BLM

Sagebrush Focal Areas Withdrawal Environmental Impact Statement

Idaho, Montana, Nevada, Oregon, Utah, and Wyoming

Draft EIS

December 2016

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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ENVIRONMENTAL IMPACT STATEMENT

Sagebrush Focal Areas Withdrawal

U.S. Department of the Interior
Bureau of Land Management
Washington Office
Washington DC
December 30, 2016

Lead Agency: U.S. Department of the Interior, Bureau of Land Management

Type of Action: **(**X**)** Draft **( )** Final

Cooperating Agencies:
U.S. Forest Service
U.S. Fish and Wildlife Service
Western Area Power Administration
Bureau of Indian Affairs
Bingham County, Idaho
Jefferson County, Idaho
Lemhi County, Idaho
State of Idaho
Fergus County, Montana
Valley County, Montana
Duckwater Shoshone
Elko County, Nevada
Humboldt County, Nevada
Lander County, Nevada
Nye County, Nevada
Nevada Division of Minerals
Nevada Department of Wildlife
Summit Lake Paiute
Oregon Department of Geology and Mineral Industries
Harney County, Oregon
Lake County, Oregon
Malheur County Sheriff
State of Utah
Fremont County, Wyoming
Lincoln County, Wyoming
Lincoln County Conservation District
State of Wyoming
Sublette County, Wyoming
Sublette County Conservation District, Wyoming
Sweetwater County, Wyoming
Sweetwater County Conservation District
Uinta County, Wyoming
Uinta County Conservation District

Responsible Official: The Honorable Sally Jewell, Secretary of the Interior

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Abstract

This Draft Environmental Impact Statement (EIS) documents the analysis of potential environmental impacts of the Secretary of the Interior's proposed withdrawal of approximately 10 million acres of Bureau of Land Management (BLM) and U.S. Forest Service-administered federal lands within Sagebrush Focal Areas (SFAs) in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming from location and entry under the Mining Law of 1872 (30 USC 22-54) for 20 years, subject to valid existing rights. The Notice of Intent to prepare this EIS was published in the Federal Register on September 24, 2015. This Draft EIS describes the geological, biological, and socioeconomic resources in and around the proposed withdrawal area. The Draft EIS considers the impacts of five alternatives, including changing the configuration and acreage of the withdrawal or not implementing the withdrawal (the "No Action" Alternative). The focus for the impact analysis was based on resource issues and concerns identified during public scoping conducted for the proposed withdrawal by BLM and other agency land managers and resource specialists. Public scoping identified concerns related to impacts on geology and mineral resources, vegetation, wildlife, and social and economic conditions.

EXECUTIVE SUMMARY

INTRODUCTION

On September 24, 2015, the Department of the Interior (DOI) published notice of the Assistant Secretary of the Interior for Land and Minerals Management's proposal to withdraw approximately 10 million acres of federal lands within Sagebrush Focal Areas (SFAs) in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming from location and entry under the Mining Law of 1872 (30 USC 22-54) (Mining Law), subject to valid existing rights. The *Notice of Proposed Withdrawal; Sagebrush Focal Areas; Idaho, Montana, Nevada, Oregon, Utah, and Wyoming and Notice of Intent to Prepare an Environmental Impact Statement* (Notice of Proposed Withdrawal), published in the Federal Register (FR) on September 24, 2015 (80 FR 57635), informed the public of the Proposed Action, and included legal descriptions for the public lands proposed for withdrawal. Publication of this Notice of Proposed Withdrawal also segregated the land from location and entry under the Mining Law, subject to valid existing rights, for a 20-year period.

The purpose of the proposed withdrawal of these approximately 10 million acres of land identified as SFAs in Priority Habitat Management Areas (PHMAs), is to protect the greater sage-grouse and its habitat from adverse effects of the reasonably foreseeable mineral development projects, subject to valid existing rights. SFAs were designated in the September 16, 2015 Bureau of Land Management (BLM) and United States Forest Service (Forest Service) Records of Decision (ROD) for the land use plan (LUP) amendments and revisions (includes both Forest Service Land Management Plans and BLM Resource Management Plans) addressing conservation measures for the greater sage-grouse and its habitat. SFAs are landscape blocks of high quality sagebrush habitat with high breeding potential densities of greater sage-grouse.

The U.S. Fish and Wildlife Service (USFWS) has identified habitat disturbance and fragmentation caused by certain hardrock mining operations as a threat to greater sage-grouse habitat. As a result, the 2015 BLM Resource Management Plans and Forest Service Land Management Plans (collectively referred to as Land Use Plans (LUP)) amendments recommend that the Secretary of the Interior (Secretary) exercise her authority under section 204 of FLPMA to safeguard these SFAs, the most important landscapes for greater sage-grouse conservation identified by the USFWS, by withdrawing them from location and entry under the Mining Law, subject to valid existing rights.

Publication of the Notice of Proposed Withdrawal segregated the identified lands from location and entry under the Mining Law, subject to valid existing rights, until the Secretary makes a decision on the withdrawal proposal or for up to two years, whichever comes first (80 FR 57635). During the segregation, studies and environmental analyses are being conducted to determine if the lands should be withdrawn to protect greater sage-grouse habitat from location and entry of new mining claims. These efforts are being undertaken under the leadership of the BLM in cooperation with the Forest Service and in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC 4321-4347). This Environmental Impact Statement (EIS) analyzes impacts of the Proposed Action (i.e., the withdrawal of lands within the SFAs from location and entry under the Mining Law, subject to valid existing rights) and alternatives to that action. This process provides the opportunity for the public, tribes, environmental groups, industry, state and local government, as well as other stakeholders to comment on and participate in the evaluation of the environmental consequences of the proposed withdrawal. These studies and reviews would provide the basis for a final decision by the Secretary regarding whether to proceed with the proposed withdrawal or to select an alternative action, including some combination of alternatives considered.

The BLM engaged the U.S. Geological Survey (USGS) to prepare a Mineral Potential Report (Day et al. 2016) for the proposed withdrawal, to describe the locatable minerals that have potential to occur within the analysis area. The Mineral Potential Report informs the decisions to be made by the Secretary regarding the proposed withdrawal and satisfies the requirements of the withdrawal regulations at 43 CFR 2310. In accordance with 43 CFR 2310.3-2 (b)(3)(iii), the Mineral Potential Report was prepared by a qualified mining engineer, engineering geologist, or geologist and includes information on general geology, known mineral deposits, past and present mineral production, mining claims, mineral leases, evaluation of future mineral potential, and present and potential market demands.

Based on the information provided in the Mineral Potential Report, the BLM prepared a Reasonably Foreseeable Development (RFD). The purpose of the RFD is to provide an estimate of the amount and type of future mineral development projects that could occur in the proposed withdrawal area over the 20-year duration of the withdrawal. The RFD provides a consistent set of assumptions regarding the anticipated future mineral development projects that could occur in the absence of the withdrawal, and is being used by the BLM and cooperators to inform the evaluation of environmental consequences in the EIS.

The proposed withdrawal, if approved, would be in effect for 20 years, as allowed under Section 204 of FLPMA, and may be extended for additional periods of up to 20 years at a time, after another public review process. The Proposed Action would withdraw the lands from location and entry under the Mining Law (30 USC 22-54), subject to valid existing rights, regardless of surface ownership. The proposed withdrawal would only affect the disposition of minerals in federal ownership which are subject to appropriation under the Mining Law. It would not affect leasable or salable minerals (e.g., oil and gas leasing, sand and gravel permits), which are not subject to appropriation under the Mining Law. The proposed withdrawal would not prohibit continuation of existing authorized mineral exploration and development activity. The proposed withdrawal would not prohibit future mineral development projects on existing mining claims, provided those mining claims were valid as of the date of the withdrawal (or the date of segregation, if the withdrawal decision is made before the segregation expires) and have remained valid.

Purpose and Need

The purpose of the proposed withdrawal of approximately 10 million acres of land identified as SFAs in PHMAs is to protect the greater sage-grouse and its habitat from adverse effects of the reasonably foreseeable locatable mineral exploration and mining, subject to valid existing rights.

Action is needed to address the protection of greater sage-grouse habitat, as identified in several USFWS findings and determinations, including the March 2010 listing decision, the Conservation Objectives Team Report (USFWS 2013a), the October 2014 USFWS memorandum titled, “Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes,” and the October 2015 listing decision. Inadequacy of regulatory mechanisms was identified as a significant threat in the USFWS finding on the petition to list the greater sage-grouse. Specifically, the USFWS found that current application of BLM and Forest Service regulatory authorities falls short of meeting the conservation needs of the species.

The BLM and the Forest Service may not, through their surface management regulations at 43 CFR part 3715, 43 CFR part 3809, or 36 CFR part 228, prohibit use under the mining laws that is otherwise compliant with the regulations, which could result in loss of greater sage-grouse habitat important for the persistence of the species. Consequently, even though legislation enacted since the Mining Law has placed significant controls on how claimants operate and reclaim mines, only a withdrawal from location and entry under the Mining Law can prevent the establishment of new mining claims and provide certainty that lands not encumbered by mining claims will not be developed.

Therefore, because certain mining operations are viewed by USFWS as a threat to the persistence of greater sage-grouse and the agencies have less discretion with respect to when and where mineral exploration and mining under the Mining Law is conducted, as compared to other agency authorizations (e.g., oil and gas leasing), the collective LUP amendments and associated RODs from 2015 recommended that the agency seek to have the Secretary withdraw the SFAs from location and entry under the Mining Law under section 204 of FLPMA.

Decision to be Made

The BLM follows the procedures in section 204 of FLPMA and the regulations at 43 CFR 2300 to process withdrawals of federal lands from operation of the public land laws, including the Mining Law. As announced in the Notice of Proposed Withdrawal, the Secretary has elected to prepare an EIS for NEPA evaluation of the proposed action. The EIS is being prepared to provide the decision-maker with a range of reasonable alternatives, each analyzed to a comparable level of detail. The EIS addresses the potential direct, indirect, and cumulative impacts on the human environment of the proposed withdrawal and alternatives to the proposed withdrawal. The BLM will identify the preferred alternative in the Final EIS, which could include any one of the alternatives presented in the Draft EIS, or some combination or minor variation of the alternatives presented. In accordance with NEPA, a preferred alternative within the spectrum of alternatives analyzed in the Draft EIS could be identified within the Final EIS or ROD (CEQ 1981: Question 29b). Following the analysis and public commenting process conducted through the NEPA process, the Secretary will issue a ROD detailing the decision concerning the withdrawal, including the rationale for the decision. Should the Secretary decide to withdraw some or all of the lands proposed for withdrawal, the Secretary will publish a Public Land Order implementing this decision.

PUBLIC ISSUES AND MANAGEMENT CONCERNS IDENTIFIED DURING SCOPING

The scoping process is described at 40 CFR 1501.7 as “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.” The formal public scoping process began on September 24, 2015, with the Federal Register publication of the Notice of Proposed Withdrawal. A total of 5,078 letters were received during the scoping period. All comments received for this scoping effort were assigned, based on content, to issues and concerns categories. Issue statements were then developed to describe the relevant issues identified during internal and external scoping to be analyzed in the EIS. Brief descriptions of the key issues that have been identified for this proposal are described below. The official Scoping Report, detailing the scoping process, comment analysis, and issue development, was produced in April 2016 and made publicly available on the BLM’s project website.

Geology and Mineral Resources

Development of federal mineral resources is authorized by law on BLM and National Forest System lands, unless lands are closed to mineral entry. Restrictions or closures individually and cumulatively may decrease development of mineral resources, and substantial mineral resources may be unavailable to the public if the proposed withdrawal is approved. There are areas of high, moderate, and low mineral resource potential in the proposed withdrawal area that the public, industries, and communities depend on and that may be unavailable if these areas are withdrawn from location and entry under the Mining Law.

Economic Conditions

A withdrawal could result in fewer future mines being developed in SFAs with corresponding effects on mining-related mineral output, employment, earnings, government tax and fee revenues, and costs of public service provisions. The manner and degree of the proposed withdrawal could directly affect the economic activity in the area, particularly in smaller communities. Withdrawal may also, however, increase non-market economic values and potentially increase activity in other economic sectors tied to recreation or amenity-based migration.

Social Conditions

Related to the change in economic conditions that may result from establishment of a withdrawal, social conditions may change as well, in relation to a possible reduction in the number of future mines being developed in SFAs, as well as a possible increase in non-market economic values and potential increase in activity in other economic sectors tied to recreation or amenity-based migration. While a withdrawal such as this, by its very nature, does not have adverse effects on natural and cultural resources themselves, as its only effect is to limit surface disturbance, the social and economic implications of such a withdrawal that do occur, may occur with disproportionally high and adverse effects among minority populations, low income populations, or Indian tribes. If such implications do occur in this way among these populations, they may need to be addressed as an environmental justice issue.

Vegetation, Including Special Status Plant Species

The proposed withdrawal could have beneficial impacts to vegetative communities by potentially reducing mining activities that may cause adverse impacts to structure, productivity, vigor, abundance, and diversity, as well as a movement away from current or natural vegetation conditions. The proposed withdrawal may have beneficial impacts to special status plant species by potentially reducing mining activities that cause habitat alteration and fragmentation, which in turn could impact overall health of the plant. The proposed withdrawal could reduce the potential for disturbance to vegetation communities.

Wildlife and Special Status Animal Species, Including Greater Sage-grouse

The proposed withdrawal could have beneficial impacts to wildlife by potentially reducing mining activities that may cause disturbance to wildlife, including greater sage-grouse and other special status species, and associated habitat within and adjacent to the proposed withdrawal area.

ALTERNATIVES

Alternatives are the heart of the EIS, as they present other courses of action that could achieve the underlying purpose of and need for action to which the agency is responding. In this case, the underlying purpose of the proposed withdrawal is to protect the greater sage-grouse and its habitat from adverse effects of the reasonably foreseeable mineral development projects, subject to valid existing rights. The BLM is required to analyze a range of reasonable alternatives to support a reasoned choice (40 CFR 1502.14). Reasonable alternatives are those that meet the purpose of and need for action and that are feasible to implement, taking into consideration regulatory, technical, economic, environmental, and other factors. Each action alternative evaluated in detail is a withdrawal in which multiple use will continue with the exception of mining claim location and entry under the Mining Law. Under all alternatives, federal land would be managed in accordance with all applicable laws, regulations, and agency policy and guidance.

Table ES-1 provides a summary comparison of key components of the alternatives evaluated in detail in this EIS.

Table ES-1. Comparison of Key Alternative Components

	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Approximate acres of federal locatable mineral estate subject to withdrawal	0	9,949,448	9,852,971	9,390,530	9,410,809
Approximate acres of high and moderate locatable mineral potential proposed for withdrawal	0	1,084,109	892,595	525,191	915,586
Estimated number of future exploration projects	114	38	54	72	48
Estimated number of future mining projects	26	3	4	8	7
Total Disturbance (acres)	9,554	2,620	3,632	4,903	3,360
Withdrawal duration (years)	0	20*	20*	20*	20*

*The 20-year period maximum for withdrawals of the size proposed also means that, although each of the action alternatives described specifically addresses a 20-year withdrawal, the Secretary has the option to establish a withdrawal of shorter duration; therefore, there is no need to evaluate in detail shorter withdrawal periods, as this possibility is included in the range of alternatives evaluated in this EIS. In fact, the Secretary may determine that a shorter period of withdrawal is appropriate in some areas proposed for withdrawal, rather than others, so long as that determination is supported by the evaluation.

No Action Alternative: the proposed withdrawal would not be implemented and the proposed withdrawal area would remain open to location and entry under the Mining Law. Applications for future mineral development projects would continue to be processed by the BLM or the Forest Service. The mitigation of potential effects from exploration or development would continue under the applicable surface managing agency regulations. This alternative serves as the baseline for measuring the impacts of the Proposed Action and three action alternatives and reflects the current management situation for all federal lands within the area proposed for withdrawal.

Proposed Action: the proposed withdrawal would be implemented and the entire 9,949,448 acres within the six states would be withdrawn from the Mining Law for 20 years, subject to valid existing rights. This withdrawal would include 3,961,824 acres in Idaho, 877,624 acres in Montana, 2,767,552 acres in Nevada, 1,843,539 acres in Oregon, 233,824 acres in Utah, and 265,085 acres in Wyoming.

State of Nevada Alternative (Nevada Alternative): the proposed withdrawal in the states of Idaho, Montana, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action. In Nevada, 486,376 acres of lands would be excluded from the withdrawal and left open to operation of the Mining Law. These are lands that are considered by the state of Nevada to have high mineral potential or limited greater sage-grouse habitat. They are located within the Southeast Oregon/Northcentral Nevada SFA and the Southern Idaho/Northern Nevada SFA. This alternative would also include in the withdrawal 389,899 acres of priority greater sage-grouse habitat located contiguous to but outside of the SFAs. This alternative would result in a total of 2,671,075 acres being withdrawn in Nevada under this alternative; 96,477 fewer acres would be withdrawn in Nevada compared to the Proposed Action. The Nevada Governor’s Office believes that this alternative would reduce the potential social and economic impact of the proposed withdrawal to the state of Nevada while still meeting the purpose of the proposal.

Remove Areas of High Mineral Potential from the Withdrawal Alternative (High Mineral Potential Alternative): the proposed withdrawal in the states of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action except that all areas within the SFAs that contain lands with high mineral potential, as defined by the Mineral Potential Report (Day et al. 2016), would not be withdrawn. Under this alternative 558,918 acres of high mineral potential lands in the six states would not be withdrawn and would be left open to operation of the Mining Law. This alternative would result in a total of 9,390,530 acres within the six states being withdrawn from the Mining Law for 20 years, subject to valid existing rights.

State of Idaho Alternative (Idaho Alternative): the proposed withdrawal in the states of Montana, Nevada, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action. The Office of the Governor of Idaho has proposed that the Secretary exclude from the proposed withdrawal, areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho. The Idaho Governor's Office deems these lands economically developable. They are located within the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA. In Idaho, 538,639 acres of lands would be excluded from the withdrawal and left open to operation of the Mining Law. A total of 3,423,185 acres would be withdrawn in Idaho under this alternative.

Section 2.5 of the EIS provides a description of the regulatory framework common to all alternatives, including federal surface regulations, state environmental regulations, state greater sage-grouse conservation plans and strategies, and county requirements.

AFFECTED ENVIRONMENT

Geology and Mineral Resources

The analysis area for geology and mineral resources is a mix of rugged topography mixed with relatively flat plateaus and plains that is covered by three physiographic divisions: Intermontane Plateaus; Rocky Mountain System; and Interior Plains. The geologically complex analysis area is composed of many different rock units that locally contain potential mineral resources, which resulted from sedimentary and igneous rock-forming processes. In addition, many of the rocks were affected by secondary geologic events and related metamorphic processes that produced additional mineral deposits in the pre-existing rocks. The proposed withdrawal is from location and entry under the Mining Law; as a result, this analysis focuses on locatable minerals, not saleable and leasable minerals.

Social and Economic Conditions

The proposed withdrawal area corresponds to a little more than 15,000 square miles, roughly equivalent to the combined land area of the states of Massachusetts and New Jersey. However, the areas proposed to be withdrawn are not contiguous. They include lands scattered across six western states within a roughly triangular region that extends about 500 miles from east to west (from southwestern Wyoming to southeastern Oregon) and about 400 miles from north to south at its widest point (northeastern Montana to southwestern Wyoming). The proposed withdrawal area is delineated by seven SFAs, which are contained in 33 counties in the six states.

The Council on Environmental Quality (CEQ) defines a community with potential environmental justice populations as one that has a greater percentage of minority or low-income populations than does an identified reference community. Minority populations are those populations having: 1) 50 percent minority population in the affected area, or 2) a meaningfully greater minority population than the reference area (CEQ 1997). Within the economic study area, two counties in Idaho (Clark and Owyhee Counties), one county in Oregon (Malheur County), and one county in Wyoming (Fremont County) have been identified as environmental justice communities.

Vegetation, Including Special Status Plants

The major plant communities within the analysis area that provide greater sage-grouse habitat are Inter-Mountain Basins Big Sagebrush Shrubland, Inter-Mountain Basins Big Sagebrush Steppe, Inter-Mountain Basins Montane Sagebrush Steppe, Columbia Plateau Low Sagebrush Steppe, Great Basin Xeric Mixed Sagebrush Shrubland, Wyoming Basins Dwarf Sagebrush Shrubland and Steppe, and other plant communities (Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland). These plant communities vary greatly in their relative ecological health as a result of stressors that influence the distribution and abundance of the plant components within the general community. Greater sage-grouse are sagebrush obligate species and rely on a variety of sagebrush dominated communities to meet various needs throughout their lifecycle (Miller et al. 2011). In winter, greater sage-grouse feed almost exclusively on sagebrush leaves (Wallestad et al. 1975). A healthy vegetative understory complete with perennial grasses and a variety of forbs provides important components of nesting and brood rearing habitat (Barnett and Crawford 1994). These vegetative communities also support a wide variety of insects that provide additional food sources for brood rearing. Some plant communities play a role in providing seasonal habitat, such as riparian areas. Other habitat, such as annual grass communities or conifer stands, may only be occasionally used by greater sage-grouse.

Special status plants are those plants that are federally listed as endangered, threatened, or are candidates for protection or proposed for protection under the Endangered Species Act of 1973 (ESA), or those that are considered sensitive by either the BLM or Forest Service. The ESA requires federal agencies to ensure that all actions, which they authorize, fund, or carry out, are not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of their critical habitat. An official ESA species list was obtained from the USFWS Information, Planning, and Conservation (IPaC) system for each of the seven SFAs. Three federally-protected plant species are known or suspected to occur within the analysis area: Ute ladies'-tresses (*Spiranthes diluvialis*), western prairie fringed orchid (*Platanthera praeclara*), and slickspot peppergrass (*Lepidium papilliferum*) have been designated as threatened under the ESA. In addition, there are two candidate species within the analysis area: whitebark Pine (*Pinus albicaulis*) and Fremont County rockcress (*Boechera pusilla*).

Wildlife and Special Status Animals, Including Greater Sage-grouse

Under the ESA all federal agencies must participate in the conservation and recovery of listed threatened and endangered species. The ESA also states that federal agencies shall ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. An official ESA species list was obtained from the USFWS IPaC system for each of the seven SFAs. According to the IPaC species lists, 21 ESA species may occur within the analysis area including five mammalian species, five avian (bird) species, and 11 fish species. There is designated or proposed "Critical Habitat" identified for four of these species. All of the listed bird species occur within shoreline habitat and riparian areas.

Special status species lists were provided by the BLM and Forest Service offices associated with the proposed withdrawal area. These lists include sensitive animal species in addition to ESA-listed species, which are recognized by the BLM, Forest Service Region 4, Forest Service Region 6, and individual state wildlife management agencies. Many of the sensitive species listed by the BLM overlap with Forest Service sensitive and focal species lists. The special status species lists obtained from the agencies within the six states associated with the proposed withdrawal identify 40 mammals, 53 birds, 38 fish, 10 amphibians, six reptiles, eight invertebrates, and seven mollusks.

The greater sage-grouse is a BLM and Forest Service sensitive species. Greater sage-grouse are considered a sagebrush ecosystem-obligate species; they rely on sagebrush on a landscape level and on a micro-habitat scale. Despite management and research efforts that date to the 1930s, breeding populations of sage-grouse have declined 17 to 47 percent throughout much of their range (Connelly et al. 2000). Prior to 19th century European settlement, greater sage-grouse habitat covered 463,322 square miles while today, due to long-term population declines, they are absent from almost half of their estimated distribution prior to Euro-American settlement (Knick and Connelly 2011). Currently sage-grouse occupy only 56 percent of their historic range (Schroeder et al. 2004). The USFWS determined that protection for the greater sage-grouse under the ESA is not warranted and withdrew the species from the candidate species list on October 2, 2015 (80 FR 59857). The USFWS's decision not to list the bird at that time follows an unprecedented conservation partnership across the western U.S. that has significantly reduced threats to the greater sage-grouse across 90 percent of the species' breeding habitat.

There are more than 900 species of birds that occur regularly in North America, of which approximately 400 can be found in the SFA boundaries of the six states at one time or another throughout the year. Approximately half of the breeding bird species that could occur within the SFAs are considered migrants – that is, they come to the states only to nest and raise their young. Many of the well-known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds, as well as raptors, fall in this category. These species may spend their winters in states to the south (e.g., California, Arizona, and Texas) or may travel thousands of miles to countries in Central and South America, during annual migrations.

ENVIRONMENTAL CONSEQUENCES

The Proposed Action and other action alternatives limit, rather than enable, a kind of use (future mineral development projects) of public lands. The effect, then, of the Proposed Action and the other action alternatives, if adopted, would be to reduce the possibility of these specific activities occurring. In this respect the effect of the Proposed Action and the other action alternatives would not be an increase in adverse environmental consequences for resources, with the possible exception of social or economic impacts from a possible reduction in future mineral development projects where lands are, in fact, withdrawn from location and entry under the Mining Law. Under each of the alternatives, including the No Action Alternative, prior to any irreversible, irretrievable commitment of resources, further, site-specific NEPA analysis would be prepared for any applicable future exploration project or mining operation proposal, as appropriate to support decision-making.

Impacts on Geology and Mineral Resources

Under the No Action Alternative, no withdrawal would occur; therefore, there would be no impact to access to and availability of geologic and mineral resources. New mineral development could take place over the next 20 years on all lands in the study area that are otherwise open to location and entry under the Mining Law, subject to compliance with all applicable laws. The Proposed Action would have the greatest potential impact on access to and availability of geology and mineral resources because the greatest amount of high and moderate mineral potential areas would be withdrawn from the Mining Law, and the Proposed Action would result in the fewest number of estimated future mineral development projects. Under the Nevada Alternative, the impact to access to and availability of geology and mineral resources in areas with high and moderate mineral potential in Nevada is less in comparison to all other action alternatives. The High Mineral Potential Alternative would result in the highest estimated number of future mineral development projects of all of the action alternatives and it would withdraw the smallest number of acres of high and moderate potential lands. Under the Idaho Alternative, the impact to access to and availability of geology and mineral resources in areas with high and moderate mineral potential in Idaho is less in comparison to all other action alternatives. Impacts to access to and availability of geology

and mineral resources could range from moderate to major under all four action alternatives, meaning the alternatives may reduce the estimated number of future mines and exploration projects by more than 20%, and in many cases, by over 50% (impact threshold definitions are provided in Table 4-3 of the EIS).

Impacts on Social and Economic Conditions

Projected total annual economic output from potential mines in the socioeconomic analysis area ranges from nearly $845 million under the No Action Alternative to approximately $151 million under the Proposed Action. Projected total employment ranges from approximately 2,031 jobs under the No Action Alternative to about 326 jobs under the Proposed Action. Projected annual labor earnings range from approximately $141 million under the No Action Alternative to about $24 million under the Proposed Action. Projected tax revenues range from about $27 million per year under the No Action Alternative to less than $5 million per year under the Proposed Action.

Overall, relative to the No Action Alternative, each of the action alternatives would have adverse direct and indirect economic impacts in the counties where future mines were estimated to be developed in the RFD. County level impacts would range from minor to major, depending on the size of the county economies and the projected differences between mineral related economic activity under the action alternatives and projected mineral-related economic activity under the No Action Alternative. In other counties with proposed withdrawal areas where mines were not estimated to be developed in the RFD, the action alternatives would have minor, adverse direct and indirect economic effects, or no impact (impact threshold definitions are provided in Table 4-13 of the EIS). The Nevada Alternative would have less economic impact within the state of Nevada than the Proposed Action, but the same impact in the other states. The Idaho Alternative would have less economic impact in Idaho than the Proposed Action, but the same impact in the other states. The High Mineral Potential Alternative would have less impact in Oregon than the other action alternatives, the same impact in Nevada as the Nevada Alternative, less impact than the Proposed Action in Idaho (but more impact than the Idaho Alternative), and the same impact as the Proposed Action in Montana, Utah, and Wyoming. At the statewide levels, the economic impacts of any of the action alternatives would be minor, based on the thresholds described in Table 4-13 of the EIS.

The tangible social impacts from the various alternatives depend greatly on the existing economic, demographic, and social context in the counties that could be most affected by the alternatives. In rural counties which have experienced long periods of declining employment and population, the potential new jobs associated with the projected mines under the No Action Alternative could lead to improvements in existing social conditions. Custer County, Idaho; Valley County, Montana; and Malheur County, Oregon appear to fit this profile. To the extent that the Proposed Action, and/or the other action alternatives, would preclude the projected economic benefits in these counties, they would also preclude associated, tangible social benefits.

In some circumstances, development of large mines or other major new facilities in small rural counties can result in a rapid influx of newcomers seeking to fill new jobs that can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions. Based on the magnitude of projected population increases associated with future mines under the No Action Alternative, this does not appear likely to be a major concern in most of the counties examined in this analysis, though such impacts could occur in specific communities (e.g., towns) depending on exactly where the future mines were located. The largest projected impact on population (in terms of percentage change) under the No Action Alternative would be expected to occur in Custer County, Idaho. That county could experience an increase in population of more than 7%. None of the other counties anticipated to be most affected by projected future mines in the proposed withdrawal area would be expected to experience an increase in population of more than 3.6%.

A number of the counties containing proposed withdrawal areas have an existing mining sector, though in most cases those sectors are either relatively small or primarily related to energy-based activity, including oil and gas production and coal mining. The major exceptions are Elko County and Humboldt County in Nevada. In those two counties, the local economy includes extensive locatable mineral mining activity. The potential future mines in the proposed withdrawal area in those counties could further expand and extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations. To the extent that the action alternatives preclude the development of the potential mines anticipated under the No Action Alternative, there could be social implications from correspondingly higher unemployment among miners and other mine-related workers in the future. Similarly, there could be social implications for those who support the withdrawal and have a different perspective on mining compared to other uses of public land.

Overall, relative to the No Action Alternative, each of the action alternatives would have adverse direct and indirect social impacts in the counties where future mines were estimated to be developed in the RFD. County level impacts would range from minor to major, depending on the size of the county populations and the projected differences between future population under the action alternatives and future population under the No Action Alternative. In other counties with proposed withdrawal areas where mines were not estimated to be developed in the RFD, the action alternatives would have minor, adverse direct and indirect social effects, or no impact. The Nevada Alternative would have less social impact within the State of Nevada than the Proposed Action, but the same impact in the other states. The Idaho Alternative would have less social impact in Idaho than the Proposed Action, but the same impact in the other states. The High Mineral Potential Alternative would have less impact in Oregon than the other action alternatives, the same impact in Nevada as the Nevada Alternative, and less impact than the Proposed Action in Idaho (but more impact than the Idaho Alternative). At the statewide levels, the tangible social impacts of any of the action alternatives would be minor, based on the thresholds described in Table 4-13 of the EIS.

Impacts on Vegetation, Including Special Status Plant Species

For all land withdrawn from appropriation under the Mining Law, a positive benefit to special status plant species and native vegetation could occur because fewer acres would be available for mineral entry compared to not withdrawing the land.

Impacts to vegetation are expected to occur under each alternative. Under the Proposed Action and all action alternatives, less mining activity would occur compared to the No Action Alternative. Under all alternatives, the decrease in vegetative cover would vary by activity, from minor to major depending on the specific areas that would be affected by an activity. Impacts to vegetation would be minor at the SFA withdrawal scale under all alternatives, including the No Action Alternative because impacts to overall density and diversity of vegetation resources from potential mining activities would be less than 1 percent of the total SFA withdrawal area (impact threshold definitions are provided in Table 4-41 of the EIS). Impacts to vegetation may be moderate to major at the individual future mining operation scale.

Under the No Action Alternative, there would be 9,554 acres of impacts to vegetation communities within the seven SFAs, either directly or indirectly. The total amount of predicted mining-related disturbance in sagebrush habitat under the Proposed Action would be 2,620 acres, representing about 73 percent less disturbance than predicted under the No Action Alternative. The total amount of mining related disturbance in sagebrush habitat under the Nevada Alternative would be 3,632 acres, representing 62 percent less disturbance than predicted under the No Action Alternative. The total amount of mining-related disturbance in sagebrush habitat under the High Mineral Potential Alternative would be 4,903 acres, representing 49 percent less disturbance than predicted under the No Action Alternative. The total amount of mining-related disturbance in sagebrush habitat under the Idaho Alternative would be 3,360 acres, representing 65 percent less disturbance than predicted under the No Action Alternative.

Without the known locations of future mineral development projects it is not possible to quantify any effects to special status plant species that might occur under any of the alternatives. Potential impacts to these species could include loss or injury of plants as a result of crushing or removal, burial under piles of extracted material, and increased exposure to dust and other contaminants. Vehicles traveling on roads could deposit dust on individual plants. This could lead to a decrease in plant vigor and a decrease in vegetation productivity adjacent to these roads. Productivity may be reduced as a result of depressed photosynthetic capability over time, after repeated deposition of dust on vegetation during active times of mine operations.

Impacts on Wildlife and Special Status Animal Species, Including Greater Sage-grouse

For all land withdrawn from appropriation under the Mining Law, a beneficial impact to wildlife and to greater sage-grouse would occur because fewer acres would be available for mineral entry compared to not withdrawing the land.

Direct and indirect adverse impacts to wildlife and special status animal species could result from habitat alteration and fragmentation from future mineral development projects, which could result in an increase in mortality or displacement. Indirect effects on wildlife include noise, dust, and light impacts resulting from mining and transportation. The No Action Alternative would result in the largest amount of surface disturbance (9,554 acres) resulting in more habitat alteration and fragmentation compared to all alternatives. The High Mineral Potential Alternative would result in the second largest amount of surface disturbance (4,903 acres), while the Nevada Alternative would result in the third largest amount of surface disturbance (3,632 acres). The Idaho Alternative would result in slightly less surface disturbance than the Nevada Alternative at 3,360 acres. The Proposed Action would result in the least amount of surface disturbance acreage compared to all alternatives (2,620 acres).

Compared to the other alternatives, the Proposed Action would have the greatest level of protection for greater sage-grouse, impacting the fewest acres of sagebrush, creating the fewest number of potential fragmentation events, and having the lowest number of leks and greater sage-grouse within potential direct impact areas. Compared to the No Action Alternative, the Proposed Action would impact 3.6 times less sagebrush habitat, and the direct impact to greater sage-grouse would be 72 percent less. Across the SFA withdrawal area, these impacts would be minor to moderate (impact threshold definition are provided in Table 4-46 of the EIS), although direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Proposed Action represents approximately 2.7 percent of all the leks, the number of sage-grouse that could be impacted represents approximately 1.3 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat.

The Nevada Alternative would result in the largest number of greater sage-grouse being located within withdrawn areas compared to any action alternative, but would have the potential to impact 421 leks directly and indirectly, compared to only 291 under the Proposed Action (see Table 4-48 of the EIS). Across the withdrawal area, these impacts would be moderate to major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Nevada Alternative represents approximately 4.7 percent of all the leks, the number of sage-grouse that could be impacted represents approximately 2.4 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat. The proposed compensation for these losses by including additional withdrawal areas under the Nevada Alternative would protect an additional 14 leks and 526 male greater sage-grouse, but there would still be the potential for moderate impacts to greater sage-grouse across the withdrawal area.

The High Mineral Potential Alternative would impact 1.9 times more sagebrush habitat than the Proposed Action, directly impact 48 percent more male greater sage-grouse, and indirectly impact 3.7 times more male greater sage-grouse (see Table 4-48 of the EIS). Across the SFA withdrawal area, these impacts would be major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the High Mineral Potential Alternative represents approximately 6.3 percent of all the leks, the number of sage-grouse that could be impacted represents approximately 4.9 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be minor at less than 1 percent of the available habitat.

The Idaho Alternative would result in the third largest number of leks being located in withdrawn areas and would have the potential to impact (when combining direct and indirect) the third greatest number of leks. Across the withdrawal area, these impacts would be moderate to major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Idaho Alternative represents approximately 3.8 percent of all the leks, the number of sage-grouse that could be impacted represents approximately 3.9 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat.

It is important to note that no particular mining or exploration activity is being proposed or evaluated here. In any instance where a particular mining or exploration activity is proposed, any evaluation required under NEPA, or Section 7 of the ESA, 43 CFR 3809, or other applicable authority would take place, and, if appropriate, a formal effects determination under Section 7, as well as any appropriate consultation with the USFWS, or establishment of required protective measures, would take place as part of that evaluation. Without the known locations of potential mining and exploration development it is not possible to quantify any effects to these species that might occur under any of the alternatives. Species determinations would be made on a case by case basis as individual mining and exploration projects are proposed and vetted through the NEPA and ESA processes.

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ACRONYMS

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
CCS	Conservation Credit System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COT	Conservation Objectives Team
DEQ	Department of Environmental Quality
DOGAMI	Department of Geology and Mineral Industries
DOI	Department of the Interior
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
GAO	Government Accountability Office
GHMA	General Habitat Management Area
GIS	Geographical Information System
HIS	Habitat Suitability Index
IGS	Idaho Geological Survey
IHMA	Important Habitat Management Area
IPaC	USFWS Information, Planning, and Conservation System
LMP	Land Management Plan
LUP	Land Use Plan
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
MT	Metric Ton
NBMG	Nevada Bureau of Mines and Geology

NDOM	Nevada Department of Minerals
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFMA	National Forest Management Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NPOM	Net Proceeds of Mineral Tax
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NWR	National Wildlife Refuge
OHMA	Other Habitat Management Area
PAC	Priority Area for Conservation
PHMA	Priority Habitat Management Area
PILT	Payments-in-Lieu of Taxes
PL	Public Law
PMU	Population Management Unit
RFD	Reasonably Foreseeable Development
RMP	Resource Management Plan
ROD	Record of Decision
SaMiRA	USGS Sagebrush Mineral Resource Assessment
SETT	Sagebrush Ecosystem Technical Team
SFA	Sagebrush Focal Area
SUI	Space Use Index
U.S.	United States
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1. INTRODUCTION: PURPOSE AND NEED FOR ACTION

1.1 Introduction

Section 204 of the Federal Land Policy and Management Act of 1976, as amended, (FLPMA; 43 USC 1714) authorizes the Secretary of the Interior (Secretary) "to make, modify, extend, or revoke withdrawals but only in accordance with the provisions and limitations of this section." On September 24, 2015, the Department of the Interior (DOI) published notice of the Assistant Secretary of the Interior for Land and Minerals Management's proposal to withdraw approximately 10 million acres of federal lands within Sagebrush Focal Areas (SFAs) in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming from location and entry under the Mining Law of 1872 (Mining Law; 30 USC 22-54), subject to valid existing rights. The *Notice of Proposed Withdrawal; Sagebrush Focal Areas; Idaho, Montana, Nevada, Oregon, Utah, and Wyoming and Notice of Intent to Prepare an Environmental Impact Statement* (Notice of Proposed Withdrawal), published in the Federal Register (FR) on September 24, 2015 (80 FR 57635), informed the public of the proposed action, and included legal descriptions for the public lands proposed for withdrawal (Appendix A). Publication of the Notice of Proposed Withdrawal initiated a 90-day public comment and scoping period. The comment period was extended on November 13, 2015 (80 FR 70252).

Subsequent to the September 24, 2015 Federal Register Notice of Proposed Withdrawal, an additional notice was published on October 20, 2015 (80 FR 63583) which corrected language in the previous notice. The text from the September notice, which reads ''The Sagebrush Focal Areas include all public and National Forest System lands identified in the townships below:'' was corrected in the October 20, 2015 notice to read, ''The Sagebrush Focal Areas consist of those public and National Forest System (NFS) lands within the townships below that are identified as SFAs on the map posted on the Bureau of Land Management (BLM) Web site at: http://www.blm.gov/wo/st/en/prog/more/sagegrouse.html'' (Appendix A).

Publication of the Notice of Proposed Withdrawal on September 24, 2015, segregated the SFAs from location and entry under the Mining Law, subject to valid existing rights, for up to two years from that date or when the Secretary makes a decision on the proposed withdrawal, whichever comes first. The segregation imposed by publication of the notice in this way has the same effect as a withdrawal in that no new mining claims may be located within these areas while the segregation is in effect.

The purpose of the proposed withdrawal of these approximately 10 million acres of land identified as SFAs in Priority Habitat Management Areas (PHMAs), is to protect the greater sage-grouse and its habitat from the adverse effects of reasonably foreseeable locatable mineral development projects, subject to valid existing rights. SFAs were designated in the September 16, 2015 BLM and United States Forest Service (Forest Service) Records of Decision (ROD) for the Land Use Plan (LUP) amendments and revisions which address conservation measures for the greater sage-grouse and its habitat[1]. SFAs are landscape blocks of high quality sagebrush habitat with high breeding potential densities of greater sage-grouse. Within these LUP documents, the SFAs have been determined to be the locations most vital to the greater sage-grouse's persistence as a species. The proposed withdrawal implements one of several land

[1] Land Use Plan (LUP) refers to both the BLM Resource Management Plans (RMP) and the Forest Service Land Management Plans (LMP).
Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, Utah (Sept. 2015).
Record of Decision and Approved Resource Management Plan Amendments for the Rocky Mountain Region, Including the Greater Sage-Grouse Sub-Regions of Lewistown, North Dakota, Northwest Colorado, Wyoming, and the Approved Resource Management Plans for Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota, Worland (Sept. 2015).
Record of Decision and Land Management Plan Amendments for Northwest Colorado and Wyoming (Sept. 2015).
Record of Decision and Land Management Plan Amendments for Idaho and Southwest Montana, Nevada and Utah (Sept. 2015).

use management recommendations from a series of BLM and Forest Service LUP amendments approved on September 16, 2015. The recommendations, decisions, and underlying analysis for the BLM LUPs are available on the BLM greater sage-grouse website: https://www.blm.gov/node/3282 or http://www.blm.gov/wo/st/en/prog/more/sagegrouse.html. The Forest Service RODs are found at: http://www.fs.fed.us/sites/default/files/rocky-mountain-ROD-package-.pdf and http://www.fs.fed.us/sites/default/files/great-basinROD-package-.pdf.

Congress, the President, and the Secretary can set aside, withhold, or reserve federal lands from some or all of the public land laws, including the mining laws. Withdrawing lands from the operation of these laws limits the allowable activities on the lands, which, in turn, limits resource conflicts and can help preserve sensitive environmental values or major federal investments in facilities. Withdrawals are established for a wide variety of purposes, e.g., power site reserves, military installations or reservations, administrative facilities, recreation sites, national parks, reclamation projects, and wilderness areas. In this instance, the purpose of the proposed withdrawal is, generally, for the protection of greater sage-grouse habitat. The proposed withdrawal, if approved, would be in effect for 20 years, as allowed under section 204 of FLPMA, and may be extended for additional periods of up to 20 years at a time, after another public review process. The proposed withdrawal would affect only disposal of locatable mineral deposits which include most metallic mineral deposits, industrial minerals, and stone that is determined to be uncommon, of high quality or possessing unique characteristics. The proposed withdrawal does not apply to saleable and leasable minerals such as coal, oil, natural gas, and sand and gravel. The proposed withdrawal, if approved, would not prohibit any other authorized uses on these lands, such as grazing, recreation, off-highway vehicle use, or development of leasable solid minerals, mineral materials, oil and gas, or geothermal resources. The BLM brochure entitled "Mining Claims and Sites on Federal Land" offers more information on this topic.

The U.S. Fish and Wildlife Service (USFWS) has identified habitat disturbance and fragmentation, including that caused by certain hard rock mining projects, as a threat to greater sage-grouse. As a result, the BLM and Forest Service LUP amendments recommend that the Secretary exercise her authority under section 204 of FLPMA to safeguard these SFAs, the most important landscapes for greater sage-grouse conservation identified by the USFWS, by withdrawing them from location and entry under the mining laws, subject to valid existing rights.

While the withdrawal application is processed, studies and environmental analyses are being conducted to determine if the lands should be withdrawn to protect the greater sage-grouse and its habitat from adverse effects of locatable mineral exploration and mining, subject to valid existing rights. These efforts are being undertaken under the leadership of the BLM in cooperation with the Forest Service and in compliance with FLPMA, and with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC 4321-4347). This Environmental Impact Statement (EIS) analyzes impacts of the Proposed Action (i.e., the withdrawal of lands within the SFAs from location and entry under the Mining Law, subject to valid existing rights) and alternatives to that action. This process provides the opportunity for the public, tribes, environmental groups, industry, state and local government, as well as other stakeholders to comment on and participate in the evaluation of the environmental consequences of the proposed withdrawal. These studies and reviews provide the basis for a final decision by the Secretary regarding whether to proceed with the proposed withdrawal or to select an alternative action, including some combination of alternatives considered.

The Proposed Action considered in this EIS would withdraw an estimated 10 million acres of federal lands within the SFAs, which are areas recognized as strongholds for greater sage-grouse conservation, in Idaho, Utah, Oregon, Montana, Wyoming, and Nevada (Table 1-1). The acreages presented in this EIS are based on GIS analysis using the mapped geometry of the proposed withdrawal. There may be minor variability in the acres presented throughout the document as a result of the complex analysis that was completed. The legal descriptions, and the acres of proposed withdrawal that are based on those legal descriptions, can be found on the project web site at: https://www.blm.gov/node/3282. The difference

between the acres calculated by GIS and the acres provided in the legal description has to do with the difference between measuring areas on a map and measuring them on the ground, they result in no substantive change to the analysis. Lands proposed for withdrawal are shown in Figures 1-1 through 1-8.

Table 1-1. Acreage of Proposed Withdrawal Areas by State

State	Approximate Acres of Proposed Withdrawal	Approximate Percentage of Total Proposed Withdrawal Acres
Idaho	3,961,824	40%
Montana	877,633	9%
Nevada	2,766,939	28%
Oregon	1,843,405	18%
Utah	233,590	2%
Wyoming	265,085	3%
Grand Total	**9,948,477**	**100%**

The Proposed Action would withdraw the lands from location and entry under the Mining Law, subject to valid existing rights, regardless of surface ownership. There are lands within the proposed withdrawal area that have split estate. In these split estate situations, the surface rights may not be managed by the BLM but the subsurface rights (such as the rights to develop minerals) for a piece of land are owned by the BLM. The proposed withdrawal would only affect the disposition of mineral estate in federal ownership which are subject to appropriation under the Mining Law. It would not affect leasable or salable minerals (e.g., oil and gas leasing, sand and gravel permits), which are not subject to appropriation under the Mining Law. Acreage of the proposed withdrawal areas by surface land management agency and subsurface mineral estate owner are shown in Tables 1-2 and 1-3.

Table 1-2. Acreage of Proposed Withdrawal Areas by Surface Land Management Agency

State	BLM	Forest Service	Other Federal	Private, State, Non-Federal	Total
Idaho	3,659,017	276,217	22,155	4,435	**3,961,824**
Montana	849,141	—	—	28,493	**877,633**
Nevada	2,244,817	514,857	205	7,060	**2,766,939**
Oregon	1,823,535	—	837	19,033	**1,843,405**
Utah	180,360	47,729	—	5,501	**233,590**
Wyoming	264,765	—	127	193	**265,085**
Total	**9,021,635**	**838,803**	**23,324**	**64,715**	**9,948,477**

Source: BLM State Offices.

Table 1-3. Acreage of Proposed Withdrawal Areas by Subsurface Mineral Estate Owner

State	Federal Mineral Estate*	Non-Federal Mineral Estate	Data Not Available**	Total
Idaho	3,956,315	5,510	—	**3,961,824**
Montana	877,633	—	—	**877,633**
Nevada	—	—	2,766,939	**2,766,939**
Oregon	1,843,297	109	—	**1,843,405**
Utah	225,932	7,658	—	**233,590**
Wyoming	265,085	—	—	**265,085**
Total	**7,168,261**	**13,277**	**2,766,939**	**9,948,477**

* Type of mineral estate not evaluated.
** The Nevada BLM has not mapped this information such that it could be used in this analysis.
Source: BLM State Offices.

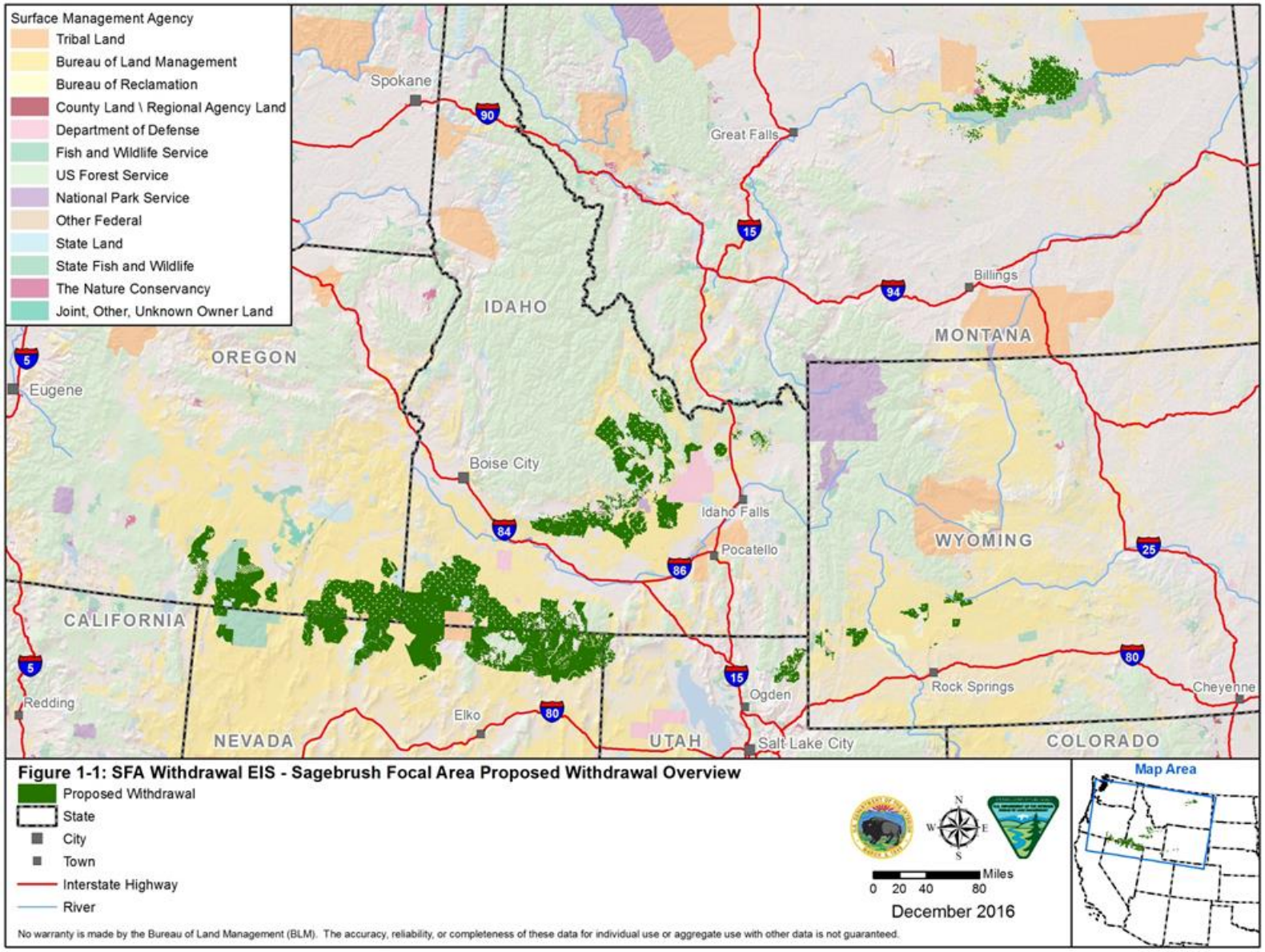

Figure 1-1. SFA Proposed Withdrawal Overview

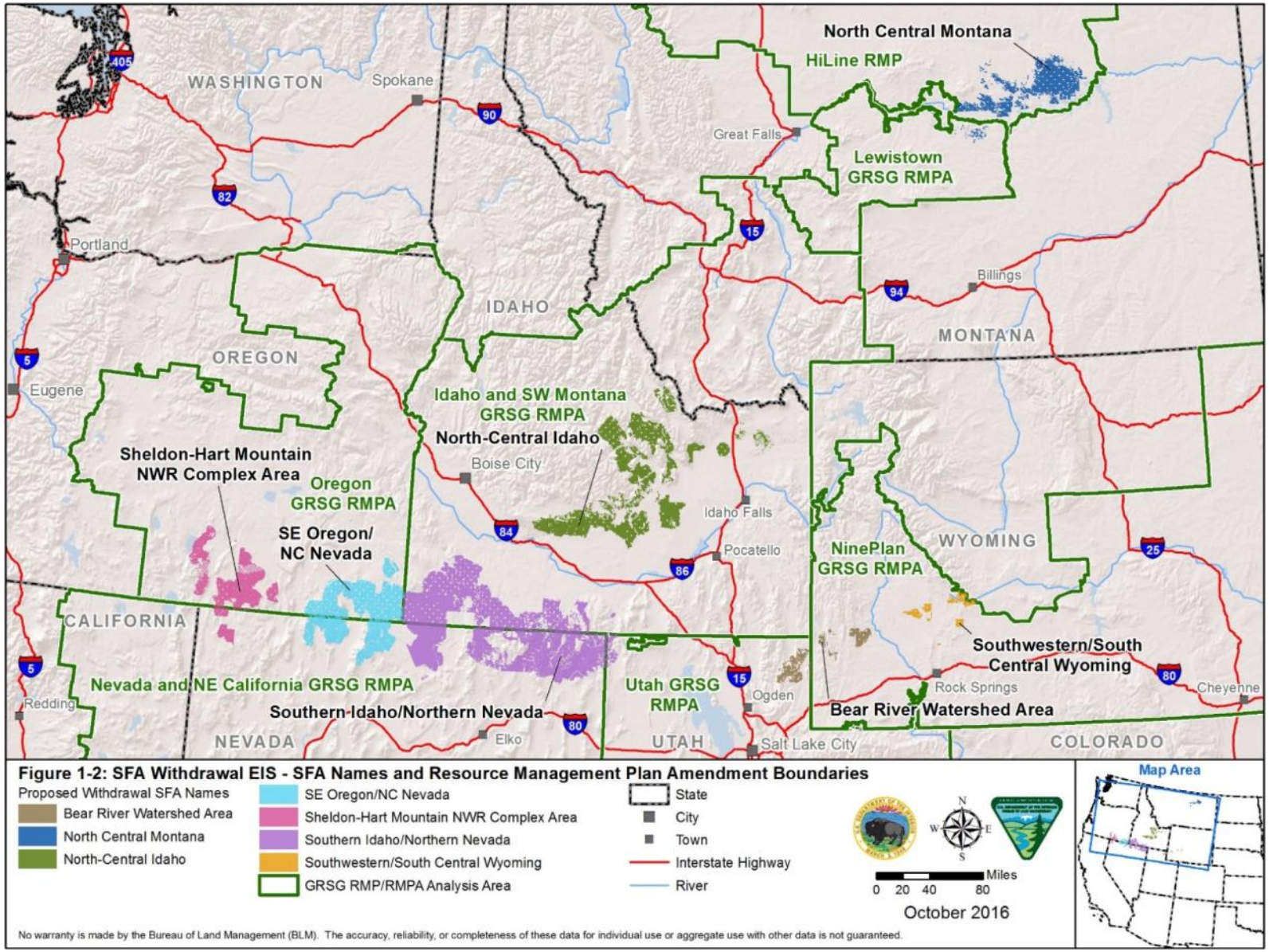

Figure 1-2. SFA Names and Resource Management Plan Amendment Boundaries

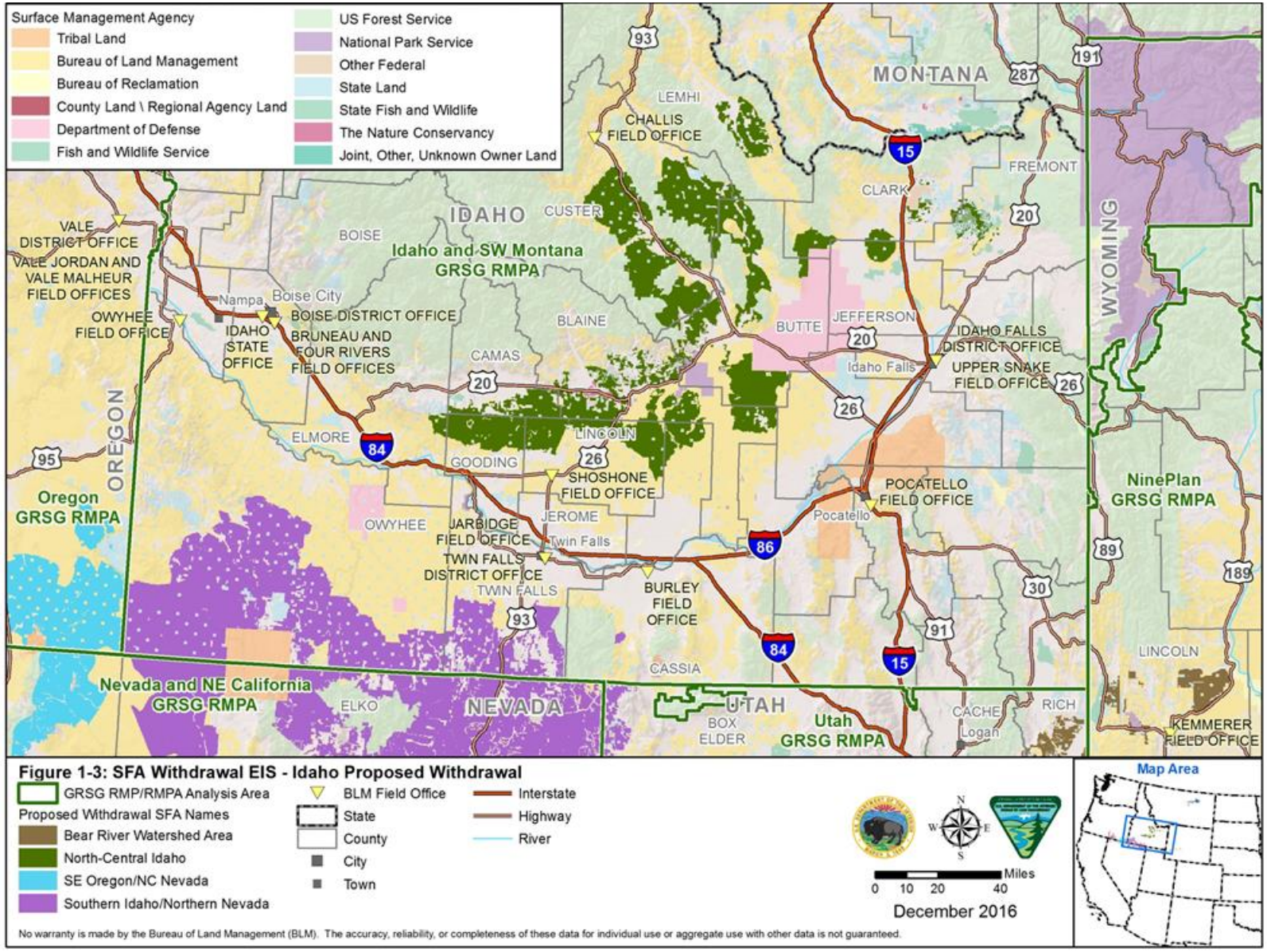

Figure 1-3. Idaho Proposed Withdrawal

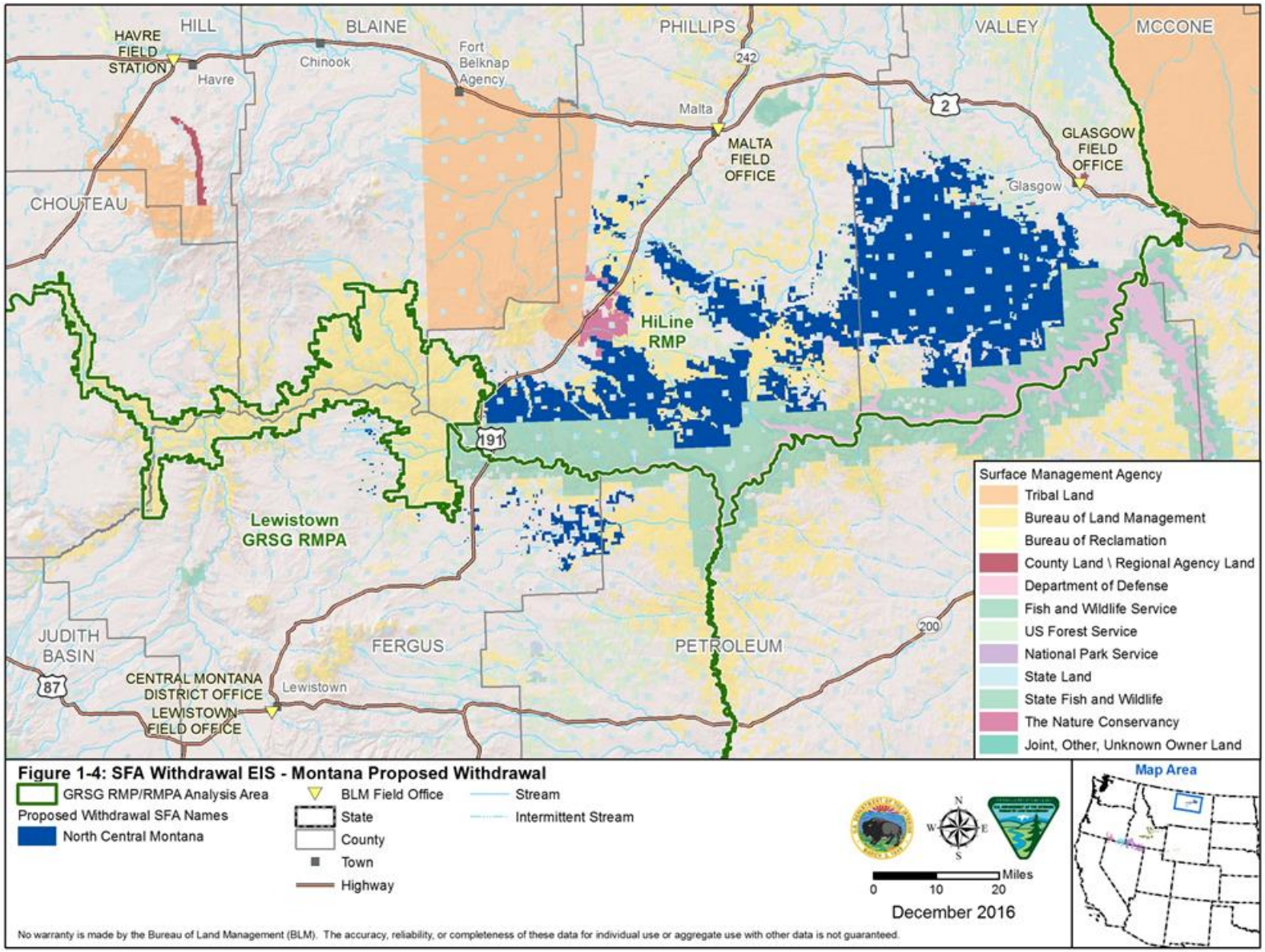

Figure 1-4. Montana Proposed Withdrawal

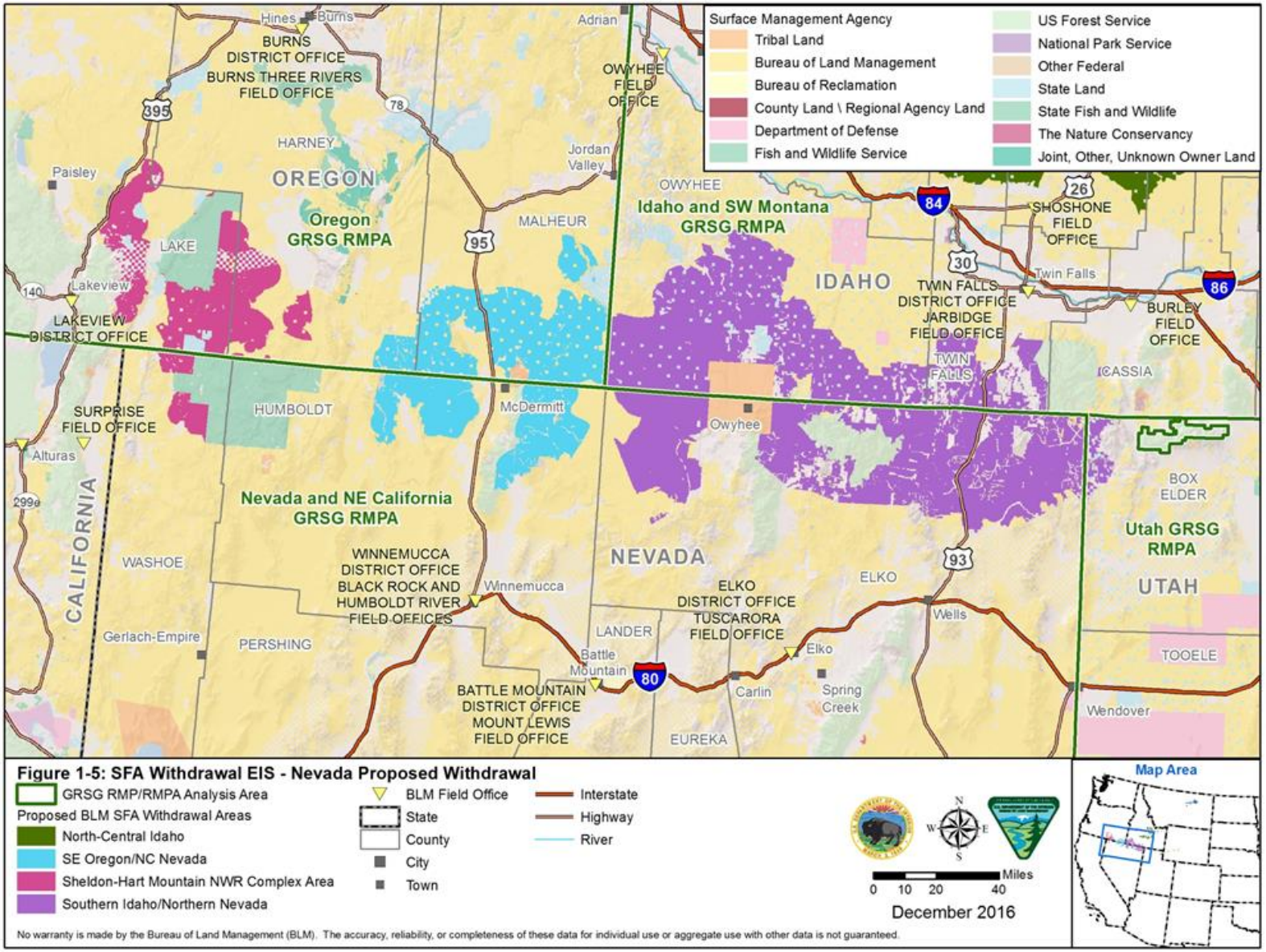

Figure 1-5. Nevada Proposed Withdrawal

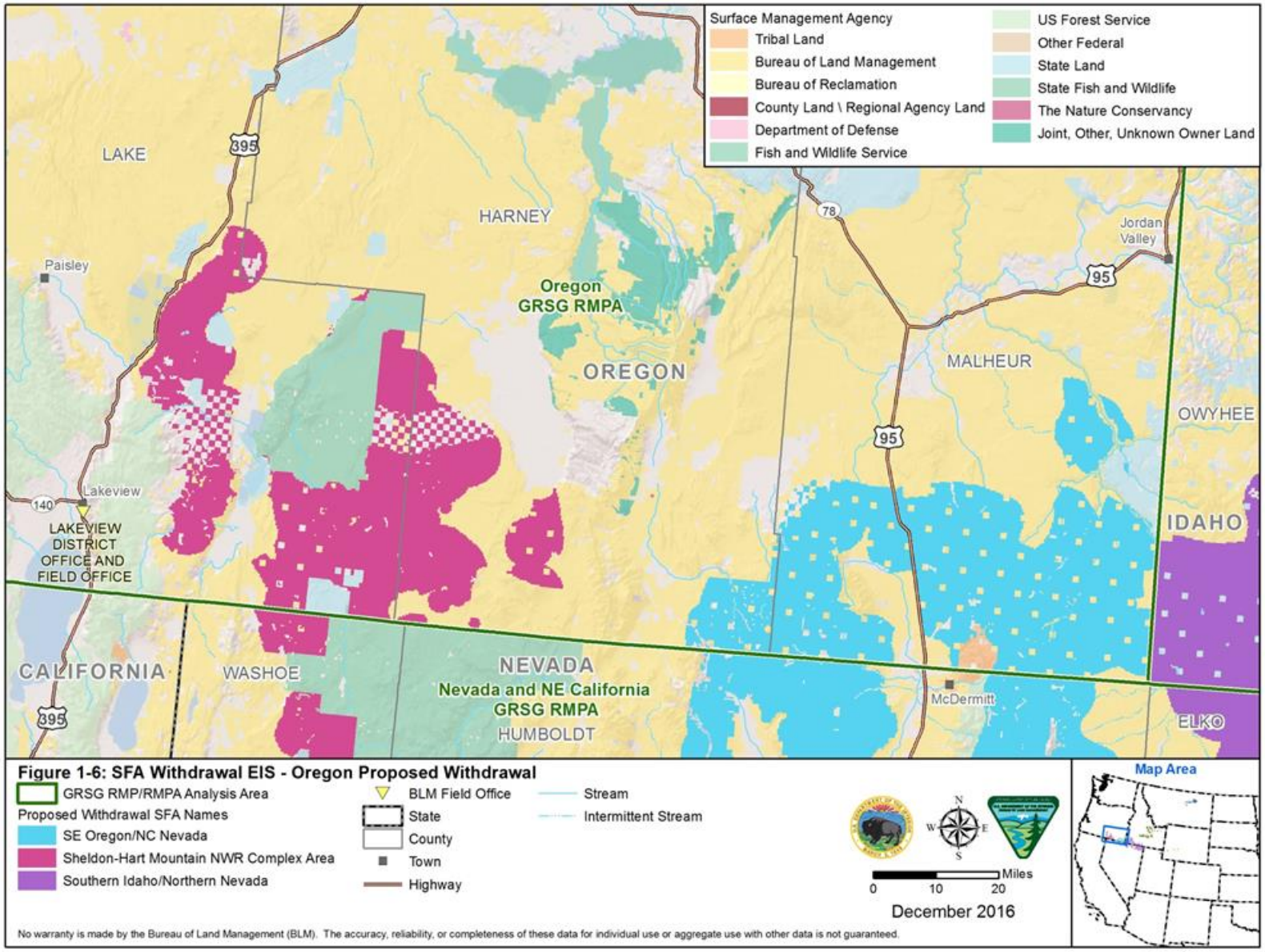

Figure 1-6. Oregon Proposed Withdrawal

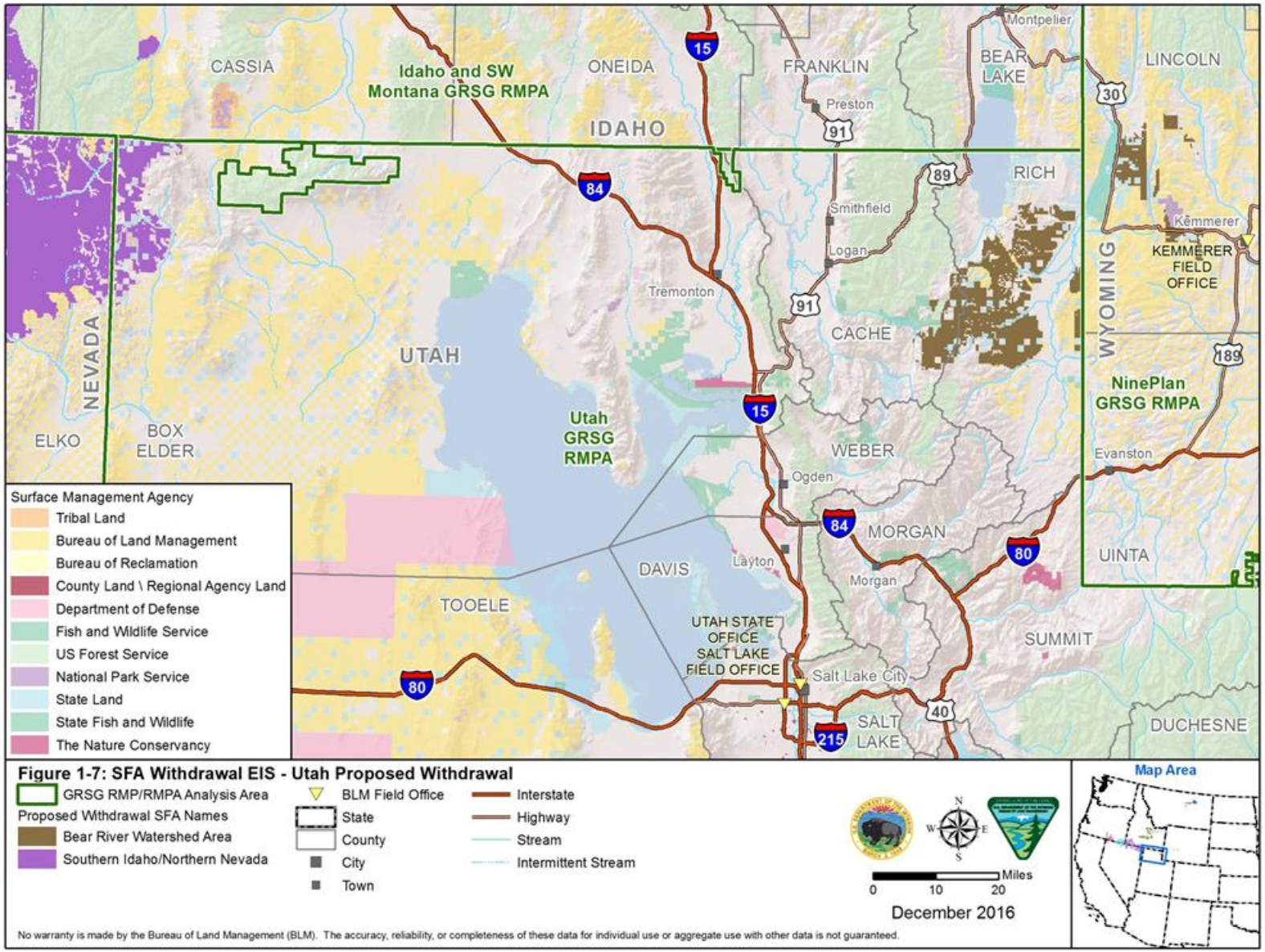

Figure 1-7. Utah Proposed Withdrawal

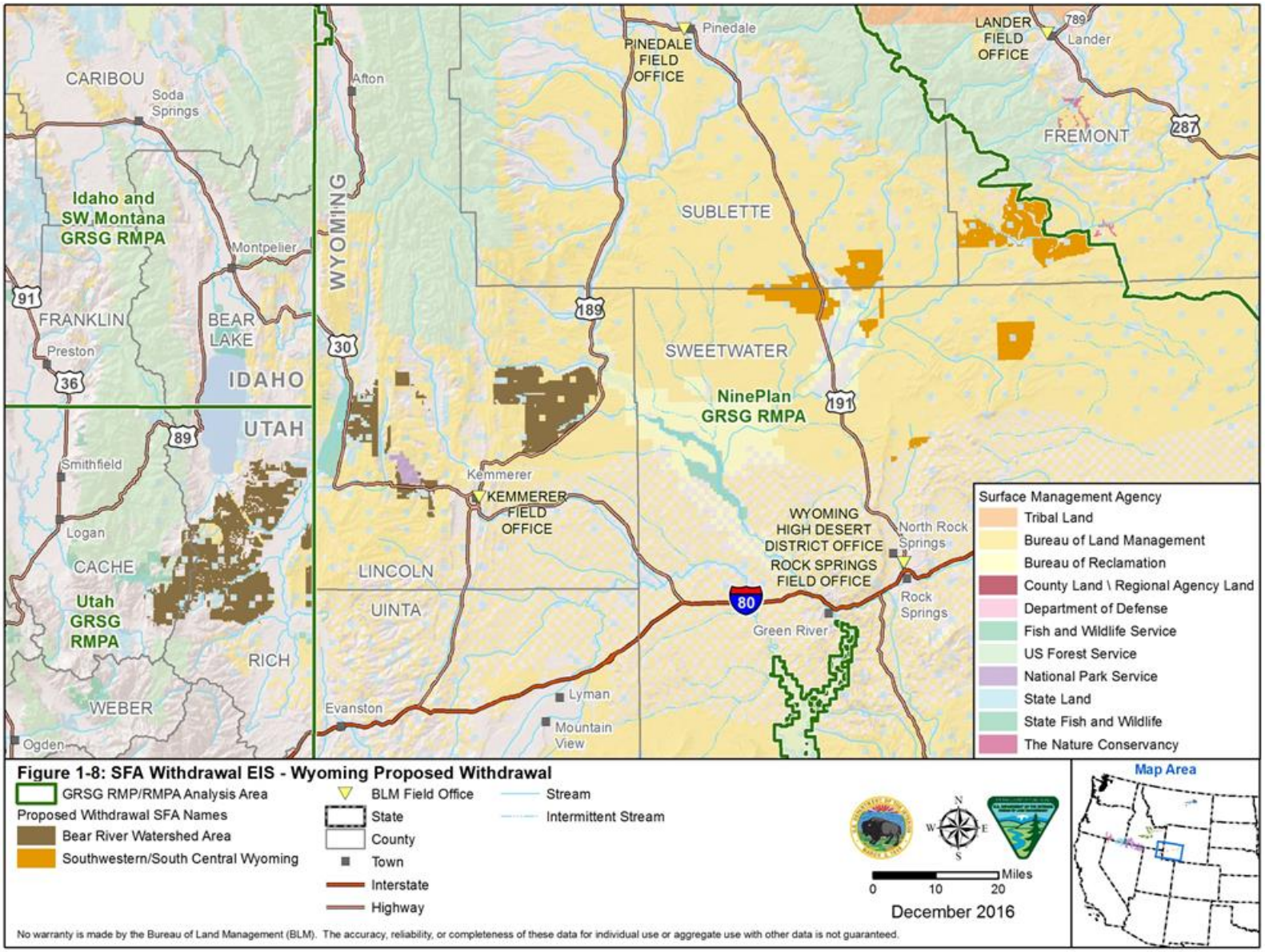

Figure 1-8. Wyoming Proposed Withdrawal

1.2 Background

In August 2011, BLM adopted the National Greater Sage-grouse Planning Strategy in response to the March 2010, USFWS 12-Month Finding for Petitions to List the Greater Sage-grouse (*Centrocercus urophasianus*) as Threatened or Endangered (75 FR 13910, March 23, 2010) (2010 Finding). In the 2010 Finding, the USFWS concluded that adding greater sage-grouse to the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973 (ESA), as amended (16 USC 1531 et seq.), was warranted but precluded by higher priority listing actions. The USFWS reviewed the status and threats to greater sage-grouse in relation to the five listing factors provided in section 4(a)(1) of the ESA. Of the five listing factors reviewed, the USFWS determined that Factor A, "the present or threatened destruction, modification, or curtailment of the habitat or range of the greater sage-grouse," and Factor D, "the inadequacy of existing regulatory mechanisms" posed "a significant threat to the greater sage-grouse now and in the foreseeable future" (USFWS 2010). The USFWS identified the conservation measures in agency LUPs as the principal regulatory mechanisms for the BLM and Forest Service and determined that the regulatory mechanisms in existence in their LUPs at the time were inadequate for greater sage-grouse conservation.

In response to the USFWS findings, the BLM and Forest Service prepared LUP amendments and revisions with associated EISs to identify PHMAs and general habitat management areas (GHMA) and to incorporate specific conservation measures across the range of the greater sage-grouse, consistent with national BLM and Forest Service policy. The BLM was the lead agency and the Forest Service was a cooperating agency in developing these EISs, which were coordinated under two administrative planning regions: the Rocky Mountain Region and the Great Basin Region. These regions are drawn roughly to correspond with the threats identified by the USFWS in the 2010 Finding, along with the Western Association of Fish and Wildlife Agencies Management Zones framework (National Sage-grouse Conservation Planning Framework Team, December 2006).

In 2012, the Director of the USFWS asked the Conservation Objectives Team (COT), consisting of state and USFWS representatives, to produce recommendations regarding the degree to which the threats need to be reduced or ameliorated to conserve greater sage-grouse so that it would no longer be in danger of extinction, or likely to become in danger of extinction, in the foreseeable future. The COT Report (USFWS 2013a) provides objectives based upon the best scientific and commercial data available at the time of its release. The BLM and Forest Service management actions analyzed in the LUP amendments were intended to ameliorate threats identified in the COT Report and to reverse the trends in habitat condition.

The highest level objective in the COT Report is identified as meeting the objectives of Western Association of Fish and Wildlife Agencies' 2006 Greater Sage-grouse Comprehensive Strategy of "reversing negative population trends and achieving a neutral or positive population trend."

The COT Report provides a Western Association of Fish and Wildlife Agencies Management Zone and Population Risk Assessment. The report identifies localized threats from sagebrush elimination, fire, conifer encroachment, weed and annual grass invasion, mining, free-roaming wild horses and burros, urbanization, and widespread threats from energy development, infrastructure, grazing, and recreation (USFWS 2013a).

Key areas across the landscape that are considered "necessary to maintain redundant, representative, and resilient populations" are identified within the COT Report. The USFWS, in concert with the respective state wildlife management agencies, identified these key areas as Priority Areas for Conservation (PACs). Management areas that may be present in the PACs include PHMAs, Important Habitat Management Areas (IHMAs), GHMAs, Other Habitat Management Areas (OHMAs), and non-habitat managed by the BLM and Forest Service.

On October 27, 2014, the USFWS provided the BLM and Forest Service a memorandum[2] and associated maps that identify areas that represent recognized "strongholds" for greater sage-grouse that have been identified as having the highest densities of greater sage-grouse and other criteria important for the persistence of the species. These areas were incorporated into the LUPs as SFAs, which are a subset of PHMAs. In the 2014 memorandum, the USFWS stated the SFAs represent "a subset of priority habitat most vital to the species persistence within which we recommend the strongest levels of protection."

The September 2015 ROD, approving the management decisions outlined in the greater sage-grouse LUPs, included the recommendation to withdraw SFAs from the Mining Law. On September 24, 2015, the DOI published the Notice of Proposed Withdrawal for the recommended acreage identified in the LUPs from location and entry under the Mining Law, subject to valid existing rights (Appendix A). Based on this proposal which expanded regulatory mechanisms and conservation efforts for the greater sage-grouse, the USFWS determined on October 2, 2015, that listing the greater sage-grouse as an endangered or threatened species was not warranted and the species was withdrawn from the candidate species list (80 FR 59857). The USFWS's decision followed an unprecedented conservation partnership across the western United States that significantly reduced threats to the greater sage-grouse across 90 percent of the species' breeding habitat.

The proposed withdrawal would not prohibit continuation of existing authorized mineral exploration and development activity. The proposed withdrawal would not prohibit future exploration or mining operations on existing mining claims, provided those mining claims were valid as of the date of the withdrawal (or the date of segregation, if the withdrawal decision is made before the segregation expires) and have remained valid. During the period the lands are segregated, the BLM has the discretion to require a demonstration of mining claim validity before authorizing new operations. As of March 6, 2016, there were approximately 18,742 mining claims located within the area proposed for withdrawal; this number will be updated as necessary during the NEPA process (see Appendix B for more information).

Following publication of the Noticed of Proposed Withdrawal in the Federal Register, and consistent with the requirements of section 204 of FLPMA, the Secretary directed that additional studies be conducted, including compliance with NEPA and other applicable authorities, to provide the information needed to make a decision on the withdrawal proposal. The Secretary will determine whether to approve the proposed withdrawal, as described under each alternative discussed in Chapter 2, for up to 20 years to protect the greater sage-grouse from potential adverse effects of locatable mineral exploration and development.

The BLM engaged the U.S. Geological Survey (USGS) to prepare a Mineral Potential Report for the proposed withdrawal. The USGS Mineral Potential Report (Day et al. 2016; referred to in this document as the Mineral Potential Report), is herein incorporated by reference and available at https://pubs.er.usgs.gov/publication/sir20165089. The Mineral Potential Report describes the locatable minerals that have potential to occur within the analysis area. The Mineral Potential Report informs the decisions to be made by the Secretary regarding the proposed withdrawal and satisfies the requirements of the withdrawal regulations at 43 CFR 2310. In accordance with 43 CFR 2310.3-2 (b)(3)(iii), the Mineral Potential Report was prepared by a qualified mining engineer, engineering geologist, or geologist and includes information on general geology, known mineral deposits, past and present mineral production, mining claims, mineral leases, evaluation of future mineral potential, and present and potential market demands.

[2] USFWS, 2014, Memorandum from U.S. Fish and Wildlife Service to the Bureau of Land Management and U.S. Forest Service, "Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes," October 27, 2014.

Based on the information provided in the Mineral Potential Report, the BLM prepared a Reasonably Foreseeable Development (RFD) analysis (Appendix B). The purpose of the RFD is to provide an estimate of the amount and type of future locatable mineral exploration and development that could occur in the proposed withdrawal area over the 20-year duration of the withdrawal. The RFD provides a consistent set of assumptions regarding the anticipated future mineral development projects that could occur in the absence of the withdrawal and serves as the basis for assessing the environmental impacts of the Proposed Action and alternatives in Chapter 4 of this EIS.

1.3 Purpose of and Need for Action

1.3.1 Purpose of Action

The Proposed Action analyzed in this document is the withdrawal from location and entry under the Mining Law of approximately 10 million acres of BLM and Forest Service-administered federal lands in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming for 20 years, subject to valid existing rights. The purpose of the proposed withdrawal of the SFAs in PHMAs is to protect the greater sage-grouse and its habitat from adverse effects of reasonably foreseeable locatable mineral exploration and mining. The BLM and Forest Service are required to consider the measure in the context of their multiple-use and sustained yield mandates under FLPMA, the Multiple Use and Sustained Yield Act, the National Forest Management Act of 1976 (NFMA), as well as the Mining Law. Consistent with section 204(b) of FLPMA, the DOI published a notice in the Federal Register describing the proposed withdrawal. Publication of the Notice of Proposed Withdrawal segregated the identified lands from location and entry under the Mining Law, subject to valid existing rights, until the Secretary makes a decision on the withdrawal proposal or for up to two years, whichever comes first (80 FR 57635).

1.3.2 Need for Action

Action is needed to address the protection of greater sage-grouse habitat, in light of the USFWS's findings and determinations, as detailed above. Inadequacy of regulatory mechanisms was identified as a significant threat in the USFWS finding on the petition to list the greater sage-grouse. Specifically, the USFWS found that current application of BLM and Forest Service regulatory authorities falls short of meeting the conservation needs of the species. The USFWS identified the principal regulatory mechanisms for the BLM and the Forest Service as conservation measures embedded in agency LUPs, which would apply, as appropriate, to BLM and Forest Service discretionary actions, such as, for instance, rights-of-way, recreation permits, oil and gas leases, etc., authorized consistent with the LUPs. Changes in management of greater sage-grouse habitats were identified as necessary to avoid the continued decline of populations that are anticipated across the species' range. The 2015 LUP amendments and revisions focused on areas affected by threats to greater sage-grouse habitat, as identified by the USFWS in the March 2010 listing decision, COT Report (USFWS 2013a), the October 2014 USFWS memorandum (as discussed in Section 1.2), and other documents.

One of several major threats to public lands identified in the LUP amendments is the fragmentation of greater sage-grouse habitat due to mineral exploration and development related to hard rock mining. The BLM and the Forest Service may not, through their surface management regulations at 43 CFR part 3715, 43 CFR part 3809, or 36 CFR part 228, prohibit use under the mining laws that is otherwise compliant with the regulations, which could result in loss of greater sage-grouse habitat important for the persistence of the species. Consequently, even though legislation enacted since the Mining Law has placed significant controls on how claimants operate and reclaim mines, only a withdrawal from location and entry under the Mining Law can prevent the establishment of new mining claims and provide certainty that lands not encumbered by mining claims will not be developed.

Therefore, because mining operations are viewed by USFWS as a threat to the persistence of greater sage-grouse and the agencies have less discretion with respect to when and where mineral exploration and mining under the Mining Law is conducted, as compared to other agency authorizations (e.g., oil and gas leasing), the collective LUP amendments and associated RODs from 2015 recommended that the agency seek to have the Secretary withdraw the SFAs from location and entry under the Mining Law under section 204 of FLPMA. Furthermore, the October 2015 decision by USFWS not to list the greater sage-grouse was informed by the 2015 LUP amendments because they established conservation strategies and regulatory mechanisms to protect the species and its habitat, one of which was to recommend the proposed withdrawal.

Because section 204 withdrawals are subject to valid existing rights, a withdrawal would not prevent all mining on the lands proposed for withdrawal. Mining and exploration may continue under existing authorizations and new mining and exploration may take place on valid mining claims on the withdrawn lands.

1.4 Decision to be Made

The BLM follows the procedures in section 204 of FLPMA and the regulations at 43 CFR 2300 to process withdrawals of federal lands from operation of the public land laws, including the Mining Law. As announced in the Notice of Proposed Withdrawal, the Secretary has elected to prepare an EIS for NEPA evaluation of the proposed action. The EIS is being prepared to provide the decision maker with an evaluation of a range of reasonable alternatives, each analyzed to a comparable level of detail. The EIS addresses the potential direct, indirect, and cumulative impacts on the human environment of the proposed withdrawal and alternatives to the proposed withdrawal. The BLM will identify the preferred alternative in the Final EIS, which could include any one of the alternatives presented in the Draft EIS, or some combination of the alternatives presented. In accordance with NEPA, a preferred alternative within the spectrum of alternatives analyzed in the Draft EIS could be identified within the Final EIS or ROD (CEQ 1981: Question 29b). Following the analysis and public commenting process conducted through the NEPA process, the Secretary will issue a ROD detailing the decision concerning the withdrawal, including the rationale for the decision. Should the Secretary decide to withdraw some or all of the lands proposed for withdrawal, the Secretary will publish a Public Land Order implementing this decision.

1.5 Roles, Responsibilities, and Authorities

This section of the EIS describes the roles and responsibilities of the lead and cooperating agencies with respect to processing the proposed withdrawal and preparing the EIS. It also describes the relevant and applicable federal, state, and local laws and regulations and how they pertain to the scope of the analysis or how they may apply to the decision to be made.

1.5.1 Bureau of Land Management

The BLM is the agency responsible for processing the proposed withdrawal and is the lead agency for preparing the EIS. The majority of the surface acreage in the withdrawal area is managed by 22 BLM field offices (Table 1-4). The public lands within these parcels are managed under 32 approved RMPs (Table 1-5), most recently amended or approved by the RODs for the Rocky Mountain and Great Basin Greater Regions (see footnote 1). In accordance with FLPMA, LUPs ensure that the public lands are managed in accordance with the intent of Congress as stated in FLPMA, under the principles of multiple use and sustained yield.

Table 1-4. BLM Field Offices Included in the Proposed Withdrawal Area

Idaho	
• Jarbidge Field Office, Twin Falls, ID	• Owyhee Field Office, Marsing, ID
• Bruneau Field Office, Boise, ID	• Shoshone Field Office, Shoshone, ID
• Salmon Field Office Salmon, ID	• Burley Field Office, Burley, ID
• Upper Snake Field Office, Idaho Falls, ID	• Challis Field Office, Challis, ID
Montana	
• Glasgow Field Office, Glasgow, MT	• Malta Field Office, Malta, MT
• Lewistown Field Office, Lewistown, MT	
Nevada	
• Tuscarora Field Office, Elko, NV	• Wells Field Office, Elko, NV
• Humboldt River Field Office, Winnemucca, NV	
Oregon	
• Burns District Office, Hines, OR	• Lakeview District Office, Lakeview, OR
• Vale District Office, Vale, OR	
Utah	
• Salt Lake Field Office, West Valley City, UT	
Wyoming	
• Pinedale Field Office, Pinedale, WY	• Kemmerer Field Office, Kemmerer, WY
• Rock Springs Field Office, Rock Springs, WY	• Lander Field Office, Lander, WY

Table 1-5. BLM Land Use Plans for the Proposed Withdrawal Area

Idaho	
• Big Lost Management Framework Plan	• Big Desert Management Framework Plan
• Cassia Resource Management Plan	• Bruneau Management Framework Plan
• Lemhi Resource Management Plan	• Challis Resource Management Plan
• Magic Management Framework Plan	• Jarbidge Resource Management Plan
• Monument Resource Management Plan	• Medicine Lodge Resource Management Plan
• Sun Valley Management Framework Plan	• Owyhee Resource Management Plan
• Twin Falls Management Framework Plan	• Little Lost-Birch Creek Management Framework Plan
• Bennett Hills/Timmerman Hills Management Framework Plan	
• Craters of the Moon National Monument Resource Management Plan	
Montana	
• HiLine Resource Management Plan[1]	• Judith, Valley, Phillips Resource Management Plan
Nevada	
• Elko Resource Management Plan	• Surprise Resource Management Plan[2]
• Winnemucca Resource Management Plan	• Wells Resource Management Plan
Oregon	
• Andrews Resource Management Plan	• Lakeview Resource Management Plan
• Southeastern Oregon Resource Management Plan	
Utah	
• Box Elder Resource Management Plan	• Randolph Management Framework Plan
Wyoming	
• Green River Resource Management Plan	• Lander Resource Management Plan
• Kemmerer Resource Management Plan	• Pinedale Resource Management Plan

[1] The HiLine RMP was a LUP revision, not an amendment, which included sage-grouse management actions under the Rocky Mountain ROD.

[2] The Surprise RMP covers a planning area in the far western northwestern corner of Nevada that extends over the border into California and is managed by the Surprise Field Office, California.

The BLM also regulates mineral development projects in accordance with provisions of section 302(b) of FLPMA that require the Secretary to prevent unnecessary or undue degradation of the lands including from activities authorized by the Mining Law. The BLM promulgated regulations at 43 CFR 3715 and 3809 that set forth the review procedures, performance standards, and other requirements that mining claimants and operators must follow when conducting operations on public lands under the Mining Law to prevent unnecessary or undue degradation.

Section 309 of FLPMA provides for the establishment of advisory councils that represent various major interests and concerns of citizens relating to land use planning and the management of public lands within the area for which the advisory council was established. Relevant resource advisory councils will be updated concerning the EIS process during regularly scheduled meetings.

1.5.2 Cooperating Agencies

Council on Environmental Quality (CEQ) regulations (40 CFR 1508.5) define a cooperating agency as any federal agency (other than the lead agency) and any state agency, local government, or Indian tribe with jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal. A summary of the cooperating agency process is presented here; additional information on cooperating agencies is presented in Chapter 5, Consultation and Coordination.

Eighty-nine federal, state, and local governments or agencies were invited to participate as a cooperating agency. Sixty-one divisions or regions within those governments and agencies were also sent invitations for a total of 150 invitations (Table 1-6). The BLM also contacted 53 tribes by letter or in-person with an invitation to participate as a cooperating agency and an offer for government-to-government consultation. The letters and presentations served to initiate consultation for the EIS under all Executive Orders (EOs) and legislative authorities.

Table 1-6. Number of Federal, State, and Local Governments or Agencies Invited to Participate

State	Total Invitations	Agencies	Divisions/Regions
Federal	48	23	25
Idaho	20	19	1
Montana	10	6	4
Nevada	23	10	13
Oregon	12	8	4
Utah	6	4	2
Wyoming	31	19	12
Total	**150**	**89**	**61**

Several agencies and two tribes expressed interest in participating as cooperating agencies and were sent a draft memorandum of understanding (MOU) documenting the cooperating agency relationship. Thirty-one agencies (federal, state, and county), with jurisdiction by law and/or applicable special expertise, have signed an MOU and have cooperated in the development of this EIS. In addition, the Summit Lake Paiute Tribe and the Duckwater Shoshone Tribe have also executed MOUs with BLM for participation in the development of the EIS as a cooperating agency. Cooperating agencies participating in the EIS process (as of December 30, 2016) are shown in Table 1-7.

The cooperating agencies assisted with EIS preparation in a number of ways, including providing studies and other information, identifying issues, assisting with the formulation of alternatives, and reviewing the Administrative Draft EIS text and other EIS materials. However, not all cooperating agencies participated in all aspects of the EIS preparation. As lead agency, BLM is responsible for the content of the EIS.

Table 1-7. Cooperating Agencies

Federal	Nevada	Wyoming	Oregon
• Forest Service • U.S. Fish and Wildlife Service • Western Area Power Administration • Bureau of Indian Affairs	• Duckwater Shoshone • Elko County • Humboldt County • Lander County • Nye County • Nevada Division of Minerals • Nevada Department of Wildlife • Summit Lake Paiute	• Fremont County • Lincoln County • Lincoln County Conservation District • State of Wyoming • Sublette County • Sublette County Conservation District • Sweetwater County • Sweetwater County Conservation District • Uinta County • Uinta County Conservation District	• Oregon Department of Geology and Mineral Industries • Harney County • Lake County • Malheur County Sheriff
Idaho			**Montana**
• Bingham County • Jefferson County • Lemhi County • State of Idaho			• Fergus County • Valley County
			Utah
			• State of Utah

U.S. Forest Service

The Forest Service is a cooperating agency with the BLM as part of the BLM Greater Sage-grouse Planning Strategy. Across the range of the greater sage-grouse, the Forest Service manages approximately 8 percent of the total remaining greater sage-grouse habitat. Combined with the approximately 52 percent managed by the BLM, both agencies manage approximately 60 percent of greater sage-grouse habitat across its range (Knick 2011).

The Forest Service partnered with the BLM to help complete the LUP amendments and EISs, with the RODs for the Rocky Mountain and Great Basin Greater Regions signed in September 2015, to implement the Greater Sage-grouse Planning Strategy (see footnote 1). Numerous Forest Service LUPs were amended through the combined effort that covered six Forest Service units that are located within the proposed withdrawal area (Table 1-8). As discussed under Section 1.3, Purpose and Need, the LUP amendments recommended federal lands, managed by either the BLM or Forest Service, to be withdrawn from locatable mineral entry.

Table 1-8. Forest Service Units within the Proposed Withdrawal Area

FOREST UNITS
Idaho
Caribou-Targhee National Forest Salmon-Challis National Forest Sawtooth National Forest
Nevada
Humboldt-Toiyabe National Forest
Oregon
Fremont-Winema National Forest
Utah
Uinta-Wasatch-Cache National Forest

U.S. Fish and Wildlife Service

The USFWS is ultimately responsible for the evaluation and findings regarding potential listings under ESA and has been a cooperating agency with the BLM throughout the process to protect the greater sage-grouse. They determined in their 2010 Finding (75 FR 13910) that greater sage-grouse was warranted for listing, but listing was precluded by higher priority actions. The USFWS then participated with the BLM as a cooperating agency as part of the National Greater Sage-grouse Planning Strategy, which was adopted in August 2011 in response to the 2010 Finding.

In September 2015, the RODs were signed for the Rocky Mountain and Great Basin Regions Approved LUP Amendments addressing conservation measures for the greater sage-grouse and its habitat. The September 2015 ROD (Forest Service 2015), approving the management decisions outlined in the greater sage-grouse LUPs, included the recommendation to withdraw SFAs from location and entry under the Mining Law, subject to valid existing rights. This was in response to the USFWS determination that the surface managing agencies (BLM and Forest Service) had inadequate regulatory mechanisms in the federal land management plans for greater sage-grouse conservation. As a result, on September 24, 2015, the DOI published the Notice of Proposed Withdrawal to implement the recommendations in the September 2015 BLM RODs. Based on this new information and the expanded regulatory mechanisms and conservation efforts, the USFWS determined on October 2, 2015, that listing the greater sage-grouse as an endangered or threatened species was not warranted and the species was withdrawn from the candidate species list (80 FR 59857).

During the EIS process, the role of USFWS is to provide input and recommendations regarding ESA-listed species and critical habitat, as well as proposed species and proposed critical habitat, that could be impacted by the proposed withdrawal. In addition, as required under Section 7 of the ESA, federal agencies must consult with USFWS regarding a project's potential impacts to threatened and endangered, proposed, and candidate species, critical and proposed critical habitat, and conservation agreement species. USFWS also has authority under conservation agreements and the Migratory Bird Treaty Act (16 USC 703-712) and Bald and Golden Eagle Protection Act (16 USC 668–668c).

1.6 Legal Authority

The withdrawal is proposed pursuant to the Secretary's authority in section 204 of FLPMA to "make, modify, extend or revoke withdrawals." FLPMA establishes the BLM's multiple-use mandate to serve present and future generations. Section 102(a)(8) of FLPMA, 43 USC § 1701(a)(8), states that it is the policy of the United States that:

> *…public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural conditions; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.*

Section 102(a)(12) of FLPMA states, it is the policy of the United States that…"public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals…including implementation of the Mining and Minerals Policy Act of 1970…as it pertains to the public lands" (BLM 2001a, section 102(a)(12)). Section 103(c) provides for a:

> *…combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources including but not limited to recreation, range, timber, minerals, watershed, wildlife and fish and*

> *natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.*

Section 202(e)(3) of FLPMA provides that withdrawals made pursuant to section 204 of this Act may be used in carrying out management decisions, but "public lands shall be removed from or restored to the operation of the Mining Law of 1872, as amended (R.S. 2318-2352; 30 USC 21 et seq.) … only by withdrawal action pursuant to section 204 or other action pursuant to applicable law."

Section 204 of FLPMA establishes the Secretary's authority to make, modify, extend, or revoke withdrawals in accordance with the provisions and limitations of FLPMA. In concert with other applicable federal laws, statutes, and regulations, as described below, FLPMA mandates the requirements for proceeding with a proposed withdrawal. Withdrawals aggregating 5,000 acres or more are limited to 20 years' duration and involve Congressional review.

Section 302(b) of FLPMA requires the Secretary to prevent unnecessary or undue degradation of the lands, including from activities authorized by the Mining Law. The BLM promulgated regulations at 43 CFR 3809 that detail review, performance standards, and other requirements that mining claimants and operators must follow when conducting mining operations on public lands under the Mining Law in order to prevent unnecessary or undue degradation.

Withdrawals under section 204 of FLPMA are "subject to valid existing rights." Consequently, before authorizing new exploration and operations on mining claims located on lands that are withdrawn under section 204 of FLPMA, the agencies must verify that valid existing rights exist—that is, the mining claim(s) were valid as of the date of the withdrawal (or the date the lands were segregated by the publication of the Notice of Proposed Withdrawal in the Federal Register, if a withdrawal is approved before the segregation expires), and continue to be valid. The BLM is required under its regulations at 43 CFR 3809.100 to determine mining claim validity before authorizing new mining operations on withdrawn lands; the Forest Service requires this determination by policy. Mining operations authorized prior to the date of withdrawal (or the date of segregation, if the withdrawal decision is made before the segregation expires) are not subject to the mandatory valid existing rights determination procedures and may continue unless or until there is a material change in the activity, as defined at 43 CFR 3809.432(b). A proposal for surface use authorization that is submitted but not accepted or approved before the date of segregation or withdrawal is subject to the validity determination requirement.

Determining the validity of a mining claim is a complex and time-consuming legal, geological, and economic evaluation that is done on a claim-by-claim basis. Mining claim validity determinations can take several years to complete, depending on the mineral deposit and the acreage involved, and are subject to administrative and judicial review. Holders of mining claims and sites located within lands later withdrawn from mineral entry must prove their right to continue to occupy and use the land for mining purposes. The owner must demonstrate they contain a discovery of a valuable mineral deposit and/or are used and occupied properly under the Mining Law, as of the date of withdrawal and as of the date of the mineral examination. Mining claims or sites whose discovery or use or occupation cannot be demonstrated on the date of withdrawal or the date of mineral examination have no valid existing rights and will be contested by the BLM (https://www.blm.gov/wo/st/en/info/regulations/mining_claims.html). During the period the lands are segregated, the BLM has the discretion to require a demonstration of mining claim validity before authorizing new operations. At the start of the analysis for this EIS, there were approximately 18,742 mining claims located within the area proposed for withdrawal (see Appendix B for more information).

1.7 Federal Laws, Statutes, and Regulations

The current federal policy for minerals resource management is reflected in the Mining and Minerals Policy Act of 1970 (30 USC 21a), which is cited in the policy statements of FLPMA. In the Mining and Minerals Policy Act, Congress declared that it is the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in the following: (1) the development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries; (2) the orderly and economic development of domestic mineral resources and reserves and reclamation of metals and minerals to help provide for satisfaction of industrial, security, and environmental needs; (3) mining, mineral, and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources; and (4) the study and development of methods for the disposal, control, and reclamation of mineral waste products and the reclamation of mined land, in order to lessen adverse impact of mineral extraction and processing on the physical environment that may result from mining or mineral activities.

Mining operations for locatable minerals are subject to a wide range of federal laws, statutes, regulations, and EOs. Many of these require permits, approvals, or consultations before the mining operations commence, whereas others mandate the submission of various documents or establish specific prohibitions or standards (EPA 1994). The requirements that relate to the regulation of mining are further discussed in this section.

1.7.1 National Environmental Policy Act of 1969

NEPA (42 USC 4321-4347) requires federal agencies to prepare an EIS prior to undertaking a major federal action that would significantly affect the quality of the human environment. NEPA also requires federal agencies to study, develop, and describe appropriate alternatives to any agency proposed action that involves unresolved conflicts concerning alternate uses of available resources. Under NEPA, agencies are required to prepare environmental documents, with input from the state and local governments, Indian tribes, the public, and other federal agencies. CEQ regulations implementing NEPA at 40 CFR 1500-1508, also provide agencies with the possibility of preparing an environmental assessment in order to assist them in determining whether an EIS must be prepared, as well as relying upon a categorical exclusion to the requirement to prepare an environmental assessment or EIS, when the proposed action is the type of action which does not individually or cumulatively have a significant effect on the human environment. In this instance, the BLM is preparing an EIS, in order to facilitate detailed analysis, agency cooperation, and public or stakeholder involvement, to better inform the Secretarial decision whether to withdraw the lands as has been proposed.

The DOI and the BLM are preparing this EIS in accordance with NEPA, the CEQ regulations implementing NEPA at 40 CFR 1500–1508, requirements in DOI Manual 516, DOI regulations implementing NEPA at 43 CFR 46, and the BLM NEPA Handbook (H-1790-1) (BLM 2008a).

1.7.2 National Forest Management Act of 1976

The NFMA (PL 94-588) established the Forest Service’s management provisions in response to the population boom (and subsequent timber clear-cutting required for construction) that followed World War II. NFMA supplemented the 1897 National Forest Organic Act (16 USC 551) as the primary authority for Forest Service policy. This Act was also an amendment to the Forest and Rangeland Renewable Resources Planning Act of 1974 (PL 93-378).

1.7.3 Forest Service Organic Administration Act of 1897

Under the Forest Service Organic Administration Act of 1897 (16 USC 471 et seq.), the Secretary of Agriculture permits access to National Forests for all lawful purposes, including prospecting for, locating, and developing mineral resources. The Organic Act remains in effect today and is one of several legal authorities directing and guiding Forest Service policy and operations, in conjunction with the Multiple-Use Mining Act of 1955, Multiple-Use Sustained-Yield Act of 1960 (16 USC 528-531); Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (16 USC 1601-1610); and NFMA, as amended (16 USC 1600 et seq.). These laws govern the administration of NFS lands including Forest Plans (36 CFR 219) and locatable mining operations (36 CFR 228A).

1.7.4 Mining Law of 1872

The Mining Law, as amended, opened the valuable mineral deposits in lands belonging to the United States to exploration, occupation, and purchase. Under the Mining Law, miners may stake or "locate" a claim on federal lands, initiating a process to obtain "right of possession of all the surface included within the lines of their locations, and of all veins, lodes and ledges throughout their entire depth." Mineral exploration and development conducted under the Mining Law must be performed in compliance with federal and state statutes and regulations.

Lands that were "opened" to location can later be "closed" by legislative or executive action to prevent the further establishment of rights under the Mining Law. For example, Acts of Congress and Presidential proclamations that set aside lands for specific purposes, such as national parks or wilderness areas or military reservations, will generally withdraw lands from appropriation under the Mining Law. As discussed above, section 204 of FLPMA also gives the Secretary authority to withdraw lands from the operation of the Mining Law.

Some "locatable minerals," such as gold, silver, and copper, are listed in the Mining Law itself, but the law does not define "valuable mineral deposit" or provide a complete list of locatable minerals. As a result, the list of locatable minerals has been refined through case law and other statutes. Generally speaking, however, any mineral deposits not subject to lease under the Mineral Leasing Act (30 USC 181 et seq.) or sale under the Materials Act are considered locatable (BLM 2011a). Table 1-9 includes the locatable minerals with the greatest potential to occur in the withdrawal area. Refer to the RFD (Appendix B) for more information about these minerals. Locatable minerals do not include minerals such as coal or oil and gas, which are leased under the Mineral Leasing Act, or sand and gravel, which are disposed of by sale under the Materials Act.

The ability of a claimant to locate new mining claims under the Mining Law is terminated if the lands are withdrawn from location and entry under the Mining Law. Congress can withdraw lands from operation of the Mining Law and has done so in the past (e.g., for national parks, wilderness areas, military reservations, etc.). The Secretary can also withdraw lands from operation of the Mining Law; however, as FLPMA explicitly states, the Secretary may "make, modify, extend, or revoke withdrawals but only in accordance with the provisions and limitations" of section 204.

1.7.5 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act of 1918 (16 USC 703–712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Except as authorized by permit, the taking, killing, or possessing of migratory birds is unlawful.

Table 1-9. Locatable Minerals with Potential to Occur in the Analysis Area

LOCATABLE MINERALS: METALS (METALLIFEROUS MINERALS)			
Antimony	Barium	Copper	Gallium
Gold	Iron	Lead	Lithium[1]
Mercury	Molybdenum	Silver	Tungsten
Uranium	Zinc	—	—
RARE EARTH ELEMENTS[2]			
Hafnium	Niobium[3]	Tantalum	Thorium
Titanium	Uranium	Zirconium	—
LOCATABLE MINERALS: NONMETALLIC (INDUSTRIAL)			
Bentonite	Diamond	Diatomite	Zeolite
LOCATABLE OR SALEABLE: NONMETALLIC (INDUSTRIAL) MINERALS DEPENDING ON QUALITY			
Clay[4], specialty	Gemstone[5]	Gypsum	Sunstone

[1] Lithium is locatable in solid mineral form, such as Lepidolite and Hectorite, and also in ionic form in subsurface brines.
[2] Elements commonly referred to as rare earths include yttrium, scandium, lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium. These elements are often present in the minerals monazite, bastnaesite, loparite, xenotime, and others. Several such elements are used in alloys to produce rare earth magnets, which are essential in the manufacture of hybrid vehicles and guidance systems.
[3] Also called Columbium.
[4] Only specialty clay, such as for ceramics, is locatable. Common clays require a mineral material sale contract. The determination is made by a BLM Certified Mineral Examiner.
[5] Most nonprecious and semiprecious gemstones require a mineral material sale contract. But most production comes from hobby collection on mining claims.

1.7.6 Bald and Golden Eagle Protection Act of 1940

The Bald and Golden Eagle Protection Act (16 USC 668–668c) was originally enacted in 1940 as the Bald Eagle Protection Act to protect bald eagles and was later amended to include golden eagles. Amended several times in subsequent years, the Act prohibits anyone without a permit issued by the Secretary from "taking" bald and golden eagles, including their parts, nests, or eggs. The definition of take includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. Activities that can be authorized by permit include scientific collecting and research, exhibition, tribal religious uses, depredation, falconry, and the taking of inactive golden eagle nests that interfere with resource development or recovery operations. The Act provides criminal penalties for persons who violate the Act.

1.7.7 Multiple-Use Sustained-Yield Act of 1960

The Multiple-Use Sustained-Yield Act of 1960 (16 USC 528-31) provides that the purposes of NFS lands include outdoor recreation, range, timber, watersheds, and fish and wildlife. While the Act supports these uses in particular, it does not directly affect the use or administration of the mineral resources on NFS lands.

1.7.8 National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 (NHPA) (PL 89-665; 16 USC 407(f)) requires the Secretary to maintain the National Register of Historic Places (NRHP). NHPA creates a process under which federal agencies must consider the effect of a proposed project on any property listed or eligible for listing in the NRHP before it authorizes or funds any undertaking. The NHPA requires federal agencies to

take into account the impacts of their actions on historic properties. The intent is to identify such properties, assess effects, and seek ways to avoid, minimize, or mitigate any adverse effects. The NHPA stresses the importance of active consultations with the public, Indian tribes, State Historic Preservation Offices, and other parties and provides the Advisory Council on Historic Preservation with the opportunity to comment on a project's potential to affect historic resources. The BLM or Forest Service review of a plan of operations for exploration projects or mining operations must comply with the NHPA to identify, assess, and seek ways to avoid, minimize, or mitigate any adverse effects on properties listed or eligible for listing in the NRHP.

1.7.9 Mining and Minerals Policy Act of 1970

The current federal policy for minerals resource management is reflected in the Mining and Minerals Policy Act of 1970 (30 USC 21a), which is cited in the policy statements of FLPMA. In the Mining and Minerals Policy Act, Congress declared that it is the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in:

1. The development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries;

2. The orderly and economic development of domestic mineral resources and reserves and reclamation of metals and minerals to help ensure satisfaction of industrial, security, and environmental needs;

3. Mining, mineral, and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources; and

4. The study and development of methods for the disposal, control, and reclamation of mineral waste products and the reclamation of mined land to lessen any adverse impact of mineral extraction and processing on the physical environment that may result from mining or mineral activities.

For the purpose of this Act, "minerals" include all minerals and mineral fuels, including oil, gas, coal, oil shale, and uranium. The Act further requires the Secretary to carry out this policy when exercising his or her authority under such programs as may be authorized by law other than under this section.

1.7.10 Clean Air Act of 1970

The Clean Air Act of 1970 (42 USC 7401 et seq.), as amended, established National Ambient Air Quality Standards to control air pollution. Impacts to air quality from industry, including mineral exploration projects and mining operations, are controlled by mitigation measures developed on a case-by-case basis during project review. The Clean Air Act has been amended several times, most importantly in 1977 and 1990. Part C of the 1977 amendment stipulates requirements to prevent significant deterioration of air quality and, in particular, to preserve air quality in national parks, national wilderness areas, national monuments, and national seashores (42 USC 7470) by establishing Federal Class I areas, including Yellowstone, Crater Lake, Grand Teton, and Glacier national parks, and Craters of the Moon National Monument and Preserve. Class I areas have more stringent controls on emission increases and protection of visibility, with a goal of no human-caused impairment. The 1990 amendment established a permit program to streamline compliance with air quality regulations into an enforceable permit for operators. The purpose of the operating permits program is to ensure compliance with all applicable requirements of the Clean Air Act and to enhance the U.S. Environmental Protection Agency's (EPA's) ability to enforce the Act.

1.7.11 Endangered Species Act of 1973

The general policy of the ESA, as set forth by Congress, is that "all federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of the Act." The USFWS is the federal agency with jurisdiction by law concerning listed threatened and endangered, proposed, and candidate species, conservation agreement species, and critical habitat under the ESA. The USFWS issued a "warranted, but precluded" ESA listing petition determination for the greater sage-grouse in March 2010, which was followed by the USFWS determination on October 2, 2015, that, listing the greater sage-grouse as an endangered or threatened species was not warranted and the species was withdrawn from the candidate species list (80 FR 59857).

Section 7 of the ESA directs all federal agencies to use their existing authority to conserve threatened and endangered species and, in consultation with the USFWS or National Marine Fisheries Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that may affect listed species, including the proposed withdrawal. The agencies have determined that the proposed decision whether to implement a withdrawal is an action subject to consultation with the USFWS. In addition, individual approval of a plan of operations for mineral exploration projects or mining operations is an action requiring compliance with Section 7 of the ESA, which frequently involves consultation with the USFWS or National Marine Fisheries Service.

1.7.12 Federal Water Pollution Control Act of 1972 / Clean Water Act of 1977

The Federal Water Pollution Control Act of 1948 was largely amended in 1972 and further revised in 1977. With the 1977 amendments, the Act became commonly known as the Clean Water Act (33 USC 1251 et seq.). The Clean Water Act, enforced by the EPA and state authorities, provides means and guidance to eliminate or reduce direct pollutant discharges into waterways and manage polluted runoff. The goal of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water (33 USC 1251(101)(a)). Sections 401 and 404 of the Clean Water Act provide for permits for discharge of pollutants or dredge or fill material, respectively, into waters of the United States and are administered by the U.S. Army Corps of Engineers.

1.7.13 American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act (42 USC 1996) states that on and after August 11, 1978, "it shall be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites." This law is designed to protect American Indian rights of religious freedom. It does not mandate that American Indian concerns are paramount but requires that the Federal Government consider such concerns in its decisions.

1.7.14 Bankhead-Jones Farm Tenant Act of 1937

The Bankhead-Jones Farm Tenant Act of 1937 (PL 75-210) authorized the federal government to acquire damaged lands to rehabilitate and use them for various purposes. The proposed withdrawal from location and entry under the Mining Law only includes the acquired minerals that are subject to location under the Mining Law. The minerals associated with lands acquired under the Bankhead-Jones Farm Tenant Act are subject to leasing, not location, and are managed under the current LUP amendments that address greater sage-grouse conservation. Therefore, the withdrawal excludes (i.e., does not affect) minerals acquired under the Bankhead-Jones Act.

1.7.15 National Materials and Minerals Policy, Research, and Development Act of 1980

The National Materials and Minerals Policy, Research, and Development Act of 1980 specifically emphasizes the USGS's responsibility to assess the mineral resources of the nation. It also charges the Secretary to improve availability and analysis of mineral data in federal land use decision-making (30 USC 1604(e)(3)).

1.7.16 Title 43 Code of Federal Regulations Part 2300

The regulations at 43 CFR 2300 set forth procedures implementing the Secretary's authority to process federal land withdrawal applications and, where appropriate, to make, modify, or extend federal land withdrawals. The regulations contain the content and processing requirements for a withdrawal application casefile. One of the requirements for a withdrawal casefile is an environmental analysis prepared in accordance with NEPA, here as presented in this EIS.

1.7.17 Title 43 Code of Federal Regulations Subpart 3715

The purpose of the regulations at 43 CFR part 3715 is to manage the use and occupancy of the public lands for the development of locatable mineral deposits by limiting such use or occupancy to that which is reasonably incident to prospecting, mining, or processing operations. The regulations address the unlawful use and occupancy of unpatented mining claims for non-mining purposes, setting forth the restrictions on use and occupancy of public lands open to the operation of the mining laws to limit use and occupancy to those reasonably incidental uses. These regulations establish procedures for beginning occupancy, standards for reasonably incidental use or occupancy, prohibited acts, procedures for inspection and enforcement, and procedures for managing existing uses and occupancies. The regulations also provide for penalties and appeals procedures. Application of these regulations by the Authorized Officer serves to prevent unnecessary or undue degradation of the public lands from uses and occupancies not reasonably incident to mining.

1.7.18 Title 43 Code of Federal Regulations Subpart 3809

The regulations at 43 CFR 3809 apply to exploration projects and mining operations for locatable minerals on BLM-managed lands. The regulations were developed to implement section 302(b) of FLPMA, which requires the Secretary to prevent unnecessary or undue degradation of the lands, including from activities authorized by the Mining Law. The regulations detail the review, plan of operations approval, performance standards, reclamation requirements, financial guarantee, and enforcement provisions that mining claimants and operators must follow when conducting exploration projects and mining operations.

1.7.19 Title 36 Code of Federal Regulations Part 228 Subpart A

The regulations at 36 CFR 228, Subpart A (228A regulations) apply to all prospecting, exploration projects, and mining operations authorized under the Mining Law and conducted on NFS lands, including the lands in the proposed withdrawal area. These regulations were originally promulgated in 1974 as 36 CFR 252 and were based on the Forest Service's authority under the Organic Administration Act of 1897. In 1981, the rules were redesignated 36 CFR 228A. In 2005, a final rule clarifying when a plan of operations is required (36 CFR 228.4A) also was adopted. However, the regulations have not been significantly revised since 1974. The regulations detail the review, approval, performance standards, reclamation requirements, financial guarantee, and enforcement provisions that mining claimants and operators must follow when conducting mining operations.

1.7.20 Executive Order 12898 of 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

EO 12898 states that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. To address environmental justice requires federal agencies to ensure that proposed projects under their jurisdictions do not cause a disproportionate environmental impact that would affect any group of people owing to a lack of political or economic strength on the part of that affected group. Each federal agency shall conduct the programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their income status, race, color, or national origin. The EIS analyzes the potential impacts of the proposed withdrawal and alternatives and identify low-income populations and minority populations that may disproportionately be subject to the project benefits and risks.

1.7.21 Executive Order 13007 of 1996, Indian Sacred Sites

EO 13007 limits the meaning of "sacred site" to a "specific, discrete, narrowly delineated location on federal land" that a tribe, or an authoritative tribal religious practitioner, has identified as sacred by virtue of its established religious significance or ceremonial use. Where such sites have been identified, EO 13007 states that in managing federal lands, each executive branch agency with statutory or administrative responsibility for such management shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, do the following: 1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; and 2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

1.7.22 Summary of Relevant Federal Laws and Regulations

A summary of the relevant federal laws, regulations, and authorities is provided in Table 1-10.

Table 1-10. Federal Laws, Statutes, Regulations, and Executive Orders Relevant to the Proposed Action

FEDERAL LAWS AND STATUTES
• American Indian Religious Freedom Act of 1978 [PL 95-341; 42 USC 1996]
• Archaeological and Historic Data Preservation Act of 1974 [PL 86-253, as amended by PL 93-291; 16 USC 469]
• Archaeological Resources Protection Act of 1979 [PL 96-95; 16 USC 470aa–mm]
• Bald and Golden Eagle Protection Act of 1940 and 1962 [PL 86-70, PL 87-884, PL 92-535, PL 95-616; 16 USC 668–668c]
• Clean Air Act of 1990 [as amended by PL 92-574; 42 USC 4901]
• Endangered Species Act of 1973 [PL 85-624; 16 USC 661, 664, 1008]
• Energy Policy Act of 2005 [PL 109-59; 42 USC 149]
• Federal Land Policy and Management Act of 1976, section 201(a) [PL 94-579; 43 USC 1701 et seq.]
• Federal Water Pollution Control Act of 1972 [PL 845; 33 USC 1251]
• Forest Service Organic Administration Act of 1897 [PL 2; 16 USC 475]
• Hazardous Materials Transportation Act of 1975 [PL 93-933; 49 USC 5101]
• Historic Sites Act of 1935 [PL 292-74; 16 USC 461–467]

Table 1-10. (continued)

FEDERAL LAWS AND STATUTES
• Migratory Bird Treaty Act of 1918 [PL 114-38; 16 USC 703–712, as amended] • Mining Law of 1872 [30 USC 21-42] • Mining and Minerals Policy Act of 1970 [PL 91-631; 30 USC 21a] • Multiple-Use Sustained-Yield Act of 1960 [PL 86-517; 16 USC 528-31] • National Environmental Policy Act of 1969 [PL 91-190; 42 USC 4321] • National Materials and Minerals Policy, Research and Development Act of 1980 [PL 96-479; 30 USC 1601] • National Historic Preservation Act of 1966 [PL 89-665; 16 USC 407(f)] • Native American Graves Protection and Repatriation Act of 1990 [PL 101-601; 25 USC 3001-3013] • National Forest Management Act of 1976 [PL 94-588; 16 USC 1600-1614] • Safe Drinking Water Act of 1982 [PL 93-523; 42 USC 300f et seq.] • Surface Resources Act of 1955 [PL 167; 30 USC 611-614]
EXECUTIVE ORDERS
• EO 11514, Protection and Enhancement of Environmental Quality • EO 11593, Protection and Enhancement of the Cultural Environment • EO 11988, Floodplain Management • EO 11990, Wetland Protection • EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations • EO 13007, Indian Sacred Sites • EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds • EO 13175, Consultation and Coordination with Indian Tribal Governments • EO 13287, Preserve America • EO 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input
FEDERAL REGULATIONS
• 40 CFR 1500–1508, CEQ implementation of NEPA • 43 CFR 2300, Land Withdrawals • 33 CFR 320–331 and 40 CFR 230, section 404 of the Clean Water Act and Its Implementing Regulations • 43 CFR 46, DOI, Implementation of NEPA • 36 CFR 220, Forest Service NEPA Procedures • 36 CFR 228A, Locatable Minerals • 36 CFR 800, as amended, Protection of Historic Properties • 43 CFR 2800, as amended, Rights-of-Way Principles and Procedures • 43 CFR 3715, Use and Occupancy Under the Mining Laws • 43 CFR 3809, Mining Claims under the Mining Law: Surface Management • 50 CFR Parts 10, 14, 20, and 21, USFWS Implementation of Migratory Bird Treaty Act • 50 CFR 400, USFWS Implementation of ESA

1.8 State Laws and Regulations

The state laws and regulations described in this section apply to the development of locatable minerals that could occur under the Proposed Action and all alternatives analyzed in detail in this EIS. The information in this section is presented to inform the reader of the main state legal requirements that apply to mineral development.

Both the BLM and Forest Service require that those seeking to develop locatable mineral resources comply with all applicable federal, state, and local laws and regulations as a condition of maintaining an approved authorization. Failure to comply with all applicable laws and regulations may result in the agencies taking enforcement action against the operator to suspend or revoke its authorization.

State permitting processes play an important role in regulating mining operations and impacts. For example, compliance with the Clean Water Act is monitored by the EPA, but the EPA has in many instances delegated its authority to the state level, requiring that state agencies provide the oversight and compliance monitoring resources to implement the Clean Water Act on individual projects. Similarly, while federal land management agencies have a mandate to maintain and protect federal lands, state mining agencies often require more detailed and specific mine plans and mitigation measures for compliance with federal environmental laws, state mining laws, regulations, and guidance. Over time, state mining divisions act as repositories for best practices and lessons learned over many years and different commodities; thus, they are able to direct mine operators to make refinements in their activities that significantly improve environmental protection.

Many counties and municipalities require additional permitting for mines proposed in their districts. These may include a right-of-way or road maintenance permit for use and/or maintenance of access roads, a conditional or special use permit to address compliance with local zoning and land use plans, a building permit for onsite building construction, and a septic system permit to protect groundwater and public health. The sections below discuss in greater detail the existing state-level regulatory frameworks. Chapter 2 also provides a discussion of permits and plans that must be in place prior to operating a mine (refer to Tables 2-17 and 2-18 in Chapter 2). For a summary of greater sage-grouse conservation plans and strategies implemented by each state, refer to Section 1.9.2 and Section 2.5.3.

1.8.1 Idaho

The Idaho Department of Environmental Quality (DEQ) is responsible for implementing and enforcing a variety of environmental regulations in Idaho pursuant to various federal and state laws (e.g., the Clean Air Act and Environmental Protection and Health Act of 1972, as amended). The Idaho DEQ has special expertise in air quality, water quality, and solid waste management, including expertise related to mining operations. The agency is responsible for reviewing permit applications under Clean Water Act section 404 and providing water quality certification for the permits under Clean Water Act section 401.

The Idaho Department of Lands is responsible for implementing and enforcing regulations for surface mining pursuant to the Idaho Surface Mining Act of 1971, as amended. The Idaho Department of Lands has special surface mining expertise, and cooperates with federal land management agencies to see that proposed mining projects are in compliance with all regulations administered by the Idaho Department of Lands. These include, but are not limited to: Idaho Statute Title 47 Mines and Mining; and Idaho Administrative Procedures Act 20.03.02.070, 58.01.02, 58.01.11, 37.03.05, 37.03.06, 37.03.07, and 58.01.01 (BLM 2015a).

The Idaho Department of Lands, in coordination with the Idaho DEQ, Idaho Department of Fish and Game, and Idaho Department of Water Resources, administers the Idaho Surface Mining Act. Through EO 2015-04, “Adopting Idaho’s Sage-grouse Management Plan,” the Idaho Governor directed the Idaho Department of Lands to implement a greater sage-grouse plan, which addresses mineral development, when issuing permits pursuant to the Idaho Surface Mining Act[3].

[3] Scoping letter from C.L. Butch Otter, Governor of Idaho, 1/15/2016.

1.8.2 Montana

The Montana DEQ is the primary state agency responsible for implementing and enforcing environmental regulations in Montana pursuant to federal and state laws. The Opencut Mining Act[4] and regulations apply to the mining of bentonite, clay, scoria, soil materials, peat, sand, or gravel. Hard rock mining is regulated under the Metal Mine Reclamation Act[5] and the rules and regulations governing the Montana Hard Rock Mining Reclamation Act[6]. Montana has separate statutes regulating coal and uranium mining (Montana Strip and Underground Mine Reclamation Act [Montana Code Annotated 982-4-201 et. seq.])[7].

When proposed mine exploration, development, or mining operations are on federal lands, the state controls are exercised in conjunction with federal controls. While focused on reclamation, Montana's laws take into account all potential operational impacts of mining, including those on air and water resources, fauna, and flora. The Montana DEQ considers impacts on greater sage-grouse habitat in its mine permitting decisions, and mandates protective and mitigative measures for any such impacts. In addition to requirements of the referenced mining statutes, Montana administers other environmental protection laws on lands within the state, including activities occurring on federal lands, such as Montana's Water Quality Act, Air Quality Act, aquatic ecosystems protection laws, and solid and hazardous waste laws. In addition, all permitting decisions by the Montana DEQ and other administrative agencies implementing these laws are subject to environmental review under the Montana Environmental Policy Act. In addition, EO 12-2015, “Amending and Providing for Implementation of the Montana Sage Grouse Conservation Strategy,” directs mining operations to comply with Montana's Management Plan and Conservation Strategies for Sage Grouse in Montana[8].

1.8.3 Nevada

Branches under the State of Nevada Division of Environmental Protection are responsible for implementing and enforcing environmental regulations in Nevada pursuant to federal and state laws. The Nevada Bureau of Mining Regulation and Reclamation is composed of three technical branches: 1) regulation, 2) closure, and 3) reclamation. It is the mission of Nevada Bureau of Mining Regulation and Reclamation to see that Nevada’s waters are not degraded by mining operations and that lands disturbed by mining operations are reclaimed to safe and stable conditions to ensure a productive post-mining land use.

The Regulation Branch has responsibility for protecting waters of the state under the water pollution control regulations. The branch consists of the permitting section, which issues Water Pollution Control Permits to ensure that the quality of Nevada's water resources is not impacted by mining activity; and the inspection section, which conducts regular inspections during the life of a mining facility to confirm that operations are in compliance with permit requirements.

The Closure Branch also has the responsibility of protecting waters of the state under the water pollution control regulations. This branch works with facilities at the cessation of operations so that all components are left chemically stable for the long term. The Closure Branch issues water pollution control permits and conducts inspections to ensure that the mine site, in the closure and post-closure period, will not degrade waters of the state.

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[4] 82-4-401 et seq., Montana Code Annotated and Administrative Rules of Montana 17.24.201 et seq.
[5] Montana Code Annotated 82-4-300.
[6] Administrative Rules of Montana 17.24.1 et seq.
[7] American Colloid Company Final EA Amendment 13 to Plan of Operations MTM 77811, 12/2013, http://deq.mt.gov/Land/hardrock/LawsRules.
[8] Comment letter from Montana Attorney General Tim Fox 1/15/2016.

The Reclamation Branch regulates exploration and mining operations in Nevada on both private and public lands. The branch issues permits to exploration and mining operations to reclaim the disturbance created to a safe and stable condition for a productive post-mining land use. An operator must obtain a reclamation permit prior to construction of any exploration, mining, or milling activity that proposes to create a disturbance over 5 acres or remove in excess of 36,500 tons of material (ore plus overburden) from the earth in any calendar year. Aggregate or sand pit operations are excluded from obtaining a reclamation permit. In addition to obtaining a reclamation permit, an operator must file a surety with the division or Federal Land Manager to confirm that the reclamation will be completed should an operator default on the project (Nevada Division of Environmental Protection 2015).

The Bureau of Mining Regulation and Reclamation, in cooperation with other state, federal, and local agencies, regulates mining operations under regulations adopted in 1989. Nevada Administrative Code 445A.350- 445A.447 and 519A.010 - 519A.415 were developed to implement the requirements of Nevada Revised Statutes 445A.300- 445A.730 and 519A.010 - 519A.290.

1.8.4 Oregon

The Mineral Land Regulation and Reclamation Program is the lead program for mine regulation in Oregon. The program is a fee-based statewide program with authority to regulate all upland and underground mining on all lands by issuing an operating permit. In addition, the program implements the Federal Clean Water Act General Stormwater Permit and the state Water Pollution Control Facility Permit at aggregate mine sites based upon an agreement with the Oregon DEQ. The Mineral Land Regulation and Reclamation Program works with the industry and the public to minimize the impacts of mining and optimize the opportunities for reclamation.

The state mine permit has two main functions: 1) it confirms that when mining occurs, off-site impacts are minimized; and 2) the site is mined in a way that guarantees the reclamation will be completed (https://www.oregon.gov/DOGAMI/Pages/mlr/mlrhome.aspx). EO 2015-18, "Adopting the Oregon Sage-Grouse Action Plan and Directing State Agencies to Implement the Plan in Full," directs state agencies to apply the Action Plan across all lands in the state.

1.8.5 Utah

The Utah minerals program is administered by the Utah Department of Natural Resources, Division of Oil, Gas, and Mining. The agency regulates all non-coal mining operations in the state with a few exceptions. This includes verifying operators work within permit boundaries, mining operations pose no threat to public safety or the environment, and assuring appropriate fees/bonds are collected for reclamation.

The Utah Department of Natural Resources, Division of Oil, Gas, and Mining implements the Utah Mined Land Reclamation Act[9] and the General Rules and Rules of Practice and Procedures, Minerals Regulatory Program[10]. The mission of the Minerals Regulatory Program is to regulate exploration for, and development and reclamation of non-coal mineral resources of, the state in conformance with the Utah Mined Land Reclamation Act (Utah Code Annotated 40-8) in a manner which:

- Supports the existence of a viable minerals mining industry to preserve the economic and physical well-being of the state and the nation,

[9] Title 40-8, Utah Code Annotated 1953, as amended.
[10] R647-1 through R647-5.

- Safeguards the environment while protecting public health and safety, and
- Achieves the successful reclamation of lands affected by mineral mining operations (Utah Department of Natural Resources 2016).

EO 2015-002, "Implementing the Utah Conservation Plan for Greater Sage-grouse," directs state agencies to coordinate implementation of the state's conservation plan to maintain, improve, and enhance greater sage-grouse habitat.

1.8.6 Wyoming

Much of Wyoming's regulation of mining is through the Wyoming Environmental Quality Act and involves the Land Quality or Water Quality Divisions of the Wyoming DEQ. The Land Quality Division works to see that any land disturbances resulting from mining are minimal, and that affected areas are properly restored once mining is complete. The Land Quality Division has the authority to require permitting and licensing of all operator actions of surface and underground mine facilities. This authority is derived from the Federal Surface Mining Reclamation and Control Act, as well as the Wyoming Environmental Quality Act.

EO 2015-04, "Greater Sage-grouse Core Area Protection," directs state agencies to comply with Wyoming's greater sage-grouse management plan[11]. Where a state agency has regulatory jurisdiction, it must assure compliance with this EO regarding greater sage-grouse core area protection[12].

Other state agencies also have regulatory jurisdiction over issues related to mineral development, such as the Office of State Lands and Investments for locatable minerals on state lands; State Engineer's Office for permitting water wells and water rights; and federal land management agencies. Regulation of locatable mineral exploration and development activities by the Wyoming DEQ includes regulation of exploration, stormwater discharge, and mining operations[13].

1.9 Relationship to Other Documents

1.9.1 Existing Land Use Plans

In September 2015, the BLM Director signed the RODs for the Rocky Mountain and Great Basin Regions Approved LUP Amendments addressing conservation measures for the greater sage-grouse and its habitat. Also in September 2015, the Forest Service Regional Foresters from the Intermountain, Northern, and Rocky Mountain Regions signed the RODs for the Rocky Mountain and Great Basin Regions LUP Amendments. The Forest Service and BLM LUP amendments focus on conserving priority habitat areas (which include SFAs) that have been identified as having the highest value to maintain the species and its habitat. Land use measures in priority habitat are designed to minimize or avoid habitat disturbance. The plans also designate GHMAs, which provide greater flexibility for land use activities. The plan amendments include greater sage-grouse habitat management direction that avoids and minimizes additional disturbance in greater sage-grouse habitat management areas. Moreover, they target restoration of and improvements to the most important areas of habitat. Management under the plan amendments is directed through land use allocations that apply to greater sage-grouse habitat. These allocations accomplish the following:

[11] Comment letter from Wyoming House District 54 Representative Lloyd Charles Larsen, 1/15/2016.
[12] Comment letter from Wyoming DEQ, 1/14/2016.
[13] Letter from Wyoming Office of the Attorney General to Natural Resource Policy Director Jerimiah Rieman 7/20/2015.

- Eliminate most new surface disturbance in the most highly valued sagebrush ecosystem areas identified as SFAs, which includes the recommendation to withdraw approximately 10 million acres of federal lands from the operation of the Mining Law;
- Avoid or limit new surface disturbance in PHMAs, of which SFAs are a subset; and
- Minimize surface disturbance in GHMAs.

The cumulative effect of these measures is to conserve, enhance, and restore greater sage-grouse habitat across the species' remaining range in the Great Basin and Rocky Mountain Regions, as well as to provide greater certainty that BLM and Forest Service LUP decisions in greater sage-grouse habitat can lead to conservation of the greater sage-grouse and other sagebrush-steppe associated species in the region.

The goal is to achieve the COT Report objective of "conserve(ing) the sage-grouse so that it is no longer in danger of extinction or likely to become in danger of extinction in the foreseeable future" (USFWS 2013a). The plans honor all valid, existing rights, including those for oil and gas development, renewable energy, rights-of-way, locatable minerals, and other permitted projects.

1.9.2 State Greater Sage-Grouse Conservation Plans and Strategies

The BLM recognizes the importance of individual state greater sage-grouse conservation plans and strategies. All six states covered by the Proposed Action have implemented a state-level greater sage-grouse conservation plan or strategy. These plans or strategies provide different approaches to addressing potential impacts to greater sage-grouse from potential mining operations or activities similar to mining. Some state greater sage-grouse conservation plans have been adopted through state legislative actions or EOs and involve regulatory mechanisms to address threats to the species and its habitat. Other state plans identify important conservation objectives and incentivize voluntary conservation measures. State plans considered in this EIS are summarized in Chapter 2 under Section 2.5, Regulatory Framework Common to the Proposed Action and Alternatives.

While the state-level plans make valuable contributions to the efforts to preserve greater sage-grouse, the Secretary considers it essential for the preservation of the species across its range, to have regulatory certainty on federal lands that are open to location and entry under the Mining Law. The Proposed Action provides that regulatory certainty beyond what can be provided by state plans.

1.10 Identification of Issues

1.10.1 Overview of Public Scoping Process

The scoping process is described at 40 CFR 1501.7 as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." The public scoping process begins the NEPA process by gathering comments and documenting important issues and concerns to be addressed in the EIS. BLM uses the scoping process to solicit input on the issues, impacts, and potential alternatives to be addressed in the EIS, as well as to determine the extent to which those issues and impacts will be analyzed. Local, state, and tribal government officials, as well as members of the general public, are consulted as part of the process.

The public scoping period for this EIS included a series of open houses/scoping meetings designed to provide members of the public background information and an opportunity to submit comments on the proposed withdrawal. BLM conducted this public process to consider information provided by the states, stakeholders, and others on mineral potential, as well as the importance of these areas as sagebrush habitat.

Notices announcing the public comment period and/or the scoping meetings consisted of:

1. The Notice of Proposed Withdrawal that was published in the Federal Register on September 24, 2015 (80 FR 57635).

2. A subsequent Federal Register notice that extended the comment period for the EIS to January 15, 2016 and announced the times, dates, and locations of the public meetings for the proposal that was published on November 13, 2015 (80 FR 70252).

3. A Federal Register notice published on November 27, 2015 informing the public about cancellation of one of the meetings (80 FR 74129).

4. A news release issued to media organizations and posted on the BLM's project website. Both the September 24, 2015 and the November 13, 2015 Federal Register notices were also posted on the BLM greater sage-grouse website (https://www.blm.gov/) informing the public of the proposed withdrawal, as well as the scoping period and meeting times and locations.

5. Publication of legal notices in newspapers in the vicinity of the proposed withdrawal.

Eight public meetings were held between December 14 and 16, 2015 at the following locations:

- Lakeview, Oregon
- Salt Lake City, Utah
- Boise, Idaho
- Rock Springs, Wyoming
- Sparks, Nevada
- Malta, Montana
- Idaho Falls, Idaho
- Elko, Nevada.

The meeting format, an informal open house with a looping video and poster stations staffed by BLM personnel, was designed to provide attendees an opportunity to review information about the proposal and the EIS, ask questions, and have informal one-on-one discussions. A total of 311 people signed in at the eight meetings – 40 in Lakeview, 9 in Salt Lake City, 28 in Boise, 13 in Rock Springs, 82 in Sparks (Reno), 9 in Idaho Falls, 98 in Elko, and 32 in Malta. These numbers do not include BLM or Forest Service representatives (who were on hand to answer questions) or the EIS contractors.

Members of the public and agencies were afforded the following opportunities for providing comments during the scoping period:

- Comments could be handwritten on comment forms at the scoping meetings. Comment forms were provided to all meeting attendees and were also available throughout the meeting room, where attendees could write and submit comments during the meeting.

- Emailed comments could be sent to a dedicated email address: sagebrush_withdrawals@blm.gov.

- Individual written letters and comment forms could be mailed via U.S. Postal Service to: BLM Director, 1849 C Street NW (WO–200), Washington, D.C., 20240.

A total of 5,078 letters or other submittals were received during the scoping period. Each letter was reviewed and specific comments were identified and sorted by topic. The comments covered a range of topics, including potential impacts to address in the EIS, suggested alternatives, and commenters' support of or opposition to the proposal. All comments received through scoping and the public involvement processes were considered in developing the key issues to be analyzed in the EIS, as well as to identify reasonable alternatives to be considered.

1.10.2 Issues for Analysis

Key issues and concerns expressed during the agency and public scoping period were grouped by topic in the following categories:

- Geology and Mineral Resources,
- Vegetation, including Special Status Plant Species,
- Wildlife and Special Status Animal Species, including Greater Sage-grouse, and
- Social and Economic Conditions.

Issue statements were then developed to describe the relevant issues identified during internal and external scoping to be analyzed in the EIS. Brief descriptions of the key issues that have been identified for this proposal are described in Table 1-11 and follow the general organization of Chapters 3 and 4 of the EIS.

Table 1-11. Description of Key Issues

Resource Category/ Issue	Description of Key Issue
Geology And Mineral Resources	
Availability of mineral resources	Development of federal locatable mineral resources is authorized by law on BLM and NFS lands, unless lands are closed to mineral entry. Restrictions or withdrawals individually and cumulatively may decrease development of mineral resources; consequently, some mineral resources will be unavailable to the public if the proposed withdrawal is approved. There are areas of high, moderate, and low mineral resource potential in the proposed withdrawal area that the public, industries, and communities utilize and that may be unavailable if these areas are withdrawn from the Mining Law.
Social Conditions	
Impacts to way of life	A withdrawal could have direct and/or indirect impacts on social conditions within the analysis area. EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to address environmental justice when implementing their respective programs. A withdrawal could potentially have disproportionately high and adverse environmental or socioeconomic impacts on minority populations, low income populations, or Indian tribes. If such disproportionate effects were to occur, they would represent an environmental justice issue. A withdrawal would not have an impact to human health and safety, but potential mining activities could present potential risks to human health and safety.
Economic Conditions	
Economic activity from mineral development	A withdrawal could result in fewer future mines being developed in SFAs with corresponding effects on mining-related mineral output, employment, earnings, government tax and fee revenues, and costs of public service provisions. The manner and degree of the proposed withdrawal could directly affect the economic activity in the area, particularly in smaller communities. Withdrawal may also, however, increase non-market economic values and potentially increase activity in other economic sectors tied to recreation or amenity-based migration.

Table 1-11. (continued)

Resource Category/ Issue	Description of Key Issue
Vegetation, Including Special Status Plant Species	
Disturbance of vegetation and loss of productivity	The proposed withdrawal could have beneficial impacts to vegetative communities by potentially reducing mining activities that may cause adverse impacts to structure, productivity, vigor, abundance, and diversity, as well as a movement away from current or natural vegetation conditions. The proposed withdrawal may have beneficial impacts to special status plant species by potentially reducing mining activities that cause habitat alteration and fragmentation, which in turn could impact overall health of the plant. The proposed withdrawal could reduce the potential for disturbance to vegetation communities.
Wildlife and Special Status Animal Species, Including Greater Sage-Grouse	
Disturbance of habitat for greater sage-grouse and other wildlife species	The proposed withdrawal could have beneficial impacts to wildlife by potentially reducing mining activities that may cause disturbance to wildlife, including greater sage-grouse and other special status species, and associated habitat within and adjacent to the proposed withdrawal area.

1.10.3 Issues Not Carried Forward for Detailed Analysis

The BLM NEPA Handbook (BLM 2008a) explains that while many issues may be raised during internal and external scoping, not all issues warrant detailed analysis in an EIS. The handbook recommends that issues should be analyzed if:

- Analysis of the issue is necessary to make a reasoned choice between alternatives. A good question to ask is, “does this issue relate to how the proposed action or alternatives respond to the purpose and need?”

- The issue is significant (an issue associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of impacts).

The issues identified below were raised during the public scoping period. Although there may be impacts (both beneficial and adverse) to the associated resources from future mineral development projects predicted under the withdrawal alternatives considered in the EIS, any adverse impacts associated with exploration or mining would not result directly from the Proposed Action or other action alternatives. Rather, potential impacts to resources could result from future mineral development projects on a specific resource under the No Action Alternative, and are more likely to be reduced under the Proposed Action or variations of the proposed withdrawal described under the other action alternatives. Because any consideration of the issues listed below that pertain to potential impacts to resources from potential site-specific future mineral development projects would require a great deal of speculation at this level of analysis, and because effects associated with these issues are not directly related to the Proposed Action, they have been dismissed from detailed analysis in the EIS.

It is not unreasonable to conclude that, if fewer mines are developed, fewer acres will be disturbed, and there would be less possibility of adverse impacts to resources such as those listed below. For instance, although lands with wilderness characteristics occur within the SFAs, the scale of analysis used for this EIS does not lend itself to determining the exact location of impacts to lands with wilderness characteristics from future mineral development projects that might take place under the No Action Alternative, and, likely to a lesser extent under the Proposed Action, or other action alternatives. It is unreasonable to try to determine if future mineral development projects over the 10 million-acre analysis area would occur within or near a specific area managed for wilderness characteristics. This circumstance is similar to other resource issues such as recreation and specially designated areas.

Additionally, due to the overall nature of the Proposed Action–that it limits, rather than enables a kind of use (future mineral development projects) of public lands, and the programmatic nature of this EIS and associated impact analysis–the EIS is most useful in evaluating the differences between the Proposed Action and various alternatives, rather than the impacts of any particular instance of such use. That is, any adverse environmental consequences associated with future mineral development projects would result from those specific activities, as these activities, in general might take place under the No Action Alternative. The Proposed Action and the other action alternatives, if adopted, would only reduce the possibility of these specific activities occurring. In this respect the effect of the Proposed Action and the other action alternatives would not be an increase in adverse environmental consequences for resources, with the possible exception of social or economic impacts from a possible reduction in future mineral development projects where lands are, in fact, withdrawn from location and entry under the Mining Law. Under each of the alternatives, including the No Action Alternative, prior to any irreversible, irretrievable commitment of resources, further, site-specific NEPA analysis would be prepared for any applicable future exploration project or mining operation proposal, as appropriate to support decision-making.

Finally, and most importantly, these issues do not directly correlate to how the alternatives considered in this EIS relate to the Proposed Action's purpose and need, which is specifically focused on the issue of protecting greater sage-grouse habitat. For these reasons, the following list of issues raised in scoping was not carried forward for detailed analysis in the EIS:

- **Soil, Water, Air, and Visual Resources:** Under all alternatives, existing BLM and Forest Service regulations would provide for analysis of potential impacts to resources such as soil, water, air, and visual resources from future exploration projects and mining operations conducted under plans of operations. The Proposed Action would not change the review of the site-specific potential impacts.

- **Lands with Wilderness Characteristics, Specially Designated Lands, and Recreation:** Although lands with wilderness characteristics, specially designated lands, and recreation areas occur within the SFAs, the Proposed Action would not change the areas managed for these purposes. Under all alternatives, future mineral exploration projects and mining operations would need to adhere to all applicable requirements for conducting activities in these areas.

- **Cultural Resources:** Under all the alternatives, for any future exploration projects and mining operations, the BLM will use NEPA public participation requirements to assist the agency in satisfying the public involvement requirements under the NHPA (16 USC 470(f)) pursuant to 36 CFR 800.2(d)(3). The information about historic and cultural resources within the area potentially affected by a proposed plan of operations will assist the BLM in identifying and evaluating impacts of approving the mine operations to such resources in the context of both NEPA and the NHPA.

The BLM will consult with Native American tribes on a government-to-government basis in accordance with EO 13175, Consultation and Coordination with Indian Tribal Governments, and other policies. Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, will be given due consideration. Federal, state, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the proposed plan of operations that the BLM is evaluating, are invited to participate in the scoping process and, if eligible, may request or be requested by the BLM to participate in the development of the environmental analysis as a cooperating agency. The Proposed Action would not change any required analysis by the agencies under these authorities. Government-to-government and other consultation on the Proposed Action is described in Chapter 5.

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2. PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

Chapter 2 describes in detail the proposed withdrawal (Proposed Action) and alternatives to the Proposed Action. Section 2.2 explains how the issues identified during scoping were used to formulate alternatives. Section 2.3 presents each alternative in detail, including an explanation of what lands would be withdrawn from location under the Mining Law under each alternative and a description of the level of reasonably foreseeable future mineral development projects that could occur based on the RFD presented in Appendix B.

In Section 2.4 the alternatives that were considered but eliminated from detailed analysis are described, along with the rationale for why they were eliminated. Section 2.5 includes a description of the regulatory framework common to all alternatives. Section 2.6 includes a comparison table to summarize and contrast the major provisions and environmental consequences of each alternative.

NEPA and its implementing regulations (40 CFR 1500-1508) require an agency to rigorously explore and objectively evaluate all reasonable alternatives. The BLM is required to analyze a range of reasonable alternatives to support a reasoned choice (40 CFR 1502.14). Reasonable alternatives are those that meet the purpose of and need for action and that are feasible to implement, taking into consideration regulatory, technical, economic, environmental, and other factors. The discussion of alternatives forms the heart of the EIS, as it presents other possible courses of action that could achieve the underlying purpose of and need for action to which the agency is responding.

In this case, the underlying purpose of the proposed withdrawal is to protect the greater sage-grouse and its habitat from the adverse effects of reasonably foreseeable locatable mineral development projects as described in Section 1.6 of Chapter 1.

Therefore, in addition to describing the Proposed Action, this chapter also describes other alternatives that could be used to address the purpose and need. How the Proposed Action and alternatives achieve the underlying purpose of and need for action is assessed by the decision-maker based in part on the environmental effects of each alternative, which are described in detail in Chapter 4 and summarized in Table 2-19 at the end of this chapter. In addition to the Proposed Action and reasonable alternatives, the EIS must also analyze the No Action Alternative, which provides a baseline against which to compare the potential environmental consequences of the Proposed Action and other alternatives. This comparative analysis provides the decision-maker and the public with the distinctions between the alternatives with respect to their environmental effects.

2.2 Development of Alternatives

As detailed in Section 1.10, eight public meetings were held to identify issues and assist with development of alternatives. The formal public scoping process began on September 24, 2015, with the Federal Register publication of the Notice of Proposed Withdrawal. The BLM received a total of 5,078 comments during the scoping period, which ended January 15, 2016.

The alternative development process began with evaluation of the public input collected during scoping and continued with extensive discussions between the BLM, as the lead agency, and the cooperating agencies, including the Forest Service and USFWS, tribal governments, and state and local governments. The main issues identified during scoping were discussed at a project team workshop on May 18, 2016. Alternatives were then developed by considering the resources identified as issues of concern from scoping comments that would be most affected by the withdrawal or alternatives to the withdrawal. Of the issues identified, the following are the primary issues of focus in the EIS analysis and the origins of the alternatives development:

- Social and economic impacts,
- Conservation of greater sage-grouse,
- Conservation of sagebrush habitat, and
- Impacts to geology and minerals.

The BLM developed a preliminary list of alternatives based on these primary issues that were identified during internal and public scoping. A memo was sent to cooperating agencies on May 25, 2016, listing nine alternatives that had been proposed for preliminary consideration, including the Proposed Action and No Action Alternative. A number of comments were received from the cooperating agencies that provided additional alternatives to consider as well as refinements to existing alternatives.

In formulating alternatives to the proposed withdrawal, the BLM and cooperating agency managers and resource specialists discussed criteria that would be used to screen alternatives. BLM presented the criteria it uses to evaluate whether proposed alternatives are carried forward for detailed analysis in the EIS at the Cooperating Agency Workshops held in April and May 2016 (refer to Cooperating Agency Consultation discussion in Section 5.3). The necessity that all alternatives must be feasible and meet the purpose of and need for action as defined in Section 1.3 was emphasized to all parties involved in the alternative development process. Each of the alternatives was evaluated against the six screening criteria listed in the BLM NEPA Handbook – H-1790-1 (http://www.blm.gov/wo/st/en/prog/planning/nepa.html):

- Criterion 1: Is it effective (does it meet or respond to the purpose and need)?
- Criterion 2: Is it technically or economically feasible?
- Criterion 3: Is it consistent with basic policy objectives for the management of the area?
- Criterion 4: Is implementation remote or speculative?
- Criterion 5: Is it substantially similar in design to an alternative that will be analyzed?
- Criterion 6: Would it have substantially similar effects to an alternative that will be analyzed? What resource would it minimize impacts on?

The initial suggestions for alternatives were subjected to a formal screening process using these six criteria.

Following that screening process, a July 6, 2016 memo was sent to the cooperating agencies updating the status of alternatives. That memo described three alternatives recommended for detailed analysis (No Action Alternative, Proposed Action, and State of Nevada Alternative), two alternatives that were still under consideration (exclude areas of high mineral potential from the withdrawal and exclude areas of low mineral potential from the withdrawal), and 11 alternatives considered but eliminated from detailed analysis. The BLM received feedback on the July 6 memo from a number of cooperating agencies. In early September 2016, an additional alternative was considered to exclude areas of both high and moderate mineral potential from the withdrawal but was subsequently eliminated from detailed analysis as described below. In mid-September, the Office of the Governor of Idaho submitted an alternative to the BLM for consideration.

As a result of this process, five alternatives have been developed for detailed analysis to address the relevant issues identified during scoping. A brief description of each of these alternatives being carried forward for detailed analysis is presented below with more detailed descriptions in Section 2.3. Alternatives considered but eliminated from detailed analysis are included in Section 2.4.

It is important to note that within the lands selected for withdrawal in the Proposed Action and the three action alternatives, new exploration and mine development proposals could continue to be authorized by the BLM or the Forest Service in accordance with applicable laws, and only on lands found to contain valid existing rights. As is also the case under the No Action Alternative, under the Proposed Action and the three action alternatives, mitigation of potential effects from future exploration or mining operations would be required, consistent with applicable law.

- **No Action Alternative:** the proposed withdrawal would not be implemented and the proposed withdrawal area would remain open to location and entry under the Mining Law. Applications for future mineral development projects would continue to be processed by the BLM or the Forest Service. The mitigation of potential effects from exploration or development would continue under the applicable surface managing agency regulations. This alternative serves as the baseline for measuring the impacts of the Proposed Action and three action alternatives and reflects the current management situation for all federal lands within the area proposed for withdrawal.

- **Proposed Action:** the proposed withdrawal would be implemented and the entire 9,949,448 acres within the six states would be withdrawn from the Mining Law for 20 years, subject to valid existing rights. This withdrawal would include 3,961,824 acres in Idaho, 877,624 acres in Montana, 2,767,552 acres in Nevada, 1,843,539 acres in Oregon, 233,824 acres in Utah, and 265,085 acres in Wyoming.

- **State of Nevada Alternative:** the proposed withdrawal in the states of Idaho, Montana, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action. In Nevada, 486,376 acres of lands would be excluded from the withdrawal and left open to operation of the Mining Law. This alternative would also include in the withdrawal 389,899 acres of priority greater sage-grouse habitat located contiguous to but outside of the SFAs. This alternative would result in 96,477 fewer acres being withdrawn in Nevada compared to the Proposed Action. A total of 2,671,075 acres would be withdrawn in Nevada under this alternative.

- **Remove Areas of High Mineral Potential from the Withdrawal Alternative:** the proposed withdrawal in the states of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action except that all areas within the SFAs that contain lands with high mineral potential, as defined by the Mineral Potential Report (Day et al. 2016), would not be withdrawn. Under this alternative 558,918 acres of high mineral potential lands in the six states would not be withdrawn and would be left open to operation of the Mining Law. This alternative would result in a total of 9,390,530 acres within the six states being withdrawn from the Mining Law for 20 years, subject to valid existing rights.

- **State of Idaho Alternative:** the proposed withdrawal in the states of Montana, Nevada, Oregon, Utah, and Wyoming would be implemented as described in the Proposed Action. In Idaho, 538,639 acres of lands would be excluded from the withdrawal and left open to operation of the Mining Law. A total of 3,423,185 acres would be withdrawn in Idaho under this alternative.

2.3 Description of the Alternatives

This section describes the No Action Alternative, the Proposed Action, and the three action alternatives that were carried forward for detailed analysis, namely the State of Nevada Alternative, the Remove Areas of High Mineral Potential from the Withdrawal Alternative, and the State of Idaho Alternative. The elements of each alternative are described in sufficient detail to understand what would be involved in its implementation. The individual alternative description includes two main components: 1) a description of the area that would be withdrawn with accompanying maps as appropriate, and 2) the reasonably foreseeable future mineral development projects that could occur under each alternative, based on the RFD (Appendix B). A narrative that describes the regulatory framework (i.e., all federal, state and local laws, regulations, permits, and compliance requirements) that is common to all alternatives is included in Section 2.5.

The first component, the description of area proposed to be withdrawn, focuses on the Proposed Action and the three action alternatives. There is no withdrawal associated with the No Action Alternative. Legal descriptions of the parcels proposed for withdrawal under the Proposed Action and each action alternative are provided on the BLM website at: https://www.blm.gov/node/3282.

The second component, the reasonably foreseeable future mineral development, focuses on key outputs from the RFD. The purpose of the RFD is to provide an estimate of the amount and type of future mineral development that could occur in the proposed withdrawal area over the 20-year duration of the withdrawal under the No Action Alternative. These estimates include the following:

- Number and size of future mines, and
- Number and size of future exploration projects.

Adjustments were made to these No Action estimates to reflect the different acreages proposed for withdrawal under each of the alternatives. Those adjustments and the resulting values are summarized for each alternative below. The values from the RFD and adjustments to those values for different alternatives are only estimates of what could occur under each alternative using a consistent set of assumptions. The main utility is as a basis for comparison of the alternatives. The RFD numbers do not constitute a limit or minimum on the number or extent of future mineral development projects.

Each of the action alternatives described specifically addresses a 20-year withdrawal. However, the Secretary has the option to establish a withdrawal of shorter duration. As discussed in 2.4.4, there is no need to evaluate in detail shorter withdrawal periods, as this possibility is included in the range of alternatives evaluated in this EIS. As stated previously in Chapter 1, there is also the possibility that the withdrawal can be authorized for additional time periods.

2.3.1 No Action Alternative

Under this alternative, the Secretary would not withdraw any of the lands proposed for withdrawal. The proposed withdrawal area (see Figures 1-1 through 1-8 in Chapter 1) would remain open to location and entry under the Mining Law unless otherwise withdrawn under separate authorizations that pre-date this initiative. The BLM and Forest Service would continue to regulate locatable mineral exploration projects and development in accordance with their existing programs, policies, and regulations. The applicable regulations, permits, and compliance requirements for both federal and state law that govern activities under the No Action Alternative or that are common to all action alternatives are described in Section 2.5. The mitigation of potential effects from exploration or development would continue under the applicable surface managing agency regulations. New mining claims could be located. This alternative serves as the baseline for measuring the impacts of the four action alternatives and reflects the current management situation for all federal lands within the area proposed for withdrawal.

Reasonably Foreseeable Future Activity

The RFD (Appendix B) describes the estimated number and size of future exploration projects and mine development projects that could potentially occur in the proposed 20-year withdrawal period. This is referred to as the reasonably foreseeable development scenario. Using the assumptions and exceptions described in the RFD, an estimated 114 future exploration projects and 26 future mines could reasonably be anticipated to occur under the No Action Alternative over the next 20 years. The distribution of these mines and exploration projects within the withdrawal area is shown in Table 2-1.

Table 2-1. Number and Size of Future Mines and Exploration Projects for the No Action Alternative

State	Number of Mines	Number of Exploration Projects	Size of Mines		Size of Exploration Projects			Total Disturbance (acres)
			L	S	L	U	S	
Idaho	9	26	1	8	2	0	24	1,916
Montana	1	2	1	0	2	0	0	1,609
Nevada	3	78	3	0	12	34	32	5,611
Oregon	10	8	0	10	4	0	4	348
Wyoming	3	0	0	3	0	0	0	70
Utah	0	0	0	0	0	0	0	0
TOTAL	**26**	**114**	**5**	**21**	**20**	**34**	**60**	**9,554**

Note: Size of mines is large (L) or small (S) and size of exploration projects is large (L), unknown (U), or small (S). Further descriptions are provided in the following paragraphs.

The RFD projections of future mines and exploration projects are intended to include currently authorized mineral development projects in the withdrawal area.

The RFD classified past exploration projects and mines as small or large based on the surface area that they disturbed. For exploration projects, small projects were those that generated a disturbance area of less than or equal to 5 acres, large projects generated a disturbance area greater than 5 acres. For mines, small projects were those that generated a disturbance area of less than 100 acres, large projects generated a disturbance area greater than or equal to 100 acres. In order to estimate the disturbance area of future projects that fall into these size categories, disturbance area information for past exploration projects and mines was evaluated. This evaluation resulted in the assumptions of project sizes used for impacts and alternatives analysis.

The BLM maintains a database containing information about authorized mineral development projects (the Legacy Rehost System; LR2000) which provided a representative sample of mineral development projects across this project's six state area. The Forest Service does not maintain a database so it was not possible to incorporate that information.

Disturbance areas for small mines ranged from less than one-tenth of an acre to 92 acres with an average disturbance area of 23.4 acres. Disturbance areas for large mines ranged from 100 acres to over 15,000 acres with an average disturbance area of 1,562.4 acres. By using the average disturbance area rather than the median disturbance area, the overall estimate of disturbance is skewed upwards because of the presence of a few very large mines in the database. However, this more conservative approach was taken in order to capture the potential for a larger disturbance area when comparing alternatives.

Determining the disturbance area for exploration projects is more difficult since these are not easy to separate in the LR2000 database output. Exploration projects proposed on BLM managed lands that will disturb less than or equal to 5 acres can be conducted under a notice and can be queried separately in the

LR2000 database. Exploration projects that will disturb more than 5 acres require filing a mining plan of operations and cannot be separated from mines in the LR2000 database. In discussions with BLM and Forest Service technical specialists, and analyzing disturbance areas for a representative sample of known exploration projects, it was determined that three disturbance area estimates could be used to prepare a reasonable assessment of impacts: small (less than 5 acres), large (over 20 acres), and those of unknown size that ranged between large and small. For this analysis, 5 acres was chosen as the disturbance area for small exploration projects since (on BLM administered lands) anything larger would require filing a plan of operations, 23.4 acres for large exploration projects (using the same data for small mines from the LR2000 database), and 14.2 acres (average of small and large) for exploration projects of an unknown size. Subsequent to the preparation of the RFD and execution of the EIS analysis, the size of several of the 34 unknown exploration projects in Nevada was estimated to be small. Therefore, this analysis may overestimate the impact of the unknown exploration projects by up to 312.8 acres in Nevada. The mineral development acreages, along with those from the mines described in the prior paragraph, were used to estimate the total number of acres that could be disturbed by mines and exploration projects under the alternatives, as shown in the last column of Table 2-1.

As described in the RFD, the data gathered for the Mineral Potential Report (Day et al. 2016) identified areas of high, moderate, low and not determined or no mineral potential throughout the withdrawal area. The location of past exploration projects and mines is fundamentally based on the existence of mineral deposits and the likelihood of those lands to yield minerals in economically viable quantities. This likely remains true for the future, so the general geographic location of future projects was estimated using mapped mineral potential in conjunction with past project locations. Under the No Action Alternative, mineral exploration projects and development could take place throughout the lands covered by the withdrawal.

Determining where mining and exploration projects might occur is difficult for a number of reasons, as described in the RFD. For instance, mining claims may be located based on little or no evidence of locatable minerals and, consequently, never developed; or mining claimants may locate mining claims over a much larger area than the geographic extent of the mineral deposit known at that time, in order to make certain that no mineable ore is missed and to allow for flexibility in mine design options. Notwithstanding these and other reasons, it is nevertheless reasonable to assume that more mining activity and exploration projects would occur in areas of high mineral potential, and indeed, past data shows that, within the six state area covered by this analysis, approximately 42 percent of all mines and 56 percent of all exploration projects occur in areas of high mineral potential.

Using data from the Mineral Potential Report (Day et al. 2016), the distribution of areas of high, moderate, low, and not determined or no mineral potential was calculated for each of the states in the proposed withdrawal area (see Table 2-2). The percentage of past mines and past exploration projects within each state and mineral potential category (i.e., high, moderate, low, and not determined or no mineral potential) was then used to determine the distribution of the expected number of future mines and exploration projects under the No Action Alternative. For instance, in Nevada 72 percent of past mines have been located in high mineral potential areas and thus it was assumed that 72 percent of future mines would occur in high mineral potential areas within that state. Similarly, 25 percent of all past mining in Idaho was located in high mineral potential areas and thus 25 percent of future mining activity was reasonably assumed to occur in those areas. A similar exercise was conducted for exploration projects where the distribution of past exploration projects by state and mineral potential was used to predict the distribution of future exploration projects. Table 2-2 shows the distribution of past mines and exploration projects by mineral potential within each of the states. The percent of the area that was encumbered by mining claims at the time of this Draft EIS analysis is also shown.

Table 2-2. Distribution of Past Mines and Exploration Projects, Acres, and Mining Claims by Mineral Potential

State	Mineral Potential	Acres within SFA	Past Mines Distribution*	Past Exploration Projects*	Area with Mining Claims*
Idaho	High	25,988	25%	34%	32%
	Moderate	216,472	27%	14%	4%
	Low	1,634,529	31%	38%	1%
	Not determined or no potential	2,084,836	17%	14%	1%
Montana	High	57,761	3%	100%	31%
	Moderate	43,466	0%	0%	0%
	Low	405,738	46%	0%	2%
	Not determined or no potential	370,659	51%	0%	5%
Nevada	High	403,808	72%	67%	55%
	Moderate	100,371	6%	23%	17%
	Low	860,055	9%	2%	3%
	Not determined or no potential	1,403,317	13%	8%	0%
Oregon	High	66,581	31%	50%	29%
	Moderate	21,133	8%	50%	37%
	Low	73,562	0%	0%	0%
	Not determined or no potential	1,682,263	61%	0%	0%
Utah	High	3,452	12%	42%	12%
	Moderate	34,025	17%	14%	0%
	Low	39,044	26%	19%	0%
	Not determined or no potential	157,304	45%	25%	0%
Wyoming	High	1,328	72%	42%	0%
	Moderate	109,723	2%	14%	0%
	Low	79,126	5%	19%	0%
	Not determined or no potential	74,907	21%	25%	3%

Note: Past exploration project data was unavailable for Utah and Wyoming and therefore the average distribution for the other states was used.

As discussed in Appendix B, factors determining the optimal place to explore or mine may include historic exploration records, estimated ore body geometry, surface topography, regional hydrology, land ownership, permitting constraints, and access to necessary infrastructure. As a result mines are often developed in areas of mineral potential that are not classified as high.

Table 2-3 shows the location by mineral potential of the 26 future mines and 114 future exploration projects predicted from the RFD for the No Action Alternative. This distribution was determined by multiplying the total number of future mines or future exploration projects predicted from the RFD for each state by the distribution of past mines and exploration projects by mineral potential shown in Table 2-2 and described earlier.

Table 2-3. Future Mines and Exploration Projects by Mineral Potential for the No Action Alternative

Mineral Potential	Number of Future Mines	Number of Future Exploration Projects
High	8	67
Moderate	4	26
Low	4	12
Not determined or no potential	10	10
TOTAL	**26**	**114**

For instance, the RFD predicted that there could be nine future mines in Idaho over the next 20 years. The distribution of those nine future mines was determined by multiplying the nine mines by the proportional distribution of past mines by mineral potential thus yielding 2.2 future mines in high mineral potential (9 × 25 percent), 2.4 future mines in moderate mineral potential (9 × 27 percent), and so forth for each mineral potential by state. The total number of future mines and exploration projects was rounded to whole numbers for presentation in the tables below.

It should be noted that current permitted mining activity does not factor in to these calculations. Also, because none of the mineral potential areas within each state have more than 37 percent of the area under existing mining claims (with the exception of high mineral potential in Nevada which is at 55 percent), it is assumed that future mining and exploration activity within any particular mineral potential area is not limited by the availability of non-claimed land. It should also be noted that these numbers from the RFD should not be regarded as absolute; that is, they are only estimates of what could occur under the No Action Alternative and each of the action alternatives described in the following sections using a consistent set of assumptions. Their main utility is as a basis for comparison of the alternatives. The RFD numbers do not constitute a limit or minimum on the level of future mineral development projects. That is, the RFD is an assumption; it does not represent any guarantee that any mining will occur under any alternative, even the No Action Alternative. Similarly, the distribution of future mines or exploration projects by mineral potential should also not be regarded as absolute. There is no way to accurately predict where people may choose to carry out future mining operations or exploration projects.

Table 2-4 shows a summary of the anticipated future activity that could occur over the 20-year withdrawal period under the No Action Alternative.

Table 2-4. Estimated Future Mineral Development Projects under the No Action Alternative

No Action Alternative – Activity Levels	Quantity
Predicted number of future exploration projects	114
Acres disturbed for exploration	1,251
Predicted number of future mining projects	26
Acres disturbed for mining	8,303
Total acres disturbed for exploration projects and development	9,554

Mineral development projects would continue to be managed under the operating requirements described under Section 2.5, Regulatory Framework Common to the Proposed Actions and Alternatives.

2.3.2 Proposed Action

The Proposed Action would withdraw from location and entry under the Mining Law 9,949,448 acres of BLM and NFS lands in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. The acreages proposed for withdrawal for each state are shown in Table 1-1 in Chapter 1. The duration of the proposed withdrawal is 20 years, as allowed under section 204 of FLPMA. Withdrawals under section 204 of FLPMA are “subject to valid existing rights” as described in the RFD. This means that future exploration projects and mine development proposals could be authorized by the BLM or the Forest Service on lands that are found to contain valid existing rights. Although the Proposed Action and each of the action alternatives described herein specifically addresses a 20-year withdrawal, the Secretary has the option to establish a withdrawal of shorter duration.

Area Proposed for Withdrawal

See Figures 1-1 through 1-8 in Chapter 1 for a depiction of the area proposed for withdrawal under the Proposed Action. The total acreage represented by the Proposed Action is 9,949,477. Table 1-1 lists the acreage of the proposed withdrawal area by state.

Reasonably Foreseeable Future Mining and Exploration

A withdrawal under the Proposed Action would be subject to valid existing rights, which means that future exploration and mining could occur on lands found to contain valid existing rights. As of the Draft EIS analysis there were 18,742 mining claims on the lands proposed for withdrawal. It is reasonable to assume that some of these mining claims could be evaluated and found to contain valid existing rights. It is further reasonable to assume that exploration or development would be authorized on some subset of areas which are evaluated and found to contain valid existing rights during the 20-year withdrawal period. Thus, under the Proposed Action, it is reasonably foreseeable that there can and would be some level of future mining and exploration.

However, estimating where, when, and how many future mines and exploration projects could occur under the Proposed Action is not an exact science. As discussed in greater detail in the RFD, there are many factors that influence whether mining will occur on the lands proposed for withdrawal, almost all of which are determined by the miner, not the agencies. It is possible to state definitively that no mining would occur under the Proposed Action in areas where there are no mining claims because a valid mining claim is required in order to mine. But because the agencies do not know which of the existing mining claims are valid or whether someone will propose development on those mining claims, it is not possible to state definitively how many exploration projects and mines could occur under any of the alternatives.

The RFD describes the process used to predict the number of future mines and exploration projects that might occur under the No Action Alternative. It is impossible to predict the exact number of future mineral development projects that might occur under the Proposed Action or any of the alternatives. However, for purposes of comparison between alternatives, the following systematic process was used to estimate the number of future mines and exploration projects that might occur during the withdrawal under the Proposed Action and alternatives:

A query of the LR2000 database was undertaken to identify all mining claims in the withdrawal area. The data from the USGS report was then used to identify the distribution of these mining claims by mineral potential. It was found that, summed together for all six states, 32 percent of all high mineral potential land within the withdrawal area was subject to mining claims. In other words, of the approximately 559,000 acres of high mineral potential land in the withdrawal area, roughly 178,000 acres were subject to mining claims. A similar calculation was performed for lands within the withdrawal boundaries that were identified in the USGS report as having moderate, low, and not determined or no mineral potential. This calculation showed that 5.6 percent, 1.5 percent, and 1.0 percent, respectively, of the moderate, low, and not determined or no mineral potential lands were subject to mining claims, reflecting a decrease in the number of acres subject to mining claims with decreasing mineral potential.

These percentages were used as a surrogate to determine the number of future mines and exploration projects that might be developed under the Proposed Action compared to the No Action Alternative. In other words, only 32 percent of the mines predicted to occur under the No Action Alternative in high mineral potential lands would be developed under the Proposed Action, 5.6 percent of the mines in moderate potential lands, and so forth. Using the information in Table 2-3, this method would predict that only 32 percent of the 8 mines in high mineral potential lands would be developed under the Proposed Action, 5.6 percent of the 4 mines in moderate potential, and so forth. While this method may

underestimate or overestimate the number of future mines and exploration projects that might be expected under the existing and future regulatory climate since there is no way to accurately predict the effects of the changing regulatory climate, this analysis method of using the percentage of acres of mining claims to estimate future mining activity allows for a consistent set of assumptions to be applied as a basis to compare the alternatives. Table 2-5 shows the results of this analysis, when summed across mineral potential areas by state. Three mines and 38 exploration projects are reasonably expected to occur under the Proposed Action.

Table 2-5. Number and Size of Future Mines and Exploration Projects under the Proposed Action

State	Number of Future Mines	Number of Future Exploration Projects	Size of Mines*		Size of Exploration Projects			Total Disturbance (acres)
			L	S	L	U	S	
Idaho	1	3	0	1	0	0	3	187
Montana	0	1	0	0	1	0	0	81
Nevada	1	32	1	0	5	14	13	2,285
Oregon	1	3	0	1	1	0	1	66
Wyoming	0	0	0	0	0	0	0	1
Utah	0	0	0	0	0	0	0	0
TOTAL	**3**	**38**	**1**	**2**	**7**	**14**	**17**	**2,620**

Note: the numbers of mines or exploration projects in this analysis can be less than 1 but in reality partial mines or partial exploration projects cannot occur. Therefore data are rounded up or down to whole numbers. Differences in the total row from the sum of the numbers within each of the state rows are due to rounding.

Unlike the No Action Alternative where exploration projects and mining could occur anywhere across the analysis area without regard to where mining claims are currently located, future mining and exploration for the Proposed Action and the other action alternatives could only occur on lands found to contain valid existing rights. It is reasonable to assume that mining claims located in areas of high mineral potential are more likely to be valid. Therefore, it was assumed the majority of the future mines and exploration projects under the Proposed Action would occur in high mineral potential lands. The distribution of the mines and exploration projects estimated under the Proposed Action is shown by mineral potential in Table 2-6.

Table 2-6. Distribution of Future Mines and Exploration Projects by Mineral Potential for the Proposed Action

Mineral Potential	Number of Future Mines	Number of Future Exploration Projects
High	3	33
Moderate	0	5
Low	0	0
Not determined or no potential	0	0
TOTAL	**3**	**38**

Table 2-7 shows a summary of the estimated future mines and exploration projects that could occur over the 20-year withdrawal period under the Proposed Action.

Table 2-7. Estimated Future Mineral Development Projects under the Proposed Action

Proposed Action – Activity Levels	Quantity
Predicted number of future exploration projects	38
Acres disturbed for exploration	448
Predicted number of future mining projects	3
Acres disturbed for mining	2,172
Total acres disturbed for exploration and development	2,620

2.3.3 State of Nevada Alternative

The Office of the Governor of Nevada has proposed an alternative to the Proposed Action that both adds and subtracts lands to the withdrawal area in Nevada. This alternative does not modify the withdrawal area in any of the other five states as included in the Proposed Action. The State of Nevada Alternative (hereinafter referred to as the Nevada Alternative) excludes 486,376 acres of land from the Proposed Action. These are lands that are considered by the state of Nevada to have high mineral potential or limited greater sage-grouse habitat. They are located within the Southeast Oregon/Northcentral Nevada SFA and the Southern Idaho/Northern Nevada SFA. The Governor's Office has also proposed including 389,899 acres of land in the withdrawal that were not in the Proposed Action. These lands are within priority greater sage-grouse habitat located contiguous to but outside of the SFAs. The Governor's Office believes that this alternative would reduce the potential social and economic impact of the proposed withdrawal to the state of Nevada while still meeting the purpose of the proposal.

This Nevada Alternative would result in 96,477 fewer acres being withdrawn in Nevada compared to the Proposed Action. A total of 2,671,075 acres would be withdrawn in Nevada under this alternative. The Nevada Alternative would result in approximately 9.85 million acres being withdrawn in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming.

On January 15, 2016, the Office of the Governor of Nevada transmitted its formal response to the withdrawal proposal. In that letter the Governor stated that in his opinion the withdrawal as proposed was unnecessary to protect greater sage-grouse from any perceived threat by the mining industry and that the Nevada Greater Sage-Grouse Conservation Plan and the Conservation Credit System (CCS) which is currently used in that state was sufficient to protect greater sage-grouse. The Governor also proposed that, should there be a withdrawal, it should only be for five years during which time greater sage-grouse populations should be intensively monitored to evaluate the efficacy of the withdrawal on greater sage-grouse habitat and population threats. A withdrawal of less than 20 years was addressed in 2.4.4; the Nevada Alternative as presented here is for the same duration as the Proposed Action.

The following paragraphs describe the process and rationale that the state of Nevada used to develop its alternative. The statements made and conclusions presented in this section reflect the state of Nevada's position. The Nevada Alternative withdrawal area was delineated through a two-part process. The Nevada Division of Minerals (NDOM) looked at current, historic, and potential mineral resources in the SFAs to identify areas with high mineral potential. The Nevada Department of Wildlife (NDOW) looked at current data and modeled habitat values to identify areas with low biological value for greater sage-grouse and search for additions to the SFAs that would increase conservation for greater sage-grouse. Areas with high mineral potential were assessed and mapped by the Nevada Bureau of Mines and Geology (NBMG). Assessments were based on the evaluation of existing data sources including known mining districts, plans of operations, notices of intent, information from the BLM LR2000, and permitting data from NBMG Annual Nevada Mineral Industry reports.

Maps of high mineral potential were constructed by the state of Nevada based on the following criteria:

1. Historic occurrences of metals, industrial minerals and gemstones from NBMG archives, which are compiled as GIS layer files. This information is largely derived from historic NBMG and USGS reports and data sets (MAS/MILS/MRDS).

2. Metallic, non-metallic and industrial mineral deposits active in the past, from NBMG archives which are available as GIS layer files. This information is largely derived from historic NBMG and USGS reports.

3. Plans of operations and notices for exploration and mining projects from the LR2000 database.

4. Plans of operations for exploration and mining projects from the Forest Service NEPA Projects website.

5. Townships with drill projects from 2004 through 2014, from NBMG annual Mineral Industry Reports (NBMG Special Publications MI-2004 through MI-2014).

6. Active unpatented mining claims data from the LR2000 database.

7. Discussions with exploration and mining entities active in the area as well as publically available securities and exchange filings and company websites.

This analysis resulted in the delineation of 12 areas of high mineral potential within the state of Nevada. These 12 areas were further evaluated for proximity to active greater sage-grouse leks and habitat and fitted to avoid and minimize impacts to greater sage-grouse and avoid or minimize potential for habitat fragmentation. These areas are shown in Figure 2-1 and the descriptions of each area below is a summary of the information provided by the Office of the Governor of Nevada in a letter transmitted to the Secretary on June 3, 2016. The acreages defined below reflect a refinement based on the geographic mapping that was received on September 16, 2016 from NDOM.

- <u>Burns/Scraper</u>

This 2,733.9-acre high mineral potential area contains 33 active mining claims and one current notice of intent. The total permitted disturbance from 25 historic notices (1983-2010) is approximately 56 acres. Possible mineral development in the next 20 years includes an underground gold-silver mine.

- <u>Charleston</u>

This 20,951.4-acre high mineral potential area contains 302 active mining claims and three current plans of operations. This is a polymetallic district with much historic production and includes two advanced gold exploration projects and one placer gold operation. Possible mineral development in the next 20 years includes an underground gold-silver mine, an open-pit gold mine, and a barite quarry.

- <u>Contact</u>

This 57,459.0-acre high mineral potential area contains 539 active mining claims. In this area 240 mining claims were located for gold/silver in 2014 and 2015. Over 280,000 feet of copper exploration drilling has also occurred here since 1967. Possible mineral development in the next 20 years includes an open-pit copper mine and an underground gold-silver mine.

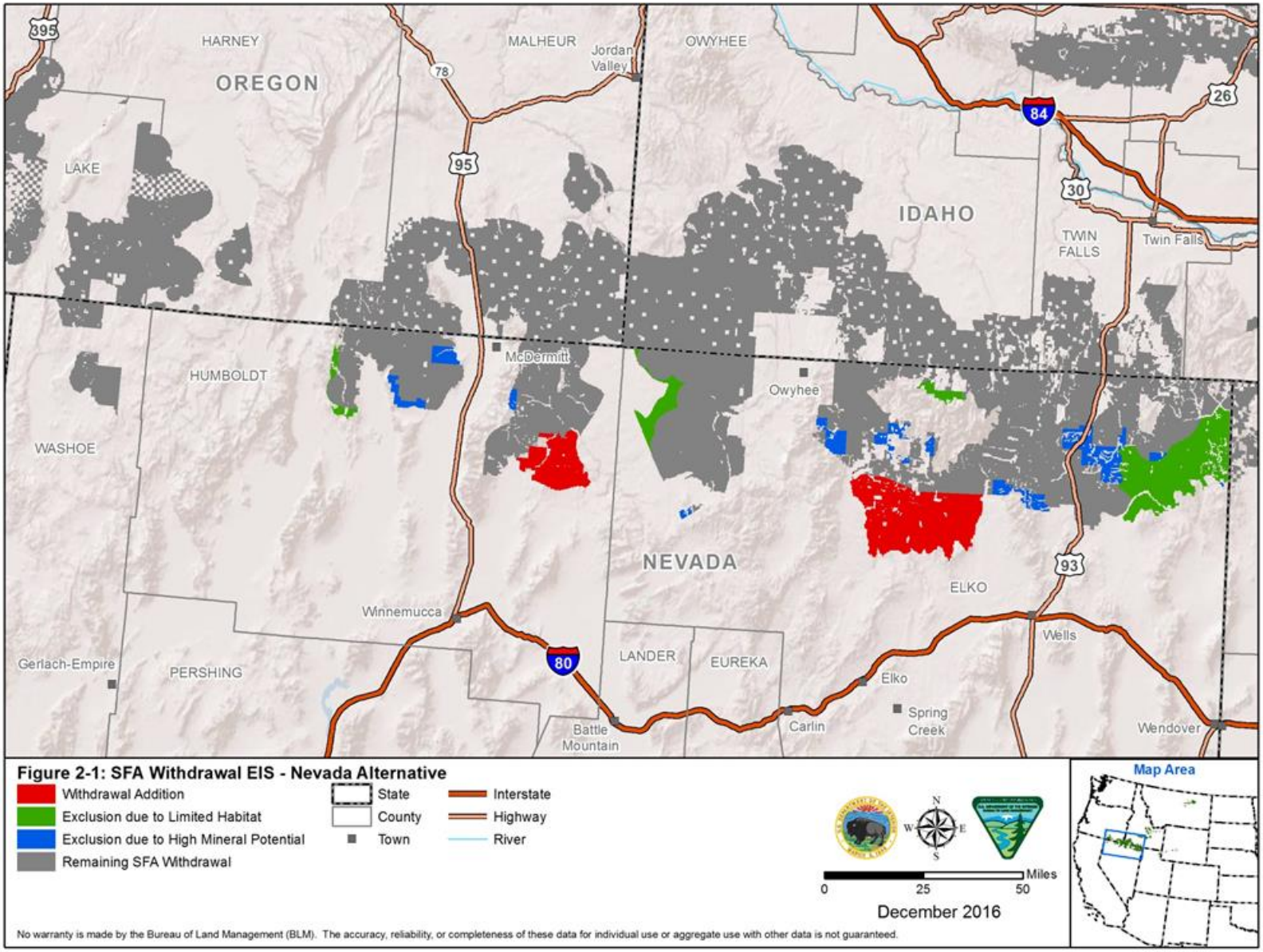

Figure 2-1. Nevada Alternative

- Delano

This 31,922.0-acre high mineral potential area contains 152 active mining claims, one current notice of intent, and one current plan of operation. This is a historic lead-silver-tungsten district that has been continuously mined between 1918 and 1980 and contains known deposits of tungsten. Possible mineral development in the next 20 years includes an underground tungsten mine and an underground gold-silver mine.

- Jarbidge

This 8,107.0-acre high mineral potential area contains 76 active mining claims and one current plan of operation. Over 356,000 ounces of gold and 1.67 million ounces of silver were produced from 1909 to 1961 from underground workings. Possible mineral development in the next 20 years includes an underground gold mine.

- Kings Valley

This 16,703.9-acre high mineral potential area contains 1,709 active mining claims and two current plans of operations. This area contains 325 acres permitted through plans of operations by Western Lithium (Lithium Americas). Possible mineral development in the next 20 years includes quarry mining for lithium clays.

- Mountain City

This 21,502.4-acre high mineral potential area contains 448 active mining claims and one current plan of operations. Active gold mining in this area between 1988 and 1990 produced 35,000 ounces of gold. The area contains two known gold deposits. Possible mineral development in the next 20 years includes two small open-pit gold mines with on-site processing.

- National

This 5,604.7-acre high mineral potential area contains 105 active mining claims and one current plan of operations for 1.03 acres of disturbance. Possible mineral development in the next 20 years includes an underground gold mine with off-site processing.

- Opalite

This 16,254.9-acre high mineral potential area contains 61 active mining claims. This area contains a known gallium deposit which is used in microelectronic components. Possible mineral development in the next 20 years includes a lithium clay and bentonite clay quarry.

- Paradise Valley

This 1,760-acre high mineral potential area contains three active mining claims. Historic gold and silver production in this area dates back to 1868. Possible mineral development in the next 20 years includes an underground gold mine with off-site processing. The September 16, 2016, boundary revision from NDOM reduced the acreage of this area to zero.

- Snake Mountains

This 22,720.5-acre high mineral potential area contains 703 active mining claims, one current notice of intent, and one current plan of operations. This area contains an existing approved 193-acre plan of operations for a barite mine that extends into PHMA as well as one major gold exploration project that includes 636 mining claims. Possible mineral development in the next 20 years includes expansion of a barite quarry and development of a large open-pit gold mine.

- White Rock

This 23,429.0-acre high mineral potential area contains 155 active mining claims, one current notice of intent, and one current plan of operations. The northern edge of this area contains an emerging gold trend and two active exploration projects. Possible mineral development in the next 20 years includes a small open-pit gold mine.

NDOW identified areas that could be excluded from the proposed withdrawal based on low quality habitat and low value to greater sage-grouse while concurrently finding areas for expanding withdrawal boundaries to include high value habitat that were not included in the proposed withdrawal area. NDOW conducted quantitative analyses of the SFAs using habitat management categories developed by USGS for Nevada that incorporate a habitat suitability index (HSI) and lek density metrics with actual spatial use to generalize PHMAs (a.k.a. ‘core’), GHMAs (a.k.a. ‘priority’), OHMA, and non-habitat. Available telemetry information, lek locations and attendance data, breeding bird density, and the Space Use Index (SUI), were also used to characterize the areas with low to high habitat value. NDOW specifically evaluated each of the 12 areas of high mineral potential as well as the areas they proposed for exclusion and addition using these parameters.

The SUI is an analytical tool developed by USGS for Nevada that is not available for adjacent states. SUI values were plotted to create a map of northern Nevada that illustrates current greater sage-grouse use of the SFA and the proposed Nevada Alternative.

Indirect impacts of excluding the 12 high mineral potential areas from the proposed withdrawal were evaluated using protocols approved for the Nevada CCS. The indirect impact area for a ‘small mine’ was evaluated in a 1.86-mile buffer area around each high mineral potential area. The indirect impacts of a ‘large mine’ was evaluated in a 3.73-mile buffer area around each high mineral potential area. A very conservative estimate of the indirect effects of a mineral exploration project would be approximated by using the 1.86-mile buffer area. The number of leks and the acres of PHMA and GHMA habitat were summed up for the high mineral potential areas and the 1-86-mile and 3.73-mile buffer areas around each of them.

NDOW evaluated each of the 12 high mineral potential areas to ascertain their importance to greater sage-grouse. Lek occurrences, acres of PHMA and GHMA, and SUI were considered. In sum, NDOW determined that no leks occurred in eight out of the 12 areas. One lek occurred in one of the remaining areas and two leks occurred in each of the three other areas. Within a 1.86-mile indirect impact buffer area, there are no leks in three out of the 12 areas; and five or fewer leks in 10 out of the 12 areas, and six additional leks in Oregon. Within a 3.73-mile indirect impact buffer area, there were fewer than five leks in nine out of 12 areas and 20 additional leks in Oregon. The SUI was low, less than 0.15, in six out of 12 areas and moderately low, 0.16 to 0.23, in five out of 12 areas.

NDOW identified four areas in the SFA withdrawal area as having low habitat value for greater sage-grouse due to existing fragmentation of the landscape with private land ownership, existing wildfire or ground disturbance activity, and areas with little or no known use by greater sage-grouse (i.e., low SUI).

The justification for NDOW's recommendation for exclusion of each of these areas from the proposed withdrawal area is described below and shown in Figure 2-1.

- Jarbidge Exclusion Area

The Jarbidge historic mine district is approximately 14,370 acres north of the town of Jarbidge and includes areas of dense, high elevation spruce and fir forest. The primary reason for recommending exclusion from the proposed withdrawal is due to high fragmentation by large, private land parcels and nearby non-habitat (e.g., rugged mountain landscapes). There are no leks located in the Jarbidge area and only one lek found within the 3.73-mile buffer area. The mean SUI is 0.05, or extremely low, in the historic mine district; 0.06 in the 1.86-mile buffer, and 0.09 in the 3.73-mile buffer area. Of the total 14,370 acres, only 1,120 acres (8 percent) are mapped as PHMA; 771 acres (5 percent) are mapped as GHMA; and 12,479 acres (87 percent) are mapped as OHMA and non-habitat.

- Owyhee Desert Exclusion Area

This exclusion area contains 44,190 acres with no PHMA; 25,699 acres (58 percent) of non-habitat; and 18,491 acres (42 percent) of OHMA. These low value habitats, an extremely low SUI of 0.05, and the fact that this area only supports six leks within a 3.73-mile buffer (none within 1.86 miles) justified a recommendation to remove SFA protections in favor of proposing additional lands for withdrawal.

- Bilk Creek Mountains Exclusion Area

This area is on the west side of the same-named mountain range and is comprised of 13,515 acres of OHMA and 568 acres of non-habitat. The steep slopes and rapid transition to salt-desert shrub make this area of limited value to greater sage-grouse. Only one lek was found within the 3.73-mile buffer area, and the mean SUI is only 0.06, extremely low.

- Delano Mountains Exclusion Area

The Delano Mountains area is approximately 244,867 acres in northeastern Nevada with generally low densities of greater sage-grouse and greater sage-grouse breeding with an extremely low SUI of 0.07. There are five leks within the 1.86-mile buffer area and two additional leks within the 3.73-mile buffer. Of the 244,867 acres, 49,757 acres (20 percent) are PHMA; 86,248 acres (35 percent) are GHMA, 74,506 acres (30 percent) are OHMA, and 34,356 acres (14 percent) are non-habitat. This area is also highly fragmented with private land parcels in the eastern third.

NDOW also identified two large areas of contiguous habitat adjacent to the proposed withdrawal area that could be exchanged for the 12 high mineral potential areas and areas of limited value to greater sage-grouse. These are areas of high lek density adjacent to the SFA that were analyzed using the same criteria previously described to evaluate their value to greater sage-grouse. The recommended additions to the proposed withdrawal area are described below and shown in Figure 2-1.

- Hardscrabble Addition Area

The Hardscrabble addition to the proposed withdrawal is northeast of Paradise Valley, Nevada, east of the Santa Rosa Range, and west of the Little Humboldt River. It would provide additional protection for 15 active or pending leks within the 105,390 acres of PHMA habitat. The mean SUI of 0.41 is a strong indication of the importance of this area in terms of actual greater sage-grouse use, and the area is contiguous with existing designated SFA lands.

- East Fork Beaver Creek Addition Area

This addition to the proposed withdrawal area is south of and contiguous with existing SFA lands east of the Independence Mountains and west of Mary's River. Expanding the withdrawal area here adds an additional 34 active and pending leks and 288,422 acres of PHMA habitat that would be given stronger protection. This area is important in terms of bird use with a mean SUI of 0.43 for the area. Connectivity between this area and areas to the north would be maintained by withdrawing this area from mineral entry.

NDOW compiled existing information on greater sage-grouse migration and connectivity between Nevada, Oregon, Idaho, and Utah. Information obtained from radio-marked grouse indicates connectivity across the border with each of the three states adjacent to the Nevada SFAs. The following movement patterns and seasonal habitat usage have been documented relative to the Nevada SFA.

In Utah, research has been conducted with radio telemetry showing some evidence of collared birds using seasonal habitats in Nevada. Over a 15-month period, (between May 2005 and August 2006) four birds were documented crossing state lines. One male greater sage-grouse moved 41 miles from southwest Idaho, through Box Elder County, Utah and into northeastern Nevada. Two greater sage-grouse hens that summered in Utah moved 2.4 miles and 12 miles, respectively, to winter in eastern Nevada. Another male followed the same path, but continued into winter habitats in eastern Nevada, a distance of 26 miles. A recent study by Utah State University (Dahlgren et al. 2016) was published on research that was conducted between 1998 and 2013 at intervals along 185 miles of the Nevada-Utah state line between Box Elder County and Iron County to the south near St. George, Utah. The majority of this study area is well outside the SFA, but they documented some movement by Utah birds using seasonal habitats in Nevada.

The Lone Willow Population Management Unit, which includes Kings Valley, the Montana Mountains, Bilk Creek Mountains and Double H Mountains, is one of the most densely populated greater sage-grouse population management units in Nevada, particularly the Montana Mountains portions of the population management unit. Even though the Lone Willow Population Management Unit, a Nevada-specific management boundary, terminates on the Nevada-Oregon border, the greater sage-grouse population is well connected with habitats in Oregon, particularly in the Trout Creek Mountains. Along the Nevada-Oregon border in the Montana Mountain-Trout Creek complex, movement of greater sage-grouse from Nevada to Oregon was observed during a 2001-2005 study to document the effects of harvest. Movement of greater sage-grouse from Oregon to Nevada was also documented following the 2012 Holloway Fire, further demonstrating connectivity between the states. The Montana Mountain-Trout Creek complex is considered one of the most densely populated greater sage-grouse habitats and is of extreme importance to both states, portions of which are within the upper 25 percent breeding density category on the national ranking scale (Doherty et al. 2010).

Area Proposed for Withdrawal

Refer to Figure 2-1, Nevada Alternative. The total acreage represented by the Nevada Alternative is 9,852,208. The acreage within Nevada is 2,670,289.

Reasonably Foreseeable Future Mining and Exploration

The reasonably foreseeable future mining and exploration under the Nevada Alternative would be the same as the Proposed Action except within the state of Nevada. The state of Nevada has proposed excluding from the withdrawal 40 percent of the high mineral potential lands that were identified within the SFAs in Nevada. The state of Nevada has also proposed excluding from the withdrawal 34 percent,

22 percent, and 7 percent of the moderate, low, and not determined or no mineral potential lands respectively, that were identified in the state. The number of mines and exploration projects expected to occur under the Nevada Alternative is shown in Table 2-8.

Table 2-8. Number and Size of Future Mines and Exploration Projects for the Nevada Alternative

State	Number of Future Mines	Number of Future Exploration Projects	Size of Mines		Size of Exploration Projects			Total Disturbance (acres)
			L	S	L	U	S	
Idaho	1	3	0	1	0	0	3	187
Montana	0	1	0	0	1	0	0	81
Nevada	2	47	2	0	7	21	19	3,297
Oregon	1	3	0	1	1	0	1	66
Wyoming	0	0	0	0	0	0	0	1
Utah	0	0	0	0	0	0	0	0
TOTAL	**4**	**54**	**2**	**2**	**9**	**21**	**24**	**3,632**

Using the same logic described above for the Proposed Action, the distribution of the mines and exploration projects anticipated under the Nevada Alternative is shown by mineral potential in Table 2-9.

Table 2-9. Distribution of Future Mines and Exploration Projects by Mineral Potential for the Nevada Alternative

Mineral Potential	Number of Future Mines	Number of Future Exploration Projects
High	3	43
Moderate	1	10
Low	0	1
Not Determined or no potential	0	0
TOTAL	**4**	**54**

Table 2-10 shows a summary of the anticipated future activity that could occur over the 20-year withdrawal period under the Nevada Alternative.

Table 2-10. Estimated Future Mineral Development Projects under the Nevada Alternative

Nevada Alternative – Activity Levels	Quantity
Predicted number of future exploration projects	54
Acres disturbed for exploration	631
Predicted number of future mining projects	4
Acres disturbed for mining	3,001
Total acres disturbed for exploration and development	3,632

2.3.4 Remove Areas of High Mineral Potential from the Withdrawal Proposal

Under the Remove Areas of High Mineral Potential from Withdrawal Proposal Alternative, hereinafter referred to as the HMP Alternative, all areas within the SFAs that contain lands with high mineral potential, as defined by the Mineral Potential Report (Day et al. 2016), would not be withdrawn. This alternative was raised during scoping under the assumption that excluding high mineral potential lands from the withdrawal would reduce the social and economic impacts of the withdrawal. Under this alternative, 558,918 acres of high mineral potential lands would not be withdrawn. These high mineral potential lands include:

- 403,808 acres located in Nevada,
- 66,581 acres in Oregon,
- 57,761 acres in Montana,
- 25,988 acres in Idaho,
- 3,452 acres in Utah, and
- 1,328 acres in Wyoming.

The HMP Alternative would result in approximately 9.39 million acres being withdrawn in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming.

Area Proposed for Withdrawal

Refer to Figures 2-2 through 2-7 for locations of proposed withdrawal areas under this alternative. The total acreage represented by the HMP Alternative is 9,390,553.

Reasonably Foreseeable Future Mining and Exploration

Under the HMP Alternative, all high mineral potential lands identified in the Mineral Potential Report (Day et al. 2016) would not be withdrawn. Therefore, the number of future mines and exploration projects expected on high mineral potential lands under this alternative would be the same as described for high mineral potential lands under the No Action Alternative. Similarly, the number of future mines and exploration projects expected in moderate, low, and not determined or no mineral potential lands under this alternative should be the same as described for those lands under the Proposed Action. The number of future mines and exploration projects expected to occur under the HMP Alternative is shown in Table 2-11.

The distribution of the mines and exploration projects anticipated under the HMP Alternative is shown by mineral potential in Table 2-12.

Table 2-13 shows a summary of the estimated future mineral development projects that could occur over the 20-year withdrawal period under the HMP Alternative.

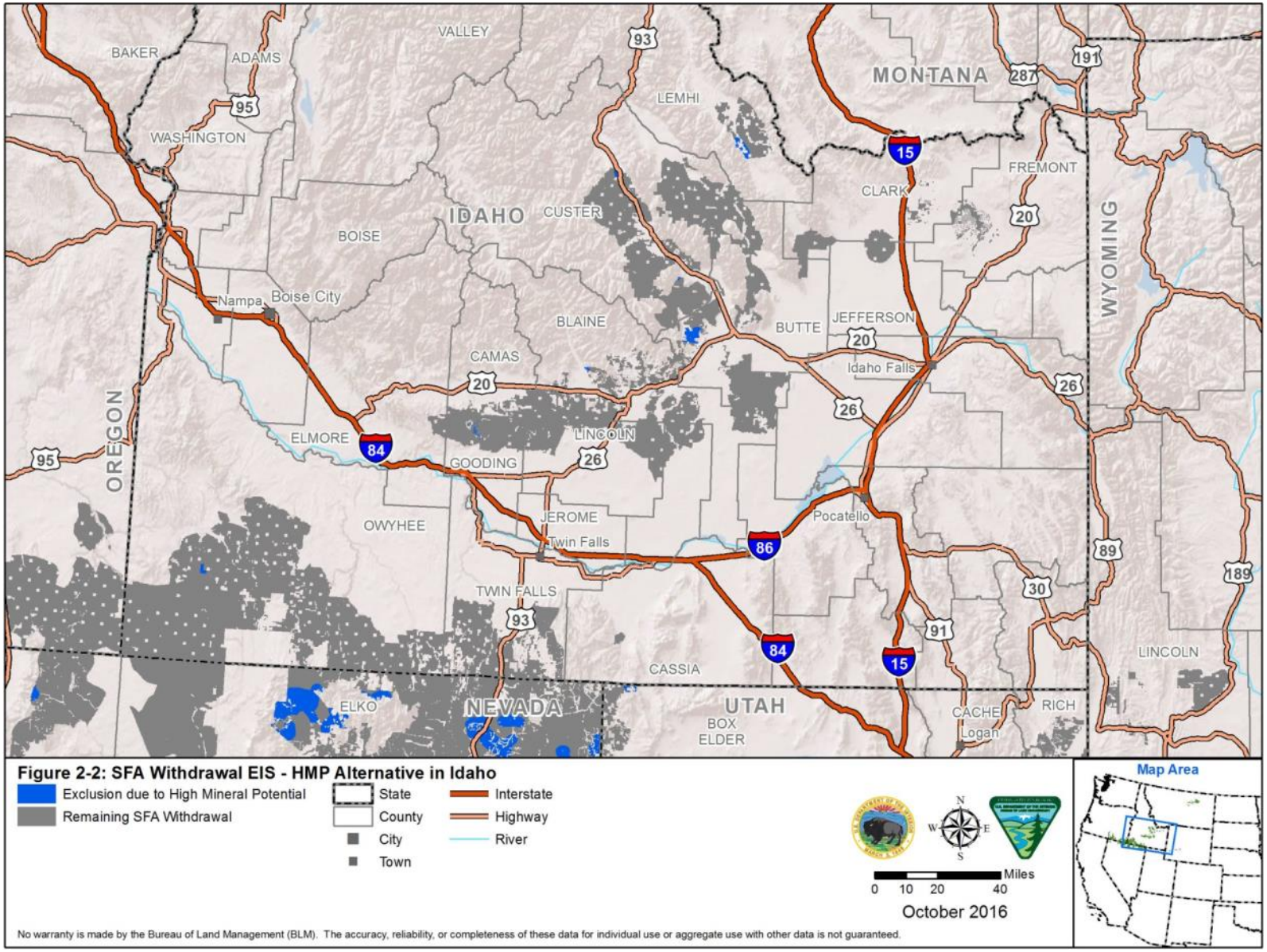

Figure 2-2. High Mineral Potential Alternative – State of Idaho Map

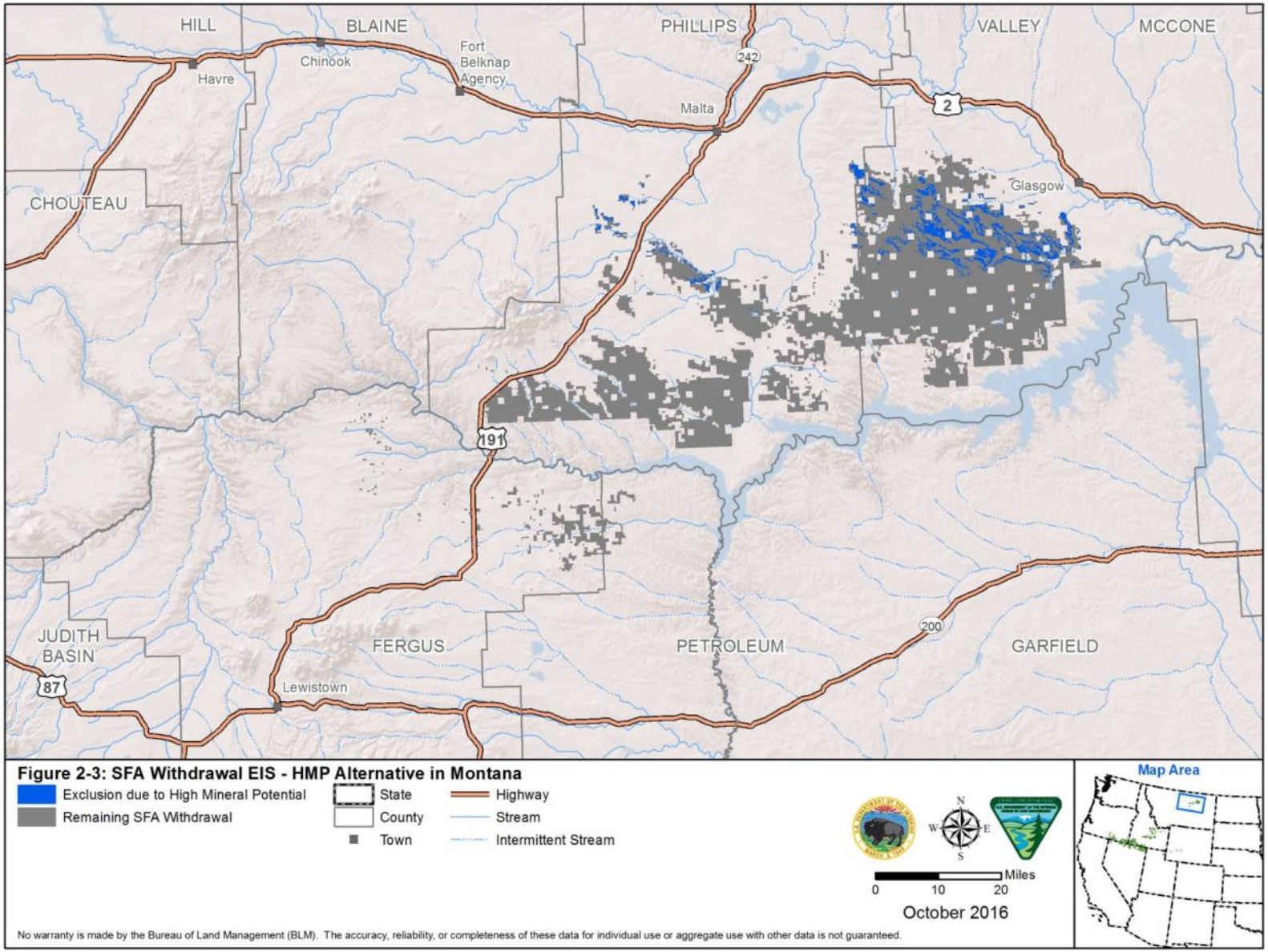

Figure 2-3. High Mineral Potential Alternative – State of Montana Map

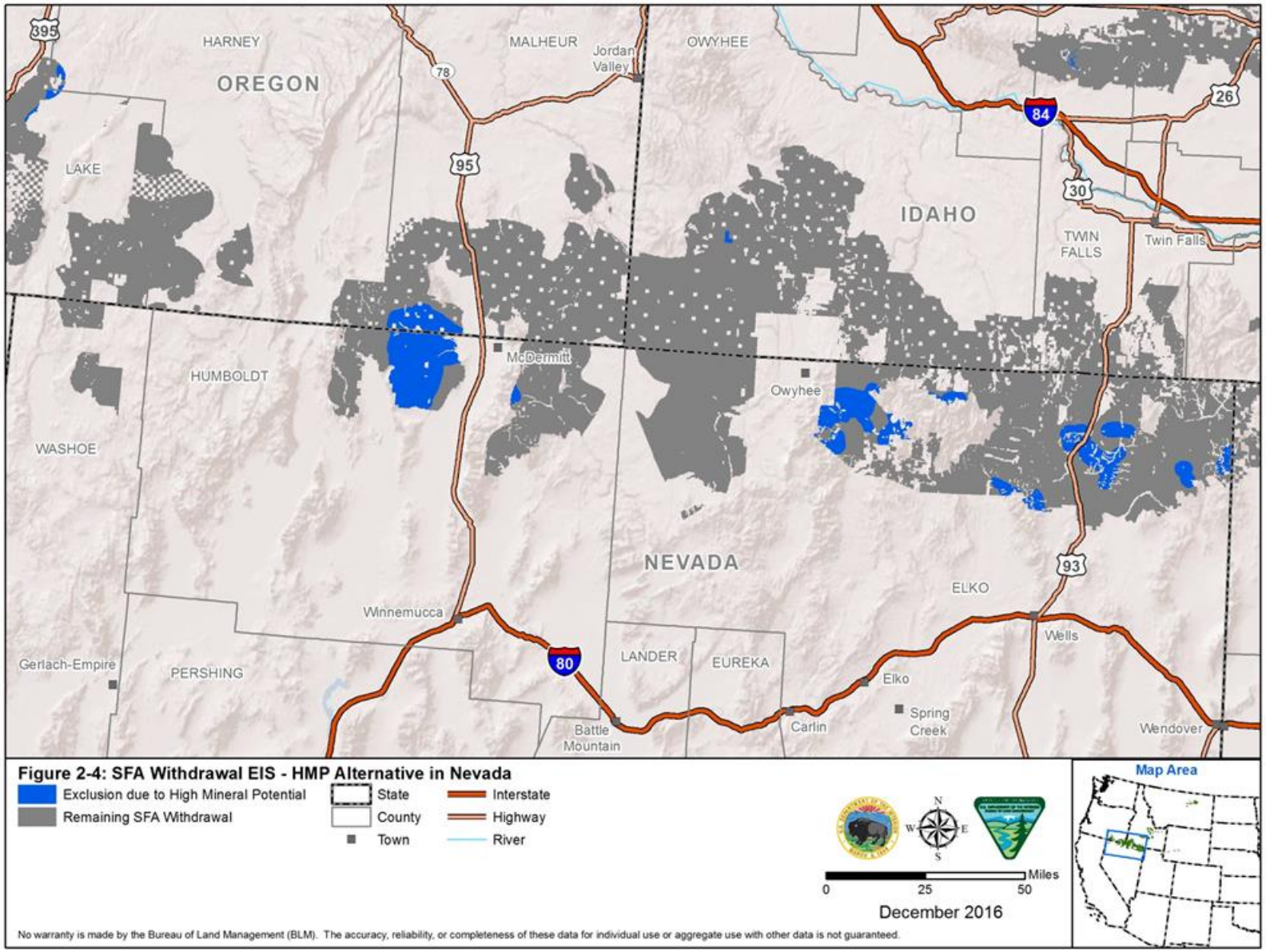

Figure 2-4. High Mineral Potential Alternative – State of Nevada Map

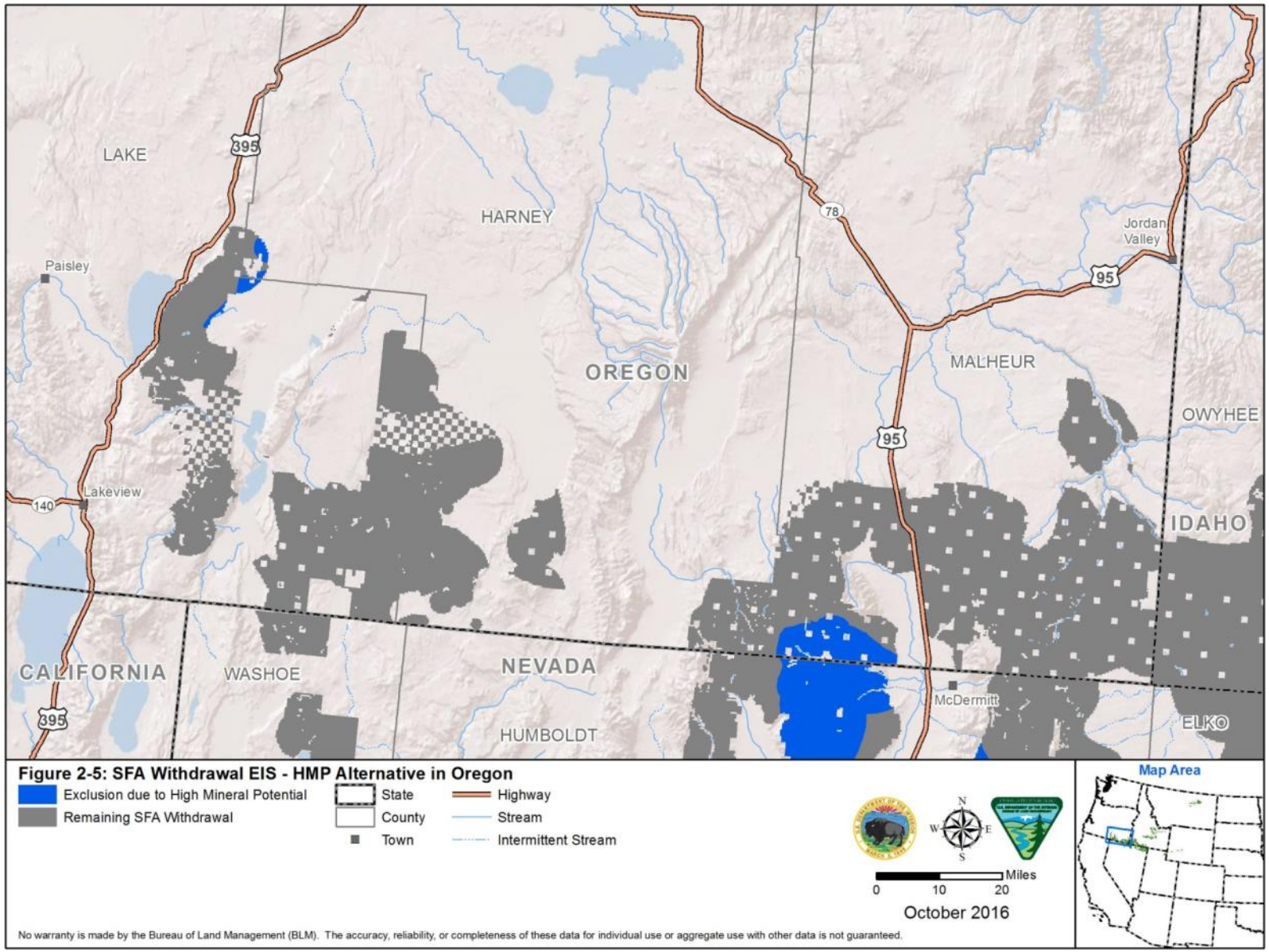

Figure 2-5. High Mineral Potential Alternative – State of Oregon Map

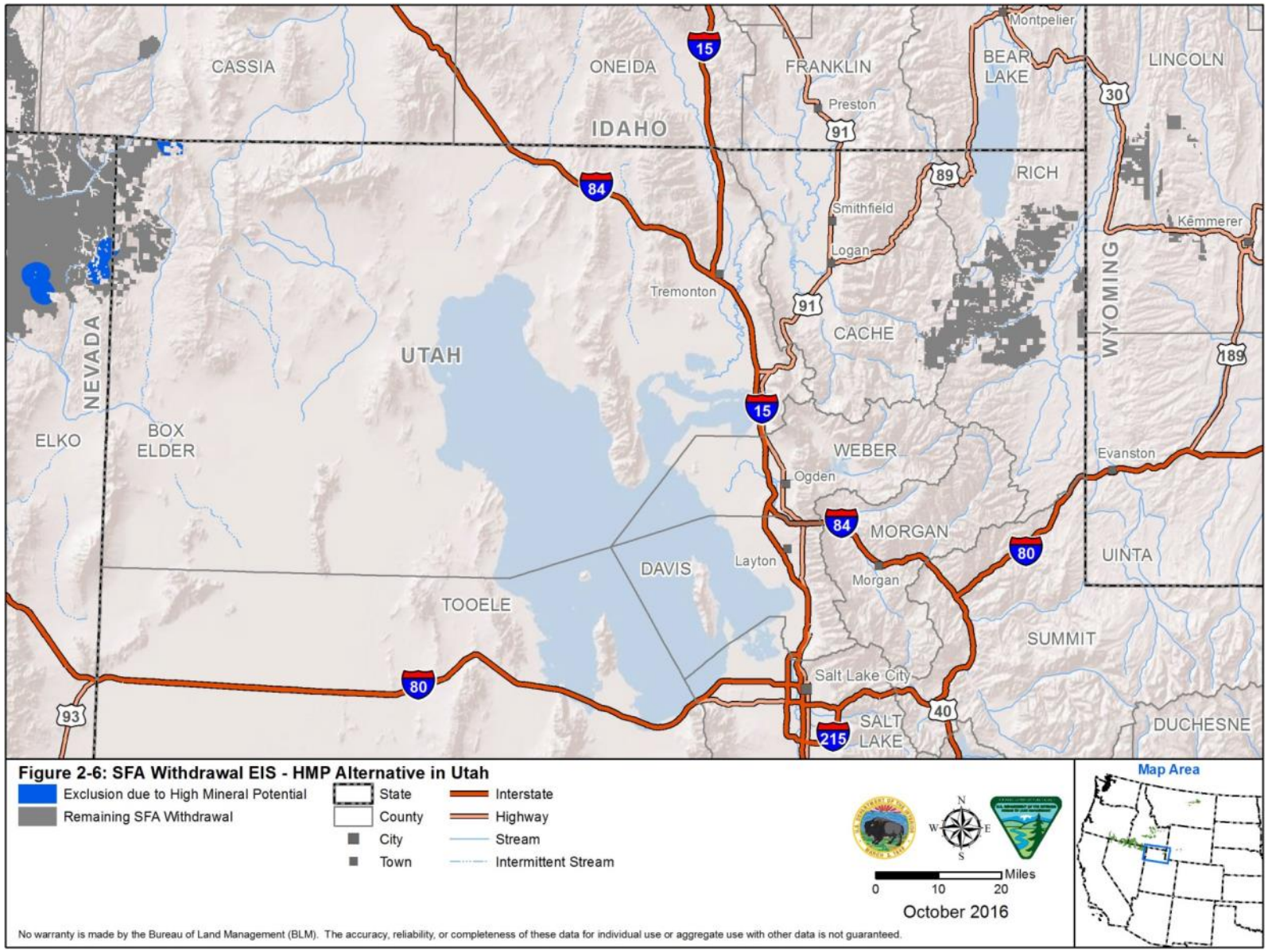

Figure 2-6. High Mineral Potential Alternative – State of Utah Map

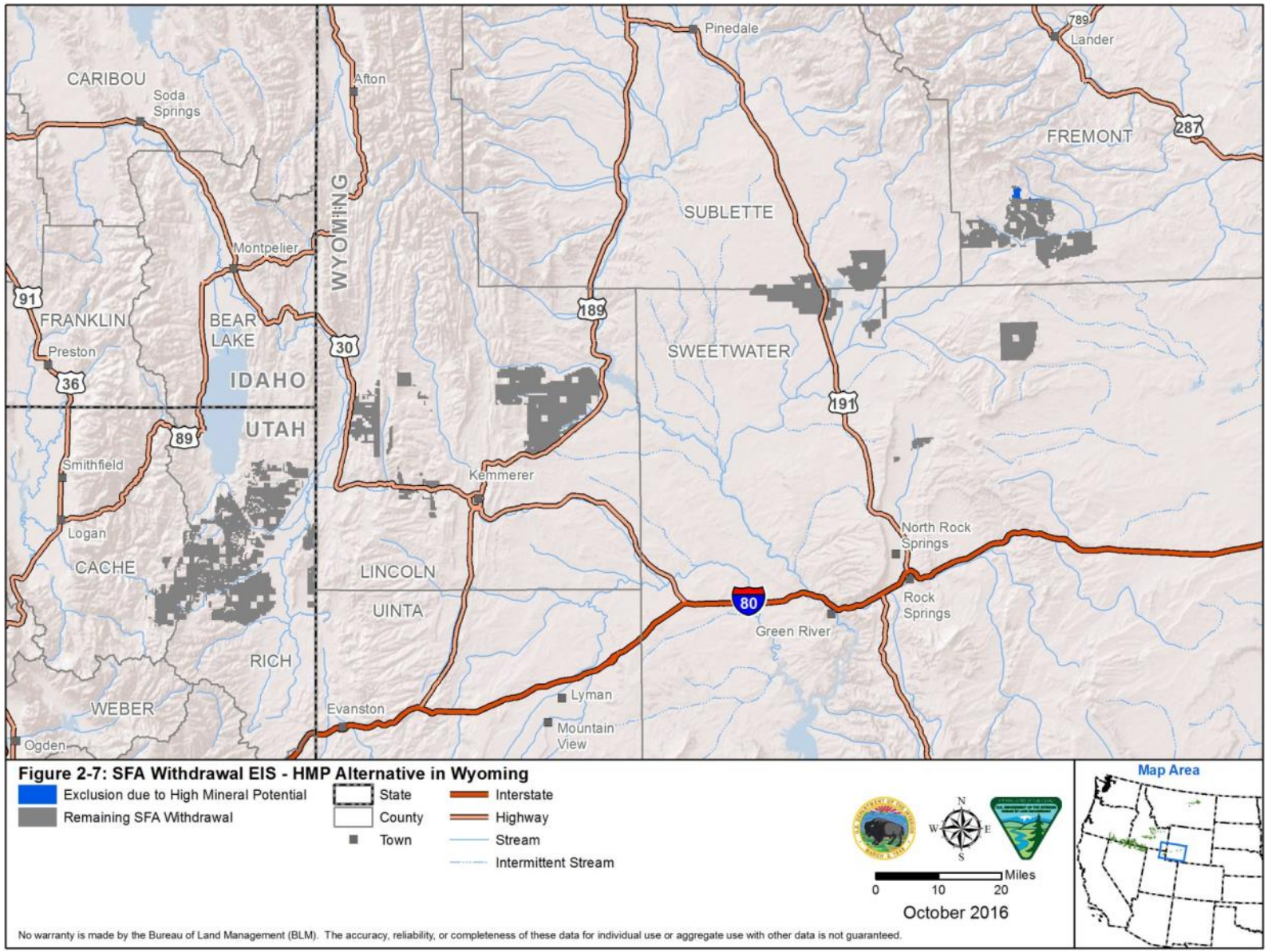

Figure 2-7. High Mineral Potential Alternative – State of Wyoming Map

Table 2-11. Number and Size of Future Mines and Exploration Projects for the HMP Alternative

State	Number of Future Mines	Number of Future Exploration Projects	Size of Mines		Size of Exploration Projects			Total Disturbance (acres)
			L	S	L	U	S	
Idaho	2	9	0	2	1	0	8	518
Montana	0	2	0	0	2	0	0	146
Nevada	2	55	2	0	8	24	23	4,074
Oregon	3	5	0	3	3	0	3	157
Wyoming	0	0	0	0	0	0	0	8
Utah	0	0	0	0	0	0	0	0
TOTAL	**8**	**72**	**3**	**12**	**14**	**24**	**34**	**4,903**

Note: the numbers of mines or exploration projects in this analysis can be less than 1 but in reality partial mines or partial exploration projects cannot occur. Therefore data are rounded up or down to whole numbers. Differences in the total row from the sum of the numbers within each of the state rows are due to rounding.

Table 2-12. Distribution of Future Mines and Exploration Projects by Mineral Potential for the HMP Alternative

Mineral Potential	Number of Future Mines	Number of Future Exploration Projects
High	8	67
Moderate	0	5
Low	0	0
Not determined or no potential	0	0
TOTAL	**8**	**72**

Table 2-13. Estimated Future Mineral Development Projects under the HMP Alternative

High Mineral Potential Alternative – Activity Levels	Quantity
Predicted number of future exploration projects	72
Acres disturbed for exploration	836
Predicted number of future mining projects	8
Acres disturbed for mining	4,067
Total acres disturbed for exploration and development	4,903

2.3.5 State of Idaho Alternative

The Office of the Governor of Idaho has proposed that the Secretary exclude from the proposed withdrawal, areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho. The Governor's Office deems these lands economically developable. They are located within the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA. No additional lands are being proposed for inclusion in the withdrawal. The withdrawal boundary in the other states included in the Proposed Action remains the same under this alternative. Under this State of Idaho Alternative, hereinafter referred to as the Idaho Alternative, 538,639 acres of the proposed withdrawal in Idaho would not be withdrawn. A total of 3,423,185 acres would be withdrawn in Idaho under this alternative. The Idaho Alternative would result in approximately 9.41 million acres being withdrawn from location and entry under the Mining Law in SFAs in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming.

On January 15, 2016, the Office of the Governor of Idaho transmitted its formal response to the proposed withdrawal. In that letter the Governor stated that in his opinion the withdrawal as proposed was unnecessary to protect greater sage-grouse from any perceived threat by the mining industry and that the state of Idaho had the necessary framework in place to protect greater sage-grouse. The Governor also stated that, should there be a withdrawal, the BLM should exclude areas with known mines and mineral prospects as documented by the Idaho Geological Survey's mineral database and mining property compilations, and that the BLM should evaluate whether the withdrawal of approximately 3.8 million acres of land in Idaho was necessary to effectuate its purpose regarding the long-term persistence of greater sage-grouse and its habitat.

On July 21, 2016, the Governor's office had a conversation with the BLM indicating their intention to develop a State of Idaho Alternative that would remove key economic mineral development areas from the withdrawal proposal. This alternative would remove from the proposed withdrawal, areas considered by the state to be of high economic importance for future mineral development within the state of Idaho. On September 26, 2016, the state of Idaho identified approximately 538,731 acres of economic interest areas proposed for exclusion from the withdrawal in the north-central Idaho SFA and southern Idaho/northern Nevada SFA. These areas were developed by the Governor's office after considering important greater sage-grouse habitat relative to areas where future mining and exploration were considered likely to occur in the next 20 years (duration of the withdrawal) and areas that were deemed essential to support active mining within the state. This constituted the original state of Idaho proposal.

The BLM and USFWS worked with the state of Idaho to refine their original proposal to take into consideration measures to minimize potential impacts to sage-grouse leks and their habitat. On September 30, 2016, the Governor's office delivered a refined proposal that addressed their areas of economic interest while still protecting important sage-grouse habitat. The refined proposal contains detailed descriptions of 16 areas within the state of Idaho proposed for exclusion from the withdrawal. The Idaho Alternative modifies the original proposed withdrawal of the SFAs in Idaho by excluding known mining operations, mining districts, and areas of higher mineral potential from the withdrawal. Areas of higher mineral potential as defined by the state of Idaho are areas ranked as high and moderate mineral potential in the Mineral Potential Report (Day et al. 2016). The Idaho Alternative also includes buffer areas around the surrounding acreage for maintaining state access and geographic and administrative simplicity.

Sixteen polygons were identified for exclusion from the withdrawal and are shown in Figure 2-8. Commodities mined historically or for which professional geologic expertise indicates potential were also noted, along with brief background information on recent exploration (past 25 years at least) or geologic deposit models relevant to each of the areas. The state of Idaho states, "several sources of information were used to collect historical information on Idaho mining districts (IBMG Bulletin 22)." The Idaho Geological Survey also has published histories of several mining districts which were reviewed. For specific mining and exploration activity over the past 30 years, the Idaho Geological Survey's annual published reports and unpublished annual presentations and compilations were utilized.

Each polygon as described in the September 30, 2016 letter from the Idaho Governor's Office is summarized below.

- <u>Polygon 1 (Leadore, Lemhi County): lead, silver, zinc, rare earth elements, thorium, phosphate, and molybdenum</u>

The townsite of Leadore (and Highway 28) lies in the middle of the two acreage blocks in the Lemhi Valley which are herein proposed to be removed from the withdrawal proposal. As the name implies, the area around Leadore (a.k.a. the Junction Mining District) is host to a large number of historic lead-silver-(zinc) mines as indicated on topographic maps and the Idaho Geological Survey Mines and Prospects

Database. They are hosted in carbonate rocks (limestone and dolomites) exposed in the mountains and along the fault-bounded range front which is included in the SFA. In 2012, a small company was drilling for silver and lead along the range front in or adjacent to the Leadore SFA. In addition, there are rare earth elements and phosphate prospects in the Beaverhead range just east of Polygons 1 and 2. During the 2008-2010 time period, there was prospecting in the area for rare earth elements-thorium deposits similar to those just to the north at Lemhi Pass.

There is also a significant molybdenum prospect west of Polygon 1 up Eightmile Creek and not withdrawing this area would help maintain access for that. From the USGS aeromagnetics and gravity surveys of the state, there is also potential under the shallow, valley-fill gravel for buried deposits of lead-silver or an intrusion-hosted molybdenum or rare earth elements-bearing system near Leadore. The USGS assessment has a large block of moderate mineral potential underlying the valley in Polygon 1. The area of exclusion from the withdrawal in Polygon 1 was reduced by approximately one-third of the state's original proposal in order to account for greater sage-grouse leks, and connectivity to the bulk of the area designated as SFA.

- <u>Polygon 2 (Gilmore, Lemhi County): lead, silver, copper, gold, zinc, (molybdenum, rare earth elements, and phosphate prospects)</u>

Polygon 2 lies on the western margin and center part of the Lemhi Valley near the townsite of Gilmore (a.k.a. Texas Mining District) on the east flank of the Lemhi Range. Portions of the original SFA surround patented mining claims near Sourdough Gulch two miles northwest of Gilmore. The Texas Mining District is a large polymetallic district with a number of mines and significant gold, silver, and base metal production hosted in carbonate rocks. In the early 1900s it was the state's largest lead-silver producer outside of the Coeur d'Alene mining district. As of a few years ago, residents of Gilmore maintained housing and their mining claims within or immediately adjacent to the SFA. Polygons 1, 2, and 4 share many geologic similarities with potential for buried silver-lead-zinc and even rare earth elements-thorium deposits related to the Paleozoic (or younger) intrusions and hydrothermal activity in the isolated and little explored Beaverhead and Lemhi Ranges of eastern Idaho. This polygon includes a large area of high mineral potential in the USGS assessment. Polygon 2 was reduced from the state's original proposal to account for active greater sage-grouse leks and potential habitat that could occur in the valleys, while excluding areas of high and moderate mineral potential that occur outside of the valleys.

- <u>Polygon 3 (Mackay area, West Flank of the Lemhi Range near George on the Little Lost River): lead and silver</u>

Polygon 3 protects access and buried range front potential in the "Moderate" category in the old Hamilton and Dome Mining Districts in the Lemhi Range to the east. The Idaho Geological Survey Mines and Prospects Database shows numerous polymetallic (precious and base metal) occurrences west of Diamond Peak. Some of those are located on the topographic map as just above the alluvial fans at the range front and within the SFAs. A buffer strip removing these areas from the withdrawal proposal would allow for future exploration projects in the area. The area of exclusion in Polygon 3 was reduced from the state's original proposal by approximately one-third to account for active greater sage-grouse leks.

- <u>Polygon 4 (Lower Birch Creek Valley, Lemhi County): lead, silver, copper, uranium, and molybdenum</u>

Polygon 4 revised the original withdrawal proposal to maintain access and exploration in the very southern end of the Beaverhead Range near the Blue Dome area and the Birch Creek Mining District. Multiple polymetallic mines and prospects, and a uranium prospect, are known from historical literature.

Two companies drilled recently (2008 and 2011-2014) in the Long Canyon area just north of the SFA. Though little information was released, the target is presumed to be lead-silver, but those metals can also be distal indicators of buried molybdenum porphyry deposits. The USGS noted moderate mineral potential for much of the acreage in Polygon 4. Polygon 4 was reduced from the state's original proposal by approximately a quarter of its original exclusion size to account for active greater sage-grouse leks on the western end of the polygon.

- Polygon 5 (Isolated SFA blocks along and east of Interstate-15 at Spencer, Clark County): Precious Opal (gemstones), gold, and silver

Polygon 5 includes isolated parcels (less than 1 square mile in area) just south of the town of Spencer. The active Kilgore gold exploration project lies a few miles to the northeast of Spencer. The hot spring/epithermal deposit hosts over a half-million ounces of gold in reserve, and drilling is currently underway by Otis Gold. Maintaining exploration potential and mineral access in the region closer to the transportation routes could be a strategic key for economic development of this deposit, which is one of Idaho's most prospective gold projects. The hills immediately north of the SFA parcels contain the economic gemstone deposits of Spencer precious opal for which the tiny rural town is noted. Small opal mining and related tourist rock shops provide economic development activity for the area. Gold at Kilgore could be related to the opal deposition at Spencer, as both are volcanic-hosted, low-temperature hydrothermal systems. The USGS classified the area immediately adjacent to and partly in Polygon 5 as having high mineral potential. Additionally, Idaho considers that administration of the withdrawal in this area is infeasible due to the scattered nature of the SFA designation.

- Polygon 6 (Triangular-shaped area north of Antelope Flat and west of Highway 93 south of Challis, Custer County): Magnesium and possible copper, molybdenum, lead, zinc, silver, and gold

Polygon 6 includes only a couple of known prospects, one of which is dolomite – a source of magnesium. However, the USGS assessment includes an area of high mineral potential in this polygon. It is likely for dolomite although due to a Tertiary pluton nearby, a buried base and precious metal skarn or porphyry deposit is also permissive. Revisions to Polygon 6 in the state's original proposal were made to account for areas of active greater sage-grouse leks while also excluding from withdrawal areas of high mineral potential.

- Polygon 7 and 16 (Large area around Mackay and Copper Basin Mining Districts, Custer County): Copper, zinc, silver, gold, lead, molybdenum

Polygons 7 and 16 include the parts of the SFAs which wrap around three sides of the historic Alder Creek Mining District, just above the town of Mackay, in the White Knob Mountains. The high grade copper lodes, discovered in the 1880s and worked through much of the twentieth century, are related to skarns around a Tertiary granitic intrusion. The Empire mine and district has been the site of modern drilling and exploration by Trio, Journey, and Musgrove Minerals from 2004 through 2012; an 18 million ton zinc resource was outlined. Patented mining claims form the core interior to the SFA and Polygon 7, which extends across the range to the southwest into the Copper Basin mining area. A second Tertiary pluton is centered to the southwest where favorable ore-hosting sedimentary rocks are also present within the polygon. At least four blocks of patented claims are included within the SFA in Polygon 7. The area has mineral potential for base and precious metals in veins and limestone-hosted skarns similar to the Alder Creek District. Much of Polygons 7 and 16 is ranked as moderate mineral potential by the USGS, surrounding the large patented claims core of high mineral potential in the assessment. Originally Polygon 7 was much larger and included Polygon 16 as areas to be excluded from the withdrawal proposal. The revisions to Polygon 7, and split of Polygon 16 were to account for a high density of greater sage-grouse leks and the importance of greater sage-grouse habitat.

- Polygon 8 (Arco and Arco Hills, Butte County): Magnesium (Dolomite), Limestone, and Silica

Polygon 8 is next to limestone quarries above the town of Arco. They exploited deposits of carbonate rocks which have been mined for magnesium or have potential for additional production according to a compilation by the U.S. Bureau of Mines. In addition, quartzites in the region have seen some exploration for industrial-grade silica in the past two decades.

- Polygon 9 (Timbered Dome area, Butte and Blaine Counties): Gold, silver, bismuth, copper, and zinc

Polygon 9, situated north of Craters of the Moon and Highway 20 west of Arco, includes much of the extensive Lava Creek Mining District, which was the site of the Champagne Creek open pit gold mine that operated from 1989 through 1993 with an initial reserve of 2.5 million tons at 0.03 troy ounces per ton gold. It appears from the GIS-generated maps and topographical maps that the proposed withdrawal actually covers the Champagne Creek open pit oxide gold mine. There are a number of old mines in the region. Mineralization and alteration is hosted in Eocene volcanic rocks with significant potential for vein or replacement deposits in older sedimentary units below them. There has been a minor amount of more recent exploration and mining claim location near the Martin mine and elsewhere in the district, which is unusual for ores containing bismuth, a critical commodity. Due to the scattered nature and lack of connectivity of the areas proposed for withdrawal in Polygon 9, no adjustments were made from the state's original proposal.

- Polygon 10 (Southern Fish Creek Reservoir area, Blaine County): Zinc, copper and molybdenum

Polygon 10 includes SFA acreage south of Fish Creek Reservoir. While historic mineral prospects are not abundant, the structurally complex region has been well-mapped by the USGS (SIM 3191) and explored by private companies in the 1980s and 1990s for stratabound base metal mineralization in the Paleozoic sediments. Gossan (a product of oxidized sulfides) is exposed in the region and literature accounts describe intrusives and mineralized layers at shallow depths (less than 100 meters) in the area of Long Canyon within Polygon 10. The occurrences are interpreted as similar to mineralization at the large Triumph mine 25 miles northwest. There is still exploration interest in the area when zinc prices warrant, and the area was designated as having moderate mineral potential in the USGS assessment.

- Polygon 11 (Southern Wood River Valley on either side of Highway 75): Gold, Unique Pumice, Silver, Zinc, Lead, Copper, and Rare Earth Elements

Polygon 11 contains two blocks of areas recommended for removal from the proposed withdrawal. The two areas are separated by non-federal land down the center of the Wood River Valley south of Bellevue. The eastern area, an elongate east-west zone, extends from the range front east over steep slopes to Bell Mountain. It lies across the valley from the prolific Minnie Moore lead-zinc-silver mine west of Bellevue. Similar lithologic units and a few polymetallic prospects are present in the polygon on the east side of the valley. The western block of acreage recommended for removal from the withdrawal includes the southern part of the highly mineralized Hailey Gold Belt and miscellaneous prospects down towards Rock Creek and Hot Springs Landing, as well as old rare earth placers in the valley.

The SFA in Polygon 11 also covers an operating (as of 2015) mine, the Moonstone Pumice mine, located adjacent to Highway 20 on both the north and south sides of the highway in the hills northwest of Hot Springs Landing. For over 20 years, the operation has extracted a unique gold-colored variety of pumice for multiple uses. Mine locations are noted on the topographic quadrangle map.

- Polygon 12 (Mount Bennett Hills, Elmore County): Silver, copper, iron, lead, zinc, and manganese

Polygon 12 covers the southern extension of an area identified by the USGS assessment as high to moderate mineral potential near Deer Heaven Mountain in the Mount Bennett Hills. The old Volcano Mining District lies near the Camas and Elmore County line; the mines worked mineralized quartz veins in granite. Polygon 12 does not include the large diatomite resources at Clover Creek further east (USBM compilation). Those are identified in the USGS assessment as high mineral potential linear zones, but they are located reportedly in the midst of prime greater sage-grouse habitat. A reduction of approximately one-third of the state's original area of exclusion was made to protect prime greater sage-grouse wintering habitat in the eastern third of the withdrawal.

- Polygon 13 (Central/NW Owyhee County): Diatomite, Gold, and Silver

Polygon 13 lies along the northwest margin of a very large block of SFA acreage covering much of southern Owyhee County. It is recommended for removal from the proposed withdrawal to preserve the major diatomite resource located near Dickshooter Creek and Deep Creek and the similarly prospective lacustrine sediments nearby. The deposit, known as BH 1-12, is owned by Grefco, a large producer, and while reportedly very large, it is remote and difficult to access. The BLM conducted a validity exam on the deposit in the early 1990s. The U.S. Bureau of Mines (1992) quotes a tonnage of 4.2 million short tons of high-purity diatomite. The Idaho Geological Survey database gives the location as T11S, R2W, Section 34SE, but the deposit extends into T12S, R2W, Section 3 to the south. The USGS identifies the deposit area as having high mineral potential over a four-section block. A state owned section is nearby. The same lacustrine sedimentary layer that hosts the diatomite crops out elsewhere in Owyhee County, where it merits a moderate mineral potential assessment. One of those areas forms the southwestern tip of Polygon 13.

In addition to the diatomite, Polygon 13 contains several precious metal and polymetallic occurrences in the northern part of the area near Clover Mountain and Grassy Flat. There are active mining claims associated with some of them. The gold and silver prospects are located where the more altered underlying Eocene volcanics and older granodiorite are exposed north of the "barren" Miocene volcanic rocks exposed in southern Owyhee County. At least one company is known to have had an active prospecting program in the region within the past five years. The original boundary of Polygon 13 was revised to account for critical greater sage-grouse habitat and activity as well as areas that were already withdrawn due to their wilderness designation. The revision to the polygon reduced the area for exclusion by approximately two-thirds.

- Polygon 14 (Southwestern Owyhee County): Diatomite

Polygon 14 includes the area of moderate mineral potential from the USGS assessment in the very southwestern corner of Idaho. The remote acreage is immediately west of the Duck Valley Indian Reservation in the vicinity of Horse Basin and Juniper Basin. It is partly underlain by the same Tertiary lacustrine sediments which host the diatomite at Deep Creek. A reduction in the state's original boundaries was made due to critical habitat for greater sage-grouse. Areas excluded from the withdrawal lack water and other suitable resources for greater sage-grouse activities, according to input received by the Idaho Department of Fish and Game.

- Polygon 15 (Southeastern Owyhee County): Diatomite

Polygon 15 occupies the southeast corner of Owyhee County and includes another area of outcropping Tertiary lacustrine sediments that have potential to host diatomite. The remote hamlet of Three Creek is situated in between two blocks of SFAs within Polygon 15. No historical activity is known, but the area was ranked as moderate mineral potential in the USGS study.

Area Proposed for Withdrawal

The area proposed for withdrawal under this alternative is shown on Figure 2-8, Idaho Alternative. The total acreage represented by the Idaho Alternative is 9,410,832. The acreage within Idaho is 3,423,185.

Reasonably Foreseeable Future Mining and Exploration

The Idaho Alternative put forth by the Governor's Office proposed that the Secretary modify the withdrawal by excluding known mining operations, mining districts, and areas of higher mineral potential (as well as some acreages surrounding these areas to maintain state access and for geographic and administrative simplicity) within the state of Idaho. The reasonably foreseeable future mining and exploration activity within the SFA boundaries under the Idaho Alternative would be the same as the Proposed Action except for activity within the state of Idaho. The state of Idaho has proposed excluding from the withdrawal 92 percent of the high mineral potential lands that were identified within the SFAs in Idaho. Similarly, the state of Idaho has proposed excluding from the withdrawal 66 percent, 18 percent, and 3 percent of the moderate, low, and not determined or no mineral potential lands, respectively, that were identified in the state. The number of mines and exploration projects expected to occur under the Idaho Alternative is shown in Table 2-14.

Table 2-14. Number and Size of Future Mines and Exploration Projects for the Idaho Alternative

State	Number of Future Mines	Number of Future Exploration Projects	Size of Mines		Size of Exploration Projects			Total Disturbance (acres)
			L	S	L	M	S	
Idaho	4	13	0	4	1	0	12	927
Montana	0	1	0	0	1	0	0	81
Nevada	1	32	1	0	5	14	13	2,285
Oregon	1	3	0	1	1	0	1	66
Wyoming	0	0	0	0	0	0	0	1
Utah	0	0	0	0	0	0	0	0
TOTAL	**7**	**48**	**2**	**5**	8	14	26	**3,360**

Note: the numbers of mines or exploration projects in this analysis can be less than 1 but in reality partial mines or partial exploration projects cannot occur. Therefore data are rounded up or down to whole numbers. Differences in the total row from the sum of the numbers within each of the state rows are due to rounding.

Using the same logic described above for the Proposed Action, the distribution of the mines and exploration projects anticipated under the Idaho Alternative is shown by mineral potential in Table 2-15.

Table 2-15. Distribution of Future Mines and Exploration Projects by Mineral Potential for the Idaho Alternative

Mineral Potential	Number of Future Mines	Number of Future Exploration Projects
High	4	39
Moderate	2	7
Low	1	2
Not determined or no potential	0	0
TOTAL	**7**	**48**

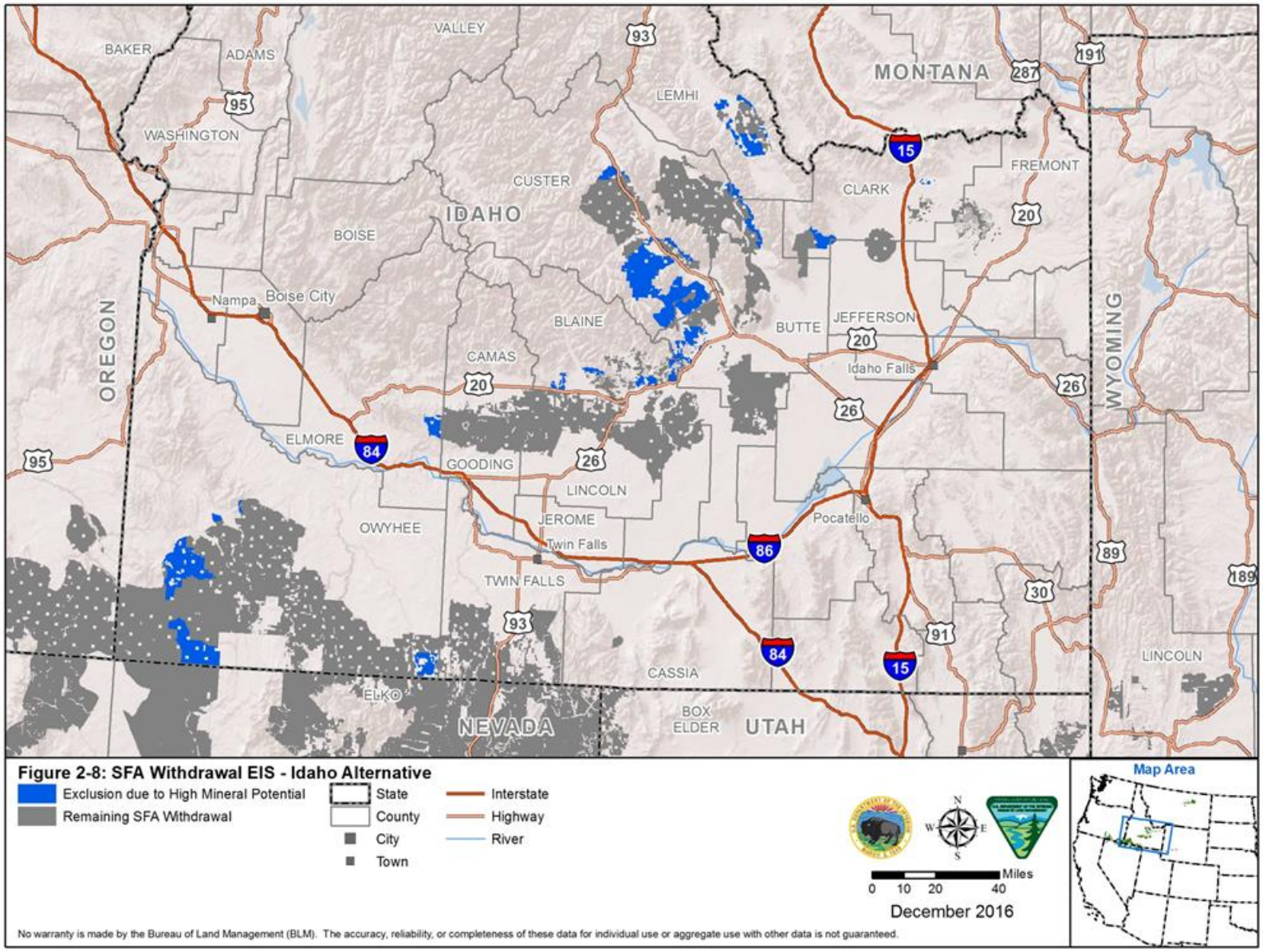

Figure 2-8. Idaho Alternative

Table 2-16 shows a summary of the estimated future mineral development projects that could occur over the 20-year withdrawal period under the Idaho Alternative.

Table 2-16. Estimated Future Mineral Development Projects under the Idaho Alternative

Idaho Alternative – Activity Levels	Quantity
Predicted number of future exploration projects	48
Acres disturbed for exploration	510
Predicted number of future mining projects	7
Acres disturbed for mining	2,850
Total acres disturbed for exploration and development	3,360

2.4 Alternatives Considered but Eliminated from Detailed Analysis

This section briefly describes alternatives to the proposed withdrawal that were considered but not carried forward for further analysis in this EIS. The management actions proposed by these alternatives were recommended by members of the public during scoping or by resource specialists. The management actions are described below, along with the rationale for excluding them from further consideration.

2.4.1 Eliminated Alternative 1: Withdraw Additional Areas of High Value Habitat

In order to maximize the conservation of greater sage-grouse habitat, it was suggested that additional areas of greater sage-grouse habitat beyond the SFAs be withdrawn. The SFAs (also identified by the USFWS as stronghold areas essential for greater sage-grouse survival) are specific areas that have been identified within PHMA. PHMAs are larger management areas of valuable greater sage-grouse habitat surrounding the SFAs. Greater sage-grouse PHMAs are themselves surrounded by even larger management areas referred to as greater sage-grouse GHMA. BLM determined that a recommendation to withdraw more area (such as the PHMAs and/or GHMAs) was excessive to meet the purpose and need since the USFWS has stated that strong, durable, and meaningful protection in stronghold areas (i.e., SFAs) will help obtain confidence for long-term greater sage-grouse persistence (USFWS 2014). In addition, selecting additional greater sage-grouse habitat areas (i.e., PHMA and/or GHMA) for potential withdrawal without data to justify the additions or the scientific need to do so is speculative.

2.4.2 Eliminated Alternative 2: Remove from the Withdrawal Areas of High Mineral Potential Associated with Current Mining Activities

Based on the assumption that areas that are in close proximity to, or associated in some way with, current mining operations are the most likely places for future mines to be proposed, an alternative was suggested during scoping to exclude these areas associated with high mineral potential areas from the withdrawal. This alternative was recommended under the assumption that it would reduce the potential social and economic impacts. This alternative was eliminated from further detailed analysis because it is substantially similar in design and would have similar effects as the HMP Alternative, albeit with potentially fewer acres excluded from the withdrawal proposal.

2.4.3 Eliminated Alternative 3: Remove Areas of Non-Habitat from the Withdrawal

It was suggested that areas of non-habitat within the SFAs be excluded from the withdrawal area. It is acknowledged that there may be some areas within the defined SFAs that may not appear to be greater sage-grouse habitat, per se, but are important for habitat connectivity and thus were included in the SFAs that were designated in the September 16, 2015 BLM and Forest Service RODs for the LUP amendments

(see Section 1.1 in Chapter 1). The exclusion of non-habitat would only marginally reduce the total acreage within the withdrawal proposal, and, in that respect, this alternative would not substantially differ from the Proposed Action.

2.4.4 Eliminated Alternative 4: Shorten Duration of the Withdrawal

It was suggested that an alternative be considered that reduced the duration of the proposed withdrawal to something less than 20 years. Withdrawals are made for the purpose of limiting activities on the withdrawn lands in order to maintain other public values in the area, or for reserving the area for a particular public purpose or program. In this particular case, the Proposed Action would withdraw federal land from location and entry under the Mining Law in order to protect greater sage-grouse habitat. Congress has granted the Secretary authority to withdraw federal lands under section 204 of FLPMA. Section 204 authorizes the Secretary to establish a withdrawal of this size, however, for no longer than 20 years without another public review process. However, such withdrawals may be renewed, at the Secretary's discretion, if warranted, and so long as the process required under section 204 is completed.

In this instance, a proposed 20-year withdrawal seems most appropriate, because it can take many years for any results of management decisions regarding greater sage-grouse habitat to be realized and population recoveries can take even longer. Therefore, the proposal to withdraw these lands for up to 20 years would allow for meaningful long-term studies to be conducted to assess the efficacy of the withdrawal on protecting greater sage-grouse habitat. The 20-year period maximum for withdrawals of the size proposed also means that, although each of the action alternatives described specifically addresses a 20-year withdrawal, the Secretary has the option to establish a withdrawal of shorter duration; therefore, there is no need to evaluate in detail shorter withdrawal periods, as this possibility is included in the range of alternatives evaluated in this EIS. Further, should the Secretary determine in the future based on monitoring or other data, that any withdrawal established in this initiative is no longer warranted, the Secretary may, under the authority of section 204 of FLPMA, modify or revoke the withdrawal, in whole or in part. In fact, the Secretary may determine that a shorter period of withdrawal is appropriate in some areas proposed for withdrawal, rather than others, so long as that determination is supported by the evaluation.

2.4.5 Eliminated Alternative 5: Remove from the Withdrawal Lands with Existing Mining Claims

An alternative was suggested to consider excluding from the withdrawal all lands encumbered by mining claims existing when the notice of proposed withdrawal was published on September 24, 2015. This alternative could exclude substantial acreage within SFAs from withdrawal, including lands underlying former mining claims that were abandoned or forfeited since September 24, 2015. For instance, in Montana this would result in the exclusion from the withdrawal proposal of 38,412 acres of lands encumbered by 746 mining claims that were active on September 24, 2015. This alternative would not meet the purpose and need as it does not provide regulatory certainty for non-discretionary activities within the large amount of acreage subject to mining claims on September 24, 2015 that would be excluded under this alternative. As to such lands, this alternative would result in substantially similar effects to the No Action Alternative.

2.4.6 Eliminated Alternative 6: Withdraw a Minimum Number of Acres to Accomplish the Purpose and Need

An alternative was suggested that only a minimum number of acres be withdrawn to accomplish the purpose and need. Specifically, it was suggested to withdraw the minimum amount of acres for greater sage-grouse habitat protection equal to the amount of acres that, after applying protection measures, would still result in a net loss of PHMA greater sage-grouse habitat from locatable mineral exploration

and mining. Protection measures include: greater sage-grouse protective measures identified in the LUP amendments, project design features, avoidance, minimization, and creating and utilizing tools such as the CCSs to address net habitat loss. It was also suggested that the BLM and Forest Service should partner with states to implement programs like the CCS to mitigate habitat loss and result in a net conservation gain. This suggestion appears to mischaracterize the possible effect of the protective measures. Section 202(e)(3) of FLPMA authorizes land use planning, but land use planning restrictions cannot withdraw lands from the public land laws, including the mining laws. Withdrawals can only be made under section 204 of FLPMA. This means that none of the protection measures suggested above that were part of the land use planning process would be sufficient to stop members of the public from being able to locate and develop mining claims under the Mining Law on the lands included in the withdrawal proposal. Therefore, this alternative would not meet the purpose and need as it does not provide regulatory certainty for non-discretionary activities.

2.4.7 Eliminated Alternative 7: Withdraw Areas from Surface Mining Activities Only

An alternative was suggested to eliminate from the withdrawal proposal lands where mining is largely underground. The reasoning is that underground mining may have less impact on greater sage-grouse habitat compared to surface-mining activities. However, withdrawals from the Mining Law prevent the disposal of locatable minerals by all means, and do not differentiate between above and below ground mining activity.

This alternative essentially appears to propose leaving the lands open to the Mining Law but restricting activity through a rulemaking, which would be a separate proposed action that has not, in fact, been proposed, and is outside the scope of the proposed action.

2.4.8 Eliminated Alternative 8: Exclude Strategic Minerals from the Withdrawal

A suggestion was made by stakeholders to exclude areas from the withdrawal that contained strategic minerals. “Strategic minerals” (or sometimes critical materials) are generally defined as ones that are at risk for supply shortage and are critical or essential components to national defense equipment, electronics, and other important economic uses. A recent report by the U.S. Government Accountability Office (GAO), *Strengthened Federal Approach Needed to Help Identify and Mitigate Supply Risks for Critical Raw Materials* (GAO-16-699, Washington, D.C.: September 2016) recommended that, among other things, federal agencies should strengthen their approach to addressing critical materials supply issues through enhanced interagency collaboration and enhance the federal government’s ability to facilitate domestic production of critical materials. The report does not state that withdrawals should be avoided.

The GAO report points out that there is no single federal government-wide definition or list of what constitutes a critical material. Different assessments have demonstrated that there are a wide variety of materials that are critical to U.S. economic and national security interests. Moreover, a determination that a mineral or other type of material is critical is generally based on some measure of the material’s importance, combined with a measure of the supply risk for the material. Supply risks include potential physical interruptions in the supply chain, market imbalances, and government interventions. Since characterization of minerals as “strategic” is an informal one and not based on statute or regulation, and since minerals that are deemed strategic or critical can change over time, implementation of this alternative would be based on speculation.

In the event that specific strategic or critical minerals are identified as being present in a particular area, and of immediate need for defense or other purposes, the Secretary of the Interior may propose a modification of the withdrawal to open such area to location and entry of those minerals under the Mining Law and thus fulfill the recommendations of the GAO report. In addition, to the extent that certain

minerals are deemed critical or essential in the future, the objective of allowing development of such minerals could be achieved by Congressional action amending the Mineral Leasing Act of 1920 to authorize disposal of these under the Mineral Leasing Act rather than the Mining Law – a suggestion outside the scope of the Proposed Action.

The Defense Logistics Agency, Strategic Materials, in the U.S. Department of Defense, is the leading U.S. agency for the analysis, planning, procurement, and management of materials critical to national security. The Mineral Potential Report, prepared in support of the proposed withdrawal, includes tables listing the elements of the non-fuel mineral-based commodities held as stock by the Defense Logistics Agency, as of September 30, 2015 as well as proposed additions of non-fuel mineral commodities in fiscal year 2016 (Day et al. 2016). The commodities listed in those tables that have the potential to be found within the withdrawal area include: lithium, mercury, molybdenum, titanium, rare earth elements (thorium, niobium, tantalum, zirconium, hafnium, and uranium), tungsten, and zinc. None of these commodities are currently produced in significant amounts and (or) as the primary source of revenue from mines operating within the assessment area; however, they may be produced as minor byproducts (Day et al. 2016).

2.4.9 Eliminated Alternative 9: State Recommended Withdrawal Boundaries

A recommendation was made to solicit from each state a recommended withdrawal that better suits the purpose to protect greater sage-grouse and its habitat from adverse effects of locatable mineral exploration and mining, while at the same time accommodating the unique social and economic needs of each state. Depending on the boundaries provided, this alternative would not necessarily respond to the purpose and need of the proposed withdrawal to protect essential greater sage-grouse habitat. The BLM requested, on several occasions, all states potentially affected by this Proposed Action, and all cooperating agencies, to bring forward alternatives they would like to have considered in the EIS. Of the six states involved in the project, only Nevada and Idaho did so. Therefore, implementation of this alternative is remote and speculative since specific alterations in withdrawal boundaries have not been suggested by any of the states with the exception of Nevada and Idaho, which are being analyzed under separate alternatives listed above.

2.4.10 Eliminated Alternative 10: Modified Boundary for the SFAs

A recommendation was made for the BLM to modify the proposed withdrawal boundary using new (post-LUP amendment ROD) scientific information based on (high or low) mineral potential and (high or low) habitat value. This alternative would allow the BLM to modify the proposed withdrawal boundaries as needed based on high or low mineral potential, high or low quality greater sage-grouse habitat, or for other reasons. This recommendation did not provide specific boundary changes. To the extent to which this recommendation suggests different areas not be withdrawn, for different reasons, this alternative is similar in design to the Nevada Alternative, the HMP Alternative, and the Idaho Alternative where specific boundary changes were recommended. This recommendation would likely have substantially similar effects to the action alternatives considered in this EIS. That said, in the event that specific scientific information regarding mineral potential or habitat value in a particular area becomes available, the Secretary may propose a modification of the withdrawal to open such area to location and entry.

2.4.11 Eliminated Alternative 11: Area of Critical Environmental Concern Designation

A recommendation was made for the BLM to accomplish the purpose and need by designating the SFAs as an Area of Critical Environmental Concern (ACEC) in lieu of the withdrawal. As discussed above, land use planning under section 202 of FLPMA cannot withdraw lands from the public land laws, including the mining laws. Consequently, designation of ACECs is an administrative designation used by

the BLM as part of land use planning and thus would need to be accomplished as part of a RMP amendment or revision. A separate process would have to occur to protect NFS lands being designated for withdrawal. Designating lands as an ACEC does not withdraw those lands from location and entry under the mining laws, although some ACECs include lands that have been withdrawn pursuant to section 204 of FLPMA or other executive or legislative action. Although the BLM's regulations do require approved plans of operations for all mining operations in ACECs, including exploration projects that would otherwise occur under a notice, mere designation as an ACEC, cannot be used to effectively manage non-discretionary uses, unless the BLM has also filed a withdrawal application for those lands with the Secretary under section 204 of FLPMA. Therefore, this suggestion would not meet the purpose and need for the proposed withdrawal. The use of ACECs for protection of sage-grouse habitat was also considered early in the LUP process, but rejected.

2.4.12 Eliminated Alternative 12: Remove Areas of Low Mineral Potential from the Withdrawal

Under this alternative, all areas of low or undetermined mineral potential would not be withdrawn. Areas of low or undetermined mineral potential, or lands not permissive for deposits, as defined by the Mineral Potential Report, account for over 8 million acres of the SFA boundaries (Day et al. 2016). Not withdrawing these lands, however low the mining potential might be, does not provide the regulatory certainty over non-discretionary activities in these LUP areas, which represent 90 percent of the total SFA and thus would not meet the purpose and need. Additionally, this alternative would result in only high or moderate mineral potential lands being withdrawn and the social and economic impacts of such a withdrawal would not substantially differ from the Proposed Action.

2.4.13 Eliminated Alternative 13: Remove Areas of High and Moderate Mineral Potential from the Withdrawal

In order to further minimize the potential social and economic impacts of any withdrawal, it was suggested that all areas within the SFAs that contain lands with high and moderate mineral potential, as defined by the Mineral Potential Report (Day et al. 2016), be excluded from the withdrawal proposal. Under this alternative, approximately 1,084,000 acres of high and moderate mineral potential lands would not be withdrawn. Approximately 504,000 acres of these lands are located in Nevada, 87,000 in Oregon, 101,000 in Montana, 242,000 in Idaho, 37,000 in Utah, and 111,000 in Wyoming. This alternative would result in approximately 8.86 million acres being withdrawn from SFAs in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. This alternative would reduce the conservation benefits of the project but also decrease the social and economic impact compared to the HMP Alternative where only high mineral potential lands are considered for exclusion from the withdrawal. Because this alternative lies along the spectrum between the HMP Alternative and the No Action, evaluating it in detail would not contribute appreciably to the analysis.

2.5 Regulatory Framework Common to the Proposed Action and Alternatives

This section includes a narrative describing the operating requirements for locatable mineral exploration and development common to all alternatives considered in this EIS. Requirements for mining companies to comply with environmental regulations administered by other federal and state agencies would apply to all alternatives. Many of these compliance requirements are expressed as project design features intended to reduce or minimize environmental impacts. Some aspects of the requirements, such as the procedures for determining valid existing rights, are generally only relevant to the alternatives that include a withdrawal since new exploration or mining could only occur on valid existing rights.

2.5.1 Federal Surface Management Regulations

Locatable mineral exploration and development on lands managed by BLM is subject to the surface management regulations at 43 CFR 3715 and 3809. Mineral development projects on NFS lands are regulated under 36 CFR 228A.

On BLM lands, mineral development projects beyond "casual use" require compliance with 43 CFR subparts 3715 and 3809. Casual use is generally defined as "activities ordinarily resulting in no or negligible disturbance of the public lands or resources" (43 CFR 3809.5).

Major provisions for use and occupancy regulations found at 43 CFR 3715 and surface management regulations found at 43 CFR 3809 include the following:

- All activity must prevent unnecessary or undue degradation, which requires complying with applicable state and federal environmental protection laws (discussed in more detail below); meeting the performance standards in the BLM regulations for the protection of air, cultural, water, and wildlife resources; and isolating and controlling toxic or deleterious materials.
- Surface use must be reasonably incident to mining, prospecting, and processing operations.
- If the area is withdrawn, the mining claims involved must be determined to have valid existing rights before new operations are authorized.
- Exploration disturbing 5 acres or less can usually be conducted under a notice. If extraction of presumed ore for testing is proposed, the quantity cannot exceed 1,000 tons.
- All mining, above notice-level impacts, requires approved plans of operations involving NEPA analysis and public comment.
- Exploration- and development-related disturbance must be reclaimed in accordance with the reclamation plan.
- All operators must provide the BLM with a financial guarantee covering the full cost of reclaiming the operation in accordance with the reclamation plan.
- The BLM inspects operations for compliance with the regulations and issues administrative enforcement orders in cases of noncompliance.

On NFS lands, for most mineral development projects, "a notice of intent to operate is required from any person proposing to conduct operations which might cause significant disturbance of surface resources" (36 CFR 228.4(a)). The requirement is further defined and clarified in the regulations at 36 CFR 228 subpart A. If the operation is likely to cause significant disturbance of surface resources, plans of operations must be submitted in lieu of the notice of intent. The determination of the significance of surface disturbance is made by the District Ranger, in accordance with Forest Service Manual 2810, section 2817.11. In either case, "if the District Ranger determines that any operation is causing or will likely cause significant disturbance of surface resources, the District Ranger shall notify the operator that the operator must submit proposed plans of operations for approval and that the operations cannot be conducted until plans of operations are approved" (36 CFR 228.4(a)(4)). Major provisions for surface management regulations found at 36 CFR 228A include the following:

- Surface use must be reasonably incident to mining, prospecting, and processing operations.
- Operators proposing exploration or small-scale mining submit a notice of intent and may be allowed to conduct operations without plans of operations if the proposed disturbance is not considered significant.
- Mining operations that will likely cause significant disturbance require approved plans of operations involving NEPA analysis and public comment.
- All activity must comply with applicable state and federal environmental protection laws (discussed in more detail below); meeting the performance standards in the Forest Service regulations for the protection of air, cultural, water, and wildlife resources; and isolating and controlling toxic or deleterious materials.
- Exploration- and development-related disturbance must be reclaimed in accordance with the reclamation plan.
- When required by the authorized officer, operators who filed plans of operations must provide the Forest Service with a reclamation bond covering the full cost of reclaiming the operation in accordance with the approved reclamation plan.
- The Forest Service can inspect operations for compliance with the regulations and issue administrative enforcement orders in cases of noncompliance.

Notice and Notice of Intent

On federal lands where lands are not withdrawn from the Mining Law, exploration projects can occur under a notice (BLM) or notice of intent (Forest Service). There is no approval process for notices or notices of intent. Where lands are withdrawn from the Mining Law, notices or notices of intent are not allowed and a plan of operations must be developed.

The BLM's regulations specify that operations under a notice can only disturb 5 acres or less, must be limited to exploration, and cannot occur in certain special-category lands (43 CFR 3809.11(c)). Also, if extraction of presumed ore for testing is proposed, the quantity cannot exceed 1,000 tons, even if disturbance is less than 5 acres. Within 15 days of receiving a notice, the BLM will advise the operator either that the notice is complete or what information is required to complete the notice. The BLM will advise the operator of any measures that must be incorporated into the notice in order to prevent unnecessary or undue degradation. The operator may not begin operations until the required reclamation financial guarantee is received and accepted by the BLM.

Similarly, the Forest Service will review a notice of intent and notify the operator whether a plan of operations is required to be filed or whether the activity can proceed under the notice of intent. A notice of intent can be filed for minimal exploration or mining surface-disturbing activities where the activity will not likely cause significant disturbance of surface resources; there is no 5-acre rule as there is on BLM land. In general, the majority of locatable exploration drilling and mining projects on NFS lands require a plan of operations and a corresponding reclamation bond.

Plan of Operations Approval Process

BLM requires plans of operations for exploration activities disturbing more than 5 acres and all mining and mine development operations, regardless of size (43 CFR 3809.21(a)). As noted above, BLM also requires plans of operations in certain special status areas even for exploration on 5 acres or less. The Forest Service allows some mining under a notice of intent (i.e., a small underground operation within an

existing adit that will not cause significant surface disturbance), but requires a plan of operations whenever the District Ranger determines that there will likely be significant surface resource disturbance. BLM mine plans do not generally contain expiration dates. The approval for plans of operations remains in place until the miner decides to close the mine. Plans of operations provide detailed information on the operator, a description of the operations, a reclamation plan, a monitoring plan, and an interim management plan in the event that operations are halted temporarily.

Upon receipt, plans of operations are reviewed for completeness. A completeness review involves identifying any additional data that the operator must provide to allow assessment of impacts or any commitments that must be made by the operator to minimize adverse environmental impacts on surface resources (Forest Service) and prevent unnecessary or undue degradation (BLM). Guidance and authorities used during the completeness review process include conformance with the appropriate resource management plan or forest plan, surface management regulations (43 CFR 3809 and 36 CFR 228A), and internal agency guidance documents. Any deficiencies identified during a completeness review are enumerated to the proponent, who then revises the plans of operations as appropriate and resubmits it to the agency for another completeness review. The cycle of completeness review by the agency, with subsequent modification of the plans of operations by the applicant, continues until the plan is declared "complete."

After complete plans of operations are received, the environmental analysis is prepared, in accordance with NEPA requirements. After the environmental analysis is complete and the public comments have been considered, the agency issues its decision. Any operating or reclamation requirements determined necessary to prevent unnecessary or undue degradation and to comply with the performance standards are required as terms and conditions of the approval. A reclamation bond amount is estimated based on an engineering evaluation of what it would cost the agency to hire a third party to reclaim the operation, as described in the approved reclamation plan. The bond must be posted before ground-disturbing activity can begin. Amendments to existing plans of operations are processed in a similar manner.

The approved plans of operations and accepted notices are subject to compliance monitoring by the BLM or Forest Service to ensure that the operator is following the approved plan and accepted notice. Operations conducted under a notice, notice of intent, or approved plans of operations must comply with all applicable state and federal laws and regulations related to environmental protection.

Requirements during Operations and Reclamation

BLM Performance Standards

The BLM performance standards are divided into two types—general and specific performance standards. These performance standards apply to notices and plans of operations. The guiding principle is BLM's obligation to prevent unnecessary or undue degradation. Operators must prevent unnecessary or undue degradation while conducting operations on public lands by operating in accordance with the requirements in 43 CFR 3809.

As defined in 43 CFR 3809.5, unnecessary or undue degradation means conditions, activities, or practices that:

- Fail to comply with one or more of the performance standards in 43 CFR 3809.420, the terms and conditions of approved plans of operations, operations described in a complete Notice, and other federal and state laws related to environmental protection and protection of cultural resources;

- Are not "reasonably incident" to prospecting, mining, or processing operations as defined in 43 CFR 3715.0–5; or

- Fail to attain a stated level of protection or reclamation required by specific laws in areas such as the California Desert Conservation Area, Wild and Scenic Rivers, BLM-administered portions of the National Wilderness System, and BLM-administered National Monuments and National Conservation Areas.

To prevent unnecessary or undue degradation, operators must comply with the performance standards in 43 CFR 3809.420; follow their accepted notice or approved plans of operations; and comply with other applicable federal and state laws related to environmental protection and protection of cultural resources.

The regulations (43 CFR 3809.420) establish procedures and standards so that operators and mining claimants meet their responsibility to prevent unnecessary or undue degradation of the land and reclaim disturbed areas. The standards are generally outcome-based and do not contain specific design or operational requirements for operations. The general performance standards require that operators:

- Use appropriate technology and practices,
- Undertake activities in a logical sequence,
- Comply with the applicable BLM land use plan sections consistent with the mining laws,
- Take mitigation measures specified by BLM (see specific standards listed below),
- Initiate and complete reclamation at the earliest economically and technically feasible, and
- Comply with all pertinent state and federal laws.

The specific performance standards address issues related to:

- The planning, construction, and use of access routes,
- Disposal of mining wastes,
- Reclamation,
- Disposal of solid wastes,
- Air and water quality,
- Disposal and treatment of solid wastes,
- Prevention of adverse impacts to fisheries, wildlife, and related habitat (specifically threatened and endangered species),
- Prevention of disturbance, alteration, or destruction of cultural and paleontological resources,
- Protection of survey monuments,
- Fire prevention and suppression,
- The handling and treatment of acid-forming and toxic materials,

- The operation, design, and construction of leaching operations, and
- The maintenance and safety of structures and equipment.

In addition to meeting the performance standards, all activity conducted under a notice or plans of operations must be reasonably incident to prospecting, mining, or processing operations and uses, as defined in 43 CFR 3715.0–5. This means that even the best-managed activity cannot be conducted under the 3809 regulations if the activity is not related to mineral exploration or development.

Forest Service Performance Standards

Forest Service regulations (36 CFR 228.8) require that all operations, where feasible, shall be conducted to minimize adverse environmental impacts on NFS surface resources, including the following required environmental protection measures:

- Air quality, including compliance with applicable federal and state air quality standards, including the requirements of the Clean Air Act.
- Water quality, including compliance with applicable federal and state water quality standards, including regulations issued pursuant to the federal Water Pollution Control Act.
- Solid wastes, including compliance with federal and state standards for the disposal and treatment of solid wastes. All garbage, refuse, or waste shall either be removed from NFS lands or disposed of or treated to minimize its impact on the environment and the forest surface resources. All tailings, dumpage, deleterious materials, or substances and other waste shall be deployed, arranged, disposed of, or treated to minimize adverse impacts on the environment and forest surface resources.
- Scenic values. The operator shall harmonize operations with scenic values through such measures as the design and location of operating facilities, including roads and other means of access, vegetative screening of operations, and construction of structures and improvements that blend in with the landscape.
- Fish and wildlife habitat. In addition to compliance with water quality and solid waste disposal standards required by this section, the operator shall take all practicable measures to maintain and protect fish and wildlife habitat that may be affected by the operations.
- Roads. Operator shall construct and maintain all roads to ensure adequate drainage and to minimize or, where possible, eliminate damage to soil, water, and other resource values.
- Reclamation. Upon exhaustion of the mineral deposit or at the earliest practicable time during operations, or within 1 year of the conclusion of operations, unless a longer time is allowed by the authorized officer, the operator shall, where practicable, reclaim the surface disturbed in operations by taking measures that will prevent or control on- and off-site damage to the environment and forest surface resources.

Monitoring Plans

A monitoring plan must be included in the plans of operations submitted to the BLM pursuant to 43 CFR 3809. Similarly, the Forest Service requires that plans of operations for mining activities on NFS lands include post operations monitoring and maintenance plans pursuant to 36 CFR 228A. Monitoring plans are intended to demonstrate compliance with the plans of operations and other federal or state laws and regulations; provide early detection of potential problems; and supply information to assist in directing corrective actions.

Reclamation Requirements

All operators on public lands are required to reclaim disturbed areas in accordance with the performance standards and their reclamation plans. Reclamation is defined as follows:

> *Reclamation means taking measures required by this subpart following disturbance of public lands caused by operations to meet applicable performance standards and achieve conditions required by BLM at the conclusion of operations (43 CFR 3809.5).*

43 CFR 301(b)(3) and 43 CFR 401(b)(3) specify that both notices and plans of operations must include reclamation plans. 43 CFR 3809.420 provides the reclamation performance standards. On BLM lands, components of reclamation include the following, where applicable (43 CFR 3809.420(b)(3)):

- Isolation, control, or removal of acid-forming, toxic, or deleterious substances,
- Regrading and reshaping to conform to adjacent landforms, facilitate revegetation, control drainage, and minimize erosion,
- Rehabilitation of fish or wildlife habitat,
- Placement of growth medium and establishment of self-sustaining revegetation,
- Removal or stabilization of buildings, structures, or other support facilities,
- Plugging of drill holes and closure of underground workings, and
- Providing for post-mining monitoring, maintenance, or treatment.

On NFS lands, reclamation specifically requires the following (36 CFR 228.8):

- Control of erosion and landslides,
- Control of water runoff,
- Isolation, removal, or control of toxic materials,
- Reshaping and revegetation of disturbed areas, where reasonably practicable, and
- Rehabilitation of fish and wildlife habitat.

Enforcement Provisions

At any time, the BLM may inspect operations on BLM-managed public lands. An inspection may include any physical aspect of the operation, including all structures, equipment, and workings located on public lands. An inspection may also include an examination of any pertinent files the operator may have related to the permitting of the operation and the storage of chemicals and supplies. Permits, approvals, and authorizations that are subject to verification include any documents issued or required by local, state, or federal authorities that are, or may be, required for lawful operation.

The BLM can issue various types of enforcement orders if an operator does not meet the requirements of the surface management regulations. The BLM may issue enforcement orders under either 43 CFR 3809 (noncompliance or suspension) and/or 43 CFR 3715 (immediate suspension, cessation, or notice of noncompliance) (BLM 2011a). The BLM may also ask the United States Attorney to institute a civil action to prevent operators from conducting operations in violation of 43 CFR 3715 or 3809.

On NFS lands, forest officers or minerals administrators shall periodically inspect operations to determine whether the operator is complying with the regulations and approved plans of operations (36 CFR 228.7). If an operator fails to comply with the regulations or the approved plans of operations, the authorized officer shall serve a notice of noncompliance on the operator. Such notice shall describe the noncompliance and shall specify the action with which to comply and the time within which such action is to be completed, generally not to exceed 30 days.

2.5.2 State Environmental Regulations

State permitting processes play an important role in regulating mining operations and impacts. Both the BLM and Forest Service require compliance with all applicable federal and state environmental laws and regulations. While federal land management agencies have a mandate to maintain and protect public lands, state agencies often require more detailed and specific mine plans and mitigation measures for compliance with federal and state environmental laws, state mining laws, regulations, and guidance. Over time, state mining divisions act as repositories for best management practices and lessons learned over many years and different commodities; thus, they are able to direct mine operators to make refinements in their activities that significantly improve environmental protection.

The state permitting process typically occurs on a separate yet concurrent track from approval of the plans of operations by the BLM or Forest Service. Both the BLM and Forest Service require that operators comply with all applicable federal, state, and local environmental protection requirements as a condition of maintaining the approved plans of operations.

The regulatory framework that governs mining operations differs by federal land management agency and by the specific state acts, laws, regulations and guidance that state agencies are responsible for implementing, yet the list of permits and plans that must be in place prior to operating a mine within the analysis area is likely to be similar. The following two tables (Tables 2-17 and 2-18) provide lists of the typical federal and state permits and plans required prior to mining.

2.5.3 State Greater Sage-grouse Conservation Plans and Strategies

In addition to the permits and approvals listed in Tables 2-17 and 2-18, each state within the proposed withdrawal area has developed a conservation plan or strategy specific to greater sage-grouse. These plans are summarized below. Each state’s greater sage-grouse conservation plan or strategy provides different approaches to addressing potential impacts to greater sage-grouse from potential mining activities or activities similar to mining.

Idaho

The primary goal of the Conservation Plan for the Greater Sage-grouse in Idaho is to maintain, improve, and, where possible, increase greater sage-grouse populations and habitats in Idaho while considering the predictability and long-term sustainability of a variety of other land uses. In EO 2015-04, “Adopting Idaho’s Sage-Grouse Management Plan,” Idaho's Governor directed that foundational elements of Idaho’s Sage-Grouse Plan (2006) applies to all land ownerships across the state.

The plan presents a discussion of 19 threats to greater sage-grouse and their habitats, together with a toolbox of conservation measures designed to address each individual threat. The recommended conservation measures associated with each threat are designed to eliminate, reduce, or mitigate threats to greater sage-grouse or to ensure the long-term sustainability of greater sage-grouse habitat in Idaho. Local working groups are encouraged to adopt these conservation measures or others that are more locally appropriate.

Table 2-17. Typical Federal Permits and Plans Required Prior to Mining

Permit/Plan	Issuing Agency	Purpose
Federal Permit Requirements Administered by Federal Agencies		
Plan of Operations	BLM/Forest Service	Compliance with federal land management agency requirements, typically subject to NEPA review.
Clean Water Act Section 404 permit	U.S. Army Corps of Engineers	Necessary for discharge of dredged or fill materials into jurisdictional waters of the U.S., including wetlands, e.g. disturbance of wetlands.
Endangered Species Act Section 7	U.S. Fish and Wildlife Service	Consultation between lead federal agency and the USFWS regarding possible effects to federally listed species and/or their critical habitat.
Tribal Consultation per the National Historic Preservation Act, American Indian Religious Freedom Act, Archeological Resources Protection Act, Native American Graves Protection and Repatriation Act	Federally recognized tribes in consultation with BLM	Government-to-government consultation with Native American tribes, and compliance with the specified authorities would be managed by the lead federal agency.
Mine Safety and Health Administration (MSHA) Mine Registration; MSHA Training Plan, Escape and Evacuation Plan, Ventilation Plan	U.S. Department of Labor	Prevention of death, illness and injury from mining and promote safe and healthful workplaces for U.S. miners.
Road use or transportation permit; transportation plan	BLM/Forest Service	For BLM – verify compliance with federal and state transportation requirements, e.g., transportation of hazardous wastes. For Forest Service - review and approve use of NFS roads
Dust control plan	BLM	Evaluate potential dust-related impacts to the community and possible mitigation measures
Weed management plan	BLM	Compliance with the federal Plant Protection Act and state noxious weed acts as well as identify appropriate mitigation measures to prevent the spread of noxious weeds.
Explosives license or permit	U.S. Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives	Ensure proper storage, handling, and use of explosives
Federal Permit Requirements Often Administered by State Agencies		
National Historic Preservation Act	State Historic Preservation Officer	Consultation between lead federal agency and State Historic Preservation Officer regarding possible affects to historic properties.
Clean Air Act permit	State environment department or similar agency	Compliance with federal and state ambient air quality standards.
Clean Water Act Section 401 Pollutant Discharge Elimination System permit	State environment department or similar agency	Water quality certification associated with Clean Water Act section 404 permit and compliance with surface water discharge standards.
Clean Water Act Section 402 Permit and Stormwater Pollution Prevention Plan	State environment department or similar agency	Eliminate or minimize stormwater-related pollution.
Clean Water Act Section 311 Spill Prevention, Control and Countermeasures Plan	State environment department or similar agency	To prevent discharge of oil into navigable waters, wetlands or waters of the U.S.
Groundwater discharge permit	State environment department or similar agency	Compliance with ground water discharge standards

Table 2-18. Typical State Permits and Plans Required Prior to Mining

Permit/Plan	Agency (Purpose)	States*					
		ID	MT	NV	OR	UT	WY
Mine and reclamation plan/permit	State mining division (compliance with state mining requirements)	X	X	X	X	X	X
Reclamation bond	Held by state mining division and BLM/Forest Service (verify availability of funds for site reclamation)	X	X	X	X	X	X
Stream alteration permit	State water quality or water rights division (to complete work in a stream channel, e.g., for culvert installation)	X	X	X	X	X	X
Water right or well permit	State water rights division and/or water quality division (allocation of water for industrial use, e.g., for dust suppression, drinking water)	X	X	X	X	X	X
Potable water system permit	State drinking water division (to provide drinking water for mines with a certain number of employees)	X	X	X	X	X	X
Water dam certificate of approval	State water rights division (safe construction and operation of a water dam)	X	X	X	X	X	X
Tailings impoundment certificate of approval	State water rights division (safe construction and operation of a tailings impoundment)	X	X	X	X	X	X
Pesticide application licensing	State department of agriculture (regulate noxious weed control)	X	X	X	X	X	X

*Additional permits may be required by certain states for potential mining activities. This table is intended to present the most common state-level permits required for most types of locatable mining development activities.

The Idaho Plan identifies 13 greater sage-grouse planning areas and associated local working groups. The local working groups are responsible for developing local plans to identify threats and appropriate conservation measures at the mid-and fine-scale.

Although mining is identified as a threat to greater sage-grouse in the plan, the extent and distribution of mines was neither quantified nor mapped due to limited available information. Local working groups are encouraged to do so in the development of their plans, to the extent that these factors are of concern locally.

The plan identifies the following key conservation issues associated with mines:

- **Habitat loss:** Mines and landfills, by their nature, result in direct habitat loss and fragmentation. Indirect effects (i.e., establishment of invasive plants) may occur in disturbed areas.
- **Disturbance to important seasonal habitats:** Human activity and noise associated with machinery or heavy equipment in proximity to occupied leks or other important seasonal habitats may disturb greater sage-grouse.
- **Predation:** Infrastructure associated with mines or landfills may also facilitate avian predation.

The plan identifies the following conservation measures for mines:

- Discourage the establishment of new mines within greater sage-grouse breeding or winter habitat. Where possible, avoid leks by at least 2 miles.

- If the placement of new mines and landfills in or near breeding habitat is unavoidable, ensure that reclamation plans incorporate the appropriate seed mix and seeding technology to restore suitable breeding habitat characteristics.

- During activities associated with the exploration, operation, and maintenance of mines or landfills, ensure that adequate measures are implemented to control invasive plant species.

- Ensure adequate weed control measures are implemented during the life of the operation.

- Off-site mitigation should be employed to offset unavoidable alteration and losses of greater sage-grouse habitat. Off-site mitigation should focus on acquiring, restoring, or improving habitat within or adjacent to occupied habitats, and ideally should be designed to complement local greater sage-grouse conservation priorities.

- Apply seasonal-use restrictions on activities associated with the exploration, operations, and maintenance of mines or landfills, including those associated with supporting infrastructure.

The Idaho Conservation Plan includes an MOU with the state of Idaho, the DOI, and the Department of Agriculture. The purpose of the MOU is to recognize the importance of the 2006 Conservation Plan for the greater sage-grouse in Idaho as a backdrop for conserving greater sage-grouse in Idaho. To fully capture the value of the Idaho Plan, the MOU aims to illustrate the roles and responsibilities of the parties. Additionally, the MOU is intended to both emphasize the benefit contributed by the local work groups and encourage the efforts of the government agencies in supporting these vital groups (Idaho Sage-grouse Advisory Committee 2006).

Montana

In 2015, Governor Bullock issued EO 12-2015, “Amending and Providing for Implementation of the Montana Sage Grouse Conservation Strategy,” and EO 21-2015 (erratum for EO 12-2015) to recognize passage of the Montana Greater Sage-grouse Stewardship Act. Montana Legislature also passed the Greater Sage-grouse Stewardship Act, which created the Montana Sage Grouse Oversight Team as well as the $10 million Sage Grouse Stewardship Fund to provide competitive grant funding to create market-based incentives to conserve greater sage-grouse habitat. The funding authorization is directly tied to the implementation of the EO and provides certainty of implementation. Taken together, EO 12-2015 and the Sage Grouse Stewardship Act establish Montana’s Conservation Strategy, and are key to addressing threats to greater sage-grouse in Montana by establishing the necessary regulatory mechanisms and addressing threats to greater sage-grouse habitat. Montana’s Conservation Strategy is regulatory on lands where state permits or authorizations are required. It requires that state agencies adhere to the requirements and stipulations of the Sage Grouse Habitat Conservation Program (Montana Governor’s Office 2015).

The Conservation Strategy includes core area stipulations, including surface disturbance and vegetation removal limits; seasonal use and surface occupancy restrictions; requirements associated with the siting of roads, pipelines, and transmission lines; limitations on noise levels; guidance for expansion of existing land uses; and exclusion of wind energy projects in core areas (Montana Governor’s Office 2015). Industry-specific stipulations for core areas are identified for mining, which include:

- For development of drilling or ore body delineation drilling on tight centers (approximately 50 feet × 50 feet), the disturbance area will be delineated by the external limits of the development areas. For widely-spaced patterns (greater than 50 feet × 50 feet), the actual disturbance footprint will be considered the disturbance area.

- Greater sage-grouse monitoring results will be reported in the mine permit annual report and to the state program. Pre-disturbance surveys will be conducted, as required, by the appropriate regulatory agency.

- The number of active mining development areas are not to exceed an average of one area per square mile (640 acres), as defined by the Density/Disturbance Calculation Tool.

- Surface disturbance and surface occupancy stipulations will be waived when implementing underground mining practices that are necessary to protect the health, welfare, and safety of miners, mine employees, contractors, and the general public. Any surface disturbance or surface occupancy necessary to provide access for implementation of the safe mining practices will also be exempt from any stipulation.

- Mining permits will include requirements for mitigation, including off-site mitigation that enhances or promotes greater sage-grouse genetic diversity, critical habitat, connectivity, and population viability.

Unless specifically excluded, all state actions, including those prescribed for greater sage-grouse conservation, require review under the Montana Environmental Policy Act, which is analogous to NEPA at the state level.

Nevada

The goal of the Nevada Greater Sage-grouse Conservation Plan is to provide for the long-term conservation of greater sage-grouse by protecting the sagebrush ecosystem upon which the species depends. Redundant, representative, and resilient populations of greater sage-grouse will be maintained through amelioration of threats; conservation of key habitats; mitigation for loss of habitat due to anthropogenic disturbances; and restoration or rehabilitation of habitat degraded or lost due to acts of nature (Nevada Sagebrush Ecosystem Council 2014).

The guiding principles that create the balanced foundation and vision for a coordinated management approach to conserve greater sage-grouse and the sagebrush ecosystem in Nevada are as follows:

- Conserve greater sage-grouse and their habitat in Nevada while maintaining the economic vitality of the state;

- Due to the broad reach of greater sage-grouse habitat, effective management and implementation of greater sage-grouse conservation actions must be conducted through a collaborative, interagency approach that engages private, non-governmental, local, state, Tribal, and federal stakeholders to achieve sufficient conservation of the greater sage-grouse and their habitat; and

- Monitoring and adaptive management will be employed at all levels of management to acknowledge potential uncertainty upfront and establish a sequential framework in which decision making will occur in order to learn from previous management actions.

The Nevada plan created the CCS, which creates financial incentives for private landowners to conserve greater sage-grouse habitat for use as compensatory mitigation. Nevada's plan requires that any development that affects greater sage-grouse habitat in Nevada will need to acquire credits to compensate for those effects before the development proceeds (USFWS 2015).

The plan directs project proponents to avoid disturbances with the spatial extent of the greater sage-grouse management area in Nevada. If the project proponent wishes to demonstrate that avoidance cannot be reasonably accomplished within these areas, exceptions will be granted to this restriction as part of consultation with the Sagebrush Ecosystem Technical Team (SETT). The project proponent must demonstrate that all of the following criteria are met as part of the SETT consultation process in order to be granted an exception:

- Demonstrate that the project cannot be reasonably accomplished elsewhere (the purpose and need of the project could not be accomplished in an alternative location) or that locating the project elsewhere is not technically or economically feasible;
- Demonstrate that the individual and cumulative impacts of the project would not result in habitat fragmentation or other impacts that would cause greater sage-grouse populations to decline through consultation with the SETT;
- Demonstrate that greater sage-grouse population trends within the specific population management unit where the project would occur are stable or increasing over a 10-year rolling average;
- Demonstrate that project infrastructure will be co-located with existing disturbances to the greatest extent possible;
- Develop site-specific consultation based design features to minimize impacts through consultation with the SETT; and
- Mitigate unavoidable impacts through compensatory mitigation via the CCS; mitigation rates will be higher for disturbances within this category (Nevada Sagebrush Ecosystem Council 2014).

Oregon

The Oregon Sage-Grouse Action Plan (2015) is intended to promote the conservation of greater sage-grouse and intact functioning sagebrush communities in Oregon. The Oregon Sage-Grouse Action Plan ensures regulatory protection and enhancement of greater sage-grouse and their habitat on state and private lands in Oregon. The Action Plan was adopted by EO 15-18, and includes the direction for state agencies to update their regulatory program to be consistent with the Oregon Land Conservation and Development Commission and Oregon Department of Fish and Wildlife rules by July 1, 2016.

The Action Plan provides a coordinated framework for action and accountability among private, nongovernmental, local, state, and federal partners. To achieve the state's greater sage-grouse population and habitat objectives, the Action Plan builds upon and enhances past and ongoing efforts, including the Oregon Department of Fish and Wildlife's Greater Sage-grouse Conservation Assessment and Strategy for Oregon.

The Oregon Department of Fish and Wildlife and Oregon Land Conservation and Development Commission rules (OAR-635-140-0000 and OAR 660-023-0115, respectively) protect against adverse development-based impacts to greater sage-grouse and their habitat, and the new regulatory mechanisms are applicable to mining activities. The rules require that new mining proposals follow the sequential mitigation hierarchy of avoidance, minimization, and compensatory mitigation for actions proposed in significant greater sage-grouse habitat (Sage-Grouse Conservation Partnership 2015). The rules direct development activity away from greater sage-grouse PACs using an avoidance test and limit the total amount of direct development impacts from activities, such as mining, to 3 percent or less of the acreage within any PAC and no more than a 1 percent increase over baseline conditions in any 10-year period (Sage-Grouse

Conservation Partnership 2015). Valid existing rights under the Mining Law on federal lands and existing mining operations permitted by the state of Oregon on all land ownerships are not subject to development limits. Minimization and compensatory mitigation of adverse impacts are also required for all proposals subject to the rules, whether in PACs, low-density, or other occupied habitat (Sage-Grouse Conservation Partnership 2015).

The new Oregon Land Conservation and Development Commission rules apply to development in significant greater sage-grouse habitat that exceeds either 5 acres in size, 50 feet in height, generates more than 50 vehicle trips per day, or produces noise greater than 70 decibels (Sage-Grouse Conservation Partnership 2015). In addition to future proposed mining activity of this type, rules are applicable to the re-permitting of existing activities that are proposing new impacts beyond current conditions (Sage-Grouse Conservation Partnership 2015).

Under the Oregon Department of Geology and Mineral Industries' state agency coordination program rules, all of the agency's regulatory programs must comply with statewide land-use planning goals and rules adopted by the Oregon Land Conservation and Development Commission.

Utah

The Conservation Plan for Greater Sage-grouse in Utah (2013) is designed to protect high-quality habitat, enhance impaired habitat, and restore converted habitat to support, in Utah, a portion of the range-wide population of greater sage-grouse necessary to eliminate threats to the species and negate the need for the listing of the species under the provisions of ESA.

The Plan is designed to eliminate threats facing greater sage-grouse while balancing the economic and social needs for the residents of Utah through a coordinated program. The plan lists extractive mineral development as one of the threats to greater sage-grouse within Utah.

Management of activities on state and federal lands within the Sage Grouse Management Areas designated in the plan is based on a hierarchical protocol that provides for avoidance of disturbance to habitat and birds by an activity as the preferable option. Minimization of the disturbance is desired if the disturbance cannot be avoided in greater sage-grouse habitat, with mitigation for the effects of the minimization decision. Mitigation of the disturbance from an activity within greater sage-grouse habitat is required if a disturbance cannot be avoided.

The provisions of Utah's plan include, under certain circumstances, a general limit on new permanent disturbance of five percent of habitat on state or federally managed lands within any particular Sage Grouse Management Area. The fundamental purpose of this provision is to limit the effects of a large amount of disturbance to the existing habitat or activities of the greater sage-grouse. The cumulative calculation of permanent disturbance is the aggregate of the various project, land use, or natural event disturbances, as defined by the plan and as modified by the effects of rehabilitation, restoration, or other mitigation actions (Utah Division of Wildlife Resources 2013).

EO 2015-002 directs the Utah Division of Oil, Gas, and Mining to coordinate with the Utah Division of Wildlife Resources on all regulatory actions proposed for issuance by the Division of Oil, Gas, and Mining with Sage Grouse Management Areas to assure compliance with the requirements of the State's Conservation Plan. The Division of Oil, Gas, and Mining shall implement the recommendations of Wildlife Resources, subject to the statutory requirements to avoid waste of the mineral resource and protect correlative rights on private property during resource production.

Wyoming

Wyoming's Greater Sage-Grouse Core Area Protection Conservation Strategy (2015) is established under Wyoming EO 2015-4, "Greater Sage-grouse Core Area Protection." The strategy includes population management objectives within and outside greater sage-grouse core areas. The Wyoming Plan encourages projects to be located outside of core areas. Where projects cannot be located outside of core areas, the Plan identifies stipulations, such as timing restrictions, surface disturbance limits, development buffers, limits on noise levels, and no surface occupancy (NSO) stipulations based on the proposed activity. Per EO 2015-4, state agencies are directed to prioritize the maintenance and enhancement of greater sage-grouse habitats and populations inside the core population areas, connectivity areas, and winter concentration areas.

The Wyoming Core Area Strategy includes protective stipulations for greater sage-grouse (limitations on development activities), based upon their biological needs and a geographical information system (GIS)-based procedure for determining levels of anthropogenic (man-made) disturbance on the landscape within the core areas. Per EO 2015-4, these disturbances are primarily limited in core areas to minimize anthropogenic activities and disturbances within high density population areas. Habitats and populations outside core areas are monitored and managed for future rehabilitation (Wyoming Governor's Office 2015).

General stipulations are recommended to apply to all activities in core population areas, with the exception of exempt actions or specifically identified activities. General stipulations, briefly summarized, include the following:

- **Surface disturbance limitations** – within core population areas, surface disturbance will be limited to five percent of suitable greater sage-grouse habitat per an average of 640 acres over the entire Density and Disturbance Calculation Tool assessment area.

- **Surface occupancy** – within 0.6 miles of the perimeter of occupied greater sage-grouse leks, there will be no surface occupancy, meaning no permanent surface facilities including roads.

- **Seasonal use** – within core population areas, activities will be allowed from July 1 to March 14 outside of the 0.6-mile perimeter of an occupied lek in core population areas where breeding, nesting, and early brood-rearing habitat is present. In areas identified as winter concentration areas, activities will be allowed March 14 to December 1.

- **Noise** – new noise levels, either individual or cumulative, should not exceed 10 decibels above baseline noise at the perimeter of the lek from 6:00 p.m. to 8:00 a.m. during the breeding season (March 1 to May 15).

- **Vegetation removal** – vegetation removal should be limited to the minimum disturbance required by a project. All topsoil stripping and vegetation removal in suitable habitat is limited between July 1 and March 15 in areas that are within 4-miles of an occupied lek. Production and maintenance activities (surface mining) outside seasonal stipulations are considered permissible once the vegetation is removed outside the seasonal stipulations.

- **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 greater sage-grouse and replace or enhance greater sage-grouse habitat to the degree that environmental conditions allow.

- **Monitoring and Adaptive Response** – proponents of new projects are expected to coordinate with the permitting agency and local Wyoming Game and Fish Department biologist to determine which leks need to be monitored and which data should be reported by the proponent. If declines in affected 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 within three years, operations will cease until such numbers are achieved.

The following stipulations would be applied to potential mining activities in addition to the general stipulations listed in EO 2015-4, Appendix B:

- For development drilling or ore body delineation drilled on tight centers, (approximately 100 feet × 100 feet), the disturbance areas 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.

- Monitoring results will be reported annually in the mine permit annual report and to Wyoming Game and Fish Department. Pre-disturbance survey will be conducted as required by the appropriate regulatory agency.

- The number of active mining development areas (e.g., operating equipment and significant human activity) is not to exceed an average of one site per square mile within the Density and Disturbance Calculation Tool.

- Surface disturbance and surface occupancy stipulations will be waived within the core population area when implementing underground mining practices that are necessary to protect the human health, welfare, and safety of miners, mine employees, contractors and the general public. Any surface disturbance or surface occupancy necessary to access the sites to implement these mining practices will also be exempt from any stipulation.

2.5.4 County Requirements

Many counties and municipalities require additional permitting for mines proposed in their jurisdictional boundaries. For example, in Sweetwater County, Wyoming, typical county permits and approvals required for proposed mining operations can include a zoning consistency review, construction/use permit, conditional use permit, county road access permit and road crossing license, a health permit, a hazardous materials inventory, and noxious weed control plan (Sweetwater Board of County Commissioners 2016). In Oregon, the Haney County zoning ordinance includes the Mineral and Aggregate Resource Overlay Zone found in section 3.150, which guides the local review and conditions of approval for proposed mining operations (Harney County 2014). In Fergus County, Montana, most permitting for a proposed mining operation is completed at the state level, except for developments within a designated floodplain (Carl Seilstad, Fergus County, personal communication with Mark Mackiewicz, BLM, July 28, 2016). County permits and zoning do not supersede valid existing rights under the Mining Law.

2.6 Impact Summary Comparison

Table 2-19 provides a comparison of the potential environmental effects of the alternatives presented in this chapter. A detailed description of the environmental effects is provided in Chapter 4.

Table 2-19. Summary of Potential Environmental Impacts by Alternative

Resource Category / Issue	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Geology and Mineral Resources					
Acres of federal locatable mineral estate subject to withdrawal	0	9,949,448	9,852,971	9,390,530	9,410,809
Acres of high and moderate locatable mineral potential proposed for withdrawal	0	1,084,109	892,595	525,191	915,586
Predicted number of future exploration projects	114	38	54	72	48
Predicted number of future mining operations	26	3	4	8	7
Reduction in domestic mineral production that could result from the withdrawal	Mineral development could take place over the next 20 years on all lands in the study area that are otherwise open to location and entry under the Mining Law, subject to compliance with all applicable laws	Domestic mineral production may be reduced as a result of all action alternatives. Major commodities that may be impacted include: • Barite • Gemstone (Sunstone) • Gold • Lithium			
Cumulative acres of lands withdrawn	1,889,359 (existing withdrawals)	11,256,050	11,160,186	10,697,132	10,720,953
Social and Economic Conditions					
Projected annual economic output directly and indirectly supported by future mines in proposed withdrawal areas	$845 million	$151 million	$284 million	$307 million	$190 million
Estimated number of jobs from future economic activity from mineral development	2,031	326	594	676	435

Table 2-19. (continued)

Resource Category / Issue	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Estimated annual labor income from future economic activity from mineral development	$141 million	$24 million	$45 million	$50 million	$32 million
Estimated annual state and local tax revenues from future economic activity from mineral development	$27 million	$5 million	$8 million	$9 million	$6 million
Impacts to Way of Life (*Tangible* Social Effects)	No effect (baseline for comparison)	Ranges from no impact to major adverse impacts in communities experiencing long-term declines in population and employment and in communities with substantial, existing mining sectors (varies by location). Minor adverse impacts at the statewide level.	Ranges from no impact to major adverse impacts in communities experiencing long-term declines in population and employment and in communities with substantial, existing mining sectors (varies by location). Minor adverse impacts at the statewide level.		
Perceptual Impacts (*Intangible* Social Effects)	No impact from public perceptions of proposed withdrawal	Short-term, adverse impact on intangible social conditions from public perceptions of proposed withdrawal			
Economic Values from Recreation and Non-market Economic Values	No effect (baseline for comparison)	Potential minor beneficial impact on recreation values in areas proximate to future mines under each action alternative. No effect to potential minor beneficial impact on non-market values associated with species preservation.			
Environmental Justice	No impact	Potential disproportionate adverse social and economic impact on minority communities in Malheur County, OR and Fremont County, WY			
Vegetation, Including Special Status Plant Species					
Acres disturbed for future exploration projects	1,251	448	631	836	510

Table 2-19. (continued)

Resource Category / Issue	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Acres disturbed for future mining	8,303	2,172	3,001	4,067	2,850
Total acres of future disturbance	9,554	2,620	3,632	4,903	3,360
Disturbance of vegetation and loss of productivity	No lands would be withdrawn and all ~10 million acres of the proposed withdrawal area would be open to future mineral development projects. Up to 9,554 acres of vegetation disturbance and/or loss could occur with future mineral development projects. Without the known location of any future projects it is not possible to quantify any effects to special status plant species or general vegetation that might occur. Impact duration: More than 5 years.	Approximately 9.95 million acres of lands would be withdrawn, offering protection from future mineral development projects. This would result in a beneficial impact to all vegetation species occurring within the SFAs. Up to 2,620 acres of vegetation disturbance and/or loss could occur with future mineral development projects. Although less acres of impact would occur under the Proposed Action compared to the No Action Alternative, it is not possible to quantify any effects to special status plant species or general vegetation that might occur because the location of any future projects is unknown. Impact duration: More than 5 years.	Impacts to vegetation from this alternative would be similar to those presented under the Proposed Action, except 9.85 million acres would be withdrawn and up to 3,632 acres of vegetation could be disturbed and/or lost. Impact duration: More than 5 years.	Impacts to vegetation from this alternative would be similar to those presented under the Proposed Action, except 9.39 million acres would be withdrawn and up to 4,903 acres of vegetation could be disturbed and/or lost. Impact duration: More than 5 years.	Impacts to vegetation from this alternative would be similar to those presented under the Proposed Action, except 9.41 million acres would be withdrawn and up to 3,360 acres of vegetation could be disturbed and/or lost. Impact duration: More than 5 years.

Table 2-19. (continued)

Resource Category / Issue	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Wildlife and Special Status Animal Species, Including Greater Sage-Grouse					
Disturbance of habitat for greater sage-grouse and other wildlife species.	No lands would be withdrawn and all ~10 million acres of the proposed withdrawal area would be open to future mineral development projects. Up to 9,554 acres of wildlife habitat used for breeding, nesting, foraging and general survival could be disturbed. There is the potential for direct impacts to 961 greater sage-grouse and 108 leks. Future mineral development projects could occur but without the known location of any future projects it is not possible to quantify any effects to special status wildlife species or general wildlife. Impact duration: More than 5 years.	Approximately 9.95 million acres of lands would be withdrawn, offering protection from future mineral development projects. This would result in a beneficial effect to all wildlife species, compared to the No Action. Up to 2,620 acres of wildlife habitat could be disturbed and/or lost from future mineral development projects. There is the potential for direct impacts to 267 greater sage-grouse and 30 leks under the Proposed Action. Although less acres of impact would occur under the Proposed Action compared to the No Action Alternative, it is not possible to quantify any effects to special status wildlife species or general wildlife that might occur since the location of any future projects is unknown. Impact duration: More than 5 years.	Impacts to wildlife would be similar to those presented under the Proposed Action, except 9.85 million acres would be withdrawn and up to 3,632 acres of wildlife habitat could be disturbed and/or lost. There is the potential for direct impacts to 499 greater sage-grouse and 52 leks. Impact duration: More than 5 years.	Impacts to wildlife would be similar to those presented under the Proposed Action, except 9.39 million acres would be withdrawn and up to 4,903 acres of wildlife habitat could be disturbed and/or lost. There is the potential for direct impacts to 991 greater sage-grouse and 69 leks. Impact duration: More than 5 years.	Impacts to wildlife would be similar to those presented under the Proposed Action, except 9.41 million acres would be withdrawn and up to 3,360 acres of wildlife habitat could be disturbed and/or lost. There is the potential for direct impacts to 784 greater sage-grouse and 59 leks. Impact duration: More than 5 years.

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3. AFFECTED ENVIRONMENT

3.1 Introduction

This chapter describes the affected environment, with a focus on the existing resources and uses that could be affected by the Proposed Action and alternatives presented in Chapter 2. The affected environment represents the baseline conditions against which the effects that may result from the proposed withdrawal are evaluated under each of the alternatives. The information presented in Chapter 3 does not describe impacts, but rather describes the existing environment with an emphasis on the present values of these resource indicators.

The affected environment discussed in this chapter is divided into sections covering the following: geology and minerals resources; social and economic conditions; vegetation, including special status plants; and wildlife and special status animal species, including greater sage-grouse. The affected environment is presented by first defining the analysis area considered for each resource, followed by a description of the resources. Relevant environmental conditions and human uses in the withdrawal area have been identified and described using GIS data, literature searches, electronic searches, interviews, and information provided by the BLM, Forest Service, USGS, USFWS, other federal and state agency managers and resource specialists, county officials, and other sources as identified in this chapter and Chapter 5 and the References section.

3.2 General Setting

The proposed withdrawal encompasses approximately 10 million acres of federal lands in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. The lands proposed for withdrawal have been identified as containing high quality sagebrush habitat that is vital to the greater sage-grouse's persistence as a species. The major plant communities contained in the withdrawal area are essential for providing greater sage-grouse habitat. Greater sage-grouse are sagebrush obligate species and rely on a variety of sagebrush-dominated communities to meet various needs throughout their lifecycle. Conservation measures were developed as part of the LUP amendments completed by the BLM and Forest Service because the USFWS recommended the strongest levels of protection for the habitat contained in the proposed withdrawal area (USFWS 2014).

3.3 Analysis Areas

As stated above, the affected environment represents the baseline conditions against which the impacts that may result from the alternatives are evaluated. The analysis area for the affected environment descriptions varies by resource as described below.

3.3.1 Analysis Areas for Direct and Indirect Effects

The analysis areas identified for each resource, for which direct and indirect effects are presented, are briefly described below:

- **Geology and Mineral Resources (see Section 3.4)** – The analysis area for the geology and mineral resources' analysis includes the lands that would be withdrawn for each alternative as well as a buffer area surrounding them, as defined by the Mineral Potential Report (Day et al. 2016), that takes into account the variability inherent in developing mining and exploration projects.

- **Social and Economic Conditions (see Section 3.5)** – The analysis area for the social effects analysis includes all counties containing lands that would be withdrawn for each alternative. It also includes adjacent counties that have strong economic ties to the counties where the withdrawal would take

place based on published data documenting county-to-county worker commuting flows. The economic analysis areas consist of two levels of geographic detail. Functional economic areas associated with each SFA are defined based on the counties in which the SFA is located and published data documenting county-to-county worker commuting flows to and from surrounding counties. Economic effects are also analyzed on a state by state basis. Results are reported for each SFA/functional economic area and for each state.

- **Vegetation, including Special Status Plants (see Section 3.6)** – The analysis area for vegetation is the proposed withdrawal area for each alternative.

- **Wildlife and Special Status Animals, including Greater Sage-Grouse (see Section 3.7)** – The analysis area for wildlife is the proposed withdrawal area for each alternative.

3.3.2 Analysis Area for Cumulative Effects

Cumulative impacts are project-induced impacts that, when added to the effects of other past, present, and reasonably foreseeable future actions, results in an incremental effect on the resource. The analysis area for cumulative effects will vary by resource and is not confined to the proposed withdrawal area for all resources, as described below; The analysis area for each resource is described further in the cumulative effects sections of Chapter 4.

- **Geology and Mineral Resources** –There are two cumulative effects analysis areas for geology and mineral resources because the analysis is split into two parts. The cumulative effects analysis area for the lands withdrawn from the Mining Law is the maximum extent of all action alternatives with the addition of areas that are currently withdrawn that intersect with the proposed withdrawal (i.e., have some amount of overlap with the action alternatives). The cumulative effects analysis area for the domestic locatable mineral resources is the full extent of the United States, because the analysis focuses on the availability of the subject commodities to the domestic markets.

- **Social and Economic Conditions** – The cumulative effects analysis area for the tangible social and economic effects analysis is each county containing proposed withdrawal areas (SFA counties), and additional counties with strong economic links to the SFA counties. The cumulative intangible social effects analysis area includes the same area mentioned above, as well as additional nearby areas in proximity to other existing restrictions on the use of federal lands (shown in Chapter 4, Figure 4-1).

- **Vegetation, including Special Status Plants** – The cumulative effects analysis area for vegetation is the proposed withdrawal area for each alternative.

- **Wildlife and Special Status Animals, including Greater Sage-Grouse** – The cumulative effects analysis area for wildlife is the proposed withdrawal area for each alternative.

3.4 Geology and Mineral Resources

3.4.1 Introduction

The Proposed Action would withdraw approximately 10 million acres across six states in the western United States. For withdrawals of more than 5,000 acres, the BLM must complete a mineral resource assessment to identify mineral resources within the proposed area of withdrawal (43 CFR 2310.3-2). The analysis must provide information on the general geology, known mineral deposits, past, and present mineral production, mining claims, mineral leases, evaluation of mineral potential, and review of mineral economics. The BLM contracted with USGS to prepare an independent Sagebrush Mineral Resource Assessment (SaMiRA) with the primary focus of providing qualitative mineral resource assessments for the significant locatable mineral commodities present in the vicinity of the withdrawal area.

The USGS Sagebrush Mineral-Resource Assessment (SaMiRA) project was initiated in November 2015 and supported by the BLM to (1) assess locatable mineral-resource potential and (2) to describe leasable and salable mineral resources for the seven SFAs and Nevada additions. Because of the limited duration of the SaMiRA project, the effort focused on publically available geoscience data. Additionally, the State geological surveys of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming provided valuable mineral resource and geologic data, as well as scientific expertise. Information was solicited directly by the USGS from the mineral industry, as well as through BLM's public comment process, regarding any information the mineral industry wished to make public and have considered in the assessment (Day et al. 2016).

This Mineral Potential Report is the source for the information presented in this section. Each of the five chapters within the SaMiRA is referenced individually below:

- Overview with Methods and Procedures of the U.S. Geological Survey Mineral-Resource Assessment of the Sagebrush Focal Areas of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming (Day et al. 2016).
- Geology and Mineral Resources of the Sheldon-Hart Mountain National Wildlife Refuge (NWR) Complex, Oregon, the Southern Idaho and Northern Nevada, and the Southeast Oregon and North-Central Nevada Sagebrush Focal Areas (Vikre et al. 2016).
- Geology and Mineral Resources of the North-Central Idaho Sagebrush Focal Area (Lund et al. 2016).
- Geology and Mineral Resources of the North-Central Montana Sagebrush Focal Area (Mauk et al. 2016).
- Geology and Mineral Resources of the Southwestern and South-Central Wyoming Sagebrush Focal Area, Wyoming, and the Bear River Watershed Sagebrush Focal Area, Wyoming and Utah (Wilson et al. 2016).

The timeframe for data considered in the SaMiRA analysis was extensive but is difficult to quantify given the wide variety of source material incorporated. No definitive analysis starting date was chosen; historic resources were evaluated based on their quality and incorporated with more current analysis, as scientifically applicable. "Amongst valuable sources of data on active mines in the SaMiRA region are State agency data for mine permits and BLM and Forest Service Plans of Operations" (Day et al. 2016).

Because of the self-initiated nature of the Mining Law, the miner—and not BLM or the Forest Service—determines when and where it proposes to mine locatable minerals. Consequently, it is not possible to predict the exact timing or location of a future mine or exploration project. Factors that influence a miner's determination of the optimal time or place to explore or mine may include historic exploration records, estimated ore body geometry, surface topography, regional hydrology, land ownership, permitting constraints, and access to necessary infrastructure. Because there are so many unknowns related to these various factors that come into play in determining where a mine could occur, the analysis area for this geology and mineral resources assessment goes beyond the proposed withdrawal area and covers a larger, more contiguous area compared to the Proposed Action and alternatives. The analysis area is split into the following four regions: Nevada, southern Idaho, Oregon, and western Utah; north-central Idaho; Montana; and eastern Utah and Wyoming (Figure 3-1). An overview of each region's topography and geology and mineral resources is provided below. Subsequently, information is provided on market demand for locatable minerals and resource impact indicators.

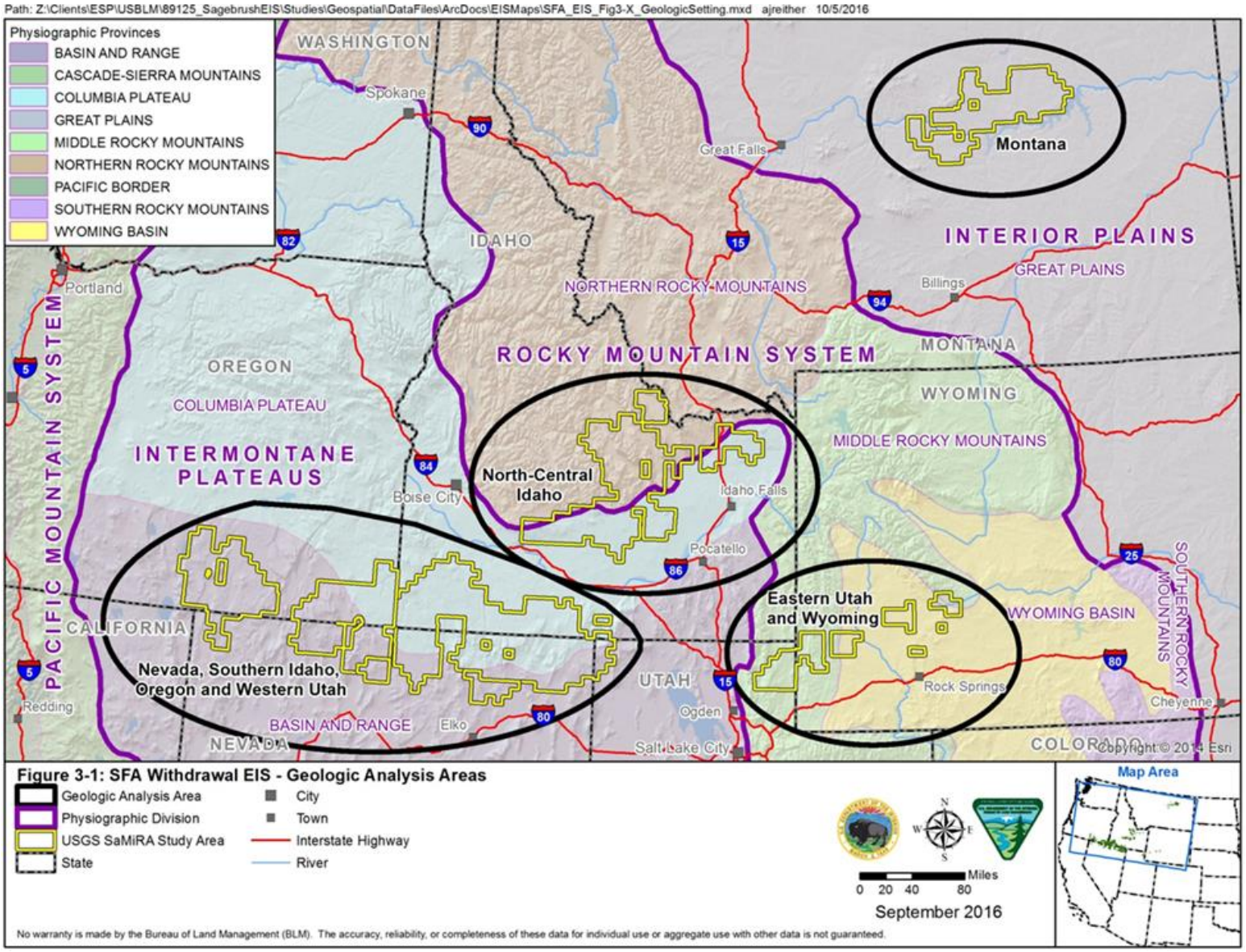

Figure 3-1. Geologic Analysis Areas

3.4.2 Topography and Geologic Setting

The analysis area for geology and mineral resources is a mix of rugged topography mixed with relatively flat plateaus and plains that is covered by three physiographic divisions: Intermontane Plateaus; Rocky Mountain System; and Interior Plains (Figure 3-1). The geologically complex analysis area is composed of many different rock units that locally contain potential mineral resources, which resulted from sedimentary and igneous rock-forming processes. In addition, many of the rocks were affected by secondary geologic events and related metamorphic processes that produced additional mineral deposits in the pre-existing rocks. The following sections provide a brief summary of the geologic setting for each of the four analysis areas. Table 3-1shows the physiographic divisions and provinces in the analysis area.

Table 3-1. Physiographic Divisions and Provinces Included in the Analysis Area

Division	Province	Area (Acres)
Interior Plains	Great Plains	2,575,704
Intermontane Plateaus	Basin and Range	6,141,820
	Columbia Plateau	8,187,239
Rocky Mountain System	Middle Rocky Mountains	951,205
	Northern Rocky Mountains	2,591,239
	Wyoming Basin	564,764
	Grand Total	**21,011,972**

Nevada, Southern Idaho, Oregon, and Western Utah

The SFAs included in the Nevada, southern Idaho, Oregon, and western Utah analysis area are Sheldon-Hart Mountain NWR Complex, Southeastern Oregon and North-Central Nevada, Southern Idaho and Northern Nevada. In addition, the Proposed Nevada alternative additions are located in this analysis area.

This analysis area is in the Basin and Range and the Columbia Plateau physiographic provinces. The Basin and Range physiographic province is a large region of alternating rugged mountain ranges and low-relief basins. The Columbia Plateau physiographic province is a wide, relatively flat plateau with isolated volcanic cinder cones.

This analysis area is underlain by sedimentary and volcanic rock. The oldest rocks are Precambrian sedimentary rocks (quartzite and schist) with small igneous rock (quartz monzonite) intrusions in the easternmost part of the Southern Idaho/Northern Nevada SFA. Paleozoic sedimentary rocks (mostly carbonates) crop out in the eastern part of this SFA. Paleozoic rocks were overthrust, starting in the Late Devonian Epoch and continuing through the Mesozoic Era, by deepwater marine sediments, which crop out in the central part of this analysis area. The far western part of this analysis area consists of Cenozoic volcanic rocks over Paleozoic sedimentary and Mesozoic volcanic rocks. Paleozoic and early Mesozoic sedimentary rocks are intruded by Jurassic and Cretaceous granitic plutons created from the subduction of a tectonic plate beneath western North America. Magmatism during the Eocene to early Miocene generated silicic to intermediate composition lava flows and tuffs. Beginning about 17 million years ago, volcanic rock was generated as the North American continent moved over the Yellowstone Hot Spot. Miocene flood basalts, rhyolite ash-flow tuff, and rhyolite lava flows blanket much of this analysis area. Extensional faulting has been ongoing since at least the middle Miocene, forming the present-day Basin and Range topography and creating numerous basins filled with sediments from the rising mountain ranges.

North-Central Idaho

The North-Central Idaho SFA is included in the North-Central Idaho analysis area. This analysis area is in the Northern Rocky Mountains, Columbia Plateau, and Basin and Range physiographic provinces. The northern portion of this analysis area is rugged mountainous topography, while the southern portion is the relatively flat Snake River Plain.

This analysis area includes relatively small exposures of the Archean basement rock that formed the western margin of the ancient North American continent and of Mesoproterozoic sedimentary rocks, which were deposited on the basement rocks. Widespread, thick Neoproterozoic through Paleozoic marine sedimentary layers were deposited along the ancient continental margin, shelf, and deep basin (from east to west across this analysis area). An orogenic event (a mountain-building process) in the Mississippian deformed older rocks on the western side of the orogeny, and then marine sedimentary deposition continued from the Late Mississippian until the Triassic. In the Cretaceous, tectonic activity to the west compressed the older strata, creating mountains and forming the Idaho batholith on the western edge of this analysis area. Subsequent extension resulted in the voluminous magmatism of the Eocene Challis volcanic and plutonic event. Post-volcanic extension changed orientation, forming the present Basin and Range topography. Synchronous with Basin and Range extension, the Snake River Plain formed as the North American continent moved across the Yellowstone Hot Spot, concealing older rocks and creating an elongate depression. The depression filled with voluminous caldera rhyolites, rift basalts, and restricted-basin lake sediments.

Montana

The North-Central Montana SFA is included in the Montana analysis area. The Montana analysis area is located along both sides of the Missouri River, in the Northern Great Plains physiographic province. The Little Rocky Mountains and the Judith Mountains are near this analysis area.

Most of this analysis area is underlain by sedimentary rocks. The Cretaceous Bearpaw Shale underlies most of this analysis area, and younger Cretaceous to Paleocene sedimentary rocks are present locally in the southeastern part. Pleistocene glacial deposits are found locally in this analysis area, predominantly in the northern part, and Quaternary deposits are widespread in river and stream valleys. The Little Rocky Mountains include Cretaceous to Paleocene igneous rocks that have intruded older sedimentary rocks. This analysis area also includes part of the Missouri River Breaks diatremes, which are Eocene mantle-derived igneous rock intrusions.

Eastern Utah and Wyoming

Included in the eastern Utah and Wyoming analysis area are the Bear River Watershed SFA and the Southwestern and South-Central Wyoming SFA. This analysis area is in the Wyoming Basin and Middle Rocky Mountains physiographic provinces. These provinces are a mix of high plains and plateaus bordered by mountains.

Most of this analysis area is in the greater Green River Basin, a paleobasin that is now a vast intermontane desert. The Green River Basin formed during the Laramide orogeny (70–35 million years ago) that began in the Late Cretaceous Epoch. The basin includes Eocene lake and river sedimentary deposits as much as 10,000 feet thick, which provide important energy, metallic and nonmetallic resources, and fossil fauna and flora. A thrust belt forms the western boundary of the Green River Basin on the western margin of Wyoming. Folding and thrust faulting occurred during the Cretaceous-to-Paleocene Sevier orogeny (~130–60 million years ago), forming the western boundary of the Green River Basin as well as the western boundary of Wyoming.

In Utah, this analysis area is located in the Bear River Range and the Wasatch Range. The Wasatch Range is a north-south oriented mountain range that extends from Idaho south to central Utah. The western flank is very steep and relatively straight as a result of displacement along the still-active Wasatch Fault. The eastern flank rises more gently. The Wasatch Range has a core of Archean metamorphic rocks (quartzites, gneisses, and schists) overlain by Mesozoic sedimentary rocks (sandstones, shales, mudstones, and limestones). Locally, Cenozoic conglomerates and shales interspersed with volcanic tuffs and breccias form the surface layers of strata. The Bear River Range is relatively small in area and includes Paleozoic limestone, dolomite, and quartzite.

3.4.3 Mineral Resources

The proposed withdrawal is from location and entry under the Mining Law; as a result, this analysis focuses on locatable minerals, not saleable and leasable minerals. Table 3-2 includes a list of the locatable minerals with potential to occur in the analysis areas. Many of these commodities have been mined, but additional unmined deposits have been identified.

Table 3-2. Locatable Minerals with the Potential to Occur in the Analysis Area

Locatable Metals/ Metalliferous Minerals				
Silver	Gold	Barium	Copper	Iron
Gallium	Mercury	Lithium	Molybdenum	Lead
Antimony	Tungsten	Zinc	Platinum	Palladium
Tellurium	Titanium	Thorium*	Niobium*	
Tantalum*	Zirconium*	Hafnium*	Fluorspar (Fluorite)	
Locatable Minerals/Nonmetallic Minerals				
Bentonite	Diatomite	Diamond	Zeolite	
Potentially Locatable Nonmetallic (Industrial) Minerals, Depending on Quality				
Clay, specialty	Gemstone	Gypsum	Sunstone	

*Part of a group called Rare Earth Elements.

BLM Manual sections 3031 and 3060 prescribe the approach to classification of the qualitative mineral-resource potential for locatable minerals. The level of potential is classified as follows:

- **None** – The geologic environment, the inferred geologic processes, and the lack of mineral occurrences do not indicate potential for accumulation of mineral resources.
- **Low** – The geologic environment and the inferred geologic processes indicate low potential for accumulation of mineral resources.
- **Moderate** – The geologic environment, the inferred geologic processes, and the reported mineral occurrences or valid geochemical/geophysical anomaly indicate moderate potential for accumulation of mineral resources.
- **High** – The geologic environment, the inferred geologic processes, the reported mineral occurrences and (or) valid geochemical/geophysical anomaly, and the known mines or deposits indicate high potential for accumulation of mineral resources. The “known mines and deposits” do not have to be within the area that is being classified but have to be within the same type of geologic environment.
- **ND** – Minerals potential not determined due to lack of useful data.

Potential mineral deposits and commodities in the analysis areas are described below and discussed in greater detail in the RFD located in Appendix B.

Nevada, Southern Idaho, Oregon, and Western Utah

Deposit types that occur in this analysis areas include epithermal gold, silver, and mercury, and gallium, gemstones, sunstone, lacustrine diatomite, volcanogenic uranium, orogenic low-sulfide gold-quartz vein, hectorite (lithium-rich clay), specialty clays, zeolites, hydroallogenic uranium, Carlin-type gold, bedded barite, and numerous intrusion-related deposit types including porphyry copper, porphyry molybdenum, polymetallic skarn, replacement, and vein, tungsten greisen, and distal disseminated silver-gold. Favorable stratigraphy also occurs in this analysis area for lacustrine diatomite, intrusion-related, volcanogenic massive sulfide copper, Carlin-type gold, black shale vanadium, sedimentary exhalative zinc-lead-silver-gold, Mississippi Valley-type lead and zinc, and bedded barite deposits (Vikre et al. 2016).

North-Central Idaho

There are 12 locatable mineral deposit types having moderate to high mineral-resource potential in the North-Central Idaho SFA; these are porphyry-related (including skarn and replacement), polymetallic vein, jasperoid precious metal, epithermal precious metal, zeolite mineral specimen, precious opal (volcanic rock-hosted opal), sedimentary exhalative zinc-lead-silver, bedded barite, unconformity uranium, lacustrine diatomite, and heavy-mineral placer. The potential metal commodities in these deposit types are primarily copper, molybdenum, gold, silver, lead, and zinc. Other potential metal commodities include iron, tungsten, antimony, titanium, rare earth elements (REE: thorium, niobium, tantalum, zirconium, uranium, and hafnium). Potential nonmetal commodities may also be present in these deposit types, including barite, zeolite mineral specimen, precious opal, and diatomite (Lund et al. 2016).

Montana

Based on the geology of this analysis area, and past production in and nearby this analysis area, the Montana analysis area has potential for gold, silver, bentonite, and diamonds. Bentonite exploration and mining operations has been ongoing in this analysis area for at least 60 years. Available data indicate that there is low potential for epithermal deposits, gold placer deposits, and diamond deposits (Mauk et al. 2016).

Eastern Utah and Wyoming

Although locatable commodities have not been produced in significant amounts from the proposed withdrawal area, four locatable commodities have been produced in significant amounts in Wyoming immediately adjacent to the proposed withdrawal area. Uranium is being mined by in situ recovery methods to the southeast of this analysis area. Precious metals (from both orogenic-type vein deposits and from placers) was mined in the South Pass/Atlantic City/Lewiston area, and there are still a few active placers and possibly lode claims in the area as well. Iron was produced from the Atlantic City mine, which is located to the northeast of this analysis area. Copper from a sedimentary-hosted copper deposit was produced in unknown quantity from the Griggs Mine, more than 15 miles north of this analysis area. Although there are no mines within the proposed withdrawal area that are known to have produced ore, at least one similar mineral occurrence is present within this analysis area: the Rock Creek Valley copper occurrence within the Fossil Basin block. A second copper prospect occurs at Cockscomb, which is south of this analysis area (Wilson et al. 2016).

3.4.4 Market Demand for Locatable Minerals

Present and potential future market-demand analyses were developed in the Mineral Potential Report for the important locatable minerals identified to have a moderate and high potential for occurrence within the overall analysis area. A complete listing of the market-demand commodity profiles is provided in Appendix 5 of Day et al. (2016). The commodity profiles describe domestic and global production, domestic consumption, historical and recent prices, major uses, recycling, stocks, shipments, whether the mineral is strategic and critical to support societal and government needs, trade, and, if relevant, recent mine production in the analysis area.

3.5 Social and Economic Conditions

3.5.1 Introduction

The social and economic characteristics of the environment affected by the proposed withdrawal of 10 million acres from location and entry under the Mining Law are discussed below. The proposed withdrawal affects land in 33 counties in six western states. In order to capture the most pertinent social and economic details of the proposed withdrawal area, the affected environment discussion presents information at the state and county-levels. The discussion features information that reflects the social and economic attributes and trends that would likely influence how the proposed withdrawal affects communities living near the SFAs. This includes: changes in population, income, housing, poverty, employment[14], demographics, and recent cultural and social events.

The proposed withdrawal would also have an effect on the non-market values people derive from sagebrush landscapes. These values can include cultural and religious values or values attached to specific goods and services. In the case of the proposed withdrawal, the value of conserving greater sage-grouse populations may be substantial. While many of the metrics used to describe the social and economic characteristics of the affected environment are reported for each county in the analysis area, non-market values associated with the conservation of greater sage-grouse are not. Instead, a generalized discussion on the non-market values of greater sage-grouse conservation that applies to all of the states in the proposed withdrawal area is provided below.

3.5.2 Non-Market Value Associated with Greater Sage-Grouse Populations

The Nevada and Northeastern California Sub -regional Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact (BLM 2015b) conducted a literature review to assess the non-market values people held over conserving greater sage-grouse populations. The literature review identified peer-reviewed studies that provided estimates of existence values, which are values that non-resource users derive from simply knowing a species exists, for threatened or endangered species such as the greater sage-grouse. Existence values have been included in federal lands management since 1989 and since that time they have been used by a number of federal agencies to inform federal land management decisions (BLM 2015b). The report found that no previous studies have estimated the total economic value or non-use values associated with greater sage-grouse. However, there were estimates in the literature from other closely related threatened or endangered species (Richardson and Loomis 2009).

The values in Table 3-3 were derived by asking people how much they would be willing to pay for specific changes associated with each species (Richardson and Loomis 2009). People in the Four Corners area were asked how much they were willing to pay to avoid the extinction of the Mexican Spotted Owl for a period of 15 years, for example. The Annual Value per Household represents the average amount households stated they were willing to pay to achieve the stated goal associated with each species. The existence values for the species listed in Table 3-3 ranged from a low of $14.69 to increase the probability of survival of the red-cockaded woodpecker to 99 percent to a high of $58.49 to guarantee the survival of the Mexican spotted owl in the Four Corners region for at least 15 years. The values displayed in Table 3-3 reflect the fact that many people place significant value on protecting threatened and endangered species. It is reasonable to assume these values would also extend to the greater sage-grouse. There are millions of

[14] "In addition to changes in total employment, changes in employment demand by occupation could also result from the alternatives. Since the IMPLAN model does not produce results by occupation this information was not provided in this document.

households in the intermountain West. Even under the conservative assumption that the per household value of conserving the greater sage-grouse is relatively small, once that value is multiplied by the total number of households in the region the total non-market value of conserving the species could be very large.

Table 3-3. Existing Estimates of Annual Total Economic Value of Protecting Habitat for Species Similar to Greater Sage-Grouse

Region	Species	Listed	Hunted	Annual Value per Household**	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*	Avoid extinction in New England
Texas (also L.A., NYC, Chicago, Atlanta)	Whooping crane	Yes	No	$43.69*	Avoid extinction
Maine	Peregrine falcon	Yes	No	$32.37 (one time)	Restore self-sustaining population
South Carolina and rest of U.S.	Red-cockaded woodpecker	Yes	No	$14.69	Restore habitat to increase chance of survival to 99%

Note: Adapted from Nevada and Northeastern California EIS. *Average of estimates from the study. **As noted in the text, these stated preference values for households may have a degree of hypothetical bias that could overstate the actual monetary amount households would pay by a factor of two to three.
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).

3.5.3 Social Conditions

Social impacts are the consequences of any public or private actions that alter the way communities and the people who live in them interact with the environment, ensure their livelihoods, relate to one another, organize to meet their needs, and function as members of society. Social impacts also include cultural impacts, which describe the values and beliefs that influence how people perceive themselves, society at large, and their environment.

Social impacts from the proposed withdrawal of 10 million acres from mineral development are most likely to be related to decisions that directly affect current and future locatable mineral exploration and development. These impacts have the potential to affect social conditions and trends. This section focuses on social information relevant to the exploration of locatable minerals and their development. These conditions and trends will affect both current and future uses of federal land managed by the BLM and the Forest Service. The Proposed Action's impacts on social conditions in the analysis area may be viewed as positive or negative depending on the values, beliefs, and social structures of the affected communities and stakeholders. Information on the baseline social conditions can help inform the economic impact analysis and support a dialogue with the public throughout the planning process.

3.5.4 Analysis Area Definition

Earlier sections of this document defined the planning area for the Proposed Action. For the purposes of evaluating social and economic conditions and potential effects from the proposed withdrawal, a socioeconomic analysis area also has been defined. The extent of the socioeconomic analysis area is determined by the economic and social relationships between communities in the region and the locatable mineral estate that the BLM and Forest Service manage.

The BLM has proposed to withdraw 10 million acres from locatable mineral exploration and development. This area corresponds to a little more than 15,000 square miles, roughly equivalent to the combined land area of the states of Massachusetts and New Jersey. However, the areas proposed to be withdrawn are not continuous. They include lands scattered across six western states within a roughly triangular region that extends about 500 miles from east to west (from southwestern Wyoming to southeastern Oregon) and about 400 miles from north to south at its widest point (northeastern Montana to southwestern Wyoming). The withdrawn land is delineated by seven SFAs, which are contained in 33 counties in the six states. The directly affected socioeconomic analysis area has been defined as the area containing, or in proximity to, the boundaries of the seven SFAs in the Proposed Action (Table 3-4).

Table 3-4. SFA States and Counties

State	County	SFA Name
Idaho	Bingham County	North-Central Idaho
	Blaine County	
	Butte County	
	Camas County	
	Clark County	
	Custer County	
	Elmore County	
	Fremont County	
	Gooding County	
	Jefferson County	
	Lemhi County	
	Lincoln County	
	Minidoka County	
	Cassia County	Southern Idaho/Northern Nevada
	Owyhee County	
	Twin Falls County	
Montana	Fergus County	North Central Montana
	Petroleum County	
	Phillips County	
	Valley County	
Nevada	Elko County	Southern Idaho/Northern Nevada
	Humboldt County	SE Oregon/NC Nevada
	Washoe County	Sheldon-Hart Mountain NWR Complex Area
Oregon	Harney County	SE Oregon/NC Nevada and Sheldon-Hart Mountain NWR Complex Area
	Lake County	Sheldon-Hart Mountain NWR Complex Area
	Malheur County	SE Oregon/NC Nevada
Utah	Box Elder County	Southern Idaho/Northern Nevada
	Cache County	Bear River Watershed Area
	Rich County	
Wyoming	Lincoln County	Bear River Watershed Area
	Fremont County	Southwestern/South Central Wyoming
	Sublette County	
	Sweetwater County	

Socioeconomic analysis areas commonly extend beyond the planning areas of proposed actions because the decisions agencies make can impact social and economic conditions in nearby communities based on socioeconomic flows in the public and private sectors, how and where services and goods are obtained, and the cultural relationships of communities and resource users to BLM federal lands and National Forest System lands. A socioeconomic analysis area may also be larger than the planning area in cases where key social and economic data is only available for geographies (e.g., counties) that extend beyond the planning area.

There are 10 additional counties included in the socioeconomic analysis area because 10 percent or more of their workforce is employed within the 33 SFA counties. For this reason, there may be significant economic interactions between the planning area and these additional 'trade counties' (Table 3-5 and Figure 3-2). Due to the wide geographic scope of the socioeconomic analysis area that is directly affected by the withdrawal, the remainder of the affected environment discussion is presented for each state.

Table 3-5. Trade Counties with 10% or More of the Workforce Employed in an SFA County

State	County	Share of Workforce Working in SFA County	SFA Name
Idaho	Franklin County	54.10%	Bear River Watershed Area
Idaho	Jerome County	32.44%	Southern Idaho/Northern Nevada
Idaho	Oneida County	18.27%	Southern Idaho/Northern Nevada
Idaho	Payette County	47.92%	Southeast Oregon/North Central Nevada
Idaho	Washington County	17.35%	Southeast Oregon/North Central Nevada
Montana	Judith Basin County	14.15%	North Central Montana
Nevada	Lander County	13.13%	Southeast Oregon/North Central Nevada
Nevada	Lyon County	32.23%	Sheldon-Hart Mountain NWR Complex Area
Nevada	Pershing County	15.25%	Southeast Oregon/North Central Nevada
Nevada	Storey County	53.71%	Sheldon-Hart Mountain NWR Complex Area

Source: U.S. Census Bureau 2013.

3.5.5 Idaho – Overview of Area

The state of Idaho, commonly known as the 'Gem State,' is the 14th largest state in the United States and the 39th most populated (U.S. Census Bureau 2015). The state of Idaho covers a land area of approximately 83,569 square miles of which a significant area is mountainous. The Snake River Plain, which is a 400-mile expanse of sagebrush steppe, plains, and low hills, runs through the southern part of the state from western Wyoming to eastern Oregon. Southern Idaho contains a small area of the Great Basin. The state contains 44 counties. Ada County, home of Idaho's capital city, Boise, is the most populated county in Idaho with a population of 434,211 (U.S. Census Bureau 2015).

Percent of Area Covered by SFAs

There are two SFAs located in the southern and central part of the state of Idaho (Figure 3-3). The Southern Idaho/Northern Nevada SFA is located in Cassia, Owyhee, and Twin Falls counties; the North-Central Idaho SFA is located in Bingham, Blaine, Butte, Camas, Clark, Custer, Elmore, Fremont, Gooding, Jefferson, Lemhi, Lincoln, and Minidoka counties.

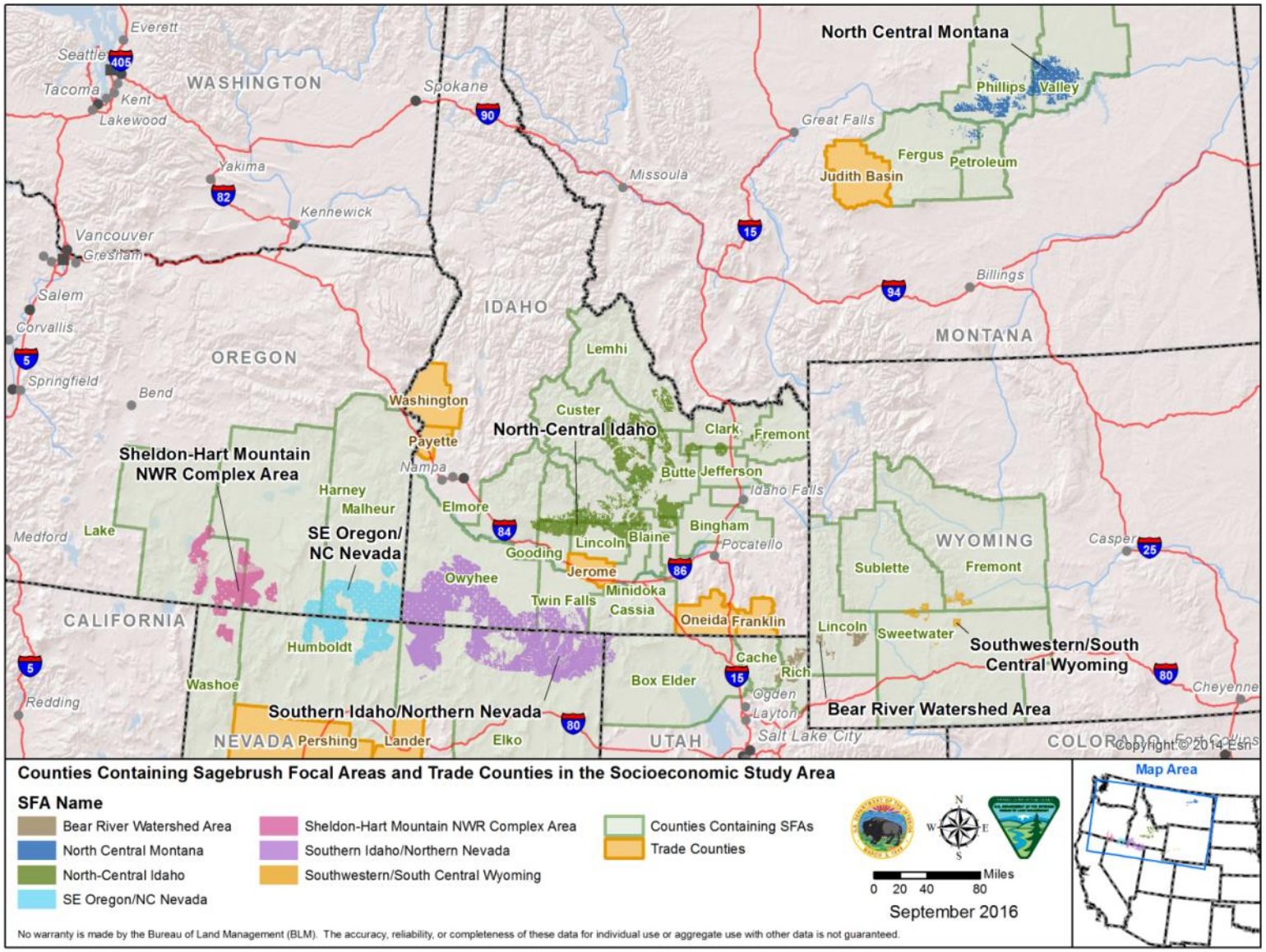

Figure 3-2. Counties Containing SFAs and Trade Counties in the Socioeconomic Analysis Area

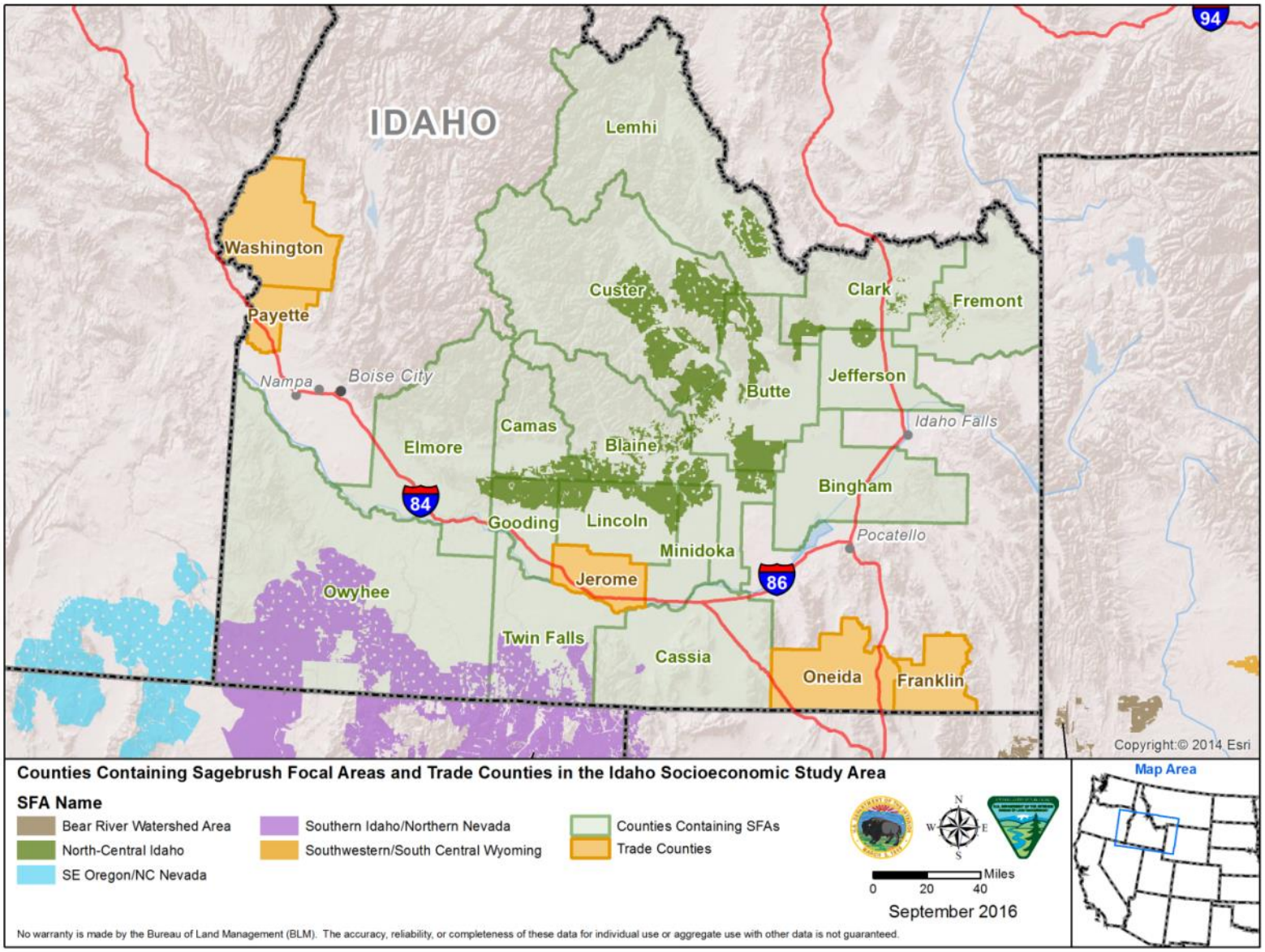

Figure 3-3. Counties Containing SFAs and Trade Counties in the Idaho Socioeconomic Analysis Area

The proposed withdrawal would impact more than 25 percent of the total land area in five counties. Twin Falls County covers a land area of approximately 1,229,440 million acres, of which 320,657 (26 percent) would be impacted by the proposed withdrawal. Owyhee County spans an area of 4,906,240 acres, of which 1,598,091 acres (33 percent) would be impacted by the withdrawal. Butte County is 1,428,780 acres in size and the withdrawal would impact 366,150 acres (26 percent). Approximately 149,126 (32 percent) of Gooding County's 466,560 acres would be impacted by the withdrawal and a further 217,455 acres would be impacted (28 percent of the county's land area) in Lincoln County.

The proposed withdrawal would impact more than 10 percent of the total land area in three other counties in Idaho's socioeconomic analysis area. Custer County covers a land area of approximately 3,149,440 million acres of which 601,202 (19 percent) would be impacted by the proposed withdrawal. Camas County spans an area of 687,360 acres of which 95,125 acres (14 percent) would be impacted by the withdrawal. Blaine County is 1,692,160 acres in size and the withdrawal would impact 294,541 acres (17 percent).

In total, a combined area of 3,961,825 acres would be withdrawn from surface mineral exploration and development inside the SFAs contained in Idaho (Table 3-6). The withdrawn area covers approximately 12 percent of the counties that would be directly impacted by the withdrawal.

Table 3-6. Withdrawal Areas in SFA Counties in the Idaho Socioeconomic Analysis Area (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Fergus	2,780,942	28,348	1%
Petroleum	1,070,049	6,668	<1%
Phillips	3,333,376	349,973	11%
Valley	3,237,554	492,635	15%
Total	10,421,921	877,624	8%

Percent of Area that is Federal Lands (List by Agency)

Federal lands constitute the majority of land in most counties in the Idaho socioeconomic analysis area (Table 3-7). The Idaho socioeconomic analysis area is approximately 25.7 million acres in size and federally managed lands compose approximately 18.1 million acres of that total (71 percent). In Custer County, federally managed land accounts for 93 percent of the county's land area. In Lemhi County, 91 percent of the county's land area is federally managed and in Butte County 86 percent of the county's land is federally managed. Jefferson County and Bingham County contain the smallest percentage of federally managed land at 27 percent and 28 percent, respectively.

Table 3-7. Land Administered by Federal Agencies in the SFA Counties in the Idaho Socioeconomic Analysis Area (Acres)

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Bingham County	1,340,160	379,817	28%
Blaine County	1,692,160	823,669	78%
Butte County	1,428,480	958,845	86%
Camas County	687,360	122,331	65%
Cassia County	1,641,600	538,098	56%

Table 3-7. (continued)

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Clark County	1,128,960	341,859	62%
Custer County	3,149,440	813,966	93%
Elmore County	1,984,640	535,553	67%
Fremont County	1,192,960	182,158	59%
Gooding County	466,560	237,504	51%
Jefferson County	700,160	186,832	27%
Lemhi County	2,920,320	574,944	91%
Lincoln County	768,640	584,487	76%
Minidoka County	485,120	174,649	36%
Owyhee County	4,906,240	3,727,129	76%
Twin Falls County	1,229,440	547,735	52%

Source: Idaho Park and Recreation Board 2005.

3.5.6 Social and Cultural Conditions

History and Recent Cultural Events

The state of Idaho was founded in 1890. In the early 20th century, the state's economy revolved around agriculture and mining, and mining and agriculture often revolved around each other (Idaho State Historical Society 2016). In 1862, when gold was discovered in the Boise Basin, irrigated agriculture spread to all the nearby valleys to support the burgeoning population. The Reclamation Act of 1902 led to the creation of large irrigation projects across Idaho, such as the Boise Project, which greatly expanded the state's crop production (Idaho State Historical Society 2016). After World War II, agriculture and mining production continued to grow and the economy began to diversify. Mechanization, groundwater irrigation and large dam projects led to an expansion of farm acreage across the state and the mining industry expanded to support agriculture primarily through the production of phosphate (Arrington 1994, pg. 128). Idaho's role as a leader in food and mineral production gave rise to lucrative food and mineral processing industries, and other industries such as manufacturing, construction, transportation, communication, and the services sector also grew (Arrington 1994, pg. 135).Within the past two decades, however, increasing urbanization and the growth of service sector industries, including retail trade, local government, and health care, have been powerful agents of change on the landscape and local cultures (Headwaters Economics 2012; U.S. Department of Commerce 2012a).

Throughout the post-war period and into the early 1990s, agriculture and related service industries remained the largest source of economic activity in Idaho (Arrington 1994, pg. 321). Mining also remained an important contributor of economic activity during this time. Idaho led the U.S. in silver production and was the second largest U.S. producer of rock phosphate. The state was also the leading producer of antimony, pumice, and industrial garnets in addition to being the fifth largest producer of lead, zinc, and gold (Arrington 1994, pg. 324). The value of the state's mineral production grew steadily from 2002 and reached an all-time high in 2011, but falling prices for gold and silver led to a decline in value the following year. Mining employment has also fallen. In 2012, 2,824 people were employed by the mining industry compared to approximately 5,000 jobs in the early 1990s (Idaho Geological Survey 2015; Arrington 1994, pg. 324). Today, the success of the industry remains sensitive to changes in mineral prices.

The mining, timber, and agricultural industries in Idaho all depend on federal land to some degree. Approximately 61 percent of the land in Idaho is owned by the federal government and managed by the BLM, Forest Service and/or the National Park Service (Congressional Research Service 2014). During the middle part of the 20th century, federal lands were managed primarily to produce commodities such as minerals, timber, and beef (Idaho Forest, Wildlife and Range Policy Analysis Group 1998). In 1964, the Governor of Idaho co-sponsored the National Wilderness Act, which began to set aside millions of acres of undeveloped lands as areas that will forever be untrammeled by man (Arrington 1994, pg. 151). Since that time, federal land management efforts have shifted toward conservation and protection and this has led to disagreements over how federal lands are used in the state.

Still, federal lands contribute significant amounts of revenue to Idaho's counties through natural resource payments based on the gross value of minerals and other resources extracted from federal land within each county (Table 3-8). In 2015, Idaho primarily produced phosphate rock, sand and gravel, silver, lead and crushed stone valued at $713 million (USGS Minerals Commodity Report 2016). In 2014, the state of Idaho produced approximately $1.2 billion worth of minerals (USGS Minerals Commodity Report 2015). In 2011, federally managed forests contributed 9.3 percent of Idaho's total timber harvest, up from a low of 7 percent in 2006 (USFS 2011). When no extractive activities occur, the federal government makes payments-in-lieu of taxes (PILT) to counties. In 2011, Idaho counties received $60,035,867 in compensation for federal lands. Forest receipts and PILTs were responsible for the majority of the revenue counties received. Notably, payments from mineral leases accounted for $4,172 (0.017 percent) of the total federal compensation received by SFA counties in Idaho.

Table 3-8. Federal Compensation for Federal Lands in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area for Fiscal Year 2010 as a Percent of Total

Area	Taylor Grazing	Mineral Leasing	Forest Receipts	PILT Actual	Total FY10
Bingham County	0.62%	0.06%	0.00%	99.31%	$683,424
Blaine County	0.31%	0.01%	7.06%	92.63%	$1,951,161
Butte County	1.13%	0.00%	46.56%	52.30%	$563,571
Camas County	0.28%	0.00%	66.50%	33.23%	$441,807
Cassia County	0.33%	0.11%	17.52%	82.04%	$2,284,092
Clark County	1.93%	0.04%	59.52%	38.52%	$398,488
Custer County	0.25%	0.00%	77.05%	22.69%	$3,012,548
Elmore County	0.31%	0.02%	37.66%	62.01%	$3,770,548
Fremont County	0.16%	0.00%	65.67%	34.18%	$1,729,793
Gooding County	0.49%	0.01%	0.00%	99.50%	$605,868
Jefferson County	0.80%	0.00%	0.00%	99.20%	$455,346
Lemhi County	0.20%	0.00%	77.39%	22.41%	$3,897,663
Lincoln County	1.04%	0.03%	0.00%	98.93%	$756,984
Minidoka County	0.35%	0.00%	0.00%	99.65%	$431,502
Owyhee County	4.33%	0.00%	0.00%	95.67%	$1,264,078
Twin Falls County	0.76%	0.00%	6.48%	92.76%	$1,649,569
Idaho	0.31%	0.67%	56.91%	42.11%	$60,035,867

Source: Idaho Association of Counties 2011.

The rolling hills and valleys of the Northern Basin and Range, which stretches across much of southern Idaho, provide ample opportunities for livestock grazing with occasional croplands, and contains all or substantial parts of Caribou, Cassia, Oneida, Owyhee, Power, and Twin Falls counties (McGrath et al. 2002). The region is still heavily dependent on agriculture and agriculture-based industries, despite stagnant or declining employment in these sectors (Headwaters Economics 2012; U.S. Department of Commerce 2012a).

Twin Falls is the most populous city in the Idaho socioeconomic analysis area and is the seventh largest city in the state of Idaho. It serves as the major commercial and industrial hub of south-central Idaho's Magic Valley region, so named due to the transformation of the basin into productive farmland through the construction of extensive irrigation systems in the early 1900s. Twin Falls is also the principal city of the Twin Falls, Idaho Micropolitan Statistical Area, which includes Jerome and Twin Falls counties. The broad Snake River Plain that arcs just north of Idaho's Basin and Range region contains all or substantial parts of Ada, Adams, Bingham, Canyon, Elmore, Gem, Gooding, Jefferson, Jerome, Lincoln, Madison, Minidoka, Payette, and Washington counties. Potatoes, sugar beets, alfalfa, grains, and vegetables are grown in areas where irrigation and soil depth are suitable for crop production (McGrath et al. 2002). Other prominent land uses include livestock grazing, cattle feedlots, and dairy operations. The barren, lava-field landscape of Craters of the Moon National Monument is a popular visitor attraction showcasing the region's unique geologic history.

Butte, Camas, Clark, Custer, and Lemhi counties are located in Idaho's Rocky Mountain region, which rises sharply from the northern edge of the Snake River Plain. Here, timber harvesting, grazing, and recreation are the predominant land uses (McGrath et al. 2002). The counties of Bonneville, Butte, Caribou, and Fremont in Idaho as well as Beaverhead and Madison in southwestern Montana also offer abundant opportunities for outdoor recreation. Popular activities include fishing, hunting, hiking, horseback riding, off-highway vehicle use, skiing, and sightseeing, which attract both residents and visitors from all areas of the United States (BLM 2008b). In many communities, growth in tourism and recreation industries has largely outpaced historical land uses. The in-migration of residents who purchase smaller ranches or farms, but do not depend on the economic return from these activities as their primary source of income, has created conflict with long-time rural residents (BLM 2008b).

Population and Population Growth

Table 3-9 shows current and historic populations in the Idaho SFA counties. The population data are derived from the 1990 and 2000 U.S. Decennial Census and the 2006-2010 and 2010-2014 American Community Survey (ACS) 5-year averages. While the population of the United States grew at a rate of 29 percent between 1990 and 2015, the population in Idaho increased by 64 percent over the same period. The state experienced a higher percentage of population growth from 1990 to 1999 than from 1999 to 2010.

Population growth between 1990 and 2015 in the Idaho SFA counties ranged from a low of negative 14 percent growth in Butte County, Idaho, to a high of 64 percent growth in Jefferson County, Idaho. There are three other counties whose populations grew by more than 50 percent between 1990 and 2015. The population in Lincoln County grew by 60 percent, from 3,308 in 1990 to an average of 5,297 between 2010 and 2014. During that same time period the population of Blaine County grew from 13,552 to 21,592, a 59 percent increase. In Twin Falls County, the population grew by 54 percent between 1990 and 2015, from 53,580 people to an average of 82,375 between 2010 and 2014.

The populations of the Idaho SFA counties grew by less than 10 percent between 1990 and 2015. The population of Butte County declined from 2,918 in 1990 to an average of 2,501 between 2010 and 2014, a drop of 14 percent. In Custer County, the population shrank by 1 percent, from 4,133 in 1990 to an average of 4,087 between 2010 and 2014. During the same time period the population of Minidoka County grew from 19,301 in 1990 to an average of 20,461 between 2010 and 2014, a change of 6 percent. The population in the other counties in the Idaho socioeconomic analysis area varied between 10 and 50 percent between 1990 and 2014.

Table 3-9. Population and Growth in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Bingham County	37,583	41,735	45,767	44,990	20%
Blaine County	13,552	18,991	21,376	21,592	59%
Butte County	2,918	2,899	2,891	2,501	-14%
Camas County	727	991	1,117	1,066	47%
Cassia County	19,532	21,416	22,952	23,506	20%
Clark County	762	1,022	982	880	15%
Custer County	4,133	4,342	4,368	4,087	-1%
Elmore County	21,205	29,130	27,038	25,876	22%
Fremont County	10,937	11,819	13,242	12,819	17%
Gooding County	11,633	14,155	15,464	15,284	31%
Jefferson County	16,543	19,155	26,140	27,157	64%
Lemhi County	6,899	7,806	7,936	7,735	12%
Lincoln County	3,308	4,044	5,208	5,297	60%
Minidoka County	19,361	20,174	20,069	20,461	6%
Owyhee County	8,392	11,526	10,644	11,310	35%
Twin Falls County	53,580	64,284	77,230	82,375	54%
Idaho	1,006,749	1,293,953	1,567,582	1,654,930	64%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010; 2010-2014

Table 3-10 shows the population between 1990 and 2000 as well as the average population between 2006 and 2010 and 2010 and 2014. The population growth rate for the trade counties of the Idaho socioeconomic analysis area is also shown.

Table 3-10. Population and Growth in the Trade Counties of the Idaho Socioeconomic Analysis Area

County	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Franklin	9,232	11,329	12,786	13,074	42%
Jerome	15,138	18,342	22,374	22,814	51%
Oneida	3,492	4,125	4,286	4,281	23%
Payette	16,434	20,578	22,623	22,896	39%
Washington	8,550	9,977	10,198	9,984	17%

Source: U.S. Census Bureau 1990, 2000, ACS 5-Year Estimates 2006-2010; 2010-2014.

Demographics (Age, Gender and Race/Ethnicity Distributions)

Table 3-11 shows age and gender characteristics of the populations in each of the SFA counties in Idaho. Idaho and the counties in the socioeconomic analysis area generally follow the same gender trends and age distributions as the rest of the country. On average, women comprised approximately 50 percent of the population in the SFA counties between 2010 and 2014 just as they did in the rest of the country and adults of the ages 21 to 64 accounted for approximately 60 percent of the population in the Idaho SFA counties, compared to 58.5 percent in the rest of the country.

Table 3-11. Average Demographic Characteristics of Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area, Share in Total Population (%) 2010 to 2014

Area	Women	Under 21 Years of Age	21 to 64 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Bingham County	49.9	26.4	61.4	12.2	87.3	0.3	5.4	0.7	6.3
Blaine County	49.2	26.1	59.8	14.1	90.0	0.1	0.3	0.9	8.7
Butte County	47.7	29.5	51.6	18.9	94.3	1.6	0.3	0.3	3.5
Camas County	44.6	27.2	55.3	17.5	86.0	0.0	0.8	0.0	13.2
Cassia County	49.3	26.7	60.3	13.0	91.4	0.3	0.5	0.6	7.2
Clark County	50.8	38.9	46.5	14.6	94.2	0.0	0.0	0.0	5.8
Custer County	48.0	22.1	57.8	20.1	97.7	0.0	0.0	0.0	2.3
Elmore County	48.5	31.2	57.4	11.4	84.5	2.2	1.6	3.1	8.6
Fremont County	48.2	23.9	61.2	14.9	94.4	0.3	0.7	0.1	4.5
Gooding County	48.4	21.7	62.0	16.3	85.1	0.0	1.4	0.6	12.9
Jefferson County	49.6	39.1	50.5	10.4	94.2	0.2	0.3	0.2	5.1
Lemhi County	49.8	20.5	55.0	24.5	96.1	0.1	0.6	0.3	2.9
Lincoln County	48.6	26.3	62.0	11.7	87.5	0.3	1.1	0.1	11
Minidoka County	49.2	32.3	52.7	15.0	89.4	0.3	0.5	0.2	9.6
Owyhee County	48.1	21.9	62.7	15.4	90.1	0.1	3.3	0.1	6.4
Twin Falls County	50.5	21.5	64.1	14.4	92.2	0.6	1.1	1.5	4.6
Idaho	49.9	21.1	65.6	13.3	91.8	0.6	1.3	1.4	4.9

Source: ACS 5-Year Estimates 2010-2014.

The average proportion of the working age population in every Idaho SFA county was below the statewide average between 2010 and 2014. The populations of Clark, Jefferson, Minidoka, and Elmore counties had the highest percentage of citizens under 21 years of age, all at least 10 percentage points higher than the state average during the 2010 to 2014 period. Clark County also had the lowest percentage of working age individuals at 46.5 percent, which was well below the statewide average of 65.6 percent. The populations of Lemhi County, Custer County, and Butte County were the oldest among the SFA counties. More than 24 percent of Lemhi County's population was 65 years or older compared to the statewide average of 13.3 percent. In Custer County 20.1 percent of the population was 65 years or older as was 18.9 percent of Butte County's population.

Among the SFA counties in Idaho, Custer County, Lemhi County, and Fremont County had populations with the highest percentage of white individuals between 2010 and 2014, all at least 20 percentage points higher than the national average of 73.8 percent. Bingham County and Owyhee County had the highest percentages of American Indian individuals during the same time period, all at least 2.5 percentage points higher than the national average and more than 2 percentage points above the state average. The percentage of black residents in all of the Idaho SFA counties was at least 10 percentage points lower than the national average of 12.6 percent, but they remained close to the state average of 0.6 percent.

Although Table 3-11 does not indicate the ethnicity of the residents of the SFA counties, an average of 11.7 percent of all Idaho residents identified themselves as Hispanic or Latino between 2010 and 2014. The average proportion of residents in the SFA counties identifying themselves as Hispanic or Latino is generally higher than the statewide average, except in Butte, Custer, and Lemhi Counties where Hispanic or Latino residents comprised between 2.5 percent and 3.8 percent of the total population, on average (ACS 5-year Estimates 2010 to 2014). Clark County contained the largest proportion of residents identifying themselves as Hispanic or Latino (43 percent) during the 2010 to 2014 time period.

Table 3-12 shows average age and gender characteristics of the population in each trade county in the Idaho socioeconomic analysis area between 2010 and 2014. Although Table 3-12 does not indicate the ethnicity of the residents of the trade counties, between 3.3 percent and 32.6 percent of residents living in the trade counties identify themselves as Hispanic or Latino. Jerome County contains the largest proportion of residents identifying themselves as Hispanic or Latino (32.6 percent) and Oneida County contains the fewest (3.3 percent).

Table 3-12. Demographic Characteristics of the Trade Counties in the Idaho Socioeconomic Analysis Area, Share in Total Population (%) 2010 to 2014

County	Women	21 to 64 Years of Age	Under 21 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Franklin	49.1	48.8	38.2	13.0	97.4	0.1	0.3	0.0	2.2
Jerome	49.5	53.2	35.1	11.7	88.6	0.1	1.4	0.8	9.1
Oneida	48.1	50.4	31.0	18.6	96.7	0.0	0.3	0.0	3.0
Payette	49.4	52.4	31.4	16.2	93.0	0.3	0.7	0.4	5.6
Washington	50.0	49.6	28.9	21.5	92.7	0.0	0.4	0.9	6.0

Source: ACS 5-Year Estimates 2010-2014.
Note: Values are averages for the period between 2010 and 2014.

Proportion of Residents Living in Poverty

Statewide, the proportion of individuals living in poverty increased from 11.8 percent in 1999 to an average of 15.6 percent between 2010 and 2014, representing an increase of 95,886 people (Table 3-13). The poverty rate in the Idaho SFA counties also increased between 1999 and 2014. Minidoka County saw

the smallest increase as the poverty rate grew from 14.8 percent in 1999 to an average of 15.6 percent between 2010 and 2014, representing an increase of 156 people. The largest change in the poverty rate was observed in Owyhee County, which grew from 16.9 percent in 1999 to an average of 27.4 percent (an increase of 1,312 people) during the same time period. Camas County had the second largest change in the poverty rate going from 8.3 percent in 1999 to an average of 17.9 percent between 2010 and 2014. Two counties saw their poverty rates decline. The poverty rates in Butte County and Fremont County went down from 18.2 percent and 14.2 percent in 1999 to an average of 15.6 percent and 12 percent between 2010 and 2014, respectively.

Table 3-13. Poverty Counts in Idaho and the SFA Counties of the Idaho Socioeconomic Analysis Area

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Idaho	1999	148,732	11.8
	2010 to 2014	244,618	15.6
Bingham County	1999	5,137	12.4
	2010 to 2014	6,277	13.9
Blaine County	1999	1,469	7.8
	2010 to 2014	2,290	10.8
Butte County	1999	522	18.2
	2010 to 2014	419	15.6
Camas County	1999	82	8.3
	2010 to 2014	207	17.9
Cassia County	1999	2,875	13.6
	2010 to 2014	3,335	14.6
Clark County	1999	202	19.9
	2010 to 2014	229	27.8
Custer County	1999	619	14.3
	2010 to 2014	857	20.3
Elmore County	1999	2,814	11.2
	2010 to 2014	4,309	17.0
Fremont County	1999	1,633	14.2
	2010 to 2014	1,478	12.0
Gooding County	1999	1,922	13.8
	2010 to 2014	3,272	21.8
Jefferson County	1999	1,984	10.4
	2010 to 2014	3,505	13.2
Lemhi County	1999	1,185	15.3
	2010 to 2014	1,651	21.5
Lincoln County	1999	522	13.1
	2010 to 2014	829	16.0
Minidoka County	1999	2,960	14.8
	2010 to 2014	3,116	15.6
Owyhee County	1999	1,781	16.9
	2010 to 2014	3,093	27.4
Twin Falls County	1999	8,038	12.7
	2010 to 2014	12,264	15.9

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for the period from 2010 to 2014 are averages for that time interval.

Table 3-14 shows the proportion of individuals living in poverty in each trade county in the Idaho socioeconomic analysis area.

Table 3-14. Poverty Counts in the Trade Counties of the Idaho Socioeconomic Analysis Area

Area	Year (Period)	Poverty Count	Percent of Population in Poverty
Franklin County	1999	832	7.4
	2010 to 2014 Average	1,726	13.5
Jerome County	1999	2,526	13.9
	2010 to 2014 Average	3,921	17.5
Oneida County	1999	443	10.8
	2010 to 2014 Average	645	15.3
Payette County	1999	2,691	13.2
	2010 to 2014 Average	4,119	18.5
Washington County	1999	1,302	13.3
	2010 to 2014 Average	1,536	15.5

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for the period from 2010 to 2014 are averages for that time interval.

Housing Stock and Prices

Table 3-15 illustrates the average housing stock available within the Idaho socioeconomic analysis area between 2010 and 2014. The average number of housing units in the analysis area increased during that time by 19,386 units, a 17 percent increase over average levels between 2006 and 2010. In all but two counties, the growth in the housing stock exceeded the demand for housing as shown by the increasing vacancy rates throughout the socioeconomic analysis area. On average, the housing stock grew by 16 percent between the two time periods. During that same time the vacancy rate grew by 4 percent on average. The highest average vacancy rates between 2010 and 2014 were observed in Clark County (49 percent) and Camas and Fremont counties (47 percent). The largest changes in the average vacancy rate were seen in Clark County, where the rate grew by 14 percent between 2010 and 2014; in Camas County, where the average vacancy rate grew by 13.3 percent; and in Butte County, where it grew by 8.3 percent. The lowest average vacancy rates between 2010 and 2014 were observed in Jefferson County (7 percent) and Minidoka, Cassia, and Bingham counties (8 percent). The average vacancy rate declined in Cassia County and Lemhi County by 2 percent and 3 percent, respectively.

Table 3-15. Housing Stock and Vacancy in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Idaho	2006 to 2010	527,824	58,179	11%
	2010 to 2014	675,421	90,162	13%
Bingham County	2006 to 2010	14,303	986	7%
	2010 to 2014	16,167	1,327	8%
Blaine County	2006 to 2010	12,186	4,406	36%
	2010 to 2014	15,065	5,807	39%
Butte County	2006 to 2010	1,290	201	16%
	2010 to 2014	1,351	323	24%

Table 3-15. (continued)

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Camas County	2006 to 2010	601	205	34%
	2010 to 2014	884	419	47%
Cassia County	2006 to 2010	7,862	802	10%
	2010 to 2014	8,395	651	8%
Clark County	2006 to 2010	521	181	35%
	2010 to 2014	550	268	49%
Custer County	2006 to 2010	2,983	1,213	41%
	2010 to 2014	3,030	1,247	41%
Elmore County	2006 to 2010	10,527	1,435	14%
	2010 to 2014	12,185	2,503	21%
Fremont County	2006 to 2010	6,890	3,005	44%
	2010 to 2014	8,579	4,040	47%
Gooding County	2006 to 2010	5,505	459	8%
	2010 to 2014	6,074	641	11%
Jefferson County	2006 to 2010	6,287	386	6%
	2010 to 2014	8,813	638	7%
Lemhi County	2006 to 2010	4,154	879	21%
	2010 to 2014	4,738	870	18%
Lincoln County	2006 to 2010	1,651	204	12%
	2010 to 2014	1,979	371	19%
Minidoka County	2006 to 2010	7,498	525	7%
	2010 to 2014	7,715	611	8%
Owyhee County	2006 to 2010	4,452	742	17%
	2010 to 2014	4,772	884	19%
Twin Falls County	2006 to 2010	25,595	1,742	7%
	2010 to 2014	31,394	2,813	9%

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for the period from 2010 to 2014 are averages for that time interval.

All dollar values reported in this section are nominal values unless otherwise stated. Average Median home values and monthly mortgage and rental costs in the Idaho SFA counties vary around the statewide averages (Table 3-16). Median home values in Clark, Minidoka, and Butte counties were below the statewide values by more than 30 percent between 2010 and 2014. The median home value in Blaine County was over two times higher than the statewide average as a result of the high demand for housing in Sun Valley, Idaho, a popular tourist destination. The median price in several other counties was close to the state median. In seven out of the 17 counties, median home prices were below the levels observed between 2006 and 2010 by between 7 percent (Gooding County) and 32 percent (Camas County). The statewide median rent during that period was $738 per month. The median rents in Clark, Butte, and Custer counties were below the statewide median by more than 27 percent between 2010 and 2014. In Blaine County, median rents were 27 percent higher than the statewide median during the same time period.

Table 3-16. Housing Values and Mortgage and Rental Costs in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area, 2010-2014

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Idaho	2006 to 2010	527,824	58,179	11%
	2010 to 2014	675,421	90,162	13%
Bingham County	2006 to 2010	14,303	986	7%
	2010 to 2014	16,167	1,327	8%
Blaine County	2006 to 2010	12,186	4,406	36%
	2010 to 2014	15,065	5,807	39%
Butte County	2006 to 2010	1,290	201	16%
	2010 to 2014	1,351	323	24%
Camas County	2006 to 2010	601	205	34%
	2010 to 2014	884	419	47%
Cassia County	2006 to 2010	7,862	802	10%
	2010 to 2014	8,395	651	8%
Clark County	2006 to 2010	521	181	35%
	2010 to 2014	550	268	49%
Custer County	2006 to 2010	2,983	1,213	41%
	2010 to 2014	3,030	1,247	41%
Elmore County	2006 to 2010	10,527	1,435	14%
	2010 to 2014	12,185	2,503	21%
Fremont County	2006 to 2010	6,890	3,005	44%
	2010 to 2014	8,579	4,040	47%
Gooding County	2006 to 2010	5,505	459	8%
	2010 to 2014	6,074	641	11%
Jefferson County	2006 to 2010	6,287	386	6%
	2010 to 2014	8,813	638	7%
Lemhi County	2006 to 2010	4,154	879	21%
	2010 to 2014	4,738	870	18%
Lincoln County	2006 to 2010	1,651	204	12%
	2010 to 2014	1,979	371	19%
Minidoka County	2006 to 2010	7,498	525	7%
	2010 to 2014	7,715	611	8%
Owyhee County	2006 to 2010	4,452	742	17%
	2010 to 2014	4,772	884	19%
Twin Falls County	2006 to 2010	25,595	1,742	7%
	2010 to 2014	31,394	2,813	9%

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for the period from 2010 to 2014 are medians for that time interval.

Tables 3-17 and 3-18 display the statistics, mortgage costs, and rental costs for the trade counties in the Idaho socioeconomic analysis area.

Table 3-17. Housing Stock and Vacancy in the Trade Counties of the Idaho Socioeconomic Analysis Area

County	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Franklin	2006 to 2010	3,872	396	10%
	2010 to 2014	4,605	364	8%
Jerome	2006 to 2010	6,713	415	6%
	2010 to 2014	8,175	489	6%
Oneida	2006 to 2010	1,755	325	19%
	2010 to 2014	1,929	272	14%
Payette	2006 to 2010	7,949	578	7%
	2010 to 2014	8,978	760	8%
Washington	2006 to 2010	4,138	376	9%
	2010 to 2014	4,539	642	14%

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for each period are averages for that time interval.

Table 3-18. Housing Values and Mortgage and Rental Costs in the Trade Counties of the Idaho Socioeconomic Analysis Area, 2010-2014

County	Year	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Franklin	2006 to 2010	$163,300	-3%	$1,096	$549	16%
	2010 to 2014	$159,200		$1,160	$636	
Jerome	2006 to 2010	$135,200	2%	$1,041	$660	3%
	2010 to 2014	$138,300		$1,078	$681	
Oneida	2006 to 2010	$120,400	8%	$1,083	$525	1%
	2010 to 2014	$130,600		$1,130	$529	
Payette	2006 to 2010	$134,800	-5%	$1,126	$605	14%
	2010 to 2014	$128,200		$1,175	$687	
Washington	2006 to 2010	$140,200	-6%	$1,030	$520	19%
	2010 to 2014	$132,200		$1,003	$619	

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

The 2015 Idaho and Southwestern Montana Greater Sage-grouse Final EIS (BLM 2015a) included the following assessment of the Idaho socioeconomic analysis area's values and attitudes concerning federal land management:

> *There is a range of interest groups in the Socioeconomic Analysis Area, including groups that focus advocacy on resource conservation and others that focus advocacy on resource uses such as livestock grazing. There are also groups that represent coalitions of interest groups. The types of interest groups identified within the socioeconomic analysis area include the following: federal agencies, state agencies, county agencies, local agencies, congressional representatives, local representatives, academic institutions, civic organizations, local chambers of commerce, environmental groups, land conservation groups, outdoors groups, local school boards, farm associations, Native American groups and Tribal Governments, and various business groups. Specific types of business interest groups identified include the following: real estate, tourism, mineral extraction, farms/ranches, textile manufacturers, livestock growers, and news media.*
>
> *The Socioeconomic Analysis Area includes various communities of people who are bound together because of where they reside, work, visit, or otherwise spend a continuous portion of their time. Stakeholder groups currently benefitting from BLM-administered and National Forest System lands within the Socioeconomic Analysis Area include those associated with agriculture and livestock production; forest products; mining; travel, tourism, and recreation; and local residents (see, for example, BLM 2006 and 2008; Forest Service 2003).*
>
> *A common perception is that there is a dichotomy of values and attitudes between stakeholder groups in the Socioeconomic Analysis Area between individuals or groups who feel that resource conservation and non-consumptive uses of BLM-administered lands are more important than benefits derived from consumptive type uses, such as livestock grazing, timber harvesting, and mining. At a more nuanced scale, however, personal attitudes, interests, and values are quite complex, and these groupings are not mutually exclusive. The high value that residents and visitors place on small town character, private property rights, low population density, scenery and landscape, outdoors and open space, the rural lifestyle, fishing, and hunting are commonly held throughout the Socioeconomic Analysis Area (BLM 2006 and 2008; Forest Service 2003). These values are commonly expressed within individual county land use plans, and were also expressed by attendees at both scoping meetings and the Economic Strategies Workshop that BLM and Forest Service held in Twin Falls, Idaho, in June 2012.*
>
> *A unifying theme expressed by residents of the socioeconomic analysis area – including in previous planning processes – is the concern for the preservation of rural characteristics and values. For example, a shift toward larger, more mechanized agricultural operations, as well as the increasing diversification of local economies, have challenged traditional ways of life in many communities. These changes are evident in the declining number of mid-sized farms and the number of workers employed in agriculture and agriculture-based industries (Blaine County 1994; Power County 2009; Headwaters Economics 2012; U.S. Department of Commerce 2012a). Nevertheless, farming and ranching remain important parts of the economy, society, and culture across the Socioeconomic Analysis Area.*
>
> *In some areas, particularly those with scenic and recreational amenities, farmlands and ranches are being sold and used for recreation purposes or subdivided for home sites. This phenomenon is part of a larger trend in which many rural communities in the western United States have witnessed "migration turnaround," a reversal of the rural-to-urban migration that*

characterized much of the United States prior to the 1970s. Many rural areas are now experiencing a significant increase in population after decades of stability or decline (BLM 2006). In response to recent commercial and industrial expansion and the associated demand for affordable, diversified housing, many counties are encouraging infill development and other strategies to prevent the loss of agricultural lands and maintain the rural character of their communities (Caribou County 2006).

Despite population increases across most of the analysis area, some rural areas continue to lose population (Idaho Department of Labor 2011). This is due, in part, to the out-migration of young people and aging of the population (Idaho Commerce & Labor 2005). In contrast to communities where in-migration is occurring, residents of these communities may be more concerned about the economic survival of their communities. Multiple use management of and access to BLM-administered lands, which comprise a large portion of lands in many counties, are cited as paramount concerns in these areas (BLM 2006). Residents expressed some similar themes during public scoping and the June 2012 Economic Strategies Workshop for this planning effort (BLM and Forest Service 2012; BLM 2012a). Comments received from these outreach efforts came from nonprofit or citizen groups; local, state and federal agencies; the commercial sector and members of the general public. These comments strongly supported maintaining or expanding access to BLM-administered lands for grazing and recreational purposes. Many expressed concern that placing additional constraints on these activities might create economic hardship within their communities and alter traditional cultural values and lifestyles. Additionally, some argued that constraints on livestock grazing would exacerbate existing trends of conversion of ranch lands to agricultural and residential uses, perhaps with the unintended consequence of decreasing open space and wildlife habitat. Other issues of concerns cited by residents include the management of invasive species, fire and fuels, and whether BLM-administered lands should be opened to wind energy development.

3.5.7 Economic Conditions

Economic Output and Gross Regional Product

Tables C-1 to C-5 in Appendix C show the total gross output and value added for the SFA counties in the Idaho socioeconomic analysis area in 2013. The data were obtained from county-level IMPLAN data files. The IMPLAN model, originally developed for the Forest Service and now maintained by the Minnesota IMPLAN Group, is a regional input-output modeling system. It is a computer-based modeling system capable of producing input-output accounts and input-output models for any region in the United States as small as a single county. The system is based on a set of regional databases that describe the structure of regional economies which allows the model to estimate the economic impacts of changes in regional production. The model uses economic data from a variety of sources. Industry output data is derived from economic census information from the Bureau of the Census and projections from the Bureau of Labor Statistics. Data on employment, wages and salaries, and proprietor income are collected from the ES202 employment security data as well as the County Business Patterns and the Regional Economic Information Systems databases.

Total Gross Output is a measure of an industry's sales or receipts. It measures the market value of the total revenue received from the sale of goods and services to both final users of a good or service and other industries that use the goods and services as intermediate inputs into their own production. Value added measures the value that is added to goods and services that have already been produced. It is commonly measured as the sales price of a good or service less the cost of purchasing the raw material to produce the good or service and the costs of capital and labor used to produce the good or service from the raw material.

Bingham County produced approximately $3.4 billion worth of economic output in 2013. The manufacturing sector produced more total gross output than any other sector in the county's economy. It produced approximately $1 billion in total gross output (30 percent of total), which generated approximately $176.8 million in value-added activities. The agricultural, forestry, fishing and hunting sector was the second largest economic contributor to the county's economy in terms of gross output in 2013 ($588.3 million in total gross output and $324.2 million in value added). Arts, entertainment and recreation produced a total gross output of $9.3 million and added approximately $2.9 million in value. The mining sector in Bingham County produced $3.7 million in total gross output in 2013, of which $564,788 was through value-added activities.

Blaine County produced approximately $2.2 billion worth of total gross output in 2013. The real estate and rental sector produced more total gross output than any other sector in the county's economy. It produced approximately $396 million in total gross output (18 percent of total), which generated approximately $284.2 million in value-added activities. The agricultural, forestry, fishing and hunting sector produced $53.9 million of total gross output in 2013 and $24.1 million of value-added activities. Arts, entertainment and recreation produced a total gross output of $50.4 million and added approximately $24.6 million in value. The mining sector (i.e., sand and gravel mining, extraction of natural gas and crude petroleum, drilling oil and gas wells, metal mining services, and supporting activities) in Blaine County produced $8.3 million in total gross output in 2013, of which approximately $3.6 million was through value-added activities.

Butte County produced approximately $2.4 billion worth of total gross output in 2013. The professional scientific technology services sector produced more total gross output than any other sector in the county's economy. It produced approximately $1.8 billion in total gross output (76 percent of total), which generated approximately $889.5 million in value-added activities. The agricultural, forestry, fishing and hunting sector produced $59.6 million of total gross output in 2013 and approximately $26 million of value-added activities. Arts, entertainment and recreation produced a total gross output of $520,602 and added approximately $84,511 in value. The mining sector (i.e., drilling oil and gas wells and supporting activities) in Butte County produced $380,268 in total gross output in 2013, of which approximately $135,303 was through value-added activities.

Camas County produced approximately $118 million worth of economic output in 2013. The wholesale trade sector produced more total gross output than any other sector in the county's economy. It produced approximately $28.6 million in total gross output (24 percent of total), which generated approximately $18.7 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $25 million of total gross output in 2013 and $10.6 million of value-added activities. Arts, entertainment and recreation produced a total gross output of $1.9 million and added approximately $617,104 in value. The mining sector in Camas County produced $176,249 in total gross output in 2013, of which $29,022 was through value-added activities.

Cassia County produced approximately $2.2 billion worth of total gross output in 2013. The real estate and rental sector produced more total gross output than any other sector in the county's economy. It produced approximately $396 million in total gross output (18 percent of total), which generated approximately $284.2 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $53.9 million of total gross output in 2013 and $24.1 million of value-added activities. Arts, entertainment, and recreation produced a total gross output of $50.4 million and added approximately $24.6 million in value. The mining sector (i.e., stone mining and quarrying, extraction of natural gas and crude petroleum, sand and gravel mining, drilling oil and gas wells, and supporting activities) in Cassia County produced $23.4 million in total gross output in 2013, of which approximately $13.1 million was through value-added activities.

Clark County produced approximately $140.8 million worth of total gross output in 2013. The agricultural, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $39.6 million in total gross output (28 percent of total), which generated approximately $18 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $572,656 and added approximately $16,747 in value. The mining sector (i.e., extraction of natural gas and crude petroleum) in Clark County produced $2.3 million in total gross output in 2013, of which approximately $83,485 was through value-added activities.

Custer County produced approximately $401.8 million worth of economic output in 2013. The utilities sector produced more total gross output than any other sector in the county's economy. It produced approximately $69.9 million in total gross output (17 percent of total), which generated approximately $17.1 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $54.6 million of total gross output in 2013 and $30.4 million of value-added activities. Arts, entertainment and recreation produced a total gross output of $6 million and added approximately $2.6 million in value. The mining sector in Custer County (i.e., gold and other metal ore mining, extraction of natural gas and crude petroleum, drilling oil and gas wells and supporting activities) produced approximately $43 million in total gross output in 2013, of which $21 million was through value-added activities.

Elmore County produced approximately $1.9 billion worth of total gross output in 2013. The manufacturing sector was the largest private industrial sector and produced more total gross output than any other sector in the county's economy. It produced approximately $325.5 million in total gross output (17 percent of total), which generated approximately $32.6 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $312.4 million of total gross output in 2013 and $142.8 million of value-added activities. Arts, entertainment and recreation produced a total gross output of $4.2 million and added approximately $1.2 million in value. The mining sector (i.e., extraction of natural gas and crude petroleum and other nonmetallic minerals services) in Elmore County produced $1,447,658 in total gross output in 2013.

Fremont County produced approximately $737.5 million worth of total gross output in 2013. The agricultural, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $193.6 million in total gross output (26 percent of total), which generated approximately $93.5 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $4.7 million and added approximately $1.4 million in value. The mining sector (i.e., extraction of natural gas and crude petroleum, sand and gravel mining, and drilling of oil and gas wells) in Fremont County produced $1.4 million in total gross output in 2013, of which approximately $414,600 was through value-added activities.

Gooding County produced approximately $2.3 billion worth of economic output in 2013. The agricultural, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $1.1 billion in total gross output (47 percent of total), which generated approximately $519.9 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $5 million and added approximately $2.2 million in value. The mining sector in Gooding County (i.e., extraction of natural gas and crude petroleum, stone mining and quarrying, drilling oil and gas wells, extraction of natural gas, and supporting activities) produced approximately $1.2 million in total gross output in 2013, of which $73,427 was through value-added activities.

Jefferson County produced approximately $1.6 billion worth of total gross output in 2013. The manufacturing sector was the largest private industrial sector and produced more total gross output than any other sector in the county's economy. It produced approximately $425.2 million in total gross output (26 percent of total), which generated approximately $94.5 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $338.5 million of total gross output in 2013 and

$161.8 million of value-added activities. Arts, entertainment, and recreation produced a total gross output of $9.8 million and added approximately $3.6 million in value. The mining sector (i.e., extraction of natural gas and crude petroleum, sand and gravel mining, and drilling oil and gas wells) in Jefferson County produced $4.7 million in total gross output in 2013, of which $433,674 was through value-added activities.

Lemhi County produced approximately $445 million worth of total gross output in 2013. The agricultural, forestry, fishing and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $62.5 million in total gross output (14 percent of total), which generated approximately $31.6 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $5.2 million and added approximately $2.3 million in value. The mining sector (i.e., extraction of non-metallic minerals and supporting services) in Lemhi County produced $2.7 million in total gross output in 2013, of which approximately $1.6 million was through value-added activities.

Lincoln County produced approximately $504.6 million worth of economic output in 2013. The agricultural, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $213 million in total gross output (42 percent of total), which generated approximately $97.6 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $858,993 and added approximately $74,530 in value. The mining sector in Lincoln County (i.e., extraction of natural gas and crude petroleum, sand and gravel mining, and drilling oil and gas wells) produced approximately $503,697 in total gross output in 2013, of which $74,530 was through value-added activities.

Minidoka County produced approximately $2 billion worth of total gross output in 2013. The manufacturing sector was the largest private industrial sector and produced more total gross output than any other sector in the county's economy. It produced approximately $737.6 million in total gross output (37 percent of total), which generated approximately $140.1 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $448 million of total gross output in 2013 and $245.4 million of value-added activities. Arts, entertainment, and recreation produced a total gross output of $2.8 million and added approximately $996,452 in value. The mining sector in Minidoka County produced no output in 2013.

Owyhee County produced approximately $737.3 million worth of total gross output in 2013. The agricultural, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $366.9 million in total gross output (50 percent of total), which generated approximately $168.1 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $2.1 million and added $381,678 in value. The mining sector (i.e., extraction of natural gas and crude petroleum, ore mining, clay, ceramic, refractory minerals mining, stone mining and quarrying, sand and gravel mining and supporting activities) in Owyhee County produced $5.4 million in total gross output in 2013, of which approximately $1.7 million was through value-added activities.

Twin Falls County produced approximately $6.9 billion worth of total gross output in 2013. The manufacturing sector was the largest private industrial sector and produced more total gross output than any other sector in the county's economy. It produced approximately $2.2 billion in total gross output (32 percent of total), which generated approximately $413.7 million in value-added activities. The agricultural, forestry, fishing, and hunting sector produced $713.7 million of total gross output in 2013 and approximately $336 million of value-added activities. Arts, entertainment, and recreation produced a total gross output of $24.5 million and added approximately $9 million in value. The mining sector (i.e., extraction of natural gas and crude petroleum, ore mining, and sand and gravel mining) in Twin Falls County produced $17.4 million in total gross output in 2013, of which approximately $9.6 million was through value-added activities.

Total Employment and Employment by Sector

Table 3-19 shows the employment history in each Idaho SFA county from 1970 to 2014. Employment in Idaho and the SFA counties has increased over the last 45 years. During that time, statewide employment grew by 184 percent while employment in the SFA counties grew by 102 percent. Blaine County saw the highest rate of job growth from 1970 to 2014 as the number of jobs increased by 459 percent. Job growth in the other counties was much more modest and varied between a low of 28 percent (Minidoka County) and a high of 147 percent (Jefferson County). While job growth has been steady over the long run, job growth from 2010 to 2014 has been less consistent. Despite seeing job growth between 1970 and 2014, Bingham County, Butte County, Custer County, Elmore County, and Lemhi County all saw the number of jobs shrink between 2010 and 2014. Butte County sustained the largest job losses (15 percent), but Lemhi County and Elmore County also experienced declines in employment (5 percent and 3 percent, respectively).

Table 3-19. Total Employment in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area, 1970–2009

Area	1970	1980	1990	2000	2010	2014	Percent Change 1970 to 2014
Bingham County	12,566	15,094	16,880	19,640	21,551	21,451	71%
Blaine County	3,514	6,971	11,953	17,572	19,117	19,648	459%
Butte County	4,291	6,719	7,987	5,881	9,687	8,192	91%
Camas County	497	590	484	555	886	994	100%
Cassia County	8,682	10,202	10,379	12,673	13,650	14,599	68%
Clark County	463	603	757	744	832	982	112%
Custer County	1,296	1,692	2,613	2,604	2,990	2,973	129%
Elmore County	8,886	10,673	10,884	13,789	13,481	13,054	47%
Fremont County	3,587	4,357	4,288	4,629	5,398	5,532	54%
Gooding County	3,962	5,413	5,669	7,983	8,181	8,492	114%
Jefferson County	4,290	5,726	6,050	7,717	10,258	10,587	147%
Lemhi County	2,393	3,491	3,561	4,328	4,403	4,175	74%
Lincoln County	1,592	1,906	1,801	1,989	2,395	2,677	68%
Minidoka County	7,664	9,354	9,531	10,769	9,240	9,797	28%
Owyhee County	2,760	3,476	3,180	3,999	4,246	4,438	61%
Twin Falls County	20,714	27,880	31,295	40,483	44,143	48,196	133%
Idaho	324,150	464,366	548,397	776,837	868,674	922,989	184%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Tables C-6 through C-10 in Appendix C. Due to the small size of several of the economies — and the resulting small number of establishments in specific industries — in some of the SFA counties, the U.S. Bureau of Economic Analysis did not disclose industry-specific employment totals due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (L) to indicate there were fewer than 10 jobs in the industry for that particular county, and the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Where data for both 2001 and 2014 were available, Tables C-6 through C-10 show how employment is distributed across different industries in each SFA county (Appendix C). Government employment and farming are the two major sources of employment in most of the SFA counties in Idaho. In counties where government is the largest employer, the sector accounts for 13 percent to 40 percent of total employment and in counties where the farming sector is the largest employer it accounts for 14 percent to 29 percent of total employment. In Blaine County, where Sun Valley is located, accommodation and food services is the largest source of jobs, accounting for 14 percent of total employment. The healthcare industry is the largest employer in Twin Falls County, accounting for approximately 14 percent of jobs. Cassia County has the largest mining sector among the SFA counties, where 178 people work in the industry (though this is uncertain from this data due to the non-disclosure issues).

Tables C-6 through C-10 also show how employment changed in the SFA counties from 2001 to 2014 (Appendix C). Although government and farming remain the largest source of employment in many of the SFA counties, the number of government and farm jobs declined in several counties over the past 14 years. Farm employment declined in Bingham County (-237 jobs), Blaine County (-115 jobs), Butte County (-28 jobs), Clark County (-42 jobs), Elmore County (-110 jobs), Good County (-7 jobs), Jefferson County (-137 jobs), Lemhi County (-27 jobs), and Twin Falls County (-234 jobs). Bingham County gained 881 jobs in the healthcare industry as did Elmore County and Twin Falls County (656 and 2,844 jobs, respectively). Employment in the mining sector grew in most of the SFA counties from 2001 to 2014. Mining employment added 26 jobs in Butte County, 49 jobs in Cassia County, 32 jobs in Gooding County, 34 jobs in Jefferson County, 26 jobs in Minidoka County, and statewide the industry added 2,539 jobs.

Table 3-20 shows the employment history in each trade county of the Idaho socioeconomic analysis area from 1970 to 2014. The distribution of employment between 2001 and 2014 by industry sector for each trade county in the Idaho socioeconomic analysis area is summarized in Table C-11 in Appendix C.

Table 3-20. Employment History in the Trade Counties in the Idaho Socioeconomic Analysis Area, 1970-2014

County	1970	1980	1990	2000	2010	2014	Percent Change 1970 to 2014
Franklin	2,874	3,503	3,450	4,741	5,715	6130	113%
Jerome	4,589	6,921	6,862	9,807	11,135	11492	150%
Oneida	1,485	1,420	1,382	1,826	2,192	2329	57%
Payette	4,089	5,652	6,545	8,838	9,421	9787	139%
Washington	3,054	3,830	3,836	4,456	4,557	4554	49%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

Labor Force and Unemployment

The labor force of an area is the population of working-age residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that “unemployed” is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Idaho rose sharply and the SFA counties were no exception (Figure 3-4). In 2009, the unemployment rate in Idaho rose to 8.8 percent, an increase of 3.7 percentage points over the previous year. The unemployment rates in the SFA counties also rose significantly between 2006 and 2010, but began to decline thereafter.

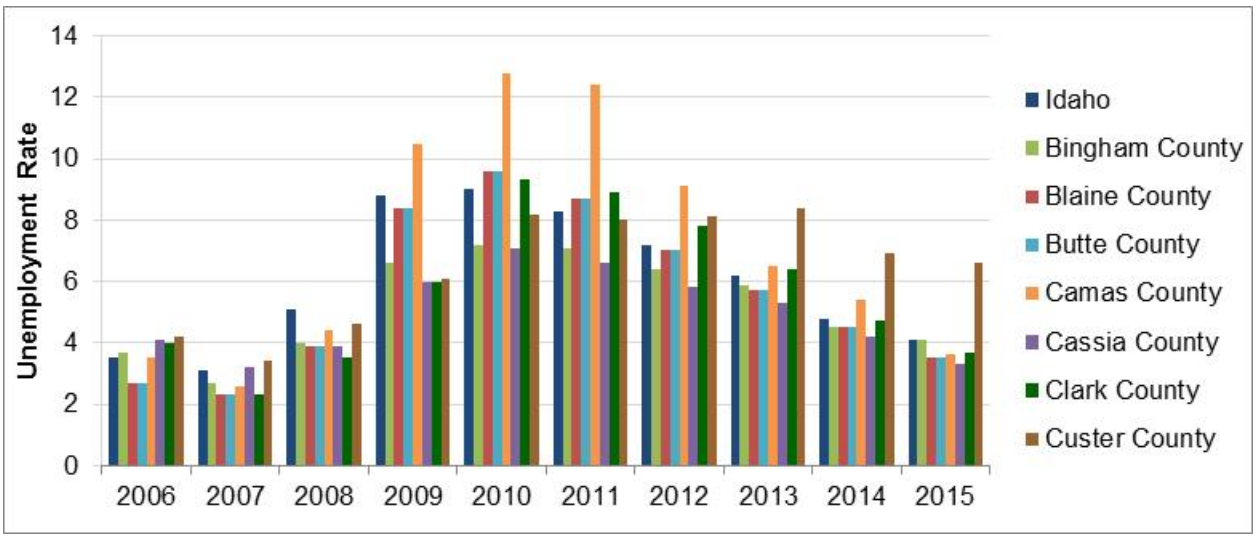

Figure 3-4. Unemployment Rates for Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area, 2006–2015
Source: U.S Bureau of Labor Statistics 2016.

From 2010 to 2015, the statewide unemployment rate declined from its high in 2009. During this time, the unemployment rates in many of the SFA counties in Idaho were below the statewide average with the exceptions of Camas County, Custer County, and Lincoln County. The unemployment rate in Camas County was 2 to 4 percentage points higher than the state average during the economic recession, although it has since fallen below the statewide average. The unemployment rate in Custer County was below the statewide average in 2009 and 2010, but it has remained 1 to 2 percentage points above the statewide average since 2011. Lincoln County's unemployment rate has always been 0.5 to 1 percentage point above the statewide average, but during the economic recession it was approximately 4 to 6 percentage points higher. Today it remains three tenths of a percentage point above the statewide average.

Figure 3-5 shows the unemployment rate for the trade counties in the Idaho socioeconomic analysis area between 2006 and 2015.

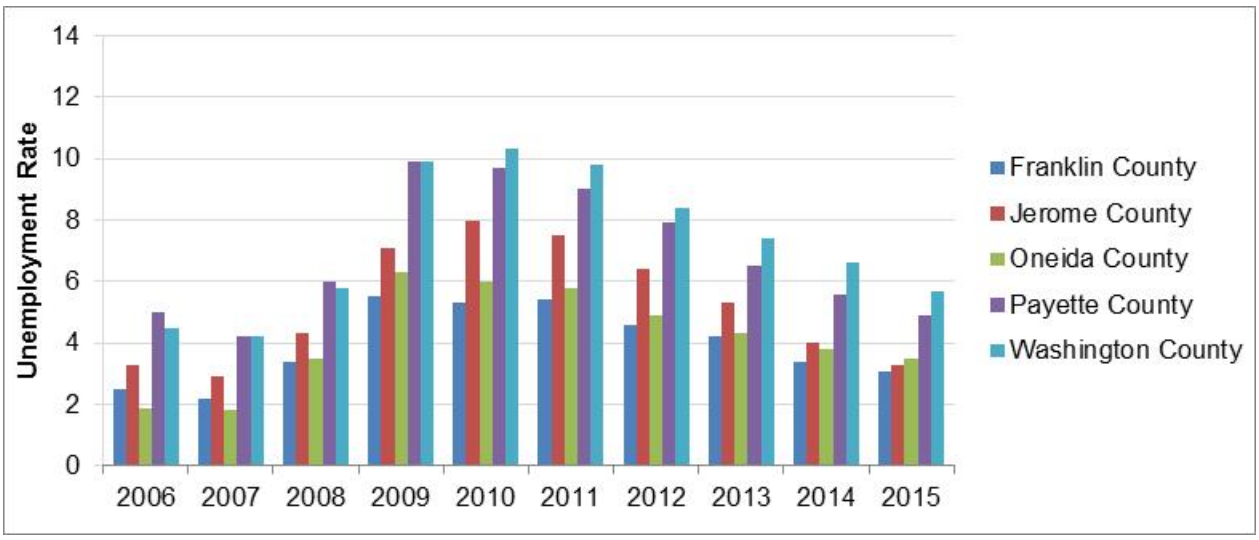

Figure 3-5. Unemployment Rates for Trade Counties in the Idaho Socioeconomic Analysis Area, 2006–2015.
Source: U.S Bureau of Labor Statistics 2016.

Personal Income

Tables C-12 through C-16 in Appendix C present labor income by sector for the SFA counties in the Idaho socioeconomic analysis area. Statewide, total income in Idaho grew by 58 percent between 2001 and 2014. Several of the SFA counties saw incomes grow at rates above the statewide average: Camas County (256 percent), Cassia County (75 percent), Gooding County (74 percent), Jefferson County (89 percent), Lincoln County (82 percent), Owyhee County (77 percent), and Twin Falls County (66 percent). Incomes in several other SFA counties grew at rates below the statewide average: Bingham County (58 percent), Blaine County (29 percent), Butte County (20 percent), Clark County (25 percent), Elmore County (45 percent), Fremont County (52 percent), Lemhi County (41 percent), and Minidoka County (41 percent).

Income growth in the Idaho SFA counties can be attributed to several economic sectors. Statewide, the utility sector was responsible for the largest increase in income growth (185 percent). In Camas County, farm income grew at the fastest rate between 2001 and 2014 (185 percent), and in Cassia County income from the warehouse and transportation sector grew by 183 percent. In Fremont County, the construction sector led income growth with an increase of 212 percent. In Gooding County, the largest growth in income occurred in the forestry and fishing sector, which saw incomes increase by 175 percent between 2001 and 2014. In Lincoln County, the farming sector was responsible for the largest income growth from 2001 to 2014 (186 percent).

Statewide, total income earned in the mining sector grew by 125 percent from $96.70 million in 2001 to $217.77 million in 2014, and in Cassia County mining income grew by 57 percent from $2.8 million to $4.2 million. Data on mining income was not available for the other SFA counties in Idaho due to the small size of their mining sectors. As a result, industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Total personal income in the state of Idaho was $60.1 billion in 2015 (Table 3-21). Total personal income in the SFA counties varied between a low of $20.7 million (Clark County) to a high of $1.8 billion (Blaine County). Statewide, non-labor income accounted for 39 percent of total personal income. In the SFA counties in the analysis area, non-labor income accounted for between 24 percent (Gooding County) and 63 percent (Blaine County) of total income. Dividends, interest, and rents accounted for between 11 percent (Gooding County) and 56 percent (Blaine County) of non-labor income. Age-related payments accounted for 11 percent of non-labor income in Idaho in 2015. In the SFA counties, age-related transfer payments accounted for between 5 percent (Blaine County) and 18 percent (Butte County and Lemhi County) of non-labor income. Hardship and other payments accounted for 5 percent of non-labor income statewide, while in the SFA counties hardship and other payments accounted for between 1 percent (Blaine County) and 7 percent (Owyhee County) of non-labor income.

Statewide, median annual household income in Idaho increased by 32 percent from 1999 to 2014, from $36,423 to an average of $48,088 between 2010 and 2014 (Table 3-22). Between 2010 and 2014, the median income in the SFA counties varied between a low of $32,770 (Clark County) and a high of $62,489 (Blaine County). Between 1999 and 2014, the change in median income in the SFA counties varied between a low of 3.7 percent (Clark County) and a high of 39 percent (Jefferson County). In Clark County, median household income was $31,576 in 1999 and between 2010 and 2014 it had increased to $32,770. During that same time period, the median household income in Jefferson County grew from $37,737 to $52,495.

Information for trade counties is presented below in Tables 3-23 and 3-24. Detailed labor income by sector the trade counties in the Idaho socioeconomic analysis area is presented in Table C-17 in Appendix C.

Table 3-21. Income by Source in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area (Thousands of 2015 dollars)

Area	Total personal income	Non-labor income share	Dividends, interest, rent	Age-related transfer payments	Hardship-related payments	Other payments
Bingham County	$1,457,588	37%	45%	33%	16%	6%
Blaine County	$1,797,110	63%	89%	8%	2%	1%
Butte County	$89,548	45%	43%	40%	13%	5%
Camas County	$32,707	50%	59%	29%	6%	5%
Cassia County	$977,699	29%	49%	30%	16%	6%
Clark County	$20,683	45%	56%	25%	11%	7%
Custer County	$178,855	47%	61%	29%	6%	5%
Elmore County	$885,666	47%	58%	20%	11%	11%
Fremont County	$411,695	42%	51%	31%	13%	6%
Gooding County	$862,035	24%	47%	33%	15%	5%
Jefferson County	$815,272	32%	45%	33%	15%	7%
Lemhi County	$280,036	58%	54%	32%	9%	5%
Lincoln County	$200,796	28%	43%	34%	17%	7%
Minidoka County	$687,510	38%	47%	32%	15%	5%
Owyhee County	$360,721	40%	47%	30%	17%	6%
Twin Falls County	$2,797,991	39%	46%	31%	16%	6%
Idaho	$60,100,802	39%	53%	28%	12%	7%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Bureau of Economic Analysis.

Table 3-22. Median Household Income in Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area

Area	Year/Period	Median Household Income	% Change (2000 - 2014)
Bingham County	1999	$36,423	32%
	2010 to 2014	$48,088	
Blaine County	1999	$50,496	24%
	2010 to 2014	$62,489	
Butte County	1999	$30,473	35%
	2010 to 2014	$41,000	
Camas County	1999	$34,167	21%
	2010 to 2014	$41,250	
Cassia County	1999	$33,322	35%
	2010 to 2014	$44,847	
Clark County	1999	$31,576	4%
	2010 to 2014	$32,770	
Custer County	1999	$32,174	23%
	2010 to 2014	$39,432	
Elmore County	1999	$35,256	23%
	2010 to 2014	$43,516	
Fremont County	1999	$33,424	35%
	2010 to 2014	$44,991	

Table 3-22. (continued)

Area	Year/Period	Median Household Income	% Change (2000 - 2014)
Gooding County	1999	$31,888	21%
	2010 to 2014	$38,447	
Jefferson County	1999	$37,737	39%
	2010 to 2014	$52,495	
Lemhi County	1999	$30,185	14%
	2010 to 2014	$34,457	
Lincoln County	1999	$32,484	26%
	2010 to 2014	$41,088	
Minidoka County	1999	$32,021	38%
	2010 to 2014	$44,220	
Owyhee County	1999	$28,339	15%
	2010 to 2014	$32,589	
Twin Falls County	1999	$34,506	28%
	2010 to 2014	$44,138	
Idaho	1999	$37,572	26%
	2010 to 2014	$47,334	

Source: U.S Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Table 3-23. Sources of Non-Labor Income by Source in the Trade Counties of the Idaho Socioeconomic Analysis Area (Thousands of 2015 dollars)

County	Total personal income	Non-labor income share	Dividends, interest, rent	Age-related transfer payments	Hardship-related payments	Other payments
Franklin	$390,256	34%	44%	37%	13%	7%
Jerome	$849,636	28%	43%	32%	19%	6%
Oneida	$129,003	43%	41%	40%	13%	6%
Payette	$772,666	40%	43%	36%	15%	6%
Washington	$339,746	46%	44%	38%	13%	6%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Bureau of Economic Analysis.

Table 3-24. Median Household Income in the Trade Counties of the Idaho Socioeconomic Analysis Area

County	Year/Period	Median Household Income	% Change (2001 - 2014)
Franklin	1999	$36,061	26%
	2010 to 2014	$45,542	
Jerome	1999	$34,696	17%
	2010 to 2014	$40,716	
Oneida	1999	$34,309	26%
	2010 to 2014	$43,078	
Payette	1999	$33,046	34%
	2010 to 2014	$44,326	
Washington	1999	$30,625	19%
	2010 to 2014	$36,483	

Source: U.S Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

Taxes and Revenues

The major components of tax revenue in Idaho include individual income taxes, sales and use taxes, a motor fuels tax, and a corporate income tax (Table 3-25). In fiscal year 2014-2015 (FY 2014-2015), the state of Idaho collected more than $3.8 billion in tax revenue. Individual income taxes accounted for 47.2 percent of Idaho's tax revenue in FY 2014-2015. Sales and use taxes accounted for 38 percent of the state's tax revenue in FY 2014-2015, while the motor fuels tax and corporate income tax accounted for 6.7 percent and 6.2 percent, respectively. Other taxes, which include alcohol and tobacco taxes, accounted for 1.5 percent of state tax revenue, followed by the travel and convention tax (0.2 percent) and the Boise Auditorium District Tax (0.1 percent). Other taxes, like the electricity tax or the local option tax, account for less than one half of 1 percent of the state's total tax revenue. Notably, the mine license tax and the oil and gas severance tax accounted for 0.02 percent and 0.0001 percent of the state's total annual tax revenue, respectively.

Table 3-25. Idaho Tax Revenues as a Percent of Total for Fiscal Year 2014-2015

Tax Category	Percent of Total
Individual income tax	47.2%
Sales/Use tax	38.0%
Motor fuels taxes	6.7%
Corporate income tax	6.2%
Alcohol and tobacco taxes	1.5%
Travel & convention tax	0.2%
Boise Auditorium District tax	0.1%
Electricity tax	0.05%
Local option tax	0.05%
E911 fee	0.04%
Mine license tax	0.02%
Suspense (source not identified)	0.002%
Railroad Car Co. property tax	0.001%
Severance (Oil and gas tax)	0.0001%
Total	$3,836,584,340

Source: Idaho State Tax Commission 2014.

Local Government Revenues

Budget and revenue information for Butte County, ID and Custer County, ID are not readily available online.

Mining Related Economy

Table 3-26 shows the value of mineral production in Idaho in 2013. Several of the SFA counties in the Idaho socioeconomic study employ hundreds of people in mineral and hardrock mining. Blaine County and Gooding County each employ three people in metal mining services and stone mining and quarrying, but counties like Cassia and Owyhee each employ more than 100 people across different mining industries. Mining output across the SFA counties in Idaho ranges from a low of $376,267 (Blaine County) to more than $49.2 million (Owyhee County). The total output from the mining industry benefits local economies by being distributed as employee compensation, proprietor and other income, and tax revenue. Negative values for proprietor incomes represent mining sectors that generated losses from the perspective of the proprietor. According to the estimates in Table 3-26, Owyhee County received more than $2.1 million in tax revenue from its mineral mining industries in 2013.

Table 3-26. Mineral Production by Value for the State of Idaho ($ millions 2013)

Description	Employment	Output	Employee Compensation	Proprietor Income	Other Property Type Income	Tax On Production And Imports
Blaine County						
Metal mining services	3	$376,267	$41,468	$57,322	$84,756	$19,175
Cassia County						
Stone mining and quarrying	116	$20,283,127	$3,262,268	-$149,750	$7,987,256	$344,733
Custer County						
Gold ore mining	52	$20,841,713	$1,970,817	$136,072	$4,294,982	$640,962
Other metal ore mining	28	$21,384,710	$2,842,140	$125,511	$10,644,481	$294,242
Metal mining services	0	$0	$0	$0	$0	$0
Other nonmetallic minerals services	7	$1,025,755	$605,831	$6,500	$67,417	$34,594
Gooding County						
Stone mining and quarrying	2	$300,288	$49,891	-$2,780	$117,770	$5,083
Metal mining services	1	$156,833	$59,215	-$336	$29,920	$6,769
Lemhi County						
Other nonmetallic minerals	11	$2,428,340	$655,325	$6,000	$680,146	$25,574
Metal mining services	1	$264,398	$137,308	-$664	$39,023	$8,829
Owyhee County						
Gold ore mining	3	$1,163,903	$182,187	-$4,961	$226,197	$33,756
Silver ore mining	2	$1,319,874	$285,220	$1,360	$463,568	$41,774
Copper ore mining	106	$46,163,296	$12,476,649	$161,464	$16,863,037	$2,040,704
Other metal ore mining	0	$242,236	$59,376	-$3,918	$107,952	$2,984
Stone mining and quarrying	1	$103,355	$17,939	-$987	$40,192	$1,735
Other clay, ceramic, refractory minerals mining	1	$202,425	$54,864	-$3,363	$45,773	$2,095
Twin Falls County						
Copper ore mining	43	$15,776,802	$1,844,945	$426,584	$6,793,099	$822,076
Metal mining services	5	$551,293	$129,364	$92	$128,851	$29,151

Source: Minnesota IMPLAN Group 2013.

Statewide, mining and oil and gas development generate tax revenues collected by the state and by many individual counties (Table 3-27). Between 2009 and 2014, the severance tax on oil and gas generated total revenue of $3,093 for the state. During that same period, the mine license tax, which is a tax of 1 percent on the value of ores mined or extracted and royalties received from mining in the state of Idaho, generated $11,410,162 in tax revenue. Between 2009 and 2014, the mine license tax generated an average of $1.9 million in tax revenue for the state of Idaho each year.

Table 3-27. Idaho Tax Revenue from Select Categories from 2009 to 2014

Tax Category	2009	2010	2011	2012	2013	2014
Severance (Oil and gas tax)	N/A	N/A	N/A	N/A	$639	$2,454
Mine license tax	$1,430,032	$2,723,273	$2,417,791	$3,220,445	$842,686	$775,935

Source: Idaho Tax Commission 2014 Annual Report.

Recreation and Tourism-Related Economy

Idaho has a diverse geography and ecology that lends itself to recreation and tourism. The state contains rugged snow-covered peaks, barren high-altitude deserts, deep canyons, winding rivers, and a variety of other natural features that draw people outdoors to recreate and sightsee. BLM and Forest Service lands within the Idaho socioeconomic analysis area offer many types of recreation opportunities. The diverse landscape and natural amenities in the Idaho socioeconomic analysis area attract tourists who value recreation activities including hunting, fishing, equestrian use, resort and backcountry skiing, mountaineering, and camping. Over the years, recreation has also expanded to include all terrain vehicles (ATV/OHV), hiking, nature viewing, photography, snow skiing, cross country skiing, boating, and numerous other uses.

Idaho's tourism industry generates $3.4 billion in revenue for the state and its businesses each year in addition to bringing in $500 million in local, state, and federal tax revenue (Idaho Division of Tourism Development 2016). Sites like the Saint Anthony Sand Dunes in Fremont County, Idaho, attract more than 100,000 visitors per year and visitors can spend an average of $320 per trip (Headwaters Economics 2014). The Sawtooth National Recreation Area, an area of forested mountains located in parts of Blaine, Custer, and Elmore counties, attracted 623,000 visitors between October 2004 and September 2005 and visitors to Idaho's National Forests have been observed to spend between $15 to $145 per trip (Headwaters Economics 2014).

Hunting and fishing trips are also an important source of recreation activity in the Idaho socioeconomic analysis area. In 2011, more than 838,000 people participated in some form of wildlife recreation through hunting, fishing, or wildlife watching (USFWS 2011). The economic activity associated with wildlife-based recreation was estimated to be $1.6 billion per year across the state (USFWS 2011). In 2003, anglers made 167,275 fishing trips to Fremont County, which generated $50.8 million in expenditures (Idaho Department of Fish and Game 2003). In the same year, anglers made 107,984 trips to Custer County and generated $32.9 million in expenditures, and in Lemhi County anglers made 82,205 trips and generated $23.2 million worth of expenditures (Idaho Department of Fish and Game 2003).

The recreation and tourism industry primarily employs people through the sectors of retail trade; passenger transportation; arts, entertainment, and recreation; and accommodation and food (Table 3-28). In 2014, approximately 8 percent of the workforce (13,374 jobs) in the socioeconomic analysis area worked in travel and tourism related jobs and industries. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-28. Employment in Travel and Tourism Related Sectors for Idaho and the SFA Counties in the Idaho Socioeconomic Analysis Area, 2014

Area	Retail Trade	Passenger Transportation	Arts, Entertainment, & Recreation	Accommodation & Food
Bingham County	236*	0	384*	655*
Blaine County	325	44*	377*	2,808*
Butte County	38*	0	0	36*
Camas County	2*	0	8*	36*
Cassia County	260	0	151*	654*
Clark County	25	0	0	2*
Custer County	57*	0	46*	130*
Elmore County	197*	0	14*	608*
Fremont County	53*	0	23*	172*
Gooding County	87*	6*	36*	237*
Jefferson County	100*	13*	38*	274*
Lemhi County	89*	3*	22*	232
Lincoln County	40*	0	2*	30
Minidoka County	222*	0	13*	282
Owyhee County	27*	0	1*	138
Twin Falls County	941	55	286*	2,859*
Idaho	15,441	1,289*	8,973	57,533

Note: Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps. These values are indicated with asterisks (*).
Source: U.S. Department of Commerce; U.S. Census Bureau County Business Patterns; Headwaters Economics 2016.

Visitor expenditures on goods and services in the state of Idaho and the SFA counties in the Idaho socioeconomic analysis area produce business receipts at local businesses and create earnings and employment for local residents. In 2014, the SFA counties' proportion of travel and tourism- related jobs was seven percentage points lower than the state average of 15 percent. The annual salaries paid to employees in the travel and tourism sector were also below comparable salaries in non-related sectors. Statewide, employees in the travel and tourism industry earned an average annual salary of $16,538 in 2014 compared to the state average of $38,816 for non-travel and tourism related employment (Headwaters Economics 2016). Table 3-29 displays the employment statistics for travel and tourism related sectors in the trade counties of the Idaho socioeconomic analysis area.

Table 3-29. Employment in Travel and Tourism Related Sectors for Trade Counties in the Idaho Socioeconomic Analysis Area in 2014

County	Retail Trade	Passenger Transportation	Arts, Entertainment, & Recreation	Accommodation & Food
Franklin	290*	0	10*	171*
Jerome	627*	0	26*	382*
Oneida	129*	0	4*	77
Payette	380*	0	19*	210*
Washington	250*	0	16*	158*

Note: See Table 3-28.
Source: U.S. Department of Commerce; U.S. Census Bureau County Business Patterns; Headwaters Economics 2016.

Other Economic Uses of Federal Lands

While energy and mineral development are a significant source of economic activity on Idaho's federal lands, several other activities make significant economic contributions to the state's economy (Table 3-30). One way to measure the economic contribution of federal lands is through the concept of value added. The estimated value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Idaho, federal land created $220 million in value-added activity through the recreation sector in 2015. Major grants and payments, which include Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land, created $50 million in value-added activity in the state in 2015. DOI employees created an additional $60 million in valued-added activity by spending part of their income in Idaho in 2015 (DOI 2015). This economic activity has a direct translation into employment figures (Table 3-45). Visitor spending on BLM, Bureau of Reclamation, USFWS, Forest Service, and National Park Service land in Idaho supported 611 jobs in the recreation sector in 2015. The revenue from major grants and other payments affecting federal lands supported 572 jobs and the spending by DOI employees supported an additional 113 jobs in various sectors in 2015.

Table 3-30. Contribution of Department of the Interior Activities to the State of Idaho by Sector (FY 2015)

Activity	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated Valued Added ($ billions)	0.22	0.2	0	0.05	0.06	0.53
Estimate Total Output ($ billions)	0.44	0.41	0.43	0.08	0.1	1.46
Estimated Total Jobs	611	5,741	0	572	113	7,037

Source: U.S. Department of the Interior 2015.

3.5.8 Montana – Overview of Area

The state of Montana is the fourth largest state in the United States and covers a land area of approximately 147,040 square miles. The eastern two-thirds of Montana are within the Great Plains, while the western third of the state includes the northern portion of the U.S. Rocky Mountains. The state contains 56 counties.

Percent of Area Covered by SFAs

The North Central Montana SFA is the proposed withdrawal area in Montana. The SFA includes lands located in Fergus, Petroleum, Phillips, and Valley counties (Figure 3-6).

Fergus County covers a land area of approximately 2.8 million acres. The proposed withdrawal would impact 28,348 acres (1 percent) of the land area inside of Fergus County (Table 3-31). Petroleum County spans an area of about 1.1 million acres of which 6,668 acres (0.6 percent) would be impacted by the withdrawal. Phillips County is approximately 3.3 million acres in size and the withdrawal would impact 349,973 acres (11 percent) of the county's total land area. Valley County encompasses approximately 3.2 million acres, of which about 492,635 acres would be withdrawn (15 percent).

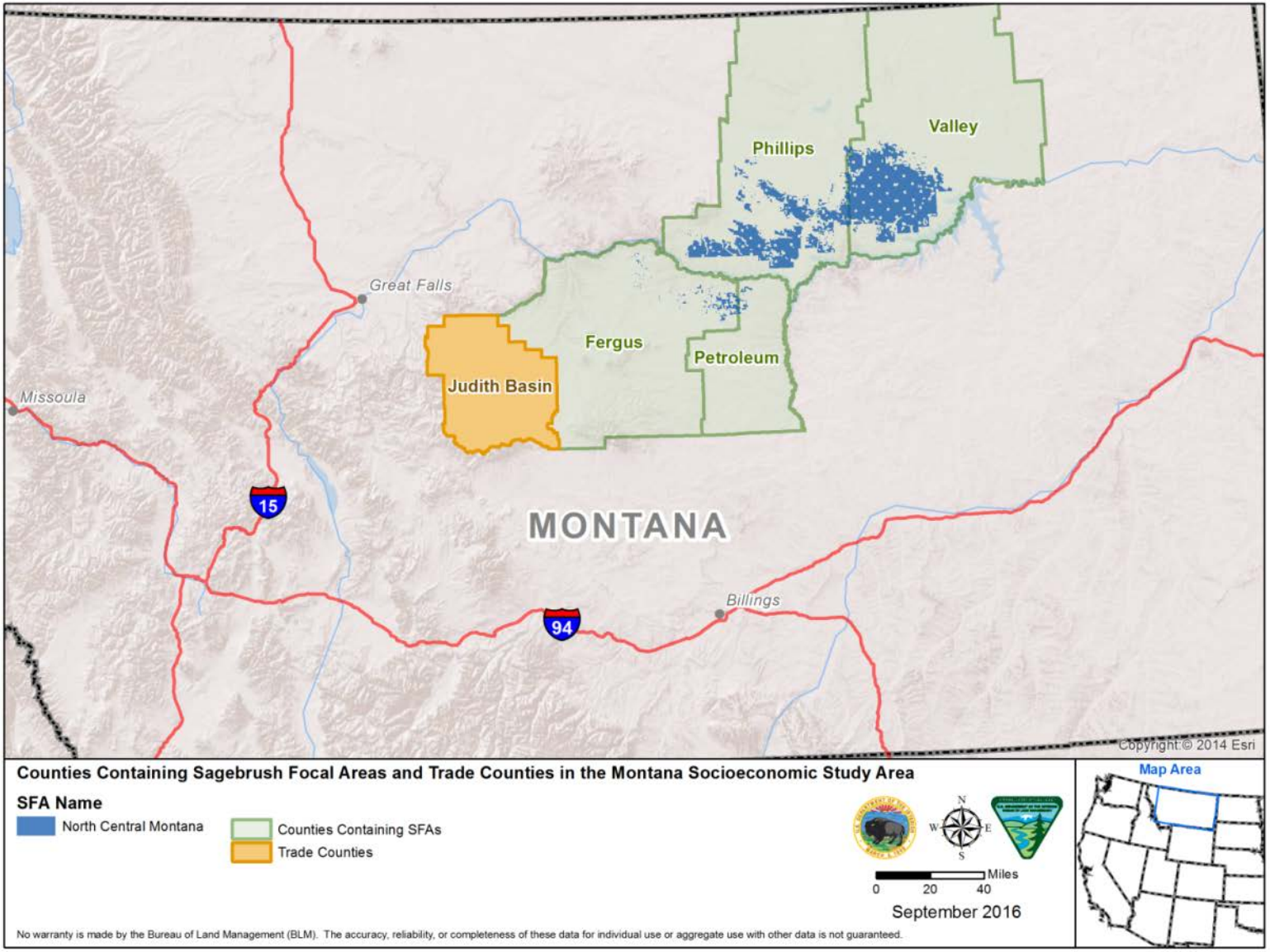

Figure 3-6. Counties Containing SFAs and Trade Counties in the Montana Socioeconomic Analysis Area

Table 3-31. SFA Withdrawal Areas in the SFA Counties in the Montana Socioeconomic Analysis Area (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Fergus	2,780,942	28,348	1%
Petroleum	1,070,049	6,668	<1%
Phillips	3,333,376	349,973	11%
Valley	3,237,554	492,635	15%
Total	10,421,921	877,624	8%

Source: Western Rural Development Center 2010a.

In total, a combined area of 877,624 acres would be withdrawn from surface mineral exploration and development inside of the SFAs contained in Montana. The proposed withdrawal covers approximately 8 percent of the combined land area of Fergus, Petroleum, Phillips, and Valley counties.

Percent of Area that is Federal Lands

The SFA counties in north central Montana are generally rural, and the two largest cities within the counties are Lewistown (in Fergus County) with approximately 5,900 residents and Glasgow (in Valley County) with approximately 3,200 residents (U.S. Census Bureau 2015). The nearest relatively large cities are Great Falls, located about 100 miles to the west and Billings, located about 100 miles to the south.

Overall, a little more than one-third (37 percent) of the 10.4 million acres of land in the SFA counties in the Montana socioeconomic analysis area is managed by the federal government (Table 3-32). Phillips County and Valley County contain the largest amounts of federally managed lands with almost 1.5 million acres of such lands in each county.

Table 3-32. Land Administered by Federal Agencies in Montana SFA Counties (Acres)

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Fergus	2,780,942	490,883	18%
Petroleum	1,070,049	379,068	35%
Phillips	3,333,376	1,481,126	44%
Valley	3,237,554	1,463,596	45%
Total	10,421,921	3,814,673	37%

Source: Western Rural Development Center 2010a.

3.5.9 Social and Cultural Conditions

History and Recent Cultural Events

Native American tribes were the first inhabitants of the lands that eventually became the state of Montana. Following the first visit by white Americans during the Lewis and Clark expedition of 1804-1806, the discovery of gold brought prospectors to the area and Montana became a territory in 1864. Railroads were built across Montana in the 1880s and the territory became a state in 1889. Silver and copper mining were major economic drivers during the state's early years, along with cattle ranching in the eastern portions of Montana. Since World War II, Montana's economy has slowly transitioned from

being primarily based on natural resources to being increasingly based on providing services. “Population shifts have loaded Montana's people in the western one-third of the state and ‘emptied out’ eastern Montana’s vast spaces” (State of Montana 2015).

Federal land management is a very important issue for Montanans. In 2013, the Montana state legislature authorized an evaluation of federal land management in Montana, and deemed that evaluation to be the second highest priority among interim studies to be undertaken. The study included a survey of the county commissioners in each Montana county where at least 15 percent of the land was managed by federal agencies. The evaluation found “serious and numerous” concerns with federal land management. Specific areas of concern included the desire that federal lands be managed to reduce wildfire risk, increase economic productivity, provide more multiple use access (including motorized access), and increase wildlife carrying capacity and diversity in some areas (Montana Environmental Quality Council 2014).

Population and Population Growth

Table 3-33 shows current and historic populations in the Montana SFA counties. Less than 25,000 people currently live in the four SFA counties in Montana. While the population of the state of Montana grew by 29 percent between 1990 and 2015, the population declined in each of the SFA counties over the same period. The most rapid decline in population occurred in Phillips County, which lost nearly 20 percent of its total population between 1990 and 2015.

Table 3-33. Population and Growth in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Fergus County	12,083	11,893	11,586	11,427	-5.4%
Petroleum County	519	493	494	475	-8.5%
Phillips County	5,163	4,601	4,253	4,169	-19.3%
Valley County	8,239	7,675	7,369	7,659	-7.0%
Montana	799,065	902,195	959,415	1,032,949	29.3%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010; 2010-2014.

Table 3-34 shows the population between 1990 and 2015, as well as the population growth rate for Judith Basin County, the “trade county” in the Montana socioeconomic analysis area.

Table 3-34. Population and Growth in Montana and the Trade County of the Montana Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Judith Basin County	2,282	2,329	2,072	1,926	-15.6%
Montana	799,065	902,195	959,415	1,032,949	29.3%

Source: U.S. Census Bureau 1990, 2000, ACS 5-Year Estimates 2006-2010; 2010-2014.

Demographics (Age, Gender and Race/Ethnicity distributions)

Table 3-35 shows average age, gender, and racial characteristics of the populations in each SFA county in Montana between 2010 and 2014. On average, women comprised slightly less than 50 percent of the population in each SFA county and in Montana as a whole during this time period. The average proportion of adults over the age of 65 was higher in each of the SFA counties than in Montana as a whole, while the average proportion of residents between the ages of 16 and 64 was lower than the state average in each of the SFA counties except for Petroleum County.

Table 3-35. Demographic Characteristics of Montana and the SFA Counties in the Montana Socioeconomic Analysis Area, Share in Total Population (%) 2010 to 2014

County	Women	21 to 64 Years of Age	Under 21 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Fergus	49.9	54.9	22.9	22.1	96.3	0.1	1.2	1.1	1.3
Petroleum	49.3	61.5	20.4	22.0	95.3	4.7	0.0	0.0	0.0
Phillips	49.6	52.7	26.5	20.5	87.6	0.0	9.5	0.0	3.0
Valley	49.9	52.1	26.5	21.4	86.8	0.1	10.6	0.2	2.4
Montana	49.8	58.0	26.4	15.8	89.4	0.5	6.5	0.7	3.0

Source: ACS 5-Year Estimates 2010-2014.
Note: Values are averages for the time interval from 2010 to 2014.

Between 2010 and 2014, more than 85 percent of the residents in each Montana SFA county classify their race as "white," on average, which is similar to the state as a whole. However, the average proportion of black residents in Petroleum County and American Indian residents in Phillips and Valley counties were higher than average across the state as a whole.

Although Table 3-35 does not indicate the ethnicity of the residents of the SFA counties, on average, between 1.4 percent (Petroleum County) and 1.9 percent (Fergus County) of the residents in the area identified themselves as Hispanic or Latino between 2010 and 2014. These proportions are lower than the statewide average of 3.2 percent (ACS 5-year Estimates 2014).

Table 3-36 shows average age and gender characteristics of the population in each trade county in the Montana socioeconomic analysis area between 2010 and 2014. On average, approximately 1.0 percent of the residents in Judith Basin County identified themselves as Hispanic or Latino between 2010 and 2014 (ACS 5-year Estimates 2010 to 2014).

Table 3-36. Average Demographic Characteristics of the Trade Counties in the Montana Socioeconomic Analysis Area, Share in Total Population (%) 2010 to 2014

County	Women	21 to 64 Years of Age	Under 21 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Judith Basin	50.4	55.5	22.4	22.0	98.7	0	0.8	0.0	0.4
Montana	49.8	58.0	26.4	15.8	89.4	0.5	6.5	0.7	3.0

Source: ACS 5-Year Estimates 2010-2014.
Note: Values are averages for the time interval from 2010 to 2014.

Proportion of Residents Living in Poverty

Statewide, the proportion of individuals living in poverty increased slightly from 14.6 percent in 1999 to an average of 15.3 percent between 2010 and 2014, representing an increase of almost 22,000 people living below the federally defined poverty level (Table 3-37). In each of the SFA counties, however, both the number of individuals living below the poverty level and the proportion of the total population living in poverty decreased between 1999 and 2014. Each of the SFA counties had a lower average proportion of residents living below the poverty level between 2010 and 2014 than the statewide average.

Table 3-38 shows the proportion of individuals living in poverty in the trade county in the Montana socioeconomic analysis area.

Table 3-37. Individuals Living in Poverty in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area 1999 -2014

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Montana	1999	128,355	14.6%
	2010-2014	150,096	15.3%
Fergus County	1999	1,767	15.4%
	2010-2014	1,175	10.5%
Petroleum County	1999	114	23.2%
	2010-2014	53	10.9%
Phillips County	1999	828	18.3%
	2010-2014	572	13.8%
Valley County	1999	1,026	13.5%
	2010-2014	917	12.6%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Table 3-38. Poverty Counts in Montana and the Trade County in the Montana Socioeconomic Analysis Area

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Montana	1999	128,355	14.6%
	2010-2014	150,096	15.3%
Judith Basin County	1999	490	21.1%
	2010-2014	259	12.8%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.

Housing Stock and Prices

Table 3-39 illustrates the average housing available within the SFA counties from 2006 to 2010 and from 2010 to 2014. In general, there has been little change in the total number of housing units, or the proportion that were vacant, between these time periods. The average proportion of vacant units in Fergus County was similar to, but slightly lower than the average across Montana. The other three SFA counties in Montana, however, had larger proportions of vacant housing units, ranging from 23 percent in Phillips County to 35 percent in Valley County between 2010 and 2014. These high proportions of vacant units may, at least in part, also reflect units that are used on a seasonal basis.

Table 3-39. Average Housing Stock and Vacancy in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Montana	2006-2010	482,825	73,218	15%
	2010-2014	486,782	78,985	16%
Fergus County	2006-2010	5,836	737	13%
	2010-2014	5,813	825	14%
Petroleum County	2006-2010	324	99	31%
	2010-2014	334	114	34%
Phillips County	2006-2010	2,335	516	22%
	2010-2014	2,330	536	23%
Valley County	2006-2010	4,879	1,681	35%
	2010-2014	4,865	1,684	35%

Source: ACS 5-Year Estimates 2006-2010; ACS 5-Year Estimates 2010-2014.
Note: Values for each period are averages for that time interval.

Average housing values and mortgage costs in the four SFA counties in Montana were generally lower than the statewide averages between 2010 and 2014 (Table 3-40). Average monthly rental costs for housing also tended to be lower, except in Petroleum County.

Table 3-40. Average Housing Values and Mortgage and Rental Costs in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Montana	2006-2010	$173,300	8%	$1,220	$629	11%
	2010-2014	$187,600		$1,290	$696	
Fergus County	2006-2010	$104,100	15%	$870	$512	30%
	2010-2014	$120,200		$1,027	$664	
Petroleum County	2006-2010	$106,800	-28%	$883	$708	9%
	2010-2014	$76,800		$1,125	$770	
Phillips County	2006-2010	$79,100	21%	$868	$418	19%
	2010-2014	$95,900		$964	$497	
Valley County	2006-2010	$81,400	36%	$889	$474	7%
	2010-2014	$110,900		$1,003	$509	

Source: ACS 5-Year Estimates 2006-2010; ACS 5-Year Estimates 2010-2014.
Note: Values for each period are medians for that time interval.

While median housing values increased slightly across Montana between 2010 and 2014, most of the SFA counties saw more rapid increases in median home values. The largest increase was in Valley County, where the median home value between 2010 and 2014 was more than one-third higher than during the 2006 to 2010 period. Median monthly rental costs also increased more rapidly than average for Montana in Fergus County and in Phillips County during that time.

Median home values appear declined in Petroleum County between 2010 and 2014. Given the very small size of that county's population and housing stock, and the seeming inconsistencies between the reported changes in home values, monthly mortgage costs, and rental costs in Phillips County, it is possible that this apparent decline in median home value was due to the small sample in the American Community Survey 5-year estimates.

Tables 3-41 and 3-42 display the housing stock and vacancy statistics and the housing stock values, mortgage costs, and rental costs for the trade county in the Montana socioeconomic analysis area.

Table 3-41. Average Housing Stock and Vacancy of Montana and the Trade County in the Montana Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Montana	2006-2010	482,825	73,218	15%
	2010-2014	486,782	78,985	16%
Judith Basin County	2006-2010	1,336	412	31%
	2010-2014	1,323	424	32%

Source: ACS 5-Year Estimates 2006-2010; ACS 5-Year Estimates 2010-2014.
Note: Values for each period are averages for that time interval.

Table 3-42. Average Housing Values and Mortgage and Rental Costs in Montana and the Trade County in the Montana Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Montana	2006-2010	$173,300	8%	$1,220	$629	11%
	2010-2014	$187,600		$1,290	$696	
Judith Basin County	2006-2010	$101,500	15%	$825	$417	16%
	2010-2014	$117,000		$1,011	$485	

Source: ACS 5-Year Estimates 2006-2010; ACS 5-Year Estimates 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

The 2015 Final EIS for the proposed RMP for federal lands and federal minerals managed by the former BLM HiLine District (now part of the North Central District), which encompasses portions of the Montana SFA counties, included an evaluation of social trends and stakeholder values related to natural resource use and management (BLM 2015c). That evaluation included the following observations:

> *Changes in the management of BLM land are just one aspect of a broader debate on environmental and resource management that is occurring locally, nationally and globally. Social values for lands and natural resources can take many forms such as commodity, amenity, environmental quality, ecological recreation, and spiritual. While the commodity value has been prevalent in the past, a study examining public attitudes toward ecosystem management in the United States found "generally favorable attitudes toward ecosystem management (defined as maintaining and ensuring sustainability) among the general public" (Bengston et al. 2001).*
>
> *In the rural West, in places where land use has been relatively unrestricted, concern is being expressed by some individuals and groups regarding the control and management of BLM land. People with these concerns feel that change in BLM land management is being driven by government officials and environmental advocacy groups who do not have a true understanding of the lands or the people living nearby who depend upon these lands for their livelihood and recreation. Of particular concern is the loss of uses of the land such as hardrock mining, livestock grazing, and off-highway vehicle use. People with these concerns seek to balance what they consider to be environmental extremism with economic and human concerns. They may feel that local elected officials who deal with their problems on a daily basis are better equipped to make decisions about BLM land.*

The observations from the 2015 HiLine District EIS are reinforced by the findings from the 2014 evaluation of federal land management conducted by the Montana State Legislature. The evaluation included a survey of county commissioners in each county in Montana where 15 percent or more of lands are managed by the federal government. Some of the survey results most relevant to the EIS for the proposed withdrawal were:

- 17 of 24 responding counties said that federal land management has had adverse effects on their county's economy;

- 16 of 25 responding counties said that the economic productivity and number of related private sector jobs was not commensurate with the resource production capacity of the federally managed lands within their county;

- 21 of 23 responding counties said that federal policies for threatened or endangered species adversely impacted private landowners, businesses, industries, and citizens in their communities;

- 20 of 26 responding counties said that changes in federal land management are necessary to increase their county's economy, employment opportunities, or tax base; and

- 18 of 24 responding counties said that federal land management actions were not consistent with their county's objectives (Montana Environmental Quality Council 2014).

Values, attitudes, and beliefs regarding federal land management not only vary among county commissioners, they also vary among individuals and other stakeholder groups. In the HiLine EIS, BLM identified conceptual stakeholder groups based on shared values regarding the use and management of federal lands. These were generalized groupings and the EIS noted that actual individuals or organizations would likely fall into multiple groups, and even within the categorized stakeholder groups differences in values may still occur. Based upon local understanding of the views and values associated with HiLine BLM resources, resource uses, and management, the following stakeholder groups were categorized: groups and individuals that prioritize ranching, ranching livelihood, and agricultural lifestyle; groups and individuals that prioritize local communities and local community benefits; groups and people that prioritize recreational opportunities (including motorized and non-motorized); groups and individuals who prioritize resource protection; groups and individuals who prioritize resource use; and Native Americans.

3.5.10 Economic Conditions

Economic Output and Gross Regional Product

Table C-18 in Appendix C shows the gross economic output and value added for the SFA counties in the Montana socioeconomic analysis area in 2013. Total gross output measures the market value of the total revenue received from the sale of goods and services. Value added measures the value that is added to goods and services that have already been produced. The agriculture, forestry, fishing, and hunting sector is the largest economic sector in all four SFA counties in Montana. In Fergus County, it produced $159.6 million in total gross output (16 percent of total), which generated approximately $50.1 million in value-added activities. In Petroleum County, the agriculture, forestry, fishing, and hunting sector produced $37 million in output in 2013, which was more than 57 percent of the county’s total gross output. In the Montana SFA counties, locatable mineral mining is limited to industrial minerals. The arts, entertainment, and recreation sector in all four SFA counties makes a similarly sized contribution to oil and natural gas production.

Total Employment and Employment by Sector

Table 3-43 shows the employment history in each SFA county of the socioeconomic analysis area in Montana from 1970 to 2014. Over the 44-year period, the number of jobs in the state of Montana more than doubled from just over 301,000 in 1970 to over 643,000 in 2014. There has been much less employment growth within the SFA counties. Job growth has been most consistent in Fergus County, which added nearly 1,800 jobs (about 32 percent) during the 44-year period. In Petroleum County, Phillips County, and Valley County, the past 44 years have included some periods of employment growth (though typically at slower growth rates than the state average) and some periods of decline in the number of local jobs. Petroleum County has added more than 270 jobs since 2000 (an increase of more than 90 percent). Valley County has experienced employment growth since 2010, but still has fewer jobs than in 1970.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Table C-19 in Appendix C. Due to the small size of the economies in most of the SFA counties in Montana, in many cases industry-specific employment totals were not disclosed due to confidentiality concerns in cases where there are very few establishments in the industry. In these instances, the Bureau of Economic Analysis uses the code (L) to indicate there were fewer than 10 jobs in the industry for that particular county, and the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Table 3-43. Employment History in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area, 1970–2014

Year	Fergus County		Petroleum County		Phillips County		Valley County		Montana State Total	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	5,605	N/A	345	N/A	2,263	N/A	5,355	N/A	301,051	N/A
1980	6,227	1.1%	288	-1.8%	2,588	1.4%	5,063	-0.6%	392,881	2.7%
1990	6,559	0.5%	275	-0.5%	2,976	1.4%	4,403	-1.4%	433,400	1.0%
2000	7,121	0.8%	292	0.6%	2,734	-0.8%	4,621	0.5%	552,934	2.5%
2010	7,402	0.4%	477	5.0%	2,796	0.2%	4,612	0.0%	613,635	1.0%
2014	7,378	-0.1%	568	4.5%	2,657	-1.3%	5,087	2.5%	643,412	1.2%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

Where data for both 2001 and 2014 were available, Table C-19 provides insight into the concentration of employment by industry in each SFA county (Appendix C). Farming remains a major source of employment in the SFA counties in Montana, accounting for more than 10 percent of all jobs in each county. In Fergus County, construction, retail trade, and accommodation and food services appear to be the largest private sector employers (after farming). The same sectors, along with “other services,” are the largest sources of private jobs in Phillips County. In Valley County, transportation and warehousing accounts is a relatively large sector, with more than 400 jobs. Valley County also appears to have the largest mining sector among the SFA counties (though this is uncertain from this data due to the non-disclosure issues). In the standard economic sector definitions used by the Bureau of Economic Analysis based on the North American Industry Classification System (NAICS), mining includes oil and gas activity.

Table C-19 also provides some insight into employment changes from 2001 to 2014 (Appendix C). Although farming remains the largest source of private sector jobs in each of the SFA counties, the number of farm jobs declined over the past 14 years (except in Petroleum County). In Fergus County, it appears the most job growth has occurred in the construction industry. Both Petroleum County and Phillips County have seen a relatively large increase in real estate, rental, and leasing jobs. In Valley County, most of the private sector job growth has been in transportation and warehousing, mining, wholesale trade, and construction. The number of government jobs declined in three of the four counties over the past 14 years, but increased in Valley County.

Table 3-44 shows the employment history in Judith Basin County, the single trade county of the socioeconomic analysis area in Montana, from 1970 to 2014. The distribution of employment between 2001 and 2014 by industry sector for Judith Basin County, and the state of Montana as a whole, is summarized in Table C-20 in Appendix C.

Table 3-44. Employment History by Trade County in the Montana Socioeconomic Analysis Area, 1970–2014

Year	Judith Basin County	
	No. of Jobs	Ave. Annual Change
1970	1,257	—
1980	1,182	-0.6%
1990	1,194	0.1%
2000	1,210	0.1%
2010	1,174	-0.3%
2014	1,357	3.7%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

Labor Force and Unemployment

The labor force of an area is the population of working-age (16 years old or older) residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that "unemployed" is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Montana rose sharply and the SFA counties were no exception (Figure 3-7). In most of the SFA counties, unemployment peaked in 2009, 2010, or 2011 and has declined in the past four years. During the past three years, the unemployment rate has generally been lower than the state average in the SFA counties except in Phillips County. In 2015, however, the unemployment rate increased in Petroleum County and exceeded the state average. Valley County has generally had the lowest unemployment rate among the SFA counties over the past 10 years. The most recent annual average unemployment rates (in 2015) for the SFA counties were: Fergus County 4.1 percent, Petroleum County 5.1 percent, Phillips County 5.0 percent and Valley County 3.1 percent. The statewide unemployment rate in Montana in 2015 was 4.1 percent.

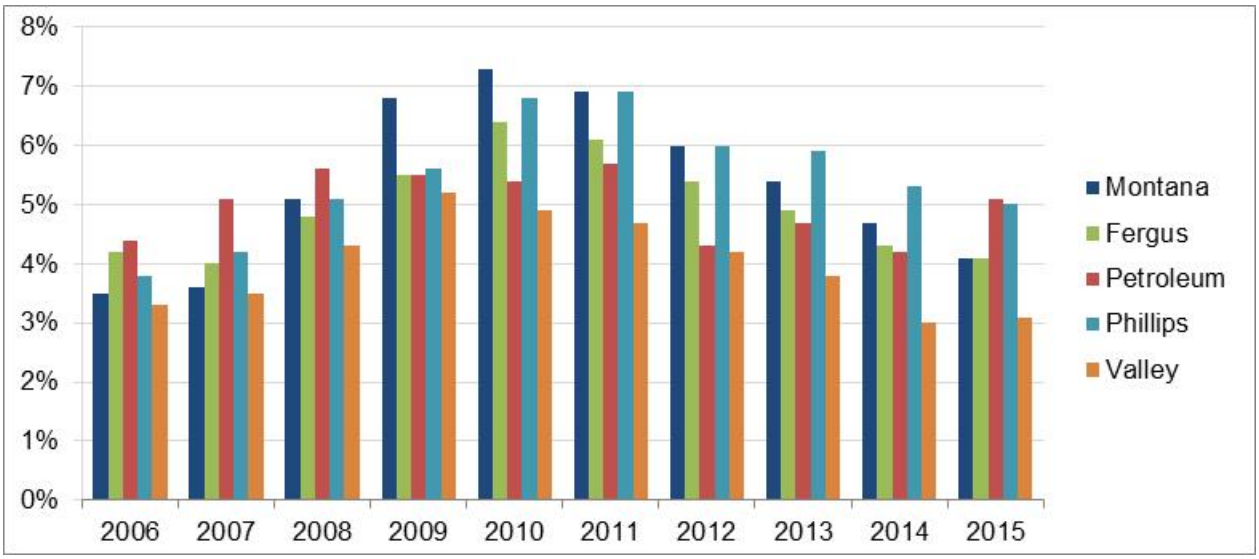

Figure 3-7. Unemployment Rates in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area, 2006–2015

Source: U.S Bureau of Labor Statistics 2016.

Figure 3-8 shows the unemployment rate for the trade county in the Montana socioeconomic analysis area between 2006 and 2015.

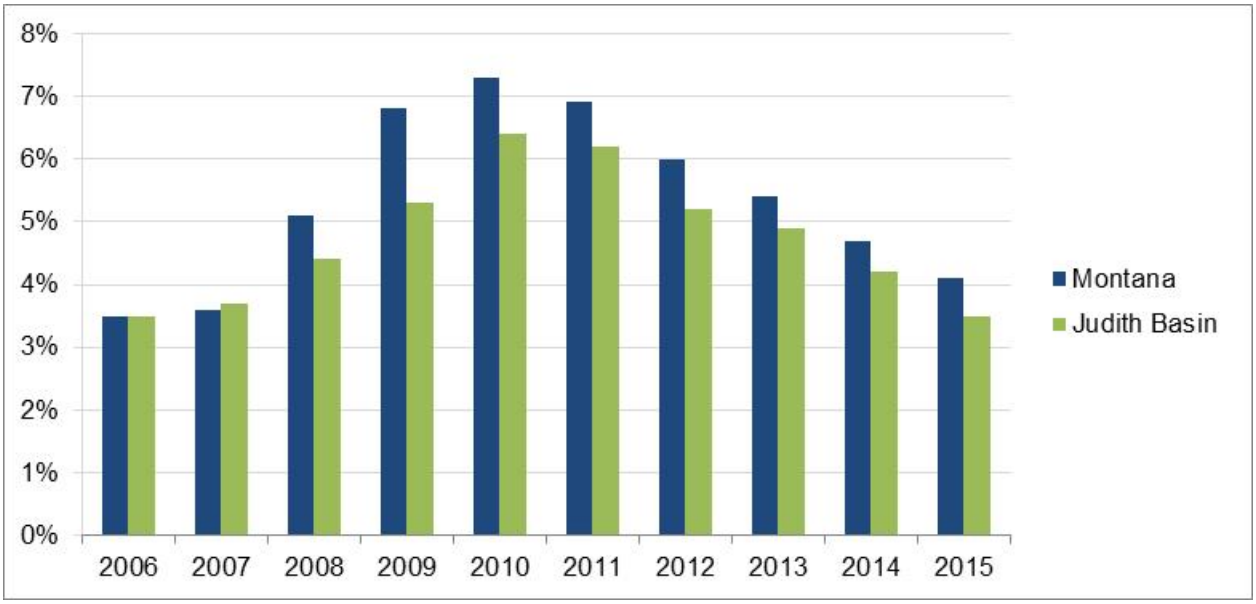

Figure 3-8. Unemployment Rates for Montana and the Trade County in the Montana Socioeconomic Analysis Area, 2006–2015

Source: U.S Bureau of Labor Statistics 2016.

Personal Income

Statewide, total employee compensation in Montana grew by 78 percent between 2001 and 2014 (see Table C-21 in Appendix C). Over the same time period, total compensation grew more rapidly in Petroleum County (122 percent) and Valley County (100 percent), and more slowly in Fergus County (63 percent) and Phillips County (54 percent). In some cases, industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns.

In part, the increases in total employee compensation reflected increases in the number of jobs (as shown previously in Table C-20 in Appendix C). However, the average compensation per job in Montana did increase by 57 percent from 2001 to 2014, from $31,212 to $48,989. Compensation per job grew at a slightly faster rate than the state average over the 14-year period in Phillips County (66 percent increase), Valley County (64 percent increase) and Fergus County (59 percent increase). Earnings per job increased in Petroleum County as well (55 percent increase), but at a slightly slower pace than the statewide average.

Average compensation per job in 2014 remained lower in each of the SFA counties than in the state as a whole. In 2014, the average compensation per job in Valley County ($47,471) was about 3 percent below the state average. The average compensation per job in Fergus County ($42,646), Phillips County ($39,941) and Petroleum County ($34,091) was 13 percent, 18 percent, and 30 percent below the state average (respectively).

Table C-21 also shows total labor compensation by industry, although the small size of the economies in several of the SFA counties limits the data that the Bureau of Economic Analysis is able to disclose (Appendix C). Employee compensation from the mining sector was disclosed in two of the four SFA counties (Fergus County and Valley County).

Based on the data that are available for total employee compensation in 2014, the largest private sectors in Fergus County were construction, retail trade, and manufacturing. However, the fastest growing sectors from 2001-2014 (in terms of percentage changes in total employee compensation) were real estate, rental and leasing (170 percent increase); farming (121 percent increase); and finance and insurance (117 percent increase).

Excluding industries where Bureau of Economic Analysis did not disclose data, the largest private sectors in Phillips County based on total employee compensation in 2014 were farming, retail trade, and transportation and warehousing. However, the fastest growing sectors from 2001-2014 (in terms of percentage changes in total employee compensation) were construction (109 percent increase); professional, scientific and technical services (104 percent increase); and farming (99 percent increase).

In Valley County, the largest sectors based on total employee compensation in 2014 were transportation and warehousing, wholesale trade, and retail trade — again recognizing that compensation data was not disclosed for several industries. The fastest growing sectors from 2001-2014 (in terms of percentage changes in total employee compensation) were information (514 percent increase); arts, entertainment, and recreation (305 percent increase); and wholesale trade (302 percent increase).

Total personal income in the state of Montana was $14.7 billion in 2014 (Table 3-45). Total personal income in the four SFA counties in 2014 ranged from $438 million in Fergus County to $27 million in Petroleum County.

Table 3-45. Income by Source in Montana and the SFA Counties in the Montana Socioeconomic Analysis Area in 2014 (Thousands of 2015 dollars)

Source	Montana	Fergus County	Petroleum County	Phillips County	Valley County
Total personal income	$14,697,831	$438,467	$27,179	$151,231	$318,247
Non-labor income share	42%	48%	28%	48%	48%
Non-labor income components	—	—	—	—	—
Dividends, interest, rent	55%	54%	59%	50%	56%
Age-related transfer payments	27%	30%	25%	30%	26%
Hardship-related payments	11%	10%	11%	14%	11%
Other transfer payments	7%	6%	4%	5%	7%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Statewide, non-labor income accounted for 42 percent of total personal income. Among the four SFA counties in Montana, 48 percent of total personal income came from sources other than labor earnings in Fergus County, Phillips County, and Valley County. Non-labor sources accounted for a smaller share of personal income (28 percent) in Petroleum County.

The largest component of non-labor income in each of the SFA counties, as well as the state as a whole, was income from dividends, interest, and rent. These sources made up between 50 percent (in Phillips County) and 59 percent (in Petroleum County) of all non-labor income in the SFA counties. Age-related transfer payments from social security and Medicare accounted for between 25 percent and 30 percent of all non-labor income in the SFA counties. Hardship-related payments (including Medicaid, income maintenance, and unemployment insurance) accounted for between 10 percent and 14 percent of non-labor income in each of the SFA counties.

Statewide, median annual household income in Montana increased by 41 percent from 1999 to 2014 from $33,151 to $46,608 (Table 3-46). After accounting for inflation, however, the statewide increase in median household income from 1999 to 2014 was about 5 percent.

Table 3-46. Median Income in the SFA Counties in the Montana Socioeconomic Analysis Area

County	Year	Median Household Income	% Change (1999 - 2014)
Fergus	1999	$31,217	37%
	2010 to 2014	$42,915	
Petroleum	1999	$24,699	42%
	2010 to 2014	$35,092	
Phillips	1999	$29,174	43%
	2010 to 2014	$41,595	
Valley	1999	$31,616	47%
	2010 to 2014	$46,328	

Source: U.S Census Bureau 2000, ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

In the SFA counties, median household income increased by 37 percent in Fergus County (3 percent after netting out inflation), 42 percent in Petroleum County (6 percent after inflation), 43 percent in Phillips County (7 percent after inflation) and 47 percent in Valley County (10 percent after adjusting for inflation). Between 2010 and 2014 the median household income in Valley County ($46,328) is similar to the median household income for Montana as a whole ($46,608) during the same time period, while median household incomes are about 7 percent lower than the state median in Fergus and Phillips counties. Between 2010 and 2014 the median household income in Petroleum County ($35,092) is 25 percent below the statewide median.

Income tables for the Montana trade counties are presented below (Tables 3-47 and 3-48). Detailed labor income by sector for the Montana trade counties are presented in Table C-22 in Appendix C.

Table 3-47. Sources of Non-Labor Income by Source in the Trade County of the Montana Socioeconomic Analysis Area (Thousands of 2015 Dollars)

Source	Judith Basin County
Total personal income	$307,098
Non-labor income share	39%
Non-labor income components	—
Dividends, interest, rent	64%
Age-related transfer payments	25%
Hardship-related payments	6%
Other transfer payments	5%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Table 3-48. Median Household Income in the Trade County of the Montana Socioeconomic Analysis Area and State of Montana

Area	Year	Median Household Income	% Change (1999 - 2014)
Judith Basin County	1999	$28,705	51%
	2010 to 2014	$43,272	
Montana	1999	$33,151	41%
	2010 to 2014	$46,608	

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values 2010 to 2014 are medians for that time interval.

Taxes and Revenues

More than 80 percent of general fund revenue in the state of Montana comes from five sources: income taxes on individuals (53 percent); property taxes (11 percent); corporate license taxes (9 percent); oil and gas production taxes (5 percent); and vehicle taxes and fees (5 percent) (Table 3-49). United States mineral royalties, coal severance taxes and other natural resource taxes (beyond oil and gas production taxes referenced previously) accounted for less than 3 percent of statewide general fund revenues.

Table 3-49. Montana General Fund Revenues Sources as a Percent of Total for FY 2016-2017

Tax Category	Percent of Total
Individual income tax	52.8%
Property tax	10.5%
Corporation license tax	8.6%
Oil and gas production taxes	4.6%
Vehicle taxes and fees	4.5%
Other natural resource taxes*	2.8%
All other taxes and fees	16.2%

Note: *Includes U.S. Mineral Royalties (1.4%), Coal Severance Tax (0.7%), Metalliferous Mines Tax (0.4%), Electrical Energy Tax (0.2%) and Wholesale Energy Transactions Tax (0.1%).
Source: Governor's Budget Fiscal Years 2016-2017. Revenue Estimates General Fund and Select Funds.

Local Government Revenues

The following discussion focuses on Valley County, the single county in Montana anticipated to experience varying levels of mining operations under the alternatives as discussed in the RFD. Property taxes are the largest source of revenue for Valley County. Intergovernmental transfers were the second largest source of county revenues. The majority of Valley County's revenue from intergovernmental transfers comes from PILTs on federal lands (Table 3-50).

Table 3-50. Valley County Revenue and Expenditure Activity, Year Ending June 30, 2014

Revenues	Dollars
Property taxes	$4,288,333
Intergovernmental transfers*	$1,875,651
Charges for services	$1,597,194
Operating grants and contributions	$1,364,843
Capital grants and contributions	$808,690
Gain on asset disposal	$538,833
Other revenues	$120,862
Total revenues	$10,594,406
Total expenditures	$12,825,083

Note: *Intergovernmental transfers includes $971,000 from PILT.
Source: Valley County 2014.

Mining Related Economy

The composite economic category of mining, quarrying, and oil and gas extraction (NAICS 21) accounted for 2.3 percent of all jobs in Montana (14,985 jobs) and 3.8 percent of labor income in the state ($882 million) in 2014. In Valley County, this composite category accounted for 2.7 percent of employment (138 jobs) and 1.3 percent of labor income ($2.2 million) in 2014 (BEA 2014).

More specific to the types of mining potentially affected by this EIS, there were 2,380 employees at 16 metal ore mines in Montana in 2012, with a total payroll of about $196 million. Five nonmetallic mineral mines employed a total of between 100 and 249 employees. The payroll for the nonmetallic mines was not disclosed (U.S. Census Bureau, 2015).

Bentonite has been mined in Valley County within the past 20 years, but no locatable mines are currently operating in the county (Appendix B). According to data from MIG Inc. – a firm that specializes in regional economic impact assessments – two SFA counties in Montana had any involvement with locatable mineral mining and production (Table 3-51). In Fergus and Petroleum counties, metal mining services made very small contributions to the local economies. In each county, one individual was employed in this sector. In both cases, metal mining services created approximately $73,000 in output, which generated economic activity in both counties through employee compensation, proprietor and other income, and local taxes.

Table 3-51. Mining Employment, Output, Compensation, Income, and Taxes by Montana County, 2013

	Employ-ment	Output	Employee Compensation	Proprietor Income	Other Property Type Income	Tax on Production and Imports
Fergus County						
Metal mining services	1	$73,290	$23,540	$882	$22,831	$3,259
Petroleum County						
Metal mining services	1	$73,688	$118	$7,093	$31,058	$4,433

Source: Minnesota IMPLAN Group, Inc. 2013.

Recreation and Tourism Related Economy

Recreation and tourism is a major industry in Montana and supports a number of jobs within the SFA counties. The industry primarily employs people through the following sectors: retail trade; passenger transportation; arts, entertainment, and recreation; and accommodation and food (Table 3-52). Approximately 1,200 jobs (18 percent of total employment in 2014) in the SFA counties are in sectors related to travel and tourism. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-52. Employment in Travel and Tourism Related Sectors for Montana and the SFA Counties in the Montana Socioeconomic Analysis Area, 2014

	Montana	Fergus County	Petroleum County	Phillips County	Valley County
Retail Trade	11,381	53	0	75	64
Passenger Transportation	948	2	0	0	2
Arts, Entertainment, & Recreation	10,658	40	0	3	19
Accommodation & Food	47,949	431	7	111	372
Total	70,936	526	7	189	457

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Census Bureau County Business Patterns.

Visitor expenditures on goods and services in the state of Montana and the SFA counties produce business receipts at local businesses, which in turn create earnings and employment for local residents. In 2014, the proportion of travel and tourism related jobs across all four SFA counties was slightly lower (17.7 percent of all jobs) than the state average of 19.5 percent. The annual salaries paid to employees in the travel and tourism sector were also substantially below comparable salaries in non-related sectors. The highest average annual wage in travel and tourism related sectors among the SFA counties was in Phillips County, but that average wage ($16,183) was about 45 percent below the county's average wage across all private sector jobs ($29,467) (Headwaters Economics 2016). The average annual wage in travel and tourism related jobs in Valley County was $9,558, compared to an overall average wage in the county's private sector of $34,735 (Headwaters Economics 2016).

Table 3-53 displays the employment statistics for travel and tourism related sectors in the trade county of the Montana socioeconomic analysis area.

Table 3-53. Employment in Travel and Tourism Related Sectors for the Trade County in the Montana Socioeconomic Analysis Area, 2014

	Judith Basin County
Retail Trade	7
Passenger Transportation	0
Arts, Entertainment, & Recreation	3
Accommodation & Food Services	25
Total	35

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Census Bureau County Business Patterns.

Other Economic Uses of Federal Lands

Recreation is the largest source of economic activity on Montana's federally-managed lands, but other activities also make significant economic contributions to the state's economy (Table 3-54). The value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Montana, activities on federal lands created $650 million in value-added activity through the recreation sector in 2015. Major grants and payments, which include Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land, created $100 million in value-added activity in the state in 2015. DOI employees created an additional $50 million in valued-added activity by spending part of their income in Montana in 2015 (DOI 2015).

This economic activity has a direct translation into employment figures (Table 3-54). Visitor spending on BLM, Bureau of Reclamation, USFWS, Forest Service, and National Park Service land in Montana supported 14,905 jobs in the recreation sector in 2015. Energy and mineral-related activities on these lands supported 4,227 jobs. Timber harvests and grazing activities on BLM and Bureau of Indian Affairs land combined to support 3,213 jobs across the state in 2015. The revenue from major grants and other payments affecting federal lands supported 1,526 jobs and the spending by DOI employees supported an additional 865 jobs in various sectors in 2015.

Table 3-54. Contribution of Department of the Interior Activities to the State of Montana by Sector (FY 2015)

	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated Valued Added ($ billions)	0.65	0.49	0	0.10	0.05	1.30
Estimate Total Output ($ billions)	1.30	1.06	0.29	0.15	0.10	2.90
Estimated Total Jobs	14,905	4,227	3,213	1,526	865	24,735

Source: U.S. Department of the Interior 2015.

Market Values Associated with Recreation and Tourism

BLM and Forest Service lands within the Montana socioeconomic analysis area offer a variety of recreation opportunities. The recreation opportunities available in the area play an important role in the quality of life of many local residents, and also attract visitors from elsewhere in the state and region. The 2015 BLM HiLine RMP/EIS, which covered an area that included Phillips County and Valley County (as well as six other counties that are not included in the SFA withdrawal areas) estimated that BLM lands in the planning area received an estimated 113,000 recreation visits in FY 2010 (BLM 2011b). Major recreation activities on BLM lands are hunting (33 percent), fishing (12 percent), off-highway vehicle (OHV) use (11 percent), wildlife viewing (8 percent), and picnicking (8 percent) (BLM 2015c).

More broadly, non-resident travelers spent an estimated $38 million in Fergus County and $21 million in Valley County in 2014. The largest categories of non-resident travel expenditures included fuel, retail sales, groceries and snacks, and hotel/motel lodging (University of Montana 2015).

3.5.11 Nevada – Overview of Area

The state of Nevada is the seventh largest state in the United States and covers a land area of approximately 110,622 square miles. Nevada is largely a semiarid desert located within the Great Basin and the Mojave Desert. The state contains 17 counties, but nearly three quarters of the population live in Clark County where the Las Vegas metro area is located.

Percent of Area Covered by SFAs

There are three SFAs located in the northern part of the state of Nevada (Figure 3-9). The Southern Idaho/Northern Nevada SFA is located in Elko County; the Southeast Oregon/North Central Nevada SFA is located in Humboldt County; and the Sheldon-Hart Mountain NWR Complex Area is located in Washoe County.

Elko County covers a land area of approximately 11,009,920 acres. The proposed withdrawal would impact 2,014,585 acres (18 percent) of the land area inside of Elko County (Table 3-55). Humboldt County spans an area of 6,181,120 acres of which 636,470 acres (10 percent) would be impacted by the withdrawal. Washoe County is 4,186,880 acres in size and the withdrawal would impact 116,496 acres (3 percent) of the county’s total land area.

In total, a combined area of 2,767,551 acres would be withdrawn from surface mineral exploration and development inside of the SFAs contained in Nevada. The proposed withdrawal area covers approximately 13 percent of the combined land area of Elko, Humboldt, and Washoe counties.

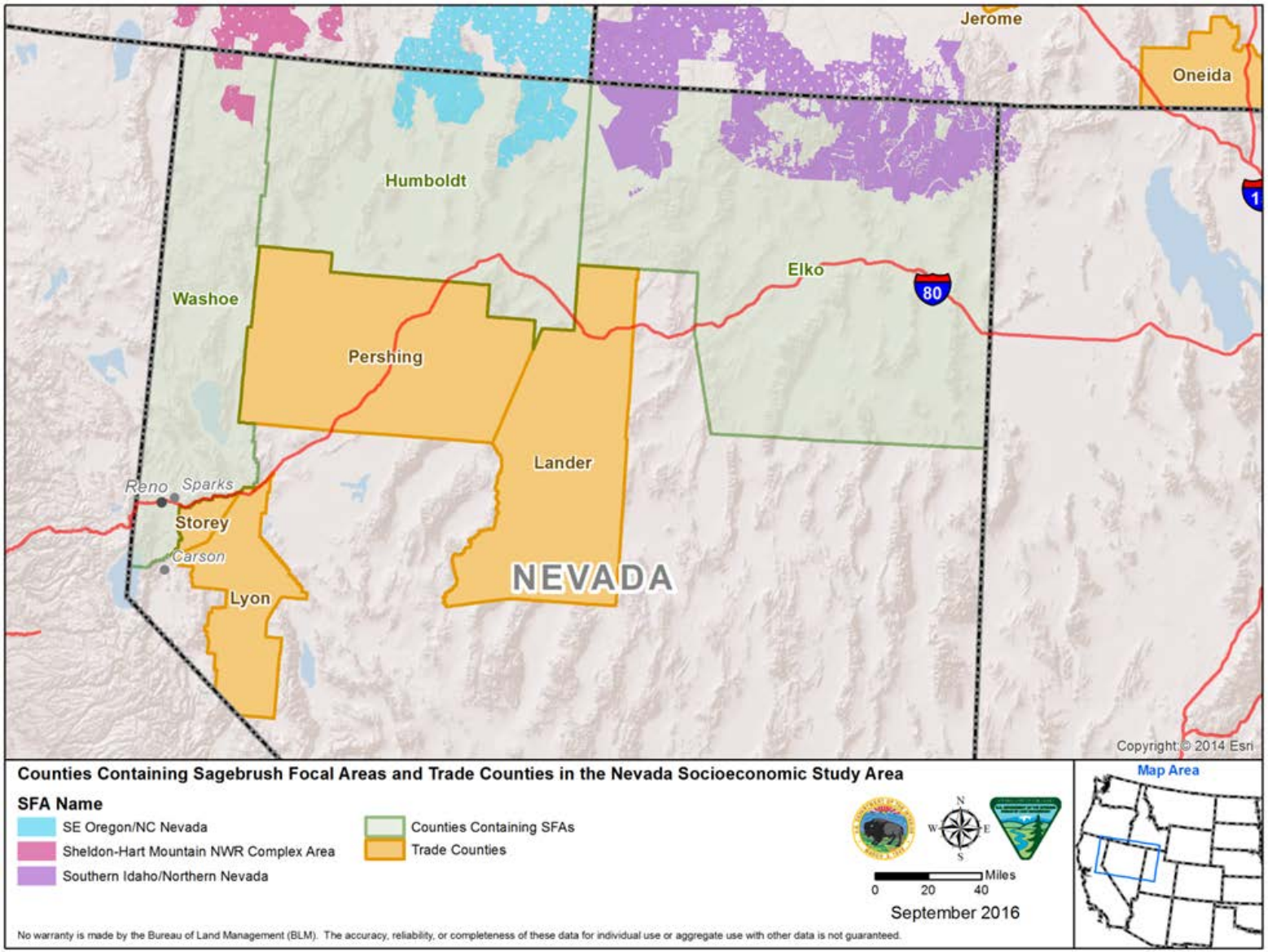

Figure 3-9. Counties Containing SFAs and Trade Counties in the Nevada Socioeconomic Analysis Area

Table 3-55. SFA Withdrawal Areas in Nevada Counties (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Elko County	11,009,920	2,014,585	18%
Humboldt County	6,181,120	636,470	10%
Washoe County	4,186,880	116,496	3%
Total	**21,377,920**	**2,767,551**	**13%**

Percent of Area that is Federal Lands (List by Agency)

The Nevada SFA counties are generally rural, with two cities (Elko and Winnemucca) within 50 miles of the proposed withdrawal area. The City of Reno, located in Washoe County, is the largest city in the Nevada SFA counties, but is located more than 100 miles from the nearest SFA. Federal lands constitute the majority of the Nevada socioeconomic analysis area and all three counties have large land areas with a dispersed population.

Elko, Humboldt, and Washoe counties contain significant areas of federal lands (Table 3-56). According to statistics from federal agencies, 7,960,731 acres of land in Elko County are administered by federal agencies. In total, 73 percent of the land area in Elko County is administered by federal agencies. In Humboldt Count, federal agencies administer 5,065,865 acres of land, which is approximately 82 percent of the County's land area. In Washoe County, federal agencies administer 2,980,254 acres of land. The 573,504 acre Sheldon NWR, which is managed by the USFWS, is located in both Humboldt and Washoe counties. Federally managed lands account for approximately 71 percent of Humboldt County and 82 percent of Washoe County.

Table 3-56. Land Administered by Federal Agencies in SFA Counties in the Nevada Socioeconomic Analysis Area

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Elko County	10,958,460	7,960,731	73%
Humboldt County	6,211,615	5,065,865	82%
Washoe County	4,187,730	2,980,254	71%
Total	**21,357,805**	**17,006,850**	**80%**

Source: Western Rural Development Center 2010b.

3.5.12 Social and Cultural Conditions

History and Recent Cultural Events

The state of Nevada is often referred to as the 'Silver State' and the 'Sage-brush State.' Silver mining shaped the economy and development of the state for several decades in the late 19th and early 20th centuries. Today Nevada is the country's second largest producer of silver after Alaska and the state also produces more gold than all but four countries (USGS 2015a; USGS 2015b; Nevada Division of Minerals 2015). The majority of gold production in the state occurs in Eureka, Lander, and Humboldt Counties. Elko County accounted for 11.4 percent of Nevada's 2015 gold production (Nevada Division of Minerals 2016). In 1931, the state legalized gambling, which created a strong tourism economy around the Las Vegas metro area. The state also has a large agricultural economy that produces, processes, and exports beef, hay, alfalfa, assorted dairy products, onions, and potatoes (Nevada Department of Agriculture 2013). Nevada contains a large amount of federal lands that are especially important for the state's grazing and mining industries and, in some rural counties, federal agencies manage more than 90 percent of the land area (Nevada Legislative Counsel Bureau 2016). Over the last several decades, federal laws,

regulations, and policies have influenced the management of large areas of land and natural resources in Nevada, which have had a significant influence on local public policies and perceptions (Nevada Legislative Counsel Bureau 2016).

In recent years, the federal government's influence over land use has caused conflict with local ranchers (Clark County) and created opposition from the extractive industry in counties near the SFAs. While the counties have made progress toward diversifying their economies, the major population centers in Elko and Humboldt counties remain tied to the mining sector. In the early 2000s, the economies of both counties were hurt from low prices for precious metals, but today employment in the mining industry has recovered and continues to grow due to high demand for gold and silver. The Newmont Mining Company, which has a base of operations in Elko, recently hired 200 employees for its new Long Canyon Mine in Elko County (Nevada Business Magazine 2016).

There have been ongoing efforts to diversify the economies of rural counties in Nevada. In rural parts of the state the tourism economy has been growing. In 2009, tourists to rural regions spent an estimated $1.25 billion dollars and by 2013 tourist expenditures had grown to $1.39 billion (Nevada Commission on Tourism 2014). The City of Elko hosts several cultural events each year to attract tourists and in 2015 the Elko County Convention and Visitors Authority invested $9 million in a new conference center (Elko Daily 2015). However, the northern region of Nevada has built on its mining heritage and infrastructure to focus its economic development efforts on expanding the activities of the mining industry through actions like encouraging mining equipment manufacturers, like L&H Industrial Inc., a machinery manufacturer, to relocate to the region and promoting the extraction of minerals other than gold and silver (e.g., barite, lithium, and magnesium) (Nevada Business Magazine 2016).

Population and Population Growth

Table 3-57 shows current and historic populations in the SFA counties in Nevada. While the population of the United States grew at a rate of 29 percent between 1990 and 2015, the population in Nevada increased by 141 percent over the same period. The state experienced a higher percentage of population growth from 1990 to 2000 than from 2000 to 2010. From 2000 to 2009, natural increase (births minus deaths) has accounted for 26 percent of Nevada's population growth, and net migration has accounted for about 74 percent.

Table 3-57. Population and Growth in Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2015)
Elko County	33,463	45,291	48,818	51,935	55.2%
Humboldt County	12,844	16,106	16,528	17,019	32.5%
Washoe County	254,667	339,486	421,407	446,903	75.5%
Nevada	1,201,675	1,998,257	2,700,551	2,890,845	141%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010, ACS 5-Year Estimates 2010-2014.
Note: Values for each period are medians for that time interval.

Population growth between 1990 and 2015 in the SFA counties in Nevada ranges from a low of 32.5 percent growth in Humboldt County, Nevada, to a high of 75.5 percent growth in Washoe County, Nevada, which is by far the most populated county in the socioeconomic analysis area. With an estimated population of 241,441 in 2015, Reno, Nevada, is the largest city in the Nevada socioeconomic analysis area (U.S. Census Bureau 2015). Reno is the county seat of Washoe County and the third largest city in Nevada, after Las Vegas and Henderson. With a 2015 population of 18,297, Elko is the largest city in Elko County, Nevada. The largest city in Humboldt County is Winnemucca, which had a population of 7,462 in 2010.

Table 3-58 shows the population between 1990 and 2014 as well as the population growth rate for the trade counties of the Nevada socioeconomic analysis area.

Table 3-58. Population and Growth in the Trade Counties of the Nevada Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2015)
Lander County	6,266	5,794	5,784	5,903	-6%
Lyon County	20,001	34,501	51,980	52,585	163%
Pershing County	4,336	6,693	6,753	6,634	53%
Storey County	2,526	3,399	4,010	3,987	58%
Nevada	1,201,675	1,998,257	2,700,551	2,890,845	141%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010, 2010-2014.

Demographics (Age, Gender and Race/Ethnicity Distributions)

Table 3-59 shows average age and gender characteristics of the populations in each SFA county in Nevada between 2010 and 2014. Nevada and the counties in the socioeconomic analysis area generally followed the same trends as the country as a whole. Women comprised approximately 50 percent of the population and adults of the ages 21 to 64 accounted for approximately 70 percent of the population.

Table 3-59. Demographic Characteristics of Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area, Share in Total Population (Percent)2010 to 2014

Area	Women	Under 21 Years of Age	21 to 64 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Elko	47.8	32.9	58.3	8.8	87.9	1.2	5.2	1.0	4.7
Humboldt	47.3	32.0	58.3	9.7	87.7	0.5	4.8	0.2	6.8
Washoe	49.7	27.0	59.6	13.4	81.5	2.4	1.6	5.2	9.3
Nevada	49.6	27.7	59.2	13.1	70.1	8.3	1.1	7.5	13.0

Source: ACS 5-Year Estimates 2010-2014.

Between 2010 and 2014, Elko County and Humboldt County had the populations with the lowest average percentage of citizens over 65, both at least 4 percentage points lower than the state average of 13.1 percent. These two counties also had the highest percentages of individuals under 21 during this same time period, both at least 4 percentage points higher than the state average of 27.7 percent. As a result, Elko County and Humboldt County had smaller percentages of working age populations than Washoe County or the state of Nevada by at least 4 percentage points. In contrast, Washoe County's average distribution of women, individuals under 21, 21 to 64, and 65 and older, were nearly identical to the state averages.

Of the SFA counties in Nevada, Elko, Humboldt, and Washoe counties had the populations with the highest average percentage of white individuals, all at least 11 percentage points higher than the state average between 2010 and 2014. The three counties also had fewer black individuals than the state average by at least 6 percentage points. Elko County and Humboldt County had the highest average percentages of American Indian individuals, both at least 3.5 percentage points higher than the state average. These two counties also had the lowest average percentages of Asian individuals, both at least 6 percentage points lower than the state average.

Although Table 3-59 does not indicate the ethnicity of the residents of the SFA counties, an average of 27.2 percent of all Nevada residents identified themselves as Hispanic or Latino between 2010 and 2014. The average proportion of residents in the SFA counties identifying themselves as Hispanic or Latino was slightly lower than the statewide average during this same time period. Between 2010 and 2014, the average proportion of residents identifying themselves as Hispanic or Latino ranged from 22.9 percent in Washoe

County to 25.1 percent in Humboldt County (ACS 5-year Estimates 2014). In Elko County, an average of 23.6 percent of residents identified themselves as Hispanic or Latino during this same time period.

Table 3-60 shows the average age and gender characteristics of the population in each trade county in the Nevada socioeconomic analysis area between 2010 and 2014. Although Table 3-60 does not indicate the ethnicity of the residents of the trade counties, between 2010 and 2014, an average of 2.9 percent and 23.3 percent of residents living in the trade counties identified themselves as Hispanic or Latino. Lander County contained the largest proportion of residents identifying themselves as Hispanic or Latino (23.3 percent) and Storey County contained the fewest (2.9 percent). During this time period, the proportion of residents identifying themselves as Hispanic or Latino in Lyon County and Pershing County was 15.3 percent and 22.7 percent, respectively.

Table 3-60. Demographic Characteristics of the Trade Counties in the Nevada Socioeconomic Analysis Area, Share in Total Population (Percent), 2010 to 2014

Area	Women	21 to 64 Years of Age	Under 21 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Lander	47.5	54.3	30.8	14.9	89.8	0.1	4.0	0.4	94.3
Lyon	49.5	55.7	26.4	17.9	87.7	1.0	2.9	1.4	7.0
Pershing	36.0	20.5	65.6	13.9	81.4	4.0	4.3	0.1	10.2
Storey	52.7	60.6	15.8	23.6	94.9	0.5	1.7	1.0	1.9
Nevada	49.6	59.2	27.7	13.1	70.1	8.3	1.1	7.5	13.0

Source: ACS 5-Year Estimates 2010-2014.

Proportion of Residents Living in Poverty

Statewide, the average proportion of individuals living in poverty increased from 10.29 percent in 1999 to an average of 15.3 percent between 2010 and 2014, representing an average increase of 216,893 people (Table 3-61). The poverty rate in the SFA counties in Nevada also increased between 1999 and 2014. Humboldt County saw the smallest increase as the poverty rate grew from 9.6 percent in 2000 to an average of 9.8 percent between 2010 and 2014, representing an average increase of 132 people. During the same time period, the poverty rate in Elko County grew from 8.7 percent in 1999 to an average of 9.7 percent between 2010 and 2014, reflecting an average increase of 1,019 people. The largest change in the poverty rate was observed in Washoe County where the rate grew from 9.8 percent in 1999 to an average of 15.5 percent between 2010 and 2014, which amounted to an average of 33,193 more people.

Table 3-61. Poverty Counts in Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area, 2000 to 2014

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Nevada	1999	205,685	10.3%
	2010 to 2014	423,578	15.3%
Elko County	1999	3,947	8.7%
	2010 to 2014	4,966	9.7%
Humboldt County	1999	1,539	9.6%
	2010 to 2014	1,671	9.8%
Washoe County	1999	33,318	9.8%
	2010 to 2014	66,511	15.5%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Table 3-62 shows the proportion of individuals living in poverty in each trade county in the Nevada socioeconomic analysis area.

Table 3-62. Poverty Counts in Nevada and the Trade Counties in the Nevada Socioeconomic Analysis Area

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Nevada	1999	205,685	10.3%
	2010 to 2014	423,578	15.3%
Lander County	1999	720	12.5%
	2010 to 2014	707	12.1%
Lyon County	1999	3,513	10.2%
	2010 to 2014	7,625	14.8%
Pershing County	1999	599	9.0%
	2010 to 2014	931	13.8%
Storey County	1999	195	5.7%
	2010 to 2014	413	10.5%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Housing Stock and Prices

Table 3-63 illustrates the average available housing stock within the SFA counties from 2006 to 2010 and from 2010 to 2014. Between 2006 and 2010, there was an average of 19,566 housing units in Elko County and approximately 11 percent (2,124 units) were vacant. Between 2010 and 2014, the average number of housing units increased to 19,939 and the number of vacant units increased by 2,352. Between 2006 and 2010, Humboldt County had an average of 7,123 housing units of which 834 were vacant (12 percent). Between 2010 and 2014, the average housing stock had increased to 7,165 units of which 15 percent (1,073) were vacant. In Washoe County there was an average of 184,841 housing units between 2006 and 2010 and approximately 12 percent were vacant (21,396 units). Between 2010 and 2014, the average number of housing units increased to 185,685 and the vacancy rate decreased to 11 percent (21,224 units). The average percentage of vacant housing units among the three-county area was slightly lower than the Nevada state averages over the same periods of time. The average percent of vacant units increased from 14 percent between 2006 and 2010 to 15 percent between 2010 and 2014.

Table 3-63. Housing Stock and Vacancy in Nevada and the SFA Counties of the Nevada Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Nevada	2006 to 2010	1,173,814	167,564	14%
	2010 to 2014	1,185,232	179,274	15%
Elko County	2006 to 2010	19,566	2,124	11%
	2010 to 2014	19,939	2,352	12%
Humboldt County	2006 to 2010	7,123	834	12%
	2010 to 2014	7,165	1,073	15%
Washoe County	2006 to 2010	184,841	21,396	12%
	2010 to 2014	185,685	21,224	11%

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are averages for that time interval.

Average housing values, mortgages, and rental costs in the three-county area vary around the statewide averages for Nevada (Table 3-64). While average housing values fell over $87,100 in Nevada between the period from 2006 to 2010 to the period from 2010 to 2014 (-34 percent), average values increased by $5,700 (3 percent) in Elko County and $14,800 (11 percent) in Humboldt County during the same time periods. In Washoe County, median home values dropped by $94,600 (-32 percent), which is $7,500 more than the statewide average. Average monthly rental costs in Nevada were greater than the rental costs of all three SFA counties, but they have been falling over time. In Nevada, the average monthly rental costs were $980 between 2010 and 2014 compared to $998 between 2006 and 2010, which is a -2 percent change. Humboldt County's monthly average rental costs of $781 between 2010 and 2014 were the lowest of the three counties contained in the analysis area, but they are 27 percent higher than they were between 2006 and 2010 ($617). In Elko County the average monthly rental costs of $923 between 2010 and 2014 were the highest in the analysis area and have increased by 23 percent compared their average value between 2006 and 2010 ($753). Washoe County's average monthly rental price between 2010 and 2014 was $908 compared to $911 between 2006 and 2010 (-0.3 percent change). The disproportionate increase in the rate of growth of rental costs in Humboldt and Elko counties may reflect the increase in demand and lack of availability in affordable rental units.

Table 3-64. Housing Values and Mortgage and Rental Costs in Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Nevada	2006 to 2010	$254,200	-34%	$1,777	$998	-2%
	2010 to 2014	$167,100		$1,514	$980	
Elko County	2006 to 2010	$178,200	3%	$1,387	$753	23%
	2010 to 2014	$183,900		$1,467	$923	
Humboldt County	2006 to 2010	$138,100	11%	$1,245	$617	27%
	2010 to 2014	$152,900		$1,211	$781	
Washoe County	2006 to 2010	$295,700	-32%	$1,877	$911	-0.3%
	2010 to 2014	$201,100		$1,630	$908	

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are medians for that time interval.

Tables 3-65 and 3-66 display the housing stock and vacancy statistics and the housing stock values, mortgage costs, and rental costs for the trade counties in the Nevada socioeconomic analysis area.

Table 3-65. Housing Stock and Vacancy in Nevada and the Trade Counties of the Nevada Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Nevada	2006 to 2010	1,173,814	167,564	14%
	2010 to 2014	1,185,232	179,274	15%
Lander County	2006 to 2010	2,575	362	14%
	2010 to 2014	2,520	445	18%
Lyon County	2006 to 2010	22,547	2,739	12%
	2010 to 2014	22,444	2,716	12%
Pershing County	2006 to 2010	2,464	446	18%
	2010 to 2014	2,429	318	13%
Storey County	2006 to 2010	1,990	248	13%
	2010 to 2014	1,996	173	9%

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are averages for that time interval.

Table 3-66. Housing Values and Mortgage and Rental Costs in Nevada and the Trade Counties of the Nevada Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Nevada	2006 to 2010	$254,200	-34%	$1,777	$998	-2%
	2010 to 2014	$167,100		$1,514	$980	
Lander County	2006 to 2010	$103,400	1%	$1,144	$723	-2%
	2010 to 2014	$104,700		$1,225	$708	
Lyon County	2006 to 2010	$185,000	-30%	$1,437	$935	-1%
	2010 to 2014	$129,300		$1,260	$922	
Pershing County	2006 to 2010	$134,500	-11%	$1,124	$627	0%
	2010 to 2014	$119,900		$1,201	$625	
Storey County	2006 to 2010	$239,200	-24%	$1,487	$686	2%
	2010 to 2014	$181,300		$1,390	$699	

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

The 2015 Nevada and Northern California Greater Sage-Grouse EIS (BLM 2015b) for the prepared land use plan amendment included the following assessment of the areas' values and attitudes concerning federal land management:

> *There is a range of interest groups in the socioeconomic analysis area, and the positions advanced by these groups include both overlapping and divergent interests. These groups sometimes define or measure sustainable use or resource conservation differently; these definitions and measures of sustainability sometimes result in different conclusions about how land and resources should be managed.*
>
> *There are also groups that represent coalitions of interest groups. Identification of these groups is intended to inform on the different interests in the analysis area and not to suggest that different interests necessarily conflict. Furthermore, groups and individuals often value various interests.*
>
> *Interest groups in the socioeconomic analysis area include the following: federal, state, county, and local agencies, congressional representatives, local representatives, academic institutions, civic organizations, local chambers of commerce, environmental groups, land conservation groups, outdoors and sporting groups, local school boards, farm associations, Native American groups and tribal governments, and various business groups.*

Specific types of business interest groups include real estate, tourism, mineral extraction, textile manufacturing, crop and livestock farming, and news media. Residents of Nevada's cities and towns view federal lands as an invaluable open space resource for urban dwellers. For example, the Washoe Comprehensive Plan recognizes the numerous scenic, natural, and cultural values that make Washoe County an attractive and exciting place to visit (Washoe County 2005a). Convenient access to federal lands for recreation is one of the area's most attractive features and forms an important element in the personal lifestyle of numerous county residents. The Policies and Action Programs section of the Washoe County Comprehensive Plan includes a policy statement that expresses the intention to maintain the rural character of the planning area and protect its scenic resources, wilderness areas, and natural habitats generally (Washoe County 2005a).

According to the December 2010 Elko County Public Land Use and Natural Resource Management Plan (Elko County 2010), open space and recreational opportunities are critical to Elko County's economic, historical, and cultural identity. Elko County has a diversified economy built on mining, ranching, recreation, and tourism. Recreation opportunities include camping, hiking, fishing, and hunting. Elko County also hosts many annual recreational, historical, cultural, and ethnic special events and attractions. The county embraces the multiple use concept of federal land management and expects federal land management agencies to maximize public access and use of lands, while addressing environmental concerns.

Mining and cattle ranching are two particularly important economic activities for the county (Elko County 2010). Nearly 73 percent of Elko County is under federal management (Elko County 2010). In 2010, Elko County prepared a study titled The Impact of Federal Land Policies on the Economy of Elko County, Nevada, presented as Appendix E of the Elko County Public Land Use and Natural Resource Management Plan. This study shows that because a large share of personal income in the county is derived from activities on federal lands or directly from the federal government, changes in federal policies can have considerable impact on the economy (Leaming 2010).

Humboldt County, west of Elko County, is sparsely populated, with most of its population living in the only incorporated city, Winnemucca (BLM 2010). Public ownership accounts for 80 percent of Humboldt County land use. Less than 1 percent of the land is urban or developed. According to the Humboldt County Regional Master Plan, it typifies a rural intermountain western county.

Its economy is derived substantially from natural resource extraction, primarily mining and agriculture, with mining being the single greatest concentration of resources. Mining-related boom-and-bust cycles have dominated Humboldt's history, and the county's Regional Master Plan aims at a more diversified economy (Humboldt County 2002).

Comments received during scoping and included in the scoping reports as well as comments received during the June 2012 Economic Strategies Workshop for planning, reflected many of the themes discussed above (BLM and Forest Service 2012; BLM 2012b). Residents expressed strong support for multiuse management strategies that would maintain or expand access to federal lands for grazing, mining, and renewable energy development. Many expressed concern that placing constraints on these existing activities, as well as activities that may occur in the reasonably foreseeable future, might create economic hardship in their communities and alter traditional cultural values and lifestyles. Some voiced broader concerns about the effects of restricted access to federal lands on domestic energy production and the prices of minerals and materials.

Participants in the Economic Strategies Workshop also requested that the BLM address a variety of specific concerns in its analysis of the Nevada and Northeastern California Sub-region, including potential impacts on greater sage-grouse habitat not related to humans, major development projects likely to occur in the socioeconomic analysis area in the reasonably foreseeable future, and potential economic impacts on the hunting and fishing industries.

3.5.13 Economic Conditions

Economic Output and Gross Regional Product

Table C-23 shows the total gross output and value added for the SFA counties in the Nevada socioeconomic analysis area in 2013 (Appendix C). Total gross output measures the market value of the total revenue received from the sale of goods and services. Value added measures the value that is added to goods and services that have already been produced. Elko County produced approximately $4.7 billion worth of economic output in 2013. The gold mining sector produced more total gross output than any other sector in the county's economy. It produced $1.1 billion in total gross output (25 percent of total), which generated approximately $769.1 million in value-added activities. The agriculture, forestry, fishing, and hunting sector produced a total gross output of $112.1 million and added approximately $51.2 million in value. Arts, entertainment, and recreation produced a total gross output of $137.8 million and added approximately $82.6 million in value.

Humboldt County produced approximately $3 billion worth of economic output in 2013. The gold mining sector produced more total gross output than any other sector in the county's economy. It produced $1.5 billion in total gross output (50 percent of total), which generated approximately $996.8 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $4.8 million and added approximately $352,412 in value. The agriculture, forestry, fishing, and hunting sector produced a total gross output of $124.5 million and added approximately $64 million in value. Arts, entertainment, and recreation produced a total gross output of $27.5 million and added approximately $16.6 million in value.

Washoe County produced approximately $34.3 billion of total gross output in 2013. The manufacturing sector produced more total gross output than any other sector in the county's economy. It produced approximately $4.5 billion in total gross output (13 percent of total), which generated approximately $1.6 billion in value-added activities. The agriculture, forestry, fishing, and hunting sector produced a total gross output of $145 million and added approximately $92.4 million in value. Arts, entertainment, and recreation produced a total gross output of $917.1 million and added approximately $540.1 million in value. The mining sector in Washoe County produced approximately $1.5 billion in total gross output in 2013 and added approximately $857.4 million worth of added value.

Total Employment and Employment by Sector

Table 3-67 shows the employment history in each SFA county in Nevada from 1970 to 2014. Nevada and the SFA counties have increased employment over the last 45 years. The period from 1970 to 1980 exhibited the highest rate of employment growth across all three SFA counties as well as the state of Nevada. During this time the highest rate of employment growth was observed in Washoe County, which added jobs at an average annual rate of 9.75 percent, slightly above the state average. From 1990 to 2000, the rate of employment growth in the three counties was below the statewide average by at least 3 percentage points. Employment growth in these counties has remained below the state average ever since 1990.

Table 3-67. Employment History for Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area, 1970- 2014

Year	Elko County		Humboldt County		Washoe County		Nevada State Total	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	6,953	–	3,259	–	68,404	–	256,145	–
1980	10,803	5.54%	5,649	7.33%	135,104	9.75%	488,628	9.08%
1990	19,311	7.88%	7,686	3.61%	174,249	2.90%	755,587	5.46%
2000	23,885	2.37%	9,606	2.50%	236,329	3.56%	1,253,202	6.59%
2010	25,280	0.58%	10,202	0.62%	243,185	0.29%	1,483,883	1.84%
2014	26,820	1.52%	10,650	0.44%	259,833	1.71%	1,614,814	2.21%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Table C-24 in Appendix C. The accommodation and food services sector accounts for the largest share of employment in Elko County and Washoe County (20.9 and 12.0 percent, respectively). The government and government enterprises and retail and trade sectors account for the next highest shares of employment in both counties. In contrast, the mining industry accounts for the largest share of employment in Humboldt County (19.9 percent), while the government and government enterprises (14.7 percent) and retail and trade (11.9 percent) account for the next highest employment shares. Mining accounts for 8.4 percent of the employment in Elko County and 0.8 percent in Washoe County as compared to the state average of 1.3 percent.

In Elko County the industries that demonstrated the largest growth between 2001 and 2014 were construction (3.1 percent increase) and mining (2.8 percent increase). Together, these industries created 2,031 additional jobs. The industries that demonstrated the largest decline in employment shares in Elko County between 2001 and 2014 were the accommodation and food services industry and government and government enterprises, which shrank by 6.1 percent and 2.3 percent, respectively. In Humboldt County, the industries that demonstrated the largest growth between 2001 and 2014 were mining (8.6 percent increase) and wholesale trade (1.9 percent increase). Together, these industries created at least 1,167 additional jobs.

The industries that demonstrated the largest decline in employment shares in Humboldt County between 2001 and 2014 were the accommodation and food services and retail industries, which shrank by 3 percent and 1.7 percent, respectively. In Washoe County, the industries that demonstrated the largest growth between 2001 and 2014 were health and social services (1.6 percent increase) and administrative and waste management (1.5 percent increase). Together, these industries created at least 10,678 additional jobs. The industries that demonstrated the largest decline in employment shares in Washoe County between 2001 and 2014 were the accommodation and construction industries, which shrank by 3.4 percent and 2.4 percent, respectively.

The greatest difference in industry proportion between counties in 2014 was in the mining industry, which contributed just 0.8 percent of total employment in Washoe County, but contributed a much higher share in Humboldt County (19.9 percent) and Elko County (8.4 percent). The employment data is reported by place of work and does not necessarily reflect the sources of income of the population of a given county.

The percentage of employment generated by the accommodation and food services industry also varied across the SFA counties in Nevada, from 10.8 percent in Humboldt County to 20.9 percent in Elko County. The retail trade industry, another industry partly related to recreation and tourism like accommodation and food services, was a stable employer across counties, accounting for approximately 10 percent to 12 percent of total employment across all three counties.

The arts, entertainment, and recreation industry contributed a consistently low share of employment in all counties (no more than 3.1 percent in any county). Farming also contributed a relatively low share of employment in the counties (with a low of 0.2 percent in Washoe County), although the industry did support a high of 5.5 percent of employment in Humboldt County.

Table 3-68 shows the employment history in each trade county of the socioeconomic analysis area in Nevada from 1970 to 2014. The distribution of employment between 2001 and 2014 by industry sector for each trade county in the Nevada socioeconomic analysis area is summarized in Table C-25 in Appendix C.

Table 3-68. Employment History by Trade County in the Nevada Socioeconomic Analysis Area, 1970 to 2014

Year	Lander County		Lyon County		Pershing County		Storey County	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	1,301	–	3,148	–	1,277	–	409	–
1980	2,495	9.18%	4,432	4.08%	1,609	9.08%	892	11.81%
1990	3,288	3.18%	7,782	7.56%	2,289	5.46%	971	0.89%
2000	2,842	-1.36%	14,243	8.30%	2,546	6.59%	1,248	2.85%
2010	3,884	3.67%	16,092	1.30%	2,330	1.84%	3,707	19.70%
2014	4,298	2.66%	17,172	1.68%	2,667	2.21%	5,616	12.87%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

Labor Force and Unemployment

The labor force of an area is the population of working-age residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that “unemployed” is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Nevada rose sharply and the SFA counties were no exception (Figure 3-10). In 2009, the unemployment rate in Nevada rose to 11.3 percent, an increase of 4.8 percentage points over the previous year. In 2010 it rose again, though not as dramatically, to 13.5 percent.

Washoe County experienced the most dramatic increase in unemployment, going from 3.8 percent in 2006 to the highest rate observed in the SFA counties in 2010 (12.9 percent). Elko County has maintained the lowest unemployment rates in the SFA counties between 2006 and 2015. In 2010, the unemployment rate in Elko County peaked at 7.2 percent and has since fallen to 5.2 percent in 2015. The unemployment rate reached a peak of 8.7 percent in Humboldt County in 2010 before falling to 5.9 percent in 2015. The unemployment rates statewide and in all three counties remain above the rates observed in 2006 and 2007, which were between 3.3 percent and 4.5 percent.

Figure 3-11 shows the unemployment rate for the trade counties in the Nevada socioeconomic analysis area between 2006 and 2015.

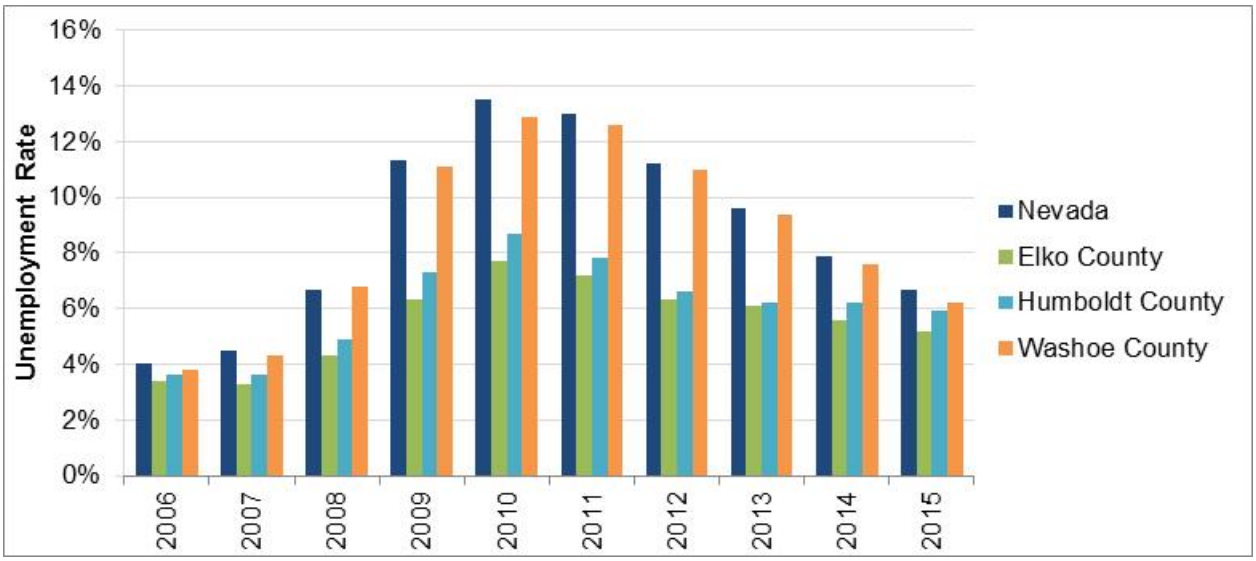

Figure 3-10. Unemployment Rates in Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area, 2006-2015

Source: U.S Bureau of Labor Statistics 2016.

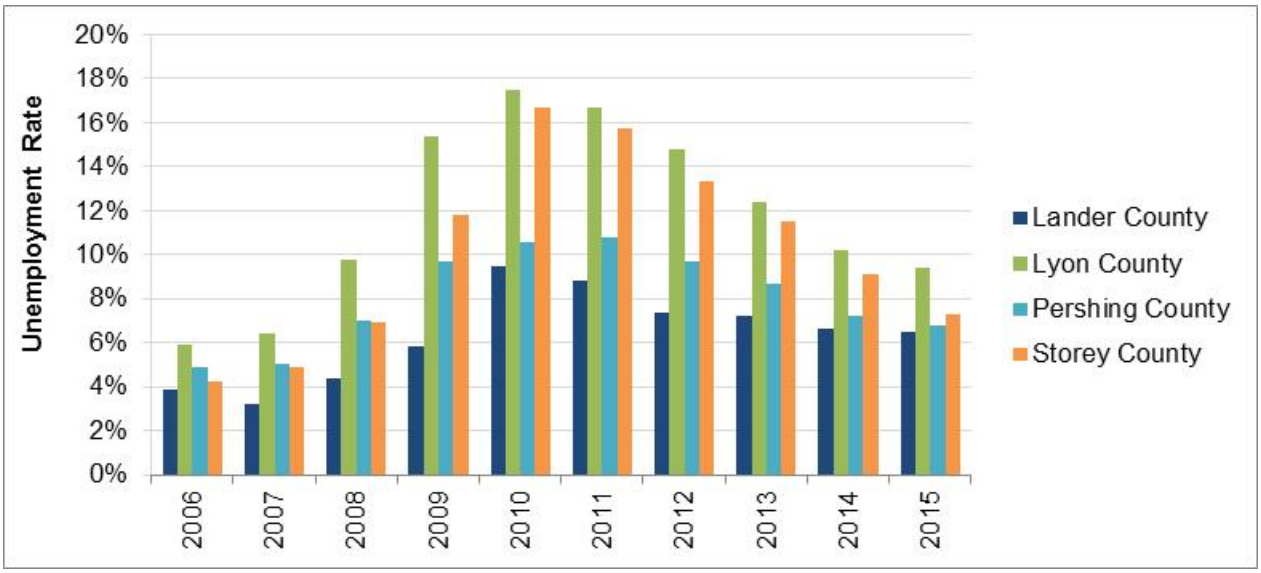

Figure 3-11. Unemployment Rates for Trade Counties in the Nevada Socioeconomic Analysis Area, 2006–2015

Source: U.S Bureau of Labor Statistics 2016.

Personal Income

Table C-26 in Appendix C presents labor income by sector in Nevada and the SFA counties in the Nevada socioeconomic analysis area. Statewide, total income in Nevada grew by 59 percent between 2001 and 2014. In some cases industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns. Total income in Humboldt and Elko counties grew at a rate 39 and 58 percentage points above the state average (88 percent and 117 percent, respectively), while total income in Washoe County grew at a rate 26 percentage points below the state-wide average (33 percent).

Average earnings in Nevada grew 37 percent between 2001 and 2014 from $41,763 to $57,412. In Elko and Humboldt counties, average earnings grew by 60 percent and 73 percent, respectively. In both counties average earnings exceeded the statewide average by approximately $2,500 and $9,000, respectively.

Average earnings in Washoe County are approximately equal to the statewide average although they grew 5 percentage points slower between 2001 and 2014. In the three SFA counties contained in the analysis area, changes in income from the management of companies and enterprises accounted for the largest percentage increases in total income. In Elko County, income from the sector increased by 3,570 percent between 2001 and 2014, and in Washoe County total income grew by 113 percent, which was less than the statewide average change of 216 percent. No sector data was available for Humboldt County.

Statewide, total mining income grew by 119 percent, from $695.15 million in 2001 to $1.52 billion in 2014. In Elko and Humboldt counties total mining income grew by 152 percent and 299 percent, respectively, while total mining income in Washoe County declined by 56 percent during the same period. Statewide total construction earnings fell by 8 percent from a high of $4.52 billion in 2001 to $4.1 billion in 2014. Total construction earnings in Washoe County fell by 7 percent during the same time period, while in Elko County and Humboldt County total construction income increased by 249 percent and 136 percent, respectively. Total earnings from the arts, entertainment, and recreation industry, which includes tourism and gaming, grew by 48 percent statewide between 2001 and 2014. In Elko, Humboldt, and Washoe counties, total income in the sector grew below the statewide average by as much as 44 percentage points (Elko County and Humboldt County). The total earnings of the accommodation and food services sector increased by 42 percent in Nevada between 2001 and 2014. The sector grew at approximately the same rate in Humboldt County, while in Elko County, the sector grew at a rate 27 percentage points slower than the statewide average. Overall, the sector's total earnings fell by 5 percentage points in Washoe County.

Total personal income in the state of Nevada was $115.79 billion in 2015 (Table 3-69). Total personal income in the three SFA counties included in the analysis area in 2015 was $2.20 billion in Elko County, $744.17 million in Humboldt County, and $20.36 billion in Washoe County. Statewide, non-labor income accounted for 38 percent of total personal income. In the three SFA counties non-labor income accounted for 22 percent of total income in Elko County, 25 percent in Humboldt County, and 43 percent in Washoe County. Statewide dividends, interest, and rents accounted for 58 percent of non-labor income. In the three SFA counties, dividends, interest, and rents accounted for 50 percent of non-labor income in Elko County and Humboldt County and 66 percent in Washoe County. Age-related payments accounted for 26 percent of non-labor income in Nevada in 2015. In the three SFA counties, age-related transfer payments accounted for 27 percent of non-labor income in Elko County, 27 percent in Humboldt County, and 21 percent in Washoe County. Hardship and other payments accounted for 17 percent of non-labor income statewide, while in the three SFA counties, hardship and other payments accounted for 23 percent of non-labor income in Elko County, 22 percent in Humboldt County, and 13 percent in Washoe County.

Statewide, median annual household income in Nevada increased by 16 percent from 1999 to 2014 from $44,325 to an average of $51,487 between 2010 and 2014 (Table 3-70). Washoe County saw the smallest change in median household income. In 1999 the county's median household income was $49,482 and between 2010 and 2014 it had increased to $52,862, a 7 percent change. During that same time period, the median household income in Humboldt County grew from $48,095 to $67,423, a 39 percent change. The largest change in the median household income was observed in Elko County where income increased from $50,533 in 1999 to $72,648 between 2010 and 2014, a 44 percent change. When the median income estimates are adjusted for inflation, the median wage in Nevada between 2010 and 2014 was $11,100 less than it was in 1999. The inflation-adjusted median wages in the SFA counties have all increased by approximately $7,000 (Washoe County) to $23,000 (Elko County).

Table 3-69. Income by Source for Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area (Thousands of 2015 Dollars)

	Nevada	Elko County	Humboldt County	Washoe County
Total personal income	$115,787,516	$2,202,671	$744,174	$20,356,687
Non-labor income share	38%	22%	43%	25%
Non-labor income components	—	—	—	—
Dividends, interest, rent	58%	50%	50%	66%
Age-related transfer payments	26%	27%	28%	21%
Hardship-related payments	12%	15%	15%	9%
Other transfer payments	5%	8%	7%	4%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Table 3-70. Median Income in Nevada and SFA Counties in the Nevada Socioeconomic Analysis Area

Area	Year/Period	Median Household Income	% Change (1999 - 2014)
Elko County	1999	$50,533	44%
	2010 to 2014	$72,648	
Humboldt County	1999	$48,095	40%
	2010 to 2014	$67,423	
Washoe County	1999	$49,482	7%
	2010 to 2014	$52,862	
Nevada	1999	$44,325	16%
	2010 to 2014	$51,487	

Source: U.S Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

Tables for trade counties are presented below (Tables 3-71 and 3-72). Detailed labor income by sector in the trade counties of the Nevada socioeconomic analysis area is presented in Table C-27 in Appendix C.

Table 3-71. Income by Source in the Trade Counties of the Nevada Socioeconomic Analysis Area (Thousands of 2015 Dollars)

	Lander County	Lyon County	Pershing County	Storey County
Total personal income	$307,098	$1,644,390	$205,533	$140,450
Non-labor income share	20%	40%	31%	40%
Non-labor income components	—	—	—	—
Dividends, interest, rent	45%	36%	38%	51%
Age-related transfer payments	31 %	45%	34%	40%
Hardship-related payments	19%	12%	23%	5%
Other transfer payments	5%	8%	6%	4%

Source: U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Table 3-72. Median Household Income in Trade Counties of the Nevada Socioeconomic Analysis Area

Area	Year/Period	Median Household Income	% Change (1999 - 2014)
Lander County	1999	$46,067	66%
	2010 to 2014	$76,558	
Lyon County	1999	$40,699	16%
	2010 to 2014	$47,143	
Pershing County	1999	$46,670	3%
	2010 to 2014	$48,165	
Storey County	1999	$45,490	43%
	2010 to 2014	$64,835	

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

Taxes and Revenues

The major components of tax revenue in Nevada include sales and use taxes, a modified business tax, and net proceeds of minerals taxes, which include severance taxes, rents, and royalties (Table 3-73). Sales and use taxes accounted for 73.7 percent of the state's tax revenue in FY 2014-2015. The modified business tax is a payroll tax paid by employers on total gross wages and salaries. In FY 2014-2015, the modified business tax accounted for 7.7 percent of the state's tax revenue. Other taxes, which include alcohol and entertainment taxes, accounted for 5.5 percent of state tax revenue, followed by the insurance premium tax (5.3 percent) and the cigarette and tobacco tax (2.1 percent). The net proceeds from the minerals tax accounted for 2.1 percent of Nevada's tax revenue in FY 2014-2015, while the centrally assessed property tax, which taxes property owned by airlines, railroads, telecommunications, electric power, gas pipeline, private carlines, and water companies, accounted for 1.9 percent of total tax revenue. Notably, Nevada has no income tax.

The tax revenue from the net proceeds of minerals has varied dramatically since 2009. In 2010-2011 the revenue from the minerals tax grew 43.81 percent compared to the previous fiscal year, but in 2011-2012 revenue from the tax grew at a much more modest 4.41 percent. In 2012-2013, revenue from the tax shrank by 6.73 percent, but in 2013-2014 it decreased by 73.71 percent, before growing by 69.38 percent in FY 2014-2015.

Table 3-73. Nevada Tax Revenues as a Percent of Total for FY 2014-2015

Tax Category	Percent of Total
Sales and use taxes	73.7%
Modified business tax	7.7%
Other taxes	5.5%
Insurance premium tax	5.3%
Cigarette and tobacco tax	2.2%
Net proceeds of minerals tax	2.1%
Centrally assessed property tax	1.9%
Real property transfer tax	1.7%

Source: Nevada Department of Taxation Annual Fiscal Report 2014/2015.

Local Government Revenues

The largest sources of revenue for Nevada's counties are generally ad valorem taxes, intergovernmental resources and charges for services. Ad valorem tax revenues include property taxes on real and personal property and locally assessed net proceeds of the minerals tax. The largest component of intergovernmental resources is sales and use taxes, but the distribution of state assessed net proceeds of minerals taxes is also included in intergovernmental resources.

Table 3-74 summarizes estimated revenues and expenditures for Elko County, Humboldt County, and Washoe County for the fiscal year ending June 30, 2015 – excluding proprietary funds (e.g., enterprise funds). It is noteworthy that all three counties anticipated that expenditures would exceed revenues and that they would have to draw down previously accumulated fund balances.

Table 3-74. Estimated County Revenues and Expenditures for SFA Counties in the Nevada Socioeconomic Analysis Area: 7/1/2014 – 6/30/2015

Revenue Sources	Elko County	Humboldt County*	Washoe County
Ad valorem taxes	$14,851,373	$5,759,092	$173,630,747
Intergovernmental resources	$21,978,722	$16,173,400	$183,929,358
Charges for services	$3,152,523	$879,800	$36,979,147
All other sources	$3,417,350	$1,694,550	$39,908,254
Total revenues	$43,399,968	$24,506,842	$434,447,506
Total expenditures	$51,548,511	$35,310,799	$460,276,979
Net revenues	-$8,148,543	-$10,803,957	-$25,829,473
Fund balance – end of year	$21,741,488	$34,084,193	$112,913,146

*Humboldt County figures are budget revenues and expenditures for the period, not estimates.
Source: Elko County 2015; Humboldt County 2014; Washoe County 2015.

Mining Related Economy

Mining is an important part of Nevada's economy. Nevada's mining industry, which has more than 64 major industrial mineral and metal mines, produces nearly 20 minerals and other resources, including locatable minerals like gold and silver (Table 3-75). As of 2014, Elko County produced four locatable minerals: barite, gold, limestone, and silver. Humboldt County also produced four locatable minerals; dolomite, gold, opals, and silver. Washoe County produced one locatable mineral: clay. Elko County produces 30 percent of all the barite in Nevada, while Humboldt County produces approximately 20 percent of all the gold. Together, Elko and Humboldt counties produce approximately 33 percent of all the gold in Nevada and 2 percent of the annual global gold production. The two counties also produce approximately 33 percent of the state's silver.

In 2015, an average of 14,196 employees worked in Nevada's mining industry, including supporting industries, although the mining industry's share of total employment has fallen below its 1995 level (Nevada Division of Minerals 2016). Elko County was the largest mining employer (2,637 employees) of the SFA counties. Humboldt County was the second largest mining employer (1,994 employees) and Washoe County employed 10 people in the mining industry. Combined, the three counties employed approximately 25 percent of all the mining sector employees in the state. The trade counties in the Nevada socioeconomic analysis area also have active mining sectors (Table 3-76).

Table 3-75. Mines, Mining Employment and Production for Select Minerals in Nevada and SFA Counties in the Nevada Socioeconomic Analysis Area in 2015

Metric	Nevada	Elko County	Humboldt County	Washoe County
Number of major industrial mineral and metal mines	64	7	7	1
Total number of employees	14,196	2,637	1,994	10*
Barite production (metric tons (MT))	516,380	200,162	—	—
Clay production (MT)	—	—	—	43,232
Dolomite production (MT)	—	—	46,183	—
Gold production (MT)	151	17	32	—
Limestone mined (MT)	—	1,259,359	—	—
Opal production (MT)	—	—	0.09*	—
Silver production (MT)	269	44	22	—

Source: Nevada Division of Minerals (2016).

Table 3-76. Mines, Mining Employment and Production for Select Minerals in the Trade Counties of the Nevada Socioeconomic Analysis Area

Metric	Lander County	Lyon County	Pershing County	Storey County
Number of mines	8	5	9	0
Total number of employees	2,934	199	716	3
Barite production (metric tons (MT))	729,651	—	—	—
Bentonite production (MT)	—	—	1,360	—
Clay production (MT)	—	—	639	—
Copper production (MT)	20,872	—	—	—
Diatomite production (MT)	—	—	280,027	—
Dolomite production (MT)	—	—	1,578	—
Gold production (MT)	36	—	3	—
Gypsum production (MT)	—	—	3,719	—
Limestone mined (MT)	—	109,406	—	—
Perlite production (MT)	—	—	16,584	—
Silver production (MT)	54	—	133	—

Source: Nevada Mining Association.

Statewide, mining is heavily relied upon to generate large amounts of tax revenues collected by the state and by many individual counties and locatable minerals are the largest source of these revenues (Table 3-77 and Table 3-78). In Nevada, net mineral proceeds are taxed by the Nevada Department of Taxation. Producers annually report the gross yield of each separate extractive operation as well as expenses related to the extraction, processing, transportation, and marketing of the mineral. Royalty recipients report the amount of royalties received. The Department calculates the net proceeds by deducting allowable expenses from the gross yield. The net proceeds are then taxed on a sliding scale between 2-5 percent, depending on the ratio of net proceeds to gross proceeds.

Table 3-77. Locatable Mineral Taxes for SFA Counties in the Nevada Socioeconomic Analysis Area, 2015

Mineral/Resource	Nevada	Elko County	Humboldt County	Washoe County
Barite	$455,250	$99,196	—	—
Bentonite	$3,219	—	$861	—
Clay	$68,878	—	—	$0
Copper	$458,839	—	—	—
Dolomite	$14,220	—	$13,873	—
Diatomaceous Earth (Diatomite)	$861,198	—	—	—
Gold/Silver	$96,780,121	$5,137,214	$19,436,055	—
Gypsum	$272,243	—	—	—
Iron ore	$4,087	—	—	—
Limestone	$416,224	$403,969	—	—
Lithium	$368,890	—	—	—
Magnesite	$63,427	—	—	—
Opals	$1,043	—	$1,043	—
Perlite	$11,689	—	—	—
Silica	$489,596	—	—	—
Total Locatable Minerals Taxes	$100,268,596	$5,640,379	$19,451,832	$0
Total Mineral Taxes	$101,591,516	$5,650,008	$19,492,143	$111,827
Locatable Taxes as % of Total	98.70%	99.83%	99.79%	0.00%

Source: Nevada Department of Taxation 2015.

Table 3-78. Locatable Mineral Taxes for Trade Counties in the Nevada Socioeconomic Analysis Area, 2015

Mineral/Resource	Lander County	Lyon County	Pershing County	Storey County
Barite	$239,692	—	—	—
Bentonite	—	—	$2,358	—
Clay	—	—	$4,540	—
Copper	—	—	—	—
Dolomite	—	—	$347	—
Diatomaceous Earth	—	—	$422,170	$55,963
Gold/Silver	$31,341695	—	$2,153,248	$93,168
Gypsum	—	$216,021	—	—
Iron ore	—	—	—	—
Limestone	—	—	—	—
Lithium	—	—	—	—
Magnesite	—	—	—	—
Opals	—	—	—	—
Perlite	—	—	—	—
Silica	—	—	—	—
Total Locatable Minerals Taxes	$31,581,387	$216,021	$2,582,663	$149,131
Total Mineral Taxes	$32,221,659	$232,256	$2,582,663	$149,131
Locatable Taxes as % of Total	98%	93%	100%	100%

Source: Nevada Department of Taxation 2015.

In 2015, the state of Nevada collected approximately $101.59 million dollars of tax revenue from mineral producers through the net proceeds of mineral tax (NPOM). As of 2016 the net proceeds of mineral tax rate were 5 percent and more than half of the tax revenue is paid to the Nevada General Fund while the remainder goes to the county in which the minerals were produced (Nevada Mining Association 2016). Taxes collected from the producers of locatable minerals, such as silver, gold, and opals, accounted for 98.7 percent of the tax's total revenue. Elko County collected $5.65 million in taxes from mineral producers, of which nearly 100 percent came from locatable minerals. Humboldt County collected $19.49 million from mineral producers in 2015 and like Elko County approximately 100 percent of the taxes came from locatable minerals. Washoe County collected $111,827 in taxes from mineral producers in 2015 none of which was associated with locatable mineral production. Statewide, gold and silver account for approximately 95 percent of the mineral taxes collected by the state of Nevada. The mining industry also generates substantial amounts of tax revenue from sales, use, and property taxes.

Recreation and Tourism Related Economy

Recreation and tourism is a multi-billion dollar industry in Nevada and its local economies. The industry primarily employs people through the retail trade, passenger transportation, arts, entertainment, and recreation and accommodation and food sectors (Table 3-79). Approximately 45,767 jobs (15 percent of total employment in 2014) in the SFA counties are related to travel and tourism. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-79. Employment in Travel and Tourism-Related Sectors in Nevada and the SFA Counties in the Nevada Socioeconomic Analysis Area, 2014

	Nevada	Elko County	Humboldt County	Washoe County
Retail trade	41,050	495	198	4,620
Passenger transportation	6,136	22	0	318
Arts, entertainment, & recreation	26,954	421	44	4,044
Accommodation & food	310,734	5,244	1,126	29,235
Total	384,874	6,182	1,368	38,217

Source: U.S. Department of Commerce; U.S. Census Bureau County Business Patterns; Headwaters Economics.

Visitor expenditures on goods and services in the state of Nevada and the SFA counties produce business receipts at local businesses, creating earnings and employment for local residents. In 2014, the proportion of travel and tourism- related jobs in SFA counties was 12.5 percentage points lower than the state average of 35.3 percent. The annual salaries paid to employees in the travel and tourism sector were also below comparable salaries in non-related sectors. In Elko County, travel and tourism related jobs paid an average annual salary of $23,592 in 2014 compared to the state average of $50,441 for non-travel and tourism related employment (Headwaters Economics 2016). Travel and tourism related jobs in Humboldt and Washoe counties paid slightly less at $17,491 and $22,655, respectively (Headwaters Economics 2016).

Table 3-80 displays the employment statistics for travel and tourism related sectors in the trade counties of the Nevada socioeconomic analysis area.

Table 3-80. Employment in Travel and Tourism-Related Sectors for Trade Counties in the Nevada Socioeconomic Analysis Area in 2014

	Lander County	Lyon County	Pershing County	Storey County
Retail trade	59	242	86	29
Passenger transportation	0	3	0	7
Arts, entertainment, & recreation	82	844	7	55
Accommodation & food	135	667	117	181
Total	276	1,756	210	272

Source: U.S. Department of Commerce; U.S. Census Bureau County Business Patterns; Headwaters Economics.

Other Economic Uses of Federal Lands

While energy and mineral development make up the largest source of economic activity on Nevada's federal lands, several other activities make significant economic contributions to the state's economy (Table 3-81). Value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Nevada, federal land created $490 million in value-added activity through the recreation sector in 2015. Major grants and payments, which include Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land, created $50 million in value-added activity in the state in 2015. DOI employees created an additional $50 million in valued-added activity by spending part of their income in Nevada in 2015 (DOI 2015).

This economic activity has a direct translation into employment figures (Table 3-81). Visitor spending on BLM, Bureau of Reclamation USFWS, Forest Service, and National Park Service land in Nevada supported 7,896 jobs in the recreation sector in 2015. Timber harvests and grazing activities on BLM and Bureau of Indian Affairs land combined to support 3,288 jobs across the state in 2015. The revenue from major grants and other payments affecting federal lands supported 555 jobs and the spending by DOI employees supported an additional 681 jobs in various sectors in 2015.

Table 3-81. Contribution of Department of the Interior Activities to the State of Nevada by Sector (FY 2015)

	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated value added ($ billions)	0.49	2.59	0	0.05	0.05	3.19
Estimate total output ($ billions)	0.84	4.99	0.23	0.07	0.09	6.21
Estimated total jobs	7,896	17,206	3,288	555	681	29,626

Source: U.S. Department of the Interior 2015.

Market Values Associated with Recreation and Tourism

BLM and Forest Service lands within the Nevada SFA counties offer many types of recreation opportunities. The diverse landscape and natural amenities in the SFA counties attract tourists who value recreation activities including hunting, fishing, equestrian use, and camping. Over the years, recreation has expanded to include all terrain vehicles (ATV/OHV), cross-country motorcycle racing, long range highway auto racing, hiking, nature viewing, photography, snow skiing, cross country skiing, boating, and numerous other uses.

In Elko County tourists primarily recreate on federal lands characterized by alpine summits and sagebrush valleys. Many of the areas are managed the BLM and Forest Service and include popular tourist destinations like Lamoille Canyon, Angel Lake, Bruneau Meadows, Goshute Canyon Wilderness, and the Ruby Mountains. The withdrawal area contains sites like the Bruneau River Loop, which is a popular area for hunters, fisherman, and ATV/OHV use. The withdrawal area would also surround the remote Jarbidge Wilderness, one of the most remote wilderness areas in the continental United States. The Elko County Public Land Use and Natural Resource Management Plan observed that tourist visits to developed recreational sites has been declining in favor of trips to undeveloped federal lands that allow for more remote and wild backcountry experiences. Part of this change is driven by tourists' desires for solitude that is not attainable in high density recreation areas. The Elko County Convention and Visitors' Association Trails Committee is developing several trails systems throughout the county to attract other backcountry users including ATV/OHV riders, mountain bikes, hikers, wildlife viewers, and horseback riders. Elko County is also a destination for tourists who want to take advantage of the regions annual recreational, historical, cultural, and ethnic special events that are becoming increasingly well known.

Humboldt County is located within the 210,000 square mile Great Basin. It contains several natural features that attract tourists throughout the year including the Humboldt River, which the Humboldt County Regional Master Plan describes as a '… prominent and valuable landscape feature providing visual resource, economic benefit, wildlife habitat, natural amenities, flood way and water quality benefits.' Humboldt County is also where the Black Rock Desert is located. The desert is the backdrop for the annual Burning Man festival that brings over 70,000 people to the county each August. The Black Rock Desert is also the largest flat area in the contiguous United States. Humboldt County's extensive rangelands create scenic vistas and provide important open space buffers and watershed protection for the urban areas around Winnemucca. Winnemucca Mountain is also a prominent destination for people visiting the region in addition to being culturally significant to local residents.

The health of Washoe County's tourism and recreation industry is linked to the health of the area's abundant federal lands, which include large mountain ranges and fresh water lakes, hills, and open valleys filled with sagebrush. Tourists are drawn in by the county's unique geologic and water resources, such as the Truckee River, Lake Tahoe, Washoe Lake and Pyramid Lake. Several major playas or dry alkali lake beds and geologic features like the Incandescent Rocks Area and the Pah Rah petroglyph area also draw tourists. Many of the region's businesses emphasize the scenic resources and the recreational opportunities available to tourists and tourism is growing rapidly in the county.

According to the Elko County Public Land Use and Natural Resource Management Plan, outdoor recreation generated a regional economic impact of $165 million per year between 2006 and 2008 through retail sales, services, lodging, and personal income.

3.5.14 Oregon – Overview of Area

The state of Oregon is the ninth largest state in the United States and covers a land area of approximately 98,381 square miles. Oregon is a geographically diverse state located in the Pacific Northwest region of the United States. Oregon's western border is marked by the Pacific Ocean. The volcanic Cascade Mountain Range runs across the state from north to south and contains several glaciated peaks. Oregon also has abundant sources of water, several types of forest, and high desert areas. The state contains 36 counties that range in size (435 square miles in Multnomah County to 10,135 square miles in Harney County) and population (1,430 people in Wheeler County to 756,530 people in Multnomah County).

Percent of Area Covered by SFAs

There are three SFAs located in the southeast corner of Oregon (Figure 3-12). Parts of the Southeast Oregon/North Central Nevada SFA and the Southern Idaho/Northern Nevada SFA are located in Malheur County, Oregon. Harney County, Oregon contains parts of the Southeast Oregon/North Central Nevada SFA and the Sheldon-Hart Mountain NWR Complex Area SFA. Lake County also contains parts of the Sheldon-Hart Mountain NWR Complex Area SFA.

Harney County covers a land area of approximately 6,544,640 acres. The proposed withdrawal would impact 379,847 acres (6 percent) of the land area inside of Harney County (Table 3-82). Lake County spans an area of 5,349,120 acres of which 555,568 acres (10 percent) would be impacted by the withdrawal. Malheur County is 6,355,200 acres in size and the withdrawal would impact 908,124 acres (14 percent) of the county's total land area.

Table 3-82. SFA Withdrawal Areas in Oregon Counties (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Harney County	6,544,640	379,847	6%
Lake County	5,349,120	555,568	10%
Malheur County	6,355,200	908,124	14%
Total	18,248,960	1,843,539	10%

In total, a combined area of 1,843,539 acres will be withdrawn from surface mineral exploration and development inside of the SFAs contained in Oregon. The withdrawn area covers approximately 10 percent of the combined land area of Harney, Lake, and Malheur counties.

Percent of Area that is Federal Lands

Harney, Lake, and Malheur counties contain significant areas of federal lands (Table 3-83). According to statistics from the Western Rural Development Center, 4,797,052 acres of land in Harney County are administered by federal agencies. In total, 73 percent of the land area in Harney County is administered by federal agencies. The federal government administers 3,902,781 acres of land in Lake County (73 percent of total), while 4,687,929 acres (74 percent of total) are federally administered in Malheur County. Federally administered land covers approximately 73 percent of the SFA counties in the Oregon socioeconomic analysis area.

Table 3-83. Land Administered by Federal Agencies in Oregon Counties Containing SFAs (Acres)

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Harney County	6,544,640	4,797,052	73%
Lake County	5,349,120	3,902,781	73%
Malheur County	6,355,200	4,687,929	74%
Total	18,248,960	13,387,762	73%

Source: Western Rural Development Center. January 2010c.

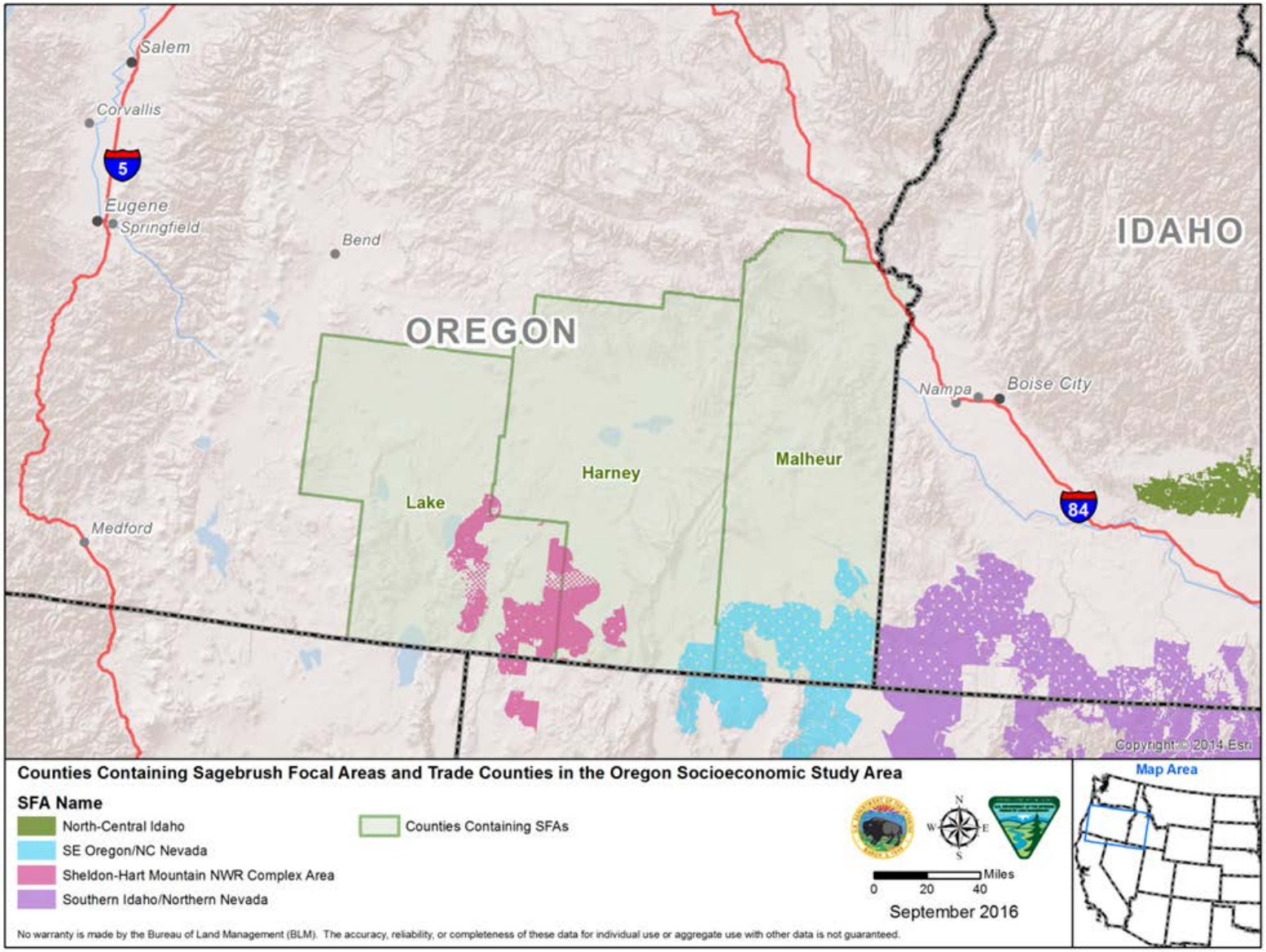

Figure 3-12. Counties Containing SFAs in the Oregon Socioeconomic Analysis Area

3.5.15 Social and Cultural Conditions

History and Recent Cultural Events

Indigenous tribes were the first inhabitants of the lands that eventually became the state of Oregon. After explorers, traders, and settlers arrived in the early part of the 19th century an autonomous government was formed in 1843. In the same year people began arriving in what was then known as "Oregon Country" on the Oregon Trail in a search for land and economic opportunity. In the 1850s prospectors began searching for gold and other previous minerals in southern and eastern Oregon. In 1852, one of the largest gold deposits in Oregon's history was found at Rich Gulch in south-western Oregon. News of the find quickly spread and prospectors from across the country headed to Oregon to search for gold. Many prospectors were successful and the state became a substantial producer of mineral wealth. Following the end of the civil war, railroads were built across the state and this led to the expansion of the state's timber, wheat, and agricultural industries.

Federal land management has been a recent source of controversy in Oregon. In early 2016, armed militia members seized control of the Malheur Wildlife Refuge in Harney County, Oregon to advance their view that federal land management agencies should turn control of those lands over to individual states (NYT 2016). The occupation drew attention to the tension between the federal government and some western residents that want more control over land contained within their borders. The occupation also highlighted the tension between federal land stakeholders. While the militia members wanted federal government to turn the management of the lands over to local authorities, several other groups, including the nearby Burns Paiute Tribe, voiced their wishes to have the federal government continue managing the land for the benefit of all stakeholders. The occupation is a microcosm of the complex relationship that Oregonians have with federal lands across the state and the challenges federal land management agencies face in meeting their multiple use mandates.

Population and Population Growth

Table 3-84 shows current and historic populations in the socioeconomic analysis area of Oregon. While the population of the United States grew at a rate of 29 percent between 1990 and 2015, the population in Oregon increased by 42 percent over the same period.

Table 3-84. Population and Growth in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Harney County	7,060	7,609	7,410	7,200	2%
Lake County	7,186	7,422	7,881	7,829	9%
Malheur County	26,038	31,615	31,348	30,380	17%
Oregon	2,842,321	3,421,399	3,837,972	4,028,977	42%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010, 2010-2014.

Population growth between 1990 and 2014 in the SFA counties of the Oregon socioeconomic analysis area ranges from a low of 2 percent growth in Harney County, Oregon, to a high of 17 percent growth in Malheur County, which is the most populated county in the Oregon socioeconomic analysis area. With an estimated population of 2,757 in 2015, Burns, Oregon is the largest city and also the county seat of Harney County (U.S. Census Bureau 2016). With an estimated 2015 population of 2,296, the Town of Lakeview, Oregon, is the largest town in Lake County. Ontario, Oregon is the largest city in Malheur County and the Oregon socioeconomic analysis area. Ontario had an estimated population of 10,999 in 2015 (U.S. Census Bureau 2016).

Demographics (Age, Gender and Race/Ethnicity Distributions)

Table 3-85 shows the average age and gender characteristics of the populations in each SFA county in Oregon. All three SFA counties had smaller average percentages of working age populations than the state of Oregon by at least 2 percentage points between 2010 and 2014. During this same time period, Harney County and Lake County had average populations of citizens over 65 that are 5 and 6 percentage points higher than the state average, respectively. The proportion of individuals under the age of 21 was 2 and 5 percentage points below the state average in Harney County and Lake County, respectively. In Malheur County, the average proportion of individuals under the age of 21 was 3 percentage points above the state average of 29.2 percent between 2010 and 2014.

Table 3-85. Demographic Characteristics of Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area, Share in Total Population (Percent) 2010 to 2014

Area	Women	Under 21 Years of Age	21 to 64 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Harney County	49.5	23.7	55.9	20.4	92.1	0.6	3.9	1.1	2.3
Lake County	50.2	21.1	57.6	21.3	90.0	0.4	1.7	1.1	6.8
Malheur County	49.5	29.2	55.4	15.4	83.2	1.3	0.6	1.5	13.4
Oregon	49.7	26.0	59.1	14.9	85.1	1.8	1.2	3.9	8.0

Source: ACS 5-Year Estimates 2010-2014.

The SFA counties as a whole are generally less racially diverse than the state of Oregon with the exception of Malheur County. The average percentage of white individuals in Harney County between 2010 and 2014 was the highest in the Oregon socioeconomic analysis area and is also 7 percentage points higher than the Oregon state average. During the same time period, the average proportion of black individuals living in all three counties was lower than the Oregon state average by between 0.5 percent and 1.2 percent. The average proportion of American Indians living in Lake County and Harney County was higher than the statewide average by 0.5 and 2.7 percentage points, respectively. The average proportion of American Indian individuals living in Malheur County was 0.6 percentage points below the Oregon average. The average proportion of Asian individuals living in the socioeconomic analysis area was highest in Malheur County (1.5 percent), which was still 1.4 percentage points below the state average. The proportion of Asian individuals living in Harney County and Lake County was 2.8 percentage points below the state average between 2010 and 2014.

Although Table 3-85 does not indicate the ethnicity of the residents of the SFA counties, an average of 12.1 percent of all Oregon residents identified themselves as Hispanic or Latino between 2010 and 2014. During the same time period, the proportion of residents in the SFA counties identifying themselves as Hispanic or Latino was generally lower than the statewide average, with the exception of Malheur County, where 32.4 percent of residents identified as Hispanic or Latino (ACS 5-year Estimates 2010-2014). In Harney County and Lake County the average proportion of residents identifying themselves as Hispanic or Latino between 2010 and 2014 was 4.4 percent and 7.4 percent, respectively.

Statewide, the proportion of individuals living in poverty increased from 11.6 percent in 1999 to an average of 16.7 percent between 2010 and 2014, representing an increase of 250,076 people (Table 3-86). The average poverty rate in the SFA counties in the Oregon socioeconomic analysis area also increased between 1999 and 2014. The largest percentage increase in poverty occurred in Malheur County, where the poverty rate grew from 18.6 percent in 1999 to an average of 28.4 percent between 2010 and 2014 (an increase of 2,574 people). During the same time period the poverty rate in Harney County grew from 11.8 percent to an average of 21.1 percent during the same time period, reflecting an increase of 633 people.

Table 3-86. Poverty Counts in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area, 2000 to 2014

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Oregon	1999	388,740	11.6%
	2010 to 2014	638,816	16.7%
Harney County	1999	875	11.8%
	2010 to 2014	1,508	21.1%
Lake County	1999	1,184	16.1%
	2010 to 2014	1,316	17.8%
Malheur County	1999	5,265	18.6%
	2010 to 2014	7,839	28.4%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

The smallest change in the poverty rate was observed in Lake County where the rate grew from 16.1 percent in 1999 to an average of 17.8 percent between 2010 and 2014, which amounted to an additional 132 people.

Housing Stock and Prices

The average housing stock in the state of Oregon and the Oregon socioeconomic analysis area has increased between 2006 to 2010 and 2010 to 2014 (Table 3-87). Between 2006 and 2010 there was an average stock of 3,773 housing units in Harney County and approximately 11.2 percent (423 units) were vacant. Between 2010 and 2014 the average number of housing units increased to 3,817 and the number of vacant units increased by 311. Between 2006 and 2010, Lake County had 4,398 housing units, on average, of which 936 were vacant (21.3 percent). Between 2010 and 2014, the average housing stock had increased to 4,418 units of which 18.2 percent (802) were vacant. In Malheur County there were 11,671 housing units, on average, between 2006 and 2010 and approximately 12.8 percent were vacant (1,490 units). Between 2010 and 2014 the average housing stock shrank to 11,654 units and the vacancy rate decreased to 12.2 percent (1,419 units).

Table 3-87. Housing Stock and Vacancy in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Oregon	2006 to 2010	1,651,063	151,796	9.2%
	2010 to 2014	1,685,814	162,826	9.7%
Harney County	2006 to 2010	3,773	423	11.2%
	2010 to 2014	3,817	734	19.2%
Lake County	2006 to 2010	4,398	936	21.3%
	2010 to 2014	4,418	802	18.2%
Malheur County	2006 to 2010	11,671	1,490	12.8%
	2010 to 2014	11,654	1,419	12.2%

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are averages for that time interval.

Average housing values, mortgages, and rental costs in the three-county area were all below the statewide averages for Oregon (Table 3-88). In Harney County, the median home price between 2010 and 2014 was $104,400, down 16 percent from between 2006 to 2010. The median home price in Malheur County was $127,300 between 2010 and 2014, a decrease of 7 percent from between 2006 and 2010. The highest median home prices in the Oregon socioeconomic analysis area between 2010 and 2014 were found in

Lake County ($141,400), which increased 16 percent from their levels between 2006 and 2010. Statewide, the median rental costs of housing increased by 12 percent between the periods from 2006 to 2010 and 2010 to 2014. In Harney County, median rental costs for housing increased by 2 percent during the same periods (from $545 between 2006 and 2010 to $558 between 2010 and 2014). The median rental costs of housing in Lake County decreased by 5 percent during the same time periods. The median rental costs of housing in Malheur County increased by 7 percent between the time periods from 2006 to 2010 ($553) and 2010 to 2014 ($594).

Table 3-88. Housing Values and Mortgage and Rental Costs in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Oregon	2006 to 2010	$252,600	-7%	$1,580	$795	12%
	2010 to 2014	$234,100		$1,591	$894	
Harney County	2006 to 2010	$124,300	-16%	$1,058	$545	2%
	2010 to 2014	$104,400		$983	$558	
Lake County	2006 to 2010	$122,200	16%	$979	$592	-5%
	2010 to 2014	$141,400		$1,080	$562	
Malheur County	2006 to 2010	$136,400	-7%	$1,089	$553	7%
	2010 to 2014	$127,300		$1,133	$594	

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

There is a diverse range of resource management attitudes, values, and beliefs in the Oregon socioeconomic analysis area. These attitudes, values, and beliefs reflect the wide variety of people, and groups, who use or otherwise benefit from the resources that would be impacted by the Proposed Action. These groups, which include federal agencies, state agencies, county agencies, local agencies, congressional representatives, local representatives, academic institutions, civic organizations, local chambers of commerce, environmental groups, land conservation groups, outdoors groups, ATV/motorcycle/4x4 clubs, equestrian clubs, local school boards, farm associations, and various business groups, have both overlapping and divergent attitudes, values, and beliefs about how these resources are managed (BLM 2015d).

According to the Oregon Greater Sage-Grouse LUP Amendment:

> *The majority of the communities within the Socioeconomic Analysis Area are characterized as rural and have strong connections with the outdoors and recreational activities (BLM 2004b). During public scoping, comments emphasized the preservation of open space, wildlife habitat, and dispersed recreation as being important to individual quality of life (BLM and Forest Service 2012; BLM 2012c). Outdoor recreation activities in the Socioeconomic Analysis Area include fishing, hunting, and wildlife viewing, among others (Hanus 2011).*
>
> *Most of the communities in the Socioeconomic Analysis Area, both currently and historically, have a strong economic reliance on the BLM-administered lands in central Oregon, primarily for livestock grazing and forest products (BLM 2004b). In fact, much of the land in the Socioeconomic Analysis Area is publicly owned, including over 75 percent in Harney, Lake, and Malheur Counties (Hanus 2011).*

Over the last 20 to 30 years, however, many of these counties have seen a decline in the timber and forest products industry on BLM-administered lands, decreasing the overall contribution of this industry to the economies in the analysis area (BLM 2004a; BLM 2012c). Few timber handling facilities and jobs remain in some counties in the analysis area (Headwaters Economics 2013). A report on the socioeconomic conditions in areas in Oregon with greater sage-grouse habitat noted that a shift in public land management since the 1990s has affected these timber-related industries, along with other industries dependent on natural resources, such as livestock grazing (Hanus 2011).

The citizens of the three SFA counties of the Oregon socioeconomic analysis area value federal lands for their livelihood, cultural, and recreational values. In Harney County, cattle and hay production are the primary industries and the county's so-called "cowboy" culture and attitude toward federal lands reflects the county's cultural and economic dependence on rural landscapes (BLM 2015d). The citizens of Lake County also have strong ties to federal lands that grew out of the county's agricultural and homesteading history (BLM 2015d). The county is also a popular destination for recreation-based tourism. The primarily rural Malheur County is known for its large share of BLM land (73 percent of the county's land area) and small-town atmosphere (BLM 2015d). Communities in Malheur County also tend to place a high value on the lifestyles associated with agriculture and mining. These attributes are highly valued by current residents and are also thought to attract newcomers (BLM 2001b).

3.5.16 Economic Conditions

Economic Output and Gross Regional Product

Table C-28 in Appendix C shows the gross economic output and value added for the counties in the Oregon socioeconomic analysis area in 2013. Total gross output measures the total revenue received from the sale of goods and services. Value added measures the value that is added to goods and services by activity in the local area (e.g., county). When summed across all economic sectors, value added is equivalent to gross regional product.

Harney County produced approximately $470 million worth of economic output in 2013. The agriculture, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced $143 million in total gross output (30 percent of total), which generated approximately $68.9 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $7.4 million and added approximately $1.4 million in value. The mining sector in Harney County produced $3.6 million in total gross output in 2013, of which $19,623 was through value-added activities. Lake County produced approximately $498 million worth of economic output in 2013. The agriculture, forestry, fishing, and hunting sector produced more total gross output than any other sector in the county's economy. It produced approximately $123 million in total gross output (30 percent of total), which generated approximately $63.9 million in value-added activities. Arts, entertainment, and recreation produced a total gross output of $4.8 million and added approximately $352,412 in value. The mining sector in Lake County produced approximately $7.5 million in total gross output in 2013 through sand and gravel mining operations and the extraction of unspecified nonmetallic minerals. These activities added approximately $4.1 million worth of value. Malheur County produced approximately $2.2 billion of total gross output in 2013. The manufacturing sector produced more total gross output than any other sector in the county's economy. It produced approximately $468 million in total gross output (21 percent of total), which generated approximately $59.1 million in value-added activities. The agriculture, forestry, fishing, and hunting sector produced a total gross output of $350 million and added approximately $175 million in value. Arts, entertainment, and recreation produced a total gross output of $7.6 million and added approximately $2.6 million in value. The mining sector in Malheur County produced approximately $17 million in total gross output in 2013 through clay, ceramic, refractory minerals and other minerals mining. These activities added approximately $8.4 million worth of added value.

Total Employment and Employment by Sector

Table 3-89 shows the employment history in each SFA county of the socioeconomic analysis area in Oregon from 1970 to 2014. Oregon and the SFA counties have increased employment over the last 45 years, but more recently employment has been declining in the SFA counties. The period from 1970 to 1980 exhibited the highest rate of employment growth across Oregon and Harney, Lake, and Malheur counties. During this time the highest rate of employment growth was observed in Lake County, which added jobs at an average annual rate of 3.21 percent, slightly below the state average at the time. From 2000 to 2010, the average annual rate of employment growth in the SFA counties was negative. The number of jobs in Malheur County fell by an average annual rate of 0.42 percent and the county lost a total of 767 jobs during that time. In Harney County, the number of jobs shrank by an average annual rate of 0.27 percent per year and in total the county lost 119 jobs between 2000 and 2010. Lake County had the slowest rate of job loss, averaging 0.26 percent per year, and the county lost 113 jobs in the 10-year period between 2000 and 2010. This trend continued between 2010 and 2014 in Lake and Malheur counties, where the average annual rate of job loss was -0.3 percent and -1 percent, respectively. In Harney County, job growth averaged an annual rate of 0.09 percent during the four-year period between 2010 and 2014, while the state of Oregon averaged 1.61 percent in annual job growth.

Table 3-89. Employment History for Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area, 1970 to 2014

Year	Oregon		Harney County		Lake County		Malheur County	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	925,933	—	3,754	—	3,077	—	12,751	—
1980	1,349,543	4.57%	3,791	0.10%	4,064	3.21%	15,349	2.04%
1990	1,626,385	2.05%	4,025	0.62%	3,883	-0.45%	15,590	0.16%
2000	2,089,945	2.85%	4,445	1.04%	4,313	1.11%	18,085	1.60%
2010	2,170,626	0.39%	4,326	-0.27%	4,200	-0.26%	17,318	-0.42%
2014	2,310,320	1.61%	4,341	0.09%	4,150	-0.30%	16,623	-1.00%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014b.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Table C-29 in Appendix C. Government employment accounts for the largest share of employment in all three SFA counties. In Harney County, government employment accounts for 23 percent of county employment and in Lake and Malheur counties it accounts for 25 percent and 19 percent, respectively. In the state of Oregon, government employment accounts for 13 percent of jobs. Farming employed 772 people in Harney County in 2014, up from 735 people in 2001. However, in Lake and Malheur counties, farm employment is down by 221 and 421 jobs, respectively. Statewide, the farming industry lost 5,720 jobs between 2001 and 2014. In Harney County, forestry, fishing, and related activities employed 189 people in 2014, an increase of 37 jobs since 2001. Information on employment in forestry, fishing, and related activities was not available for Lake and Malheur Counties. The arts, entertainment, and recreation sector employed 119 people in Malheur County in 2014, down from 133 people in 2001. Information on employment in arts, entertainment, and recreation was not available for Harney and Lake Counties. The mining industry in Harney County employed 24 people in 2014, representing a very large increase because the industry did not employ anyone in 2001. Employment information for the mining industry employment was not available for Lake and Malheur Counties. Statewide, the mining industry employed 6,236 people in 2014, up from 3,489 in 2001.

Labor Force and Unemployment

The labor force of an area is the population of working-age residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that "unemployed" is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Oregon rose sharply and the SFA counties in the Oregon socioeconomic analysis area were no exception (Figure 3-13). In 2009, the unemployment rate in Oregon rose to 11.3 percent, an increase of 6 percentage points over the 2006 rate. In 2010 the unemployment rate went down and has continued to decline every year since.

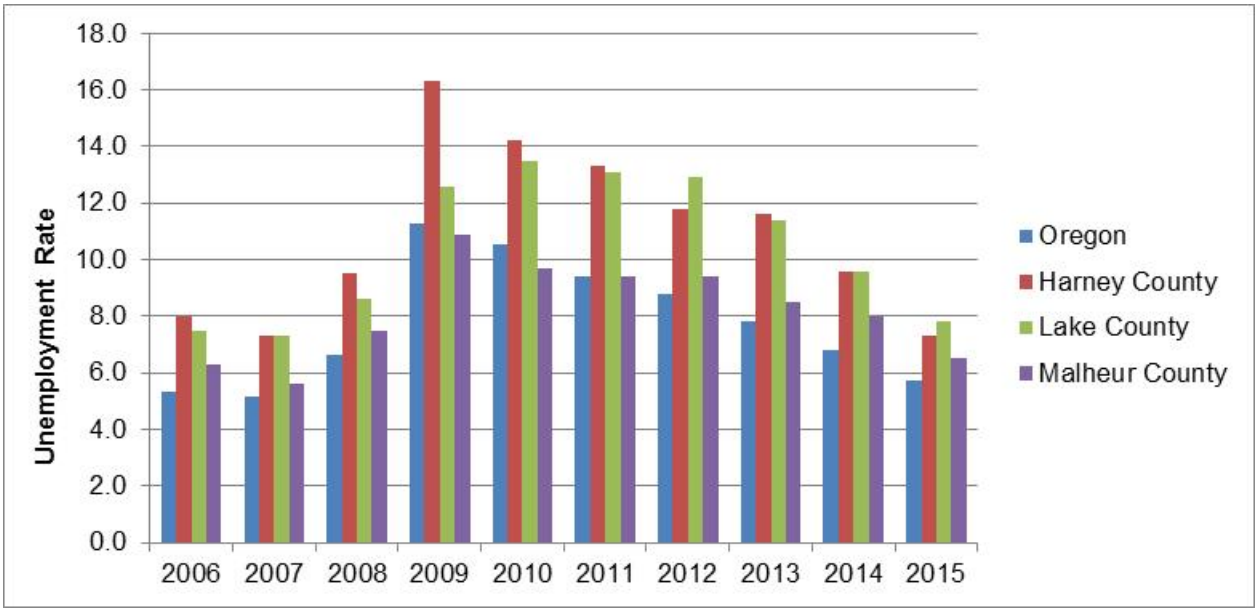

Figure 3-13. Unemployment Rates in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area, 2006-2015
Source: U.S Bureau of Labor Statistics 2016.

Harney County experienced the most dramatic increase in unemployment, going from 8 percent in 2006 to 16.3 percent in 2010. Malheur County maintained the lowest unemployment rates among the SFA counties between 2006 and 2015. In 2010, the unemployment rate in Malheur County peaked at 10.9 percent and has since fallen to 6.5 percent in 2015. The unemployment rate reached a peak of 12.6 percent in Lake County in 2009 before falling to 7.8 percent in 2015. The unemployment rates statewide and in all three SFA counties remain above the rates observed in 2006 and 2007, which were between 5.2 and 7.3 percent.

Personal Income

Statewide, total income in Oregon grew by 51 percent between 2001 and 2014 (Table C-30 in Appendix C). Total income in the three SFA counties grew more slowly. In Malheur County, total income grew by 32 percent, while in Harney County and Lake County it grew at 33 percent and 41 percent, respectively. Average compensation in Oregon grew 40 percent between 2001 and 2014 from $41,623 to $58,219. Average compensation in all three SFA counties rose more quickly than the state average. In Malheur County, average compensation increased by 43 percent and in Harney and Lake Counties it grew by 45

percent and 57 percent, respectively. In Harney County, which has incomplete earnings data, total compensation grew fastest in the farm sector (126 percent increase). In Lake County, the transportation and warehouse sector saw the largest increase in total compensation (219 percent). In Malheur County the information sector saw the largest increase in total compensation (77 percent). In some cases industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Statewide, total mining income grew by 15 percent from $85.62 million in 2001 to $98.32 million in 2014. Data on the total compensation for the mining industries was only available in Lake County in 2001. In that year, Lake County's mining industry's total compensation was $1.17 million, approximately 1 percent of the state's total mining compensation in 2014.

Total personal income in the state of Oregon was $163.82 billion in 2015 (Table 3-90). Total personal income in the three SFA counties in 2015 was approximately $255 million in Harney County, $285 million in Lake County, and $841 million in Malheur County. Statewide, non-labor income accounted for 40 percent of total personal income. In the three SFA counties, non-labor income accounted for 49 percent of total income in Harney County, 50 percent in Lake County, and 54 percent in Malheur County. Statewide dividends, interest, and rents accounted for 19 percent of non-labor income. In the three SFA counties, dividends, interest, and rents accounted for 20 percent of non-labor income in Harney County, 22 percent in Lake County, and 19 percent Malheur County. Age-related payments accounted for 11 percent of non-labor income in Oregon in 2015. In the three SFA counties age-related transfer payments accounted for 18 percent of non-labor income in Harney County, 17 percent in Lake County, and 16 percent in Malheur County. Hardship and other payments accounted for 9 percent of non-labor income statewide and between 10 percent (Lake County) and 20 percent (Malheur County) in the three counties contained in the analysis area.

Table 3-90. Income by Source in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area (Thousands of 2015 Dollars)

	Oregon	Harney County	Lake County	Malheur County
Total personal income	$163,816,496	$254,797	$285,304	$840,598
Non-labor income shares	40%	49%	50%	54%
Non-labor income components	—	—	—	—
Dividends, interest, rent	48%	41%	45%	35%
Age-related transfer payments	28%	37%	35%	29%
Hardship-related payments	17%	17%	14%	31%
Other transfer payments	6%	5%	6%	6%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Statewide, median annual household income in Oregon increased from $41,752 in 1999 to $51,088 between 2010 and 2014, a 22 percent increase (-8 percent after adjusting for inflation) (Table 3-91). Harney County saw the smallest change in median household income. In 1999 the county's median household income was $30,667 and between 2010 and 2014 it had increased to $36,340, an 18 percent change. During the same time periods, the median household income in Malheur County grew from $29,481 to $35,094, a 19 percent change (-14 percent after controlling for inflation). The largest change in the median household income was observed in Lake County where income increased from $29,813 in 1999 to $40,328 between 2010 and 2014, a 35 percent change (1 percent after adjusting for inflation).

Table 3-91. Median Income in Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area

Area	Year/Period	Median Household Income	% Change (1999 - 2014)
Harney County	1999	$30,667	18%
	2010 to 2014	$36,340	
Lake County	1999	$29,813	35%
	2010 to 2014	$40,328	
Malheur County	1999	$29,481	19%
	2010 to 2014	$35,094	
Oregon	1999	$41,752	22%
	2010 to 2014	$51,088	

Source: U.S Census Bureau 2000, ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

Taxes and Revenues

The major components of Oregon's tax revenue include personal income tax and corporate income tax (Table 3-92). Individual income taxes accounted for 86.7 percent of the state of Oregon's tax revenue in fiscal year 2014-2015. In the 2014-2015 fiscal year corporate income taxes accounted for 7.1 percent of the state's tax revenue. Other taxes accounted for 2.7 percent of state's tax revenue, followed by license and fees (1.3 percent), tobacco taxes (0.8 percent), and insurance premium taxes (0.7 percent). The net proceeds from other taxes amounted to 0.6 percent of the revenue collected by the state's general fund in FY 2014-2015.

Table 3-92. Oregon Tax Revenues as a Percent of Total for FY 2014-2015

Tax Category	Percent of Total
Personal Income Tax	86.7%
Corporate Income Taxes	7.1%
Other Taxes	2.8%
Licenses and Fees	1.4%
Tobacco Taxes	0.8%
Insurance Premium Taxes	0.7%
Charges and Services	0.2%
Fines, Forfeitures, and Penalties	0.2%
Investment Income	0.09%
Donations and Grants	0.03%
Federal	0.01%
Total (Millions, $)	$8,461,390.0

Source: Oregon Department of Administrative Services 2015.

Local Government Revenues

Table 3-93 summarizes estimated revenues and expenditures for the general funds of Harney County, Lake County, and Malheur County for FY 2013-2014 (Harney County), FY 2011-2012 (Lake County), and FY 2014-15 (Malheur County). The largest sources of revenue for Oregon's SFA counties are

generally property taxes, intergovernmental resources, operating grants and contributions, and charges for service. It is noteworthy that all three counties anticipated that expenditures would exceed revenues and that they would have to draw down previously accumulated fund balances.

Table 3-93. Estimated County Revenues and Expenditures for SFA Counties in the Oregon Socioeconomic Analysis Area

Revenue Sources	Harney County (FY 2013-14)	Lake County (FY 2011-12)	Malheur County (FY 2014-15)
Property taxes	$3,319,727	$4,416,775	$4,503,070
Intergovernmental	$1,255,630	$6,189	$3,631,883
Operating grants and contributions	—	$6,089,756	$768,988
Charges for services	$740,874	$1,513,899	$2,540,550
Fines	$8,801	—	—
Miscellaneous	$501,282	$90,157	—
Investment earnings	$10,428	$162,642	$12,308
Administration	$184,418	—	—
Total Revenues	$6,170,935	$12,279,418	$11,456,799
Total Expenditures	$6,561,772	$16,090,245	$12,269,470
Net Revenues	-$390,837	-$3,810,827	-$812,671
Fund Balance - End of Year	$3,069,279	$58,939,569	$3,798,258

Source: Harney County 2015; Lake County 2013; Malheur County 2016.

Mining Related Economy

Since World War II, mining in Oregon has been dominated by large industrial-scale mines that produce millions of tons of low-grade ore each year (DOGAMI 2016). Statewide, nonfuel mineral production was valued at $305 million in 2011 (USGS 2012). Approximately 95 percent of the production value derived from the production of crushed stone, construction and sand gravel, portland cement, diatomite, and crude perlite. Oregon's mining industry also produces bentonite, emery, gemstones, lime, gold, silver, lead, and zinc (USGS 2012). Information on state-permitted mines is available from the Oregon Department of Geology and Mineral Industries (DOGAMI), which permits mining operations on private, state-owned and federally managed lands. Plans of operation are necessary for the BLM and Forest Service but state permits are required for those mines and all the others in the state. As of 2016 there are 33 industrial mineral, gemstone, or metal mines that have permits to operate in the state, although there is no production information available to determine the annual production volume of each mine (DOGAMI 2016). Permits are required for any mine that disturbs an area of more than 1 acre per year up to a maximum of 5 acres in 5 years, or mine more than 5,000 cubic yards of material annually. In addition to the 33 permitted mines, there are also 23 small-scale mines in the state that operate below the permit threshold. Investors and prospectors are still discovering new mineral and energy deposits throughout the state. In 2016, there were 6,168 active mining claims and eight active exploration permits (DOGAMI 2016).

According to data from the Minnesota IMPLAN Group, there was some mineral production in the Oregon SFA counties in 2013 (Table 3-94). In Harney County, the extraction of natural gas and petroleum employed 30 people and produced $3.6 million in gross output. In Lake County, 34 people were employed in the production of nonmetallic minerals in 2013 and produced $7.3 million in output. The county also produced sand and gravel worth $103,241, but this activity did not create any quantifiable employment in the county. In Malheur County, 84 people were employed in clay, ceramic, refractory mineral, and other nonmetallic mineral mining in 2013 and produced $16.9 million in output. The county also produced $139,833 worth of gold, but this activity did not create any quantifiable employment in the county.

Table 3-94. Mining Employment, Output, Compensation, Income, and Taxes by SFA County in the Oregon Socioeconomic Analysis Area, 2013

	Employment	Output	Value Added
Harney County			
Extraction of natural gas and crude petroleum	30	$3,638,134	$19,623
Lake County			
Sand and gravel mining	0	$103,241	$59,036
Other nonmetallic minerals	34	$7,399,438	$4,013,897
Malheur County			
Gold ore mining	0	$139,833	$105,005
Other clay, ceramic, refractory minerals mining	27	$4,887,152	$2,035,947
Other nonmetallic minerals	57	$12,042,983	$6,318,920

Source: Minnesota IMPLAN Group, Inc. 2013.

Recreation and Tourism Related Economy

Oregon and the SFA counties in the Oregon socioeconomic analysis area have a diverse geography and ecology that lends itself to recreation and tourism. In 2011, Oregon State University conducted a statewide survey across all of the counties in Oregon to learn about their recreation and tourism habits. In Harney, Lake, and Malheur counties, the researchers found that residents participated in more than 70 different types of outdoor recreation (OSU 2012).

The recreation and tourism industry primarily employs people through the retail trade, passenger transportation, arts, entertainment, and recreation and accommodation and food sectors (Table 3-95). Approximately 1,866 jobs in the socioeconomic analysis area are related to travel and tourism. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-95. Employment in Travel and Tourism-Related Sectors for Oregon and the SFA Counties in the Oregon Socioeconomic Analysis Area, 2014

	Oregon	Harney County	Lake County	Malheur County
Retail Trade	41,631	75*	39*	302*
Passenger Transportation	5,483	0	0	0
Arts, Entertainment, & Recreation	25,982	8*	9*	82*
Accommodation & Food	161,421	200	152	999
Total	234,517	283	200	1,383

Note: Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps. These values are indicated with asterisks (*).
Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Census Bureau County Business Patterns.

The annual salaries paid to employees in the travel and tourism sector were also below comparable salaries in non-related sectors. In Malheur County, travel and tourism related jobs paid an average annual salary of $15,820 in 2014 compared to the average salary of $31,284 for non-travel and tourism related employment (Headwaters Economics 2016). Travel and tourism related jobs in Harney and Lake counties paid slightly less at $14,802 and $13,329, respectively (Headwaters Economics 2016).

Other Economic Uses of Federal Lands

Several activities that occur on federal lands make significant economic contributions to Oregon's economy (Table 3-96). Value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Oregon, federal land created $1.19 billion in value added in 2015. Energy and mineral development added $140 million in value to Oregon's federal lands and the recreation sector was responsible for adding $630 million in value. Major grants and payments, which include Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land, created $50 million in value-added activity in the state in 2015. DOI employees created an additional $80 million in valued added activity by spending part of their income in Oregon in 2015 (DOI Payroll).

This economic activity has a direct translation into employment figures (Table 3-96). Visitor spending on BLM, Bureau of Reclamation, USFWS, Forest Service, and National Park Service land in Oregon supported 12,178 jobs in the recreation sector in 2015. Energy and mineral extraction on federal land employed 1,441 people. Timber harvests and grazing activities on BLM and Bureau of Indian Affairs land combined to support 7,961 jobs across the state in 2015. The revenue from major grants and other payments affecting federal lands supported 634 jobs and the spending by DOI employees supported an additional 1,145 jobs across the state.

Table 3-96. Contribution of Department of the Interior Activities to the State of Oregon by Sector (FY 2015)

	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated Valued Added ($ billions)	0.63	0.14	0.3	0.05	0.08	1.19
Estimate Total Output ($ billions)	1.14	0.25	1.03	0.07	0.14	2.63
Estimated Total Jobs	12,178	1,441	7,961	634	1,145	23,359

Source: U.S. Department of the Interior 2015.

3.5.17 Utah – Overview of Area

The state of Utah is the 13th largest state in the United States and covers a land area of approximately 84,899 square miles. Utah is a geographically diverse state located at the confluence of the Rocky Mountains, the Great Basin, and the Colorado Plateau. The state contains 29 counties, but nearly three quarters of the population live in five counties surrounding the state capital of Salt Lake City.

Percent of Area Covered by SFAs

There are two SFAs located in the norther part of the state of Utah (Figure 3-14). The Southern Idaho/Northern Nevada SFA is located in Box Elder County; the Bear River Watershed Area SFA is located in Cache County and Rich County.

Box Elder County covers a land area of approximately 4,296,960 acres. The proposed withdrawal would impact 67,641 acres (2 percent) of the land area inside of Box Elder County (Table 3-97). Cache County spans an area of 750,720 acres of which 29,363 acres (4 percent) would be impacted by the proposed withdrawal. Rich County is 695,040 acres in size and the proposed withdrawal would impact 136,820 acres (20 percent) of the county's total land area.

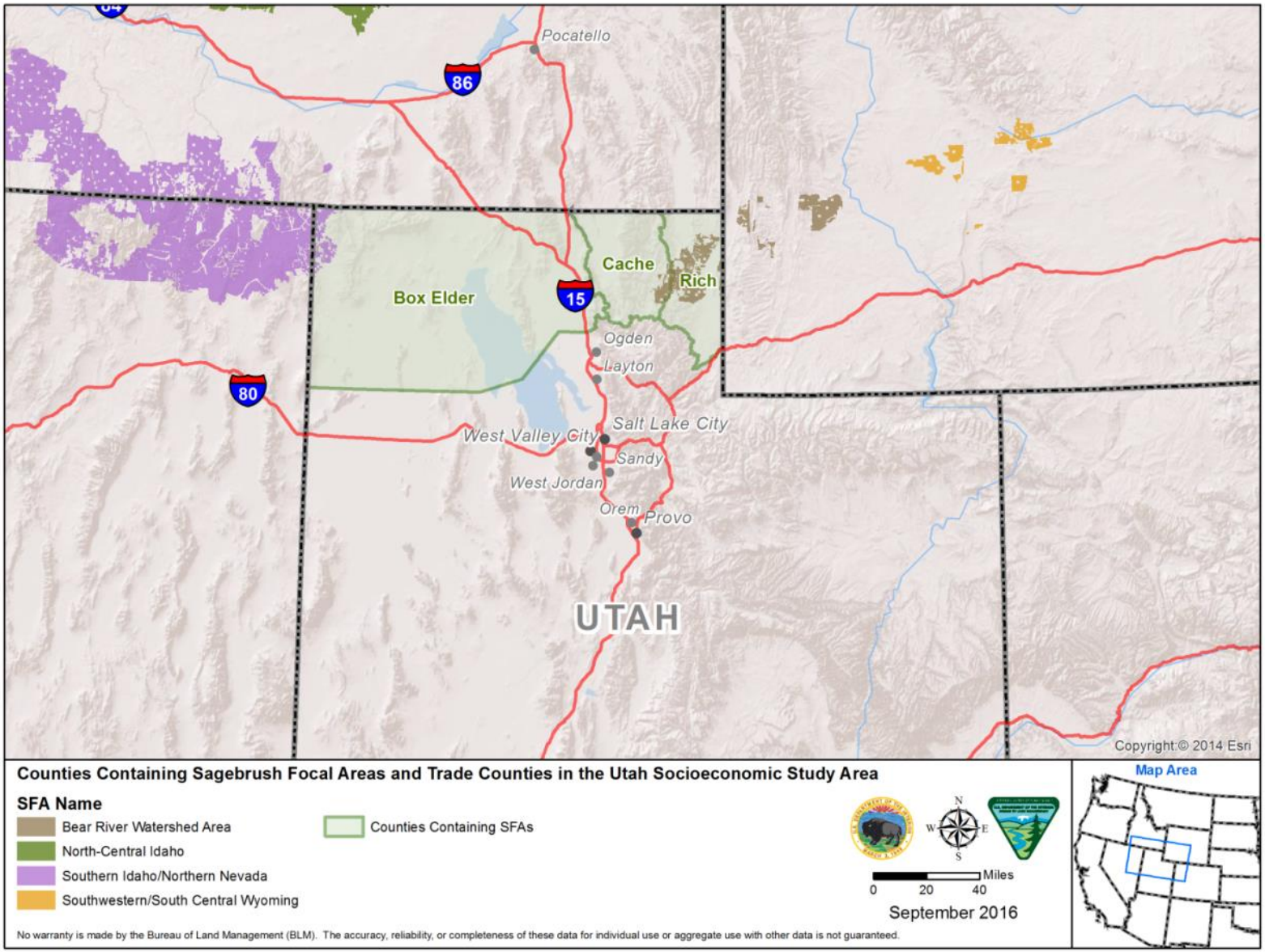

Figure 3-14. Counties Containing SFAs and Trade Counties in the Utah Socioeconomic Analysis Area

Table 3-97. SFA Withdrawal Areas in Utah Counties (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Box Elder County	4,296,960	67,641	2%
Cache County	750,720	29,363	4%
Rich County	695,040	136,820	20%
Total	5,742,720	233,824	4%

In total, a combined area of 233,824 acres would be withdrawn from surface mineral exploration and development inside of the SFAs contained in Utah. The withdrawn area covers approximately 4 percent of the combined land area of Box Elder, Cache, and Rich counties.

Percent of Area that is Federal Lands

The Utah socioeconomic analysis area is generally rural, with two cities (Brigham City and Logan) within 30 miles of the proposed withdrawal area. The City of Logan, located in Cache County, is the largest city in the Utah SFA counties and is located more than 20 miles from the nearest SFA. Federal lands constitute approximately one third of the Utah socioeconomic analysis area.

Box Elder, Cache, and Rich counties contain significant areas of federal lands (Table 3-98). According to statistics from the Utah Geologic Survey, 1,467,690 acres of land in Box Elder County are administered by the federal government. In total, 34 percent of the land area in Box Elder County is administered by federal agencies. In Cache County 286,129 acres are managed by the federal government (38 percent) and in Rich County, the federal government manages 223,643 acres (32 percent). In total, federal lands represent 34 percent of the land area in the SFA counties of Utah.

Table 3-98. Land Administered by Federal Agencies in Utah Counties Containing SFAs

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Box Elder County	4,296,960	1,467,690	34%
Cache County	750,720	286,129	38%
Rich County	695,040	223,643	32%
Total	5,742,720	1,977,464	34%

Source: Utah Geologic Survey (Data available at: http://gis.utah.gov/data/sgid-cadastre/land-ownership/).

3.5.18 Social and Cultural Conditions

History and Recent Cultural Events

Several indigenous tribes, including the Pueblo and Navajo, were the first inhabitants of the lands that eventually became the state of Utah. After the Spanish explorers visited the region in the 16th century, fur traders arrived and began to settle in the region in the 19th century. In 1847, a group of Mormon settlers, led by Brigham Young, arrived at the Great Salt Lake. Over time, the region became a beacon for the Mormon faith and tens of thousands of religious people migrated to the region and settled throughout the modern day state of Utah. In 1850, the settlers of Utah sent a proposal to the United States Government to create the state of Deseret. The proposed state would have covered areas of modern day Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, and Wyoming. The Mormon Church disputed the United States Government's decision, but the Government upheld their position and in 1896 the state of Utah was founded instead.

Disagreement over the management of Utah's federal land continues to this day. Many communities with large areas of federal land are frustrated by the uncertainty caused by temporary land use designations, like Wilderness Study Areas, and the lack of local control over important resources. Collaborative processes have started in an attempt to bring the disparate views of federal lands stakeholders together to form a more comprehensive management plan, but these efforts are far from achieving a consensus and disagreements about how to manage federal lands in Utah are likely to continue for some time.

Population and Population Growth

Table 3-99 shows current and historic populations in the socioeconomic analysis area of Utah. While the population of the United States grew at a rate of 29 percent between 1990 and 2014, the population in Utah increased by 74 percent over the same period.

Table 3-99. Population and Growth in Utah and the SFA Counties in the Utah Socioeconomic Analysis Area

County	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Box Elder	36,485	42,745	49,975	52,097	43%
Cache	70,183	91,391	112,656	120,783	72%
Rich	1,725	1,961	2,264	2,311	34%
Utah	1,722,850	2,233,169	2,763,885	2,995,919	74%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010, 2010-2014.

Population growth between 1990 and 2014 in the SFA counties of the Utah socioeconomic analysis area ranges from a low of 34 percent growth in Rich County, Utah, to a high of 72 percent growth in Cache County, which is the most populated county in the socioeconomic analysis area. With an estimated average population of 48,997 between 2010 and 2014, Logan, Utah is the largest city in the Utah socioeconomic analysis area (ACS 5-Year Estimates 2010-2014). Logan is the county seat of Cache County. With an estimated 2014 population of 18,752, Brigham City, Utah, is the largest city in Box Elder County. The largest city in Rich County, Garden City, had an estimated average population of 580 between 2010 and 2014 (ACS 5-Year Estimates 2010-2014).

Demographics (Age, Gender and Race/Ethnicity distributions)

Table 3-100 shows the average age and gender characteristics of the populations in each SFA county of the socioeconomic analysis area in Utah. Box Elder County and Rich County had average populations of citizens over 65 that were 2 and 6 percentage points higher than the state average between 2010 and 2014, respectively. The proportion of individuals under the age of 21 in all three counties was between 1.3 and 2.7 percentage points higher than the state average during the same time period. As a result, all three counties had smaller percentages of working age populations than the state of Utah by at least 4 percentage points.

Table 3-100. Demographic Characteristics of Utah and the SFA Counties in the Utah Socioeconomic Analysis Area, Share in Total Population (Percent) 2010 to 2014

Area	Women	Under 21 Years of Age	21 to 64 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Box Elder	49.5	37.0	51.2	11.8	93.2	0.3	0.9	0.8	4.8
Cache	50.2	38.4	53.5	8.1	90.7	0.7	0.6	2.2	5.8
Rich	49.5	38.0	46.1	15.9	96.7	0.1	0.0	0.0	3.2
Utah	49.7	35.7	54.8	9.5	88.0	1.1	1.1	2.1	7.7

Source: ACS 5-Year Estimates 2010-2014.

The SFA counties in the Utah socioeconomic analysis area are less racially diverse than the state of Utah. The average percentage of white individuals in Rich County was the highest in the Utah socioeconomic analysis area and was also 8.7 percentage points higher than the Utah state average between 2010 and 2014. The proportion of black individuals living in all three counties was lower than the Utah state average by between 0.4 percent and 1 percent. The proportion of American Indian individuals living in the socioeconomic analysis area was lower than the statewide average by between 0.2 and 1.1 percentage points. Between 2010 and 2014, the largest average proportion of American Indians lived in Box Elder County (0.9 percent), while the smallest proportion lived in Rich County (0 percent). The average proportion of Asian individuals living in the socioeconomic analysis area is highest in Cache County (2.2 percent), which was 0.1 percentage points above the statewide average. The average proportion of Asian individuals living in Box Elder County and Rich County between 2010 and 2014 was 1.3 and 2.1 percentage points below the statewide average, respectively.

Although Table 3-100 does not indicate the ethnicity of the residents of the SFA counties, an average of 13.3 percent of all Utah residents identified themselves as Hispanic or Latino between 2010 and 2014. The proportion of residents in the SFA counties that identified themselves as Hispanic or Latino was lower than the statewide average during the same time period. In Box Elder County, Cache County, and Rich County the average proportion of residents that identified themselves as Hispanic or Latino was 8.7 percent, 10.2 percent, and 3.3 percent, respectively (ACS 5-year Estimates 2010-2014).

Statewide, the average proportion of individuals living in poverty increased from 9.4 percent in 1999 to 12.8 percent between 2010 and 2014, representing an increase of 152,354 people (Table 3-101). The average poverty rate in the SFA counties in the Utah socioeconomic analysis area also increased between 1999 and 2014. The largest percentage increase in poverty occurred in Box Elder County, where the average poverty rate grew from 7.1 percent in 1999 to 9.6 percent between 2010 and 2014 (an increase of 1,792 people). During the same time period the poverty rate in Cache County grew from 13.5 percent to 15.8 percent, reflecting an increase of 5,653 people. The smallest change in the average poverty rate was observed in Rich County where the rate grew from 10.2 percent in 1999 to 11.7 percent between 2010 and 2014, which amounted to an additional 67 people.

Table 3-101. Poverty Counts in Utah and the SFA Counties in the Utah Socioeconomic Analysis Area, 1999 to 2014

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Utah	1999	206,328	9.4%
	2010 to 2014	358,682	12.8%
Box Elder County	1999	3,011	7.1%
	2010 to 2014	4,803	9.6%
Cache County	1999	12,017	13.5%
	2010 to 2014	17,670	15.8%
Rich County	1999	198	10.2%
	2010 to 2014	265	11.7%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Housing Stock and Prices

The average housing stock and the vacancy rate in the state of Utah and the SFA counties in the socioeconomic analysis area have increased between 2006 to 2010 and 2010 to 2014 (Table 3-102). Between 2006 and 2010, there were 16,890 housing units in Box Elder County, on average, and approximately 7.6 percent (1,278 units) were vacant. Between 2010 and 2014 the average number of housing units increased to 17,756 and the number of vacant units increased by 255 (an increase of 2.5

percentage points). Between 2006 and 2010, Cache County had 36,028 housing units, on average, of which 2,208 were vacant (6.1 percent). Between 2010 and 2014, the average housing stock had increased to 38,200 units of which 7.1 percent (2,695) were vacant. In Rich County there was an average of 2,954 housing units between 2006 and 2010 and approximately 74.2 percent were vacant (2,192 units). Between 2010 and 2014 the average number of housing units shrank to 2,872, but the vacancy rate increased to 78.2 percent (2,245).

Table 3-102. Housing Stock and Vacancy in Utah and the SFA Counties in the Utah Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Utah	2006 to 2010	952,370	93,212	9.8%
	2010 to 2014	999,734	103,540	10.4%
Box Elder County	2006 to 2010	16,890	1,278	7.6%
	2010 to 2014	17,756	1,533	8.6%
Cache County	2006 to 2010	36,028	2,208	6.1%
	2010 to 2014	38,200	2,695	7.1%
Rich County	2006 to 2010	2,954	2,192	74.2%
	2010 to 2014	2,872	2,245	78.2%

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are averages for that time interval.

Average housing values, mortgages, and rental costs in the three-county area were all below the statewide averages for Utah between 2006 and 2014 (Table 3-103). In Box Elder County, the median home price between 2006 and 2010 was $166,200, up 3 percent from 2006 to 2010. During the same time period, the median home price in Rich County was $163,400, an increase of 36 percent from 2006 to 2010. The highest median home price in the Utah socioeconomic analysis area between 2010 and 2014 was found in Cache County ($189,300), which increased 5 percent from its 2006 to 2010 levels. Statewide, the median rental costs of housing increased by 12 percent between the periods from 2006 to 2010 and 2010 to 2014. In Box Elder County, median rental costs for housing increased by 10 percent during the same period. The median rental costs of housing in Cache County increased by 4 percent between the periods from 2006 to 2010 ($656) and 2010 to 2014 ($680). The median rental costs of housing in Rich County declined by 23 percent between the same time periods. The high rate of growth of rental costs in Utah and Box Elder County may reflect the increase in demand and lack of availability in affordable rental units.

Table 3-103. Housing Values and Mortgage and Rental Costs in Utah and the SFA Counties in the Utah Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Utah	2006 to 2010	$218,100	-3%	$1,440	$781	12%
	2010 to 2014	$212,500		$1,454	$875	
Box Elder County	2006 to 2010	$162,000	3%	$1,172	$593	10%
	2010 to 2014	$166,200		$1,244	$653	
Cache County	2006 to 2010	$180,300	5%	$1,236	$656	4%
	2010 to 2014	$189,300		$1,281	$680	
Rich County	2006 to 2010	$120,300	36%	$978	$820	-23%
	2010 to 2014	$163,400		$1,229	$632	

Source: ACS 5-Year Estimates 2006-2010, 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

The 2015 Utah Greater Sage-Grouse LUP Amendment/EIS (BLM 2015e) for the prepared land use plan amendment included the following assessment of the areas values and attitudes concerning federal land management:

> *There is a range of interest groups in the socioeconomic analysis area, including groups that focus advocacy on resource conservation and others that focus advocacy on resource uses such as livestock grazing and developed recreation opportunities. There are also groups that represent coalitions of interest groups. Identification of these groups is intended to inform on the different interests in the analysis area and not to suggest that different interests necessarily conflict.*
>
> *Furthermore, groups and individuals often value various interests. The types of interest groups identified within the socioeconomic analysis area include the following: federal agencies, state agencies, county agencies, local agencies, Congressional representatives, local representatives, academic institutions, civic organizations, local chambers of commerce, environmental groups, land conservation groups, outdoors groups, local school boards, farm associations, Native American groups and tribal governments, and various business groups. Specific types of business interest groups identified include the following: real estate, tourism, mineral/oil and gas extraction, farms/ranches, textile manufacturers, livestock growers, and news media.*
>
> *The socioeconomic analysis area includes various communities of people who are bound together because of where they reside, work, visit, or otherwise spend a continuous portion of their time. A survey conducted by Utah State University assessed the extent to which Utah residents experience strong feelings about federal land environments and settings in the state (Table 3-104). According to the authors of the study, the study and sample sizes were designed to produce results generalizable at the statewide level, with generalizations increasingly risky as the sample area diminishes. Nonetheless, the study provides current and interesting results not available elsewhere and shows the dependence of local communities on federal lands for a variety of economic and recreational pursuits.*

The three counties in the Utah socioeconomic analysis area have strong economic and social ties to BLM-administered and National Forest System lands. In Box Elder County, 6 percent of households report relying on BLM lands for some part of their income. Approximately 42 percent of households in Box Elder County who reported a linkage between their household income and BLM lands receive more than 25 percent of their income from BLM lands. In Cache and Rich counties 2 percent of households receive income from BLM lands, but 28 percent of those households rely on BLM lands for more than 25 percent of their income. The proportion of households relying on Forest Service land for income is slightly less than those that rely on BLM land. Approximately 7 percent of the households in Box Elder County rely on tourism and recreation on federal land for their income and 10 percent rely on federal lands for income from farming, ranching, logging, or other natural resources. In Cache and Rich counties, 4 percent of households rely on tourism and recreation on federal lands as a source of their household income and 3 percent rely on federal lands for income from farming, ranching, logging, or other natural resources.

Table 3-104. Utah Residents' Feelings about Federal Land Environments and Settings in Utah

County Cluster	Respondents Reporting Linkage Between BLM Land and Household Income	Affirmative Respondents Reporting Linkage to BLM Land >25% of Household Income	Respondents Reporting Linkage Between USFS Land and Household Income
Box Elder and Tooele Counties	6	42	5
Cache and Rich Counties	2	28	2
County Cluster	**Affirmative Respondents Reporting Linkage to USFS Land >25% of Household Income**	**Households Reporting Linkage between Income and Recreation and Tourism on Federal Land**	**Households Reporting Linkage Between Income from Farming, Ranching, Logging, and Other Enterprises that Process Natural Resources from Federal Lands**
Box Elder and Tooele Counties	29	7	10
Cache and Rich Counties	20	4	3

Source: BLM 2015e.
Note: The survey results were reported with Box Elder County and Tooele County combined.

3.5.19 Economic Conditions

Economic Output and Gross Regional Product

Table C-31 in Appendix C shows the total gross output and value added for economic activities in Box Elder County in 2013. Total gross output measures the market value of the total revenue received from the sale of goods and services. Value added measures the value that is added to goods and services that have already been produced. Box Elder County produced $4.9 billion worth of economic output of which $2.7 billion was through value-added activities. The agricultural, forestry, fishing, and hunting sector produced $200.9 million of gross output in 2013 (4 percent of the total) of which $90.5 million was through value-added activities. Extractive industries, including natural gas and petroleum production, coal mining, and hard rock mineral mining produced a total gross output of $41.7 million in 2013 of which $29.1 million was through value-added activities.

Cache County produced approximately $10.6 billion worth of economic output. The manufacturing sector produced $934 million through value-added activities (21 percent of total). The agricultural, forestry, fishing, and hunting sector produced $183 million of gross output in 2013 (1.7 percent of the total) of which $84 million was value-added activities. Extractive industries, including natural gas and petroleum production, sand and gravel mining, drilling oil and gas wells, and nonmetallic mineral mining produced a total gross output of $28 million in 2013 of which $19 million was through value-added activities.

Rich County produced approximately $163 million worth of economic output. The agricultural, forestry, fishing, and hunting sector produced $46.5 million of gross output in 2013 (28 percent of the total) of which $22 million was through value-added activities. Extractive industries, including natural gas and petroleum production, sand and gravel mining, and drilling of oil and gas wells produced a total gross output of $1.8 million in 2013 of which $1.2 million was through value-added activities.

Total Employment and Employment by Sector

Table 3-105 shows the employment history in each SFA county in the socioeconomic analysis area in Utah from 1970 to 2014. Utah and the SFA counties have increased employment over the last 45 years. The period from 1970 to 1980 exhibited the highest rate of employment growth across Utah and Box Elder and Cache counties. During this time the highest rate of employment growth was observed in Cache County, which added jobs at an average annual rate of 6.3 percent, slightly above the state average. Employment in Rich County fell by 2.2 percent between 1970 and 1980. From 2010 to 2014 the average annual rate of employment growth in Box Elder and Cache counties was below the statewide average by approximately 2 percentage points. The average annual rate of employment growth in Rich County was 3.5 percent between 2010 and 2014, which was higher than the state average of 2.7 percent.

Table 3-105. Employment History in Utah and the SFA Counties in the Utah Socioeconomic Analysis Area, 1970 to 2014

Year	Utah		Box Elder County		Cache County		Rich County	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	454,612	—	11,213	—	16,346	—	971	—
1980	687,159	5.12%	15,497	3.82%	26,587	6.27%	758	-2.19%
1990	938,218	3.65%	20,788	3.41%	37,319	4.04%	783	0.33%
2000	1,376,759	4.67%	24,364	1.72%	53,691	4.39%	1,032	3.18%
2010	1,611,189	1.70%	24,843	0.20%	67,952	2.66%	1,468	4.22%
2014	1,785,244	2.70%	25,205	0.36%	70,173	0.82%	1,673	3.49%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Table C-32 in Appendix C. In 2014, the manufacturing sector accounted for the largest share of employment in Box Elder County and Cache County (20.7 percent and 16.4 percent, respectively). The government and government enterprises sector accounted for the next highest share of employment in Box Elder County and was the largest employer in Rich County (12.7 percent). In Cache County retail trade was the second largest source of employment. The mining sector in all three counties lacks detailed employment information because the small size of the industry makes it difficult to disclose the information without also disclosing sensitive proprietary information. In Box Elder County, the only county for which information was available, the mining sector employed 0.45 percent of the county's workforce. Statewide, mining employed a little more than 1 percent of the state's workforce, an increase of 0.4 percent from 2001.

In Box Elder County and Cache County the healthcare and social assistance sector demonstrated the largest growth between 2001 and 2014 (35.9 percent and 18.1 percent, respectively). The manufacturing sector led the largest decline in employment share in Box Elder County between 2001 and 2014 (-153 percent). In Cache County the management of companies and enterprises sector experienced the largest decline (-12.1 percent). The economy of Rich County is relatively small compared to the other two counties. As a result, employment information is incomplete. According to the information that is available, the largest change in employment in Rich County in 2014 was in the farming sector, which declined by 4.7 percent.

Labor Force and Unemployment

The labor force of an area is the population of working-age residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that "unemployed" is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Utah rose sharply and the SFA counties were no exception (Figure 3-15). In 2010, the unemployment rate in Utah rose to 8.2 percent, an increase of more than 5 percentage points over the 2006 rate. In 2011 the unemployment rate began to fall as the economy recovered and has continued to go down every year since.

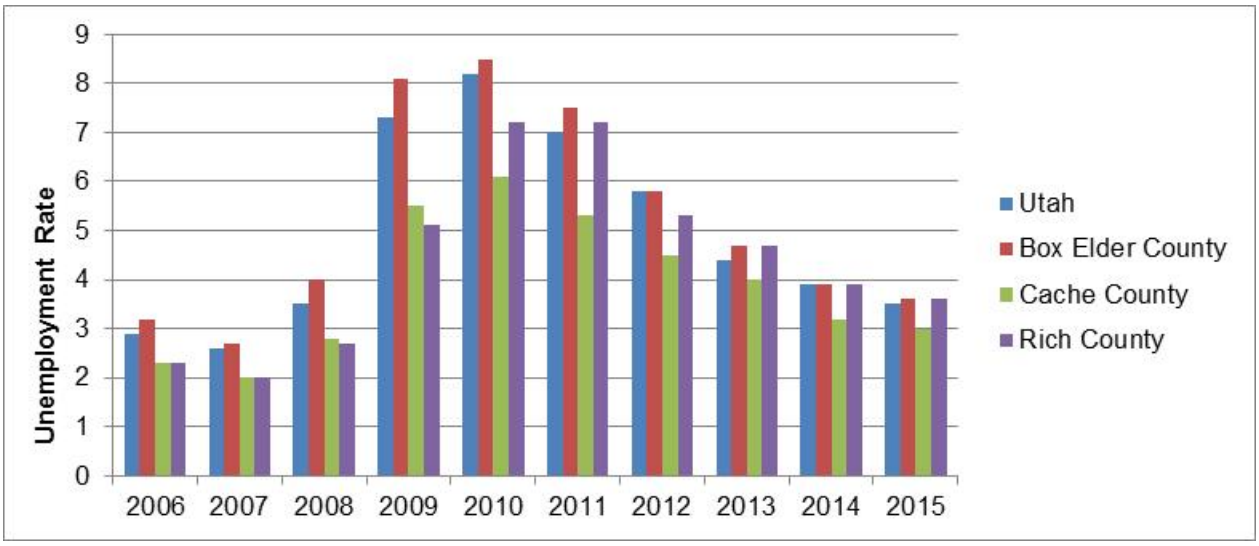

Figure 3-15. Unemployment Rates in Utah and SFA Counties in the Utah Socioeconomic Analysis Area, 2006-2015
Source: U.S Bureau of Labor Statistics 2016.

Box Elder County experienced the largest increase in unemployment amongst the SFA counties. In 2006, the unemployment rate in Box Elder County was 3.2 percent, but by 2010 the unemployment rate was the highest rate observed in the Utah SFA counties (8.5 percent). Cache County maintained the lowest unemployment rates in the analysis area between 2006 and 2015. In 2010, the unemployment rate in Cache County peaked at 6.1 percent and has since fallen to 3 percent in 2015. The unemployment rate reached a peak of 7.2 percent in Rich County in 2011 before falling to 3.6 percent in 2015. The unemployment rates statewide and in all three counties remain above the rates observed in 2006 and 2007, which were between 2.0 percent and 3.2 percent.

Personal Income

Table C-33 in Appendix C presents detailed labor income by sector for Utah and the SFA counties in the Utah socioeconomic analysis area. Statewide, total income in Utah grew by 44 percent between 2001 and 2014 Total income in Cache and Rich counties also grew at roughly the state average (45 percent and 47 percent, respectively), while total income in Box Elder County grew at a rate 26 percentage points below the state-wide average (18 percent). Average compensation (compensation per employee) in Utah grew 32 percent between 2001 and 2014 from $37,231 to $54,553. In Cache and Rich counties average earnings grew by 32 percent and 37 percent, respectively. In contrast, average compensation in Box Elder

County grew by 17 percent, 18 percentage points less than the state average. In Box Elder and Cache counties the educational services sector saw the fastest increase in total compensation between 2001 and 2014 (91 percent and 85 percent, respectively). In Rich County, which has incomplete earnings data, total compensation grew fastest in the military (56 percent increase). In Box Elder County, the manufacturing sector saw the largest decline in total compensation (-15 percent). In Cache County the management of companies and enterprises sector saw the largest decline in total compensation (-265 percent). In Rich County, the total compensation increased in every sector for which data was available. In some cases industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Statewide, total mining income grew by 61 percent from $439 million in 2001 to $1.13 billion in 2014. Data on the total compensation for the mining industries was available in Box Elder County in 2014. In that year, Box Elder County's mining industry's total compensation was $1.4 million, approximately 0.1 percent of the state's total mining compensation in 2014.

Total personal income in the state of Utah was $110.95 billion in 2015 (Table 3-106). Total personal income in the three SFA counties in 2015 was $1.7 billion in Box Elder County, $3.6 billion in Cache County, and $89 million in Rich County. Statewide, non-labor income accounted for 31 percent of total personal income. In the three SFA counties non-labor income accounted for 31 percent of total income in Box Elder County, 33 percent in Cache County, and 38 percent in Rich County. Statewide, dividends, interest, and rents accounted for 18 percent of non-labor income. In the SFA counties contained in the analysis area dividends, interest, and rents accounted for 15 percent of non-labor income in Box Elder County, 18 percent in Cache County and 23 percent in Rich County. Age-related payments accounted for 8 percent of non-labor income in Utah in 2015, 11 percent of non-labor income in Box Elder County, 8 percent in Cache County, and 10 percent in Rich County. Hardship and other payments accounted for 3-4 percent of non-labor income statewide and in the three SFA counties.

Table 3-106. Income by Source in Utah and SFA Counties in the Utah Socioeconomic Analysis Area (Thousands of 2015 Dollars)

	Utah	Box Elder County	Cache County	Rich County
Total personal income	$110,952,732	$1,660,957	$3,604,500	$89,952
non-labor income share	31%	31%	33%	38%
Non-labor income components	—	—	—	—
Dividends, interest, rent	57%	46%	53%	62%
Age-related transfer payments	24%	34%	24%	27%
Hardship-related payments	12%	13%	14%	7%
Other transfer payments	7%	7%	9%	5%

Source: Headwater Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Statewide, median annual household income in Utah increased by 28 percent from 1999 to 2014 from $47,472 to $60,943 between 2010 and 2014 (-3 percent after adjusting for inflation) (Table 3-107). The median income in the SFA counties grew at or above the state average, with the exception of Box Elder County. Between 1999 and 2014, the median household income in Cache County grew from $40,509 to $51,735, a 28 percent change (-4 percent after adjusting for inflation). The largest change in the median household income was observed in Rich County where income increased from $41,212 in 1999 to $56,772 between 2010 and 2014, a 38 percent change (3 percent after adjusting for inflation). Median income in Box Elder County grew 6 percentage points less than the state average. In 1999, the county's median household income was $46,044 and between 2010 and 2014 it had increased to $56,313, a 22 percent change (-8 percent after adjusting for inflation).

Table 3-107. Median Income in Utah and SFA Counties in the Utah Socioeconomic Analysis Area

Area	Year/Period	Median Household Income	% Change (2001 - 2014)
Box Elder County	1999	$46,044	22%
	2010 to 2014	$56,313	
Cache County	1999	$40,509	28%
	2010 to 2014	$51,735	
Rich County	1999	$41,212	38%
	2010 to 2014	$56,772	
Utah	1999	$47,472	28%
	2010 to 2014	$60,943	

Source: U.S Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

Taxes and Revenues

The major components of state tax revenue in Utah include sales and use taxes, individual income tax, and a corporate tax (Table 3-108). Individual income taxes accounted for 51.9 percent of the state's tax revenue in FY 2014-2015. In FY 2014-15 sales and use taxes accounted for 29.8 percent of the state's tax revenue. Other taxes, which include the corporate tax accounted for 5.6 percent of the state's tax revenue, followed by the motor fuel tax (4.6 percent) and the beer, cigarette, and tobacco tax (2 percent), special fuels taxes (1.8 percent), the insurance premium tax (1.6 percent), and the motor vehicle registration tax (0.7 percent) provided the remainder of the state's total tax revenue, the net proceeds from minerals severance taxes accounted for 1.9 percent of Utah's tax revenue in the 2014-2015 fiscal year.

Table 3-108. Utah Tax Revenues as a Percent of Total for FY 2014-2015

Tax Category	Percent of Total
Total (Millions, $)	$5,567
Individual Income Tax	51.9%
Sales and Use Tax	29.8%
Corporate Tax	5.6%
Motor Fuel Tax	4.6%
Beer, Cigarette & Tobacco Taxes	2.0%
Severance Taxes	1.9%
Special Fuel Taxes	1.8%
Insurance Premium Taxes	1.6%
Motor Vehicle Registration Fees	0.7%

Source: Utah State Tax Commission 2015.

Local Government Revenues

Table 3-109 summarizes estimated revenues and expenditures for Box Elder County, Cache County, and Rich County for the fiscal year ending June 30, 2015 – excluding proprietary funds (e.g., enterprise funds). The largest sources of revenue for Utah's counties are generally property taxes, intergovernmental resources, and sales taxes. Box Elder County also received significant amounts of revenue from tax increment funds, which are most often property taxes that are diverted to urban development and renewal projects, and PILT. It is noteworthy that Box Elder and Rich counties anticipated that expenditures would exceed revenues and that they would have to draw down previously accumulated fund balances.

Table 3-109. Estimated Revenues and Expenditures for SFA Counties in the Utah Socioeconomic Analysis Area: 7/1/2014 – 6/30/2015

Revenue Sources	Box Elder County	Cache County	Rich County
Property taxes	$11,182,511	$15,679,023	$1,142,521
Intergovernmental	$3,326,665	$11,251,638	$1,681,126
Payments in lieu of taxes	$3,096,128	–	–
Tax Increment	$2,936,137	–	–
Sales taxes	$2,872,885	$11,403,750	$103,160
Charges for services	$1,952,842	$6,149,131	$765,087
Fines	$631,510	$127,119	$39,365
Restaurant taxes	$471,291	–	$35,172
License and permits	$328,908	$327,893	$44,731
Transient room taxes	$239,147	–	$186,527
Rents	$123,318	$200,956	–
Miscellaneous	$81,218	$435,263	$109,438
Investment earnings	$57,389	$138,719	$13,731
Special Assessments	$26,280	–	–
Contributions and donations	$25,250	$305,127	–
Total Revenues	$27,351,479	$46,018,619	$4,120,858
Total Expenditures	$28,201,115	$45,318,221	$4,213,274
Net Revenues	-$745,832	$700,398	-$92,416
Fund Balance – End of Year	$38,570,529	$30,247,663	$4,322,931

Source: Box Elder County 2015; Cache County 2015; Rich County 2015.

Mining Related Economy

Utah is a state rich in mineral and energy resources. Since settlers first came to Utah in the late 19th century, mining these resources has played an important part in the state's economy, creating jobs for thousands of people through mineral extraction, processing, transportation and related industries. According to the Utah Geological Survey and the USGS, Utah produced $10 billion worth of energy and mineral resources in 2008. Since then, mineral and energy production has contributed between 2 percent and 3 percent of the state's annual gross domestic product (U.S. Bureau of Economic Analysis 2015).

Prospectors and investors are still discovering and developing new mineral and energy deposits throughout the state. In 2014, there were over 3,000 new mining claims recorded (UGS 2015). This activity was bolstered when the Utah Division of Oil, Gas, and Mining permitted two new large mines, 11 new small mines, and 14 notices of intent (UGS 2015). According to the Utah Geological Survey, eight of the small mine permits are for industrial minerals, two are for base metals, and one is for uranium (UGS 2015). Eight of the NOIs are for industrial minerals and six are for base/precious metals (Doug Burnett, DOGM, written communication, April 2015 as cited by UGS 2015). Statewide, there were a total of 19,770 active unpatented mining claims on BLM land in 2014 (Opolonia Abeyta, Utah BLM, written communication, April 2015 via UGS 2015).

Table 3-110 shows the value of mineral production in Utah from 2005-2014. According to the USGS, Utah was the 5th largest United States producer of nonfuel minerals in 2014, accounting for about 5.4 percent of the United States total (USGS 2015c). Base metals like iron, tungsten and cobalt have made up

the majority of Utah's mineral value. Since 2005, the state has produced between $2.1 and $2.9 billion of base metals each year. In 2014, base metal production was valued at $2.2 billion. Industrial minerals like diatomite, sand, gravel and clay, are the second most valuable mineral group produced in Utah. Since 2005, the state has produced between $759 million and $1.4 billion worth of industrial minerals each year. The production of precious metals like gold and silver is also an important source of Utah's mineral wealth. Since 2005, the state has produced between $209 million and $711 million worth of precious metals each year. Utah is also one of several western states that produce uranium, but as Table 3-110 shows, low uranium prices have caused all of the state's uranium mines to shut down over the last two years for which data is available.

Table 3-110. Mineral Production Value for State of Utah ($ millions)

Year	Base Metals	Industrial Minerals	Precious Metals	Uranium
2005	$2,093	$759	$209	$0
2006	$2,885	$811	$400	$0
2007	$2,827	$921	$322	$20
2008	$2,900	$1,053	$390	$39
2009	$2,142	$949	$635	$27
2010	$2,710	$808	$651	$28
2011	$2,625	$1,156	$711	$29
2012	$2,104	$1,280	$403	$31
2013	$2,217	$1,249	368*	$0
2014**	$2,212	$1,413	$388	$0

Source: Utah Geological Survey a division of Utah Department of Natural Resources.

According to data from the Minnesota IMPLAN Group, there was no mineral production in the Utah SFA counties in 2013, although all of the counties produced oil, gas, and sand and gravel (Table 3-111). In Box Elder County, 119 people were employed in energy production, stone mining, and sand and gravel mining in 2013 and produced $41.7 million in output. In Cache County, 85 people were employed in energy production, stone mining, and sand and gravel mining in 2013 and produced $28.3 million in output. In Rich County, 8 people were employed in energy production, stone mining, and sand and gravel mining in 2013 and produced $2.3 million in output.

Recreation and Tourism Related Economy

Utah has a diverse geography and ecology that lends itself to recreation and tourism. From the canyon country in the southeastern part of the state to the vast areas of sagebrush in the west, Utah offers something to every tourist and recreationist. BLM and Forest Service lands within the Utah socioeconomic analysis area offer many types of recreation opportunities including hunting, fishing, and equestrian use, backcountry skiing and mountaineering, and camping. Utah's tourism industry generates $6.8 billion in revenue for the state and its businesses each year in addition to bringing in $60 million in state and local sales tax revenue (Utah State Parks 2013). Areas like the Uinta-Wasatch-Cache National Forest contain a number of attractions that bring in more than 3 million visitors per year (Utah State Parks 2013).

The recreation and tourism industry primarily employs people through the retail trade, passenger transportation, arts, entertainment, and recreation and accommodation and food sectors (Table 3-112). Approximately 6,976 jobs in the SFA counties are related to travel and tourism. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-111. Mining Employment, Output, Compensation, Income, and Taxes by SFA County in the Utah Socioeconomic Analysis Area, 2013

	Employ-ment	Output	Employee Compensation	Proprietor Income	Other Property Type Income	Tax On Production And Imports
Box Elder County						
Extraction of natural gas and crude petroleum	55	$24,981,571	$505	$2,784,310	$11,746,127	$3,723,465
Stone mining and quarrying	18	$3,501,503	$310,028	$120,707	$1,648,563	$60,506
Sand and gravel mining	20	$4,365,622	$395,651	$165,705	$1,671,526	$62,065
Drilling oil and gas wells	25	$8,777,711	$101,839	$626,827	$4,921,574	$707,245
Support activities for oil and gas operations	1	$101,788	$0	$47,441	$0	$5,820
Other nonmetallic minerals services	0	$0	$0	$0	$0	$0
Cache County						
Extraction of natural gas and crude petroleum	40	$19,188,099	$11,334	$3,077,413	$8,518,909	$2,700,453
Stone mining and quarrying	0	$0	$0	$0	$0	$0
Sand and gravel mining	18	$4,524,736	$188,874	$915,090	$1,502,936	$55,805
Drilling oil and gas wells	5	$988,811	$0	$373,949	$0	$139,045
Support activities for oil and gas operations	18	$2,848,474	$575,146	$310,469	$896,238	$114,232
Other nonmetallic minerals services	4	$754,432	$238,962	$35,552	$292,188	$17,599
Rich County						
Extraction of natural gas and crude petroleum	4	$1,523,945	$1,716	$83,175	$761,573	$241,415
Stone mining and quarrying	0	$0	$0	$0	$0	$0
Sand and gravel mining	1	$285,451	$70,323	-$11,198	$99,440	$3,692
Drilling oil and gas wells	0	$64,878	$0	$10,116	$0	$12,384
Support activities for oil and gas operations	3	$441,221	$123,268	$4,067	$143,319	$18,267
Other nonmetallic minerals services	0	$0	$0	$0	$0	$0

Source: Minnesota IMPLAN Group, Inc. 2013.

Table 3-112. Employment in Travel and Tourism-Related Sectors for Utah and the SFA Counties in the Utah Socioeconomic Analysis Area, 2014

	Utah	Box Elder County	Cache County	Rich County
Retail Trade	29,024	266*	1235	21*
Passenger Transportation	7,982	0	0	0
Arts, Entertainment, & Recreation	19,846	137*	797*	3*
Accommodation & Food	104,992	1,273	3,180	64*
Total	161,844	1,676*	5,212*	88*

Note: Some data are withheld by the federal government to avoid the disclosure of potentially confidential information. Headwaters Economics uses data from the U.S. Department of Commerce to estimate these data gaps. These values are indicated with asterisks (*).
Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Census Bureau County Business Patterns.

The annual salaries paid to employees in the travel and tourism sector were below comparable salaries in non-related sectors. In Box Elder County, travel and tourism related jobs paid an average annual salary of $12,881 in 2014 compared to the average salary of $35,700 for non-travel and tourism related employment in Box Elder County (Headwaters Economics 2016). Travel and tourism related jobs in Cache and Rich counties paid slightly more at $13,266 and $13,598, respectively (Headwaters Economics 2016).

Other Economic Uses of Federal Lands

While energy and mineral development make up the largest source of economic activity on Utah's federal lands, several other activities make significant economic contributions to the state's economy (Table 3-113). Value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Utah, federal land created $4.06 billion in value added in 2015. Energy and mineral development added $2.78 billion in value to Utah's federal lands and the recreation sector was responsible for adding $1.03 billion in value. Major grants and payments, which include Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land, created $190 million in value-added activity in the state in 2015. DOI employees created an additional $60 million in valued-added activity by spending part of their income in Utah in 2015 (DOI 2015).

This economic activity has a direct translation into employment figures (Table 3-113). Visitor spending on BLM, Bureau of Reclamation, USFWS, Forest Service, and National Park Service land in Utah supported 20,252 jobs in the recreation sector in 2015. Energy and mineral extraction on federal land employed 18,011 people. Timber harvests and grazing activities on BLM and Bureau of Indian Affairs land combined to support 3,967 jobs across the state in 2015. The revenue from major grants and other payments affecting federal lands supported 2,654 jobs and the spending by DOI employees supported an additional 833 jobs in various sectors in 2015.

Table 3-113. Contribution of Department of the Interior Activities to the State of Utah by Sector (FY 2015)

	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated Valued Added ($ billions)	1.03	2.78	0	0.19	0.06	4.06
Estimate Total Output ($ billions)	1.9	4.82	0.17	0.29	0.11	7.29
Estimated Total Jobs	20,252	18,011	3,967	2654	833	45,716

Source: U.S. Department of the Interior 2015.

3.5.20 Wyoming – Overview of Area

Wyoming is the ninth largest state in the country, with a land area of approximately 98,000 square miles. The second highest state in the country, Wyoming can be described as a great plateau interrupted by a number of mountain ranges. The state contains 23 counties (State of Wyoming 2016).

Percent of Area Covered by SFAs

Portions of two SFAs include lands located in Wyoming (Figure 3-16). Portions of Lincoln County are included in the Bear River Watershed Area SFA (along with lands in Utah). Portions of Fremont, Sublette, and Sweetwater counties are included in the Southwestern/South Central Wyoming SFA.

Fremont County covers a land area of approximately 5.9 million acres. About 3.2 million of those acres are managed by the federal government, while another 1.3 million acres lie within Native American reservations. The proposed withdrawal would impact 61,214 acres (1 percent) of the land area within Fremont County (Table 3-114). Lincoln County spans an area of about 2.7 million acres, including almost 2 million acres of federally managed lands. 119,281 acres (4 percent) of federally managed land in Lincoln County would be impacted by the withdrawal. Sublette County is approximately 3.2 million acres in size and the withdrawal would impact 30,154 acres (<1 percent) of the county's total land area. Sweetwater County encompasses approximately 6.7 million acres, of which about 54,436 acres would be withdrawn (<1 percent of total county land area).

Table 3-114. SFA Withdrawal Areas in Wyoming Counties (Acres)

County	County Area	Total Withdrawal Area	Percent of County Area
Fremont	5,898,685	61,214	1%
Lincoln	2,692,947	119,281	4%
Sublette	3,159,980	30,154	<1%
Sweetwater	6,693,699	54,436	<1%
Total	18,445,011	265,085	1%

Source: Western Rural Development Center 2010d.

In total, approximately 265,085 acres of federally managed land would be withdrawn from new surface mineral exploration and development inside of the SFAs across the four Wyoming counties under the Proposed Action. The proposed withdrawal area covers approximately 1.4 percent of the combined land area of the four SFA counties.

Percent of Area that is Federal Lands

Like most of Wyoming, the SFA counties in the southwestern part of the state are mostly rural. The largest cities in relatively close proximity to the proposed withdrawal area are Kemmerer in Lincoln County, Rock Springs in Sweetwater County, Lander in Fremont County, and Pinedale in Sublette County. Rock Springs, which is located along Interstate Highway 80 and has a population of almost 25,000 people, is the largest of these communities (U.S. Census Bureau 2014).

Overall, two-thirds (67 percent) of the 18.4 million acres of land in the Wyoming SFA counties is managed by the federal government (Table 3-115), while about half of the non-federally managed lands of Fremont County lies within Native American reservations.

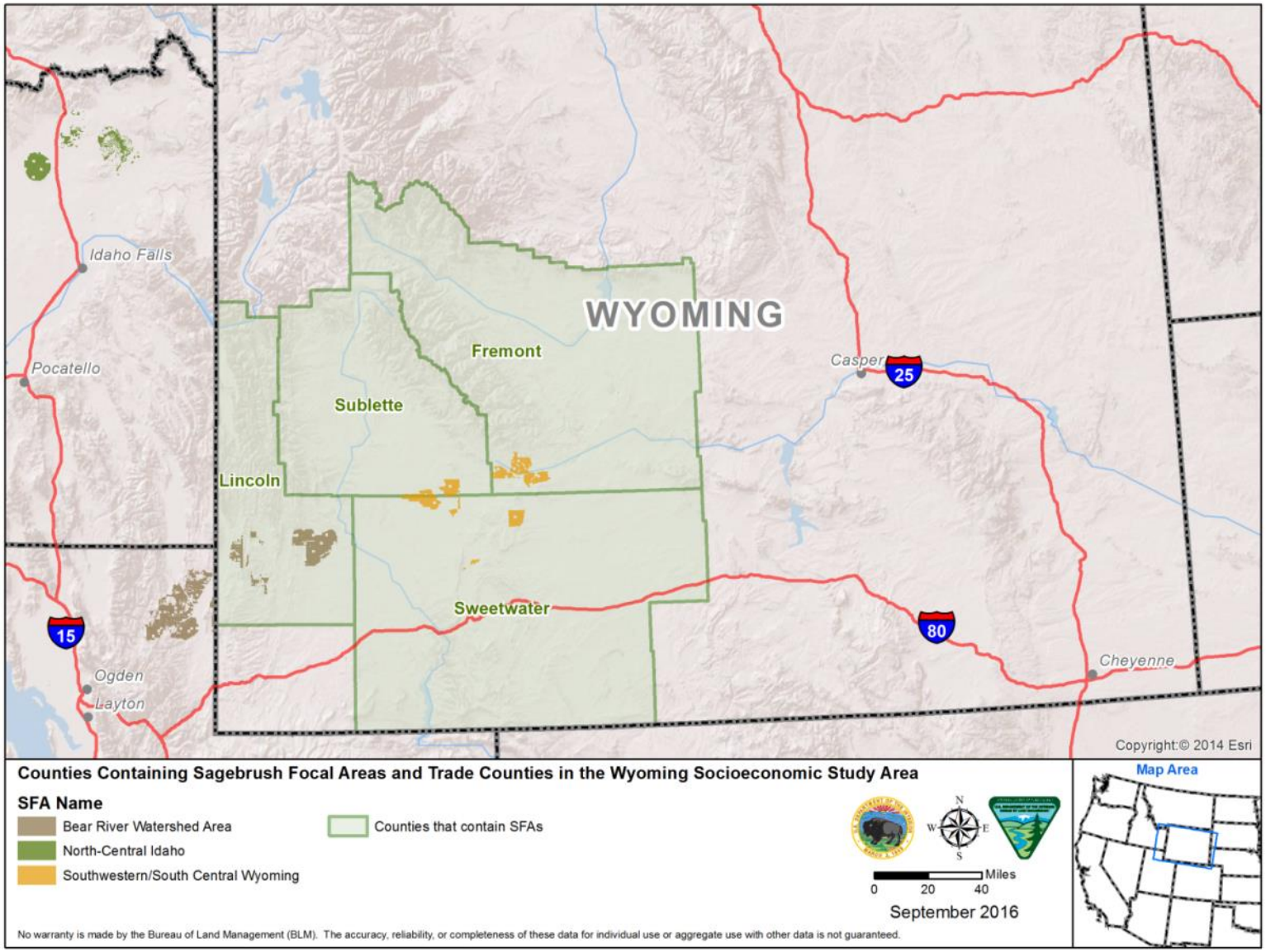

Figure 3-16. Counties Containing SFAs and Trade Counties in the Wyoming Socioeconomic Analysis Area

Table 3-115. Land Administered by Federal Agencies in Wyoming Counties Containing SFAs (acres)

County	County Area	Area Administered by Federal Agencies	Percent of County Administered by Federal Agencies
Fremont	5,898,685	3,218,649	55%
Lincoln	2,692,947	1,988,976	74%
Sublette	3,159,980	2,441,085	77%
Sweetwater	6,693,699	4,672,282	70%
Total	18,445,011	12,320,992	67%

Source: Western Rural Development Center 2010d.

3.5.21 Social and Cultural Conditions

History and Recent Cultural Events

Fremont County was established in 1884. Fremont County's unique geography offers access to a diversity of minerals, including uranium, oil and gas, jade, gold, and precious gems. A substantial portion of the Wind River Indian Reservation, including the tribal headquarters, is located within Fremont County boundaries. In addition, the only casino in Wyoming (operated by the Tribes) is located in the county.

Lincoln County was established in 1911, the same year Kemmerer was named as the county seat. Pioneers traveling west in the mid-to-late 1800s generally followed the Oregon Trail, which ran near Kemmerer. Early settlers established homesteads in the area in the late 1800s, and large sheep and cattle ranches took advantage of the vast rangeland. Extensive ranch settlement in the region followed the construction of the Union Pacific Railroad around 1867.

Sublette County was established in 1921, the same year Pinedale was named as the county seat. The first inhabitants of the area were Shoshone, Gros Ventre, Bannock, Sheepeater, and Crow Native American tribes. White explorers, mainly trappers and mountain men, arrived in the early 1800s, drawn to the area by the tales of streams rich with beaver. Later, ranchers and cattlemen began to winter their stock in the area and eventually settled there. In the last few years, the level of oil and gas development has considerably increased, making it the dominant industry, with timbering and ranching declining.

Sweetwater County was established in 1867, the same year Green River was named as the county seat. Several emigrant trails passed through the county, including the Oregon, California, Mormon, Overland, and Cherokee trails. In addition, the transcontinental railroad came in 1868, creating two major population centers—Green River and Rock Springs. I-80 traverses east-west through Sweetwater County. State Highway 30 traverses northwest from I-80 near Granger to Kemmerer (Lincoln County). The largest deposit of trona in the world, according to the USGS (2011), is largely located is Sweetwater County. Trona mining and soda ash processing is a unique and important industry for the county (BLM 2012d).

Population and Population Growth

Table 3-116 shows current and historic populations in the SFA counties in the Wyoming socioeconomic analysis area. A little less than 114,000 people live in the four SFA counties, about 19 percent of the state's overall population. The state of Wyoming's population increased by just over 29 percent between 1990 and 2014, a very similar rate of growth to the state of Montana (described earlier in this chapter). All four SFA counties in Wyoming grew in population over the 1990 through 2014 period. Two of the four counties, Fremont and Sweetwater, grew at a slower rate than the state as a whole. Lincoln County and Sublette County grew at a more rapid rate than the statewide average. Particularly rapid growth occurred in Sublette County between 2000 and 2010 due to the oil and gas boom that occurred in the Pinedale area, but the county's population has declined since 2010.

Table 3-116. Population and Growth in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area

Area	1990	2000	2006 to 2010 Average	2010 to 2014 Average	Percent Change (1990 - 2014)
Fremont	33,662	35,804	40,123	40,315	19.8%
Lincoln	12,625	14,573	18,106	18,722	48.3%
Sublette	4,843	5,920	10,247	9,899	104.4%
Sweetwater	38,823	37,613	43,806	44,626	14.9%
Wyoming	453,588	493,782	563,626	586,107	29.2%

Source: U.S. Census Bureau 1990, 2000; ACS 5-Year Estimates 2006-2010, 2010-2014.

Demographics (Age, Gender and Race/Ethnicity Distributions)

Table 3-117 shows the average age, gender, and racial characteristics of the populations in each SFA county in Wyoming between 2010 and 2014. On average, women comprised less than 50 percent of the population in Wyoming and in each analysis area county except for Fremont County during this time period. During the same time period, the average proportion of adults over the age of 65 was higher in Fremont County than in Wyoming as a whole, similar to the state average proportion in Lincoln County, and lower than average in Sublette County and Sweetwater County. With the exception of Fremont County, an average of more than 90 percent of the residents in each SFA county in the Wyoming socioeconomic analysis area classified their race as “white,” which was similar to the state as a whole. American Indians comprised an average of more than 20 percent of the population of Fremont County.

Table 3-117. Demographic Characteristics of Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area, Share in Total Population (%) 2010 to 2014

Area	Women	21 to 64 Years of Age	Under 21 Years of Age	65 Years of Age and Older	White	Black	American Indian	Asian	Other
Fremont	50.1	55.9	28.8	15.3	74.0	0.4	20.9	0.7	4.0
Lincoln	48.8	55.4	31.3	13.3	96.5	0.1	0.3	0.5	2.8
Sublette	45.9	60.8	28.1	11.1	93.0	0.0	0.2	1.0	5.8
Sweetwater	47.8	60.6	30.7	8.7	91.9	0.9	0.5	0.7	6.0
Wyoming	49.0	58.8	28.1	13.1	90.8	1.0	2.3	0.9	5.0

Source: ACS 5-Year Estimates 2010-2014.

Although Table 3-117 does not indicate the ethnicity of the residents of the SFA counties, an average of 9.4 percent of all Wyoming residents identified themselves as Hispanic or Latino between 2010 and 2014. The proportion of residents in the SFA counties that identified themselves as Hispanic or Latino was lower than the statewide average, except in Sweetwater County where Hispanic or Latino residents comprised an average of 15.7 percent of the total population (ACS 5-year Estimates 2010-2014).

Proportion of Residents Living in Poverty

Statewide, the average proportion of individuals living in poverty was the same between 2010 and 2014 as it was in 1999, at 11.2 percent of the population (Table 3-118). Between 2010 and 2014, average poverty rates were lower in each of the SFA counties than the statewide average. From 1999 through 2014, the poverty rate noticeably improved in Fremont County, declining from 16.6 percent to an average of 10.5 percent, and in Sublette County, declining from 9.0 percent to an average of 6.8 percent. The incidence of poverty worsened slightly in Sweetwater County between 1999 and 2014, increasing from 8.3 percent of the population to an average of 9.8 percent.

Table 3-118. Individuals Living in Poverty in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area 1999 -2014

Area	Year/Period	Poverty Count	Percent of Population in Poverty
Wyoming	1999	54,214	11.2%
	2010 to 2014	63,860	11.2%
Fremont County	1999	5,840	16.6%
	2010 to 2014	5,558	10.5%
Lincoln County	1999	1,355	9.3%
	2010 to 2014	1,656	9.0%
Sublette County	1999	531	9.0%
	2010 to 2014	675	6.8%
Sweetwater County	1999	3,084	8.3%
	2010 to 2014	4,346	9.8%

Source: U.S. Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are averages for that time interval.

Housing Stock and Prices

Table 3-119 illustrates housing available within the analysis area from 2010 to 2014. In general, there has been little change in the total number of housing units, and a slight increase in the percent that were vacant, over this time period. Relatively large proportions of the housing stock were vacant in both Lincoln and Sublette counties. 2010 Census data indicate that more than half of the vacant units in both of these counties were used for seasonal or recreational purposes.

Table 3-119. Housing Stock and Vacancy in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area

Area	Period	Number of Housing Units	Number of Vacant Units	Percent Vacant
Wyoming	2006 to 2010	261,868	34,989	13%
	2010 to 2014	265,195	39,681	15%
Fremont County	2006 to 2010	17,796	2,341	13%
	2010 to 2014	17,731	2,441	14%
Lincoln County	2006 to 2010	8,946	2,085	23%
	2010 to 2014	8,992	2,408	27%
Sublette County	2006 to 2010	5,770	1,864	32%
	2010 to 2014	5,815	2,275	39%
Sweetwater County	2006 to 2010	18,735	2,260	12%
	2010 to 2014	18,938	2,251	12%

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for each period are averages for that time interval.

Average housing values and mortgage costs in the four SFA counties in Wyoming are summarized in Table 3-120. In general, median home values across the Wyoming analysis area are similar to the statewide median value, except in Sublette County, where the median home value is about 50 percent higher. The median monthly rent in Sublette County is also more than 50 percent higher than the statewide median. The higher costs of housing in Sublette County are likely the product of the oil and gas boom that occurred in that area during the last decade. Home values in both Sublette and Lincoln counties have grown more slowly over the past four years than in the other analysis area counties, or the state as a whole, though rents have continued to increase substantially in Sublette County. Median home values in Sweetwater County are similar to the statewide values, but median monthly rents are about 17 percent higher than the statewide median.

Table 3-120. Housing Values and Mortgage and Rental Costs in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area

Area	Period	Median Home Value	Percent Change in Median Home Value	Median Monthly Mortgage Costs	Median Monthly Rent Costs	Percent Change in Median Rent Costs
Wyoming	2006 to 2010	$174,000	9%	$1,249	$666	17%
	2010 to 2014	$189,300		$1,357	$778	
Fremont County	2006 to 2010	$154,400	19%	$1,103	$567	20%
	2010 to 2014	$183,700		$1,260	$683	
Lincoln County	2006 to 2010	$196,400	-1%	$1,279	$781	1%
	2010 to 2014	$194,700		$1,366	$792	
Sublette County	2006 to 2010	$278,300	2%	$1,602	$964	22%
	2010 to 2014	$284,400		$1,731	$1,180	
Sweetwater County	2006 to 2010	$169,500	8%	$1,300	$801	13%
	2010 to 2014	$183,400		$1,455	$908	

Source: ACS 5-Year Estimates 2006-2010; 2010-2014.
Note: Values for each period are medians for that time interval.

Public Resource Management Attitudes, Values, and Beliefs

In 2012, BLM completed a detailed Socioeconomic Baseline Report for the Wyoming Sage-Grouse LUP Amendments, also known as the "9 Plan" (BLM 2012d). That evaluation included the following observations:

> *In 2007, the Wyoming Rural Development Council released its seven-year community assessment synopsis. The assessment process involves annual community surveys across the state to determine the challenges, strengths, and goals of the citizens of these communities. The overall themes that emerged from these surveys provide a glimpse into the quality of life Wyoming residents enjoy. According to the seven-year synopsis of the annual surveys, Wyoming residents are impressed with the level of community leadership and feel the biggest community asset is the friendly people who pull together in times of need and demonstrate exceptional community involvement through volunteerism. Residents also appreciate the small size of their communities, which provides a safe environment with low crime. Moreover, the location, rural atmosphere, natural resources, and outdoor recreational activities are considered a valuable part of the community (Wyoming Rural Development Council 2007).*
>
> *On the other hand, the growth of the oil and gas industry has not benefited all communities in the same way and has created a number of challenges. The influx of new residents lured by the promise of oil and gas jobs has created tensions in some communities struggling to adapt to the newcomers. For example, Sublette County has experienced significant growth due to the oil and gas boom. The 2008 Community Satisfaction and Quality of Life Survey of Long-Term Residents of Sublette County (Coburn 2008), suggests that long-term residents feel the influx of newcomers has had a negative effect on the community; and despite the economic advantages of the oil and gas industry, future growth is not viewed positively. Still other communities have not benefitted from the economic growth attributed to the oil and gas industry and are struggling to develop new industries for their small communities. In many instances, infrastructure and economic development limit the quality of life in many communities within the socioeconomic analysis area (Wyoming Rural Development Council 2007).*

The Wyoming Rural Development Council released its 10-year community assessment results in 2011. The following excerpt from the summary report is a wide-ranging synopsis of the quality of life across the socioeconomic analysis area:

The challenges facing rural Wyoming have many common themes to explore. Some of the overall major problems and challenges include lack of affordable housing, needed infrastructure improvements, the out-migration of youth due to lack of jobs and opportunities in their hometown, overall lack of good paying jobs in rural communities, the need for beautification in rural communities, lack of vision and planning, growth in the rural communities being decided by external forces, and an overall lack of activities and services for youth, families, and seniors.

When exploring the overall strengths and assets in Wyoming's rural communities, it is easy to understand how proud the citizens of rural Wyoming are. The overall major strengths and assets include the people (biggest asset), friendly, people pull together in times of need, great volunteerism, small size of the community, safe, low crime, the location and rural atmosphere, natural resources, outdoor recreational activities of every possible type, and good community leadership.

Overall, Wyoming's rural communities have similar hopes and desires. Every community wants to grow in the way that they choose, not one that is decided by an external source. Also, each community wants to preserve its unique history and culture, while building a future where their children can return to and be proud to live (Wyoming Rural Development Council 2011).

3.5.22 Economic Conditions

Economic Output and Gross Regional Product

Table C-34 in Appendix C shows the total gross output and value added for economic activities in the SFA counties in the Wyoming socioeconomic analysis area. Total gross output measures the market value of the total revenue received from the sale of goods and services. Value added measures the value that is added to goods and services that have already been produced. The SFA counties economic activity produced total gross output of between $1.6 billion (Lincoln County) and $7.7 billion (Sweetwater County) in 2013. The largest share of economic activity in the SFA counties is created by the extraction of natural gas and petroleum, coal mining, and manufacturing. Mineral mining is also an important source of economic activity in all four counties. Agriculture, forestry, fishing, and hunting activities are also an important part of the regional economy in all four SFA counties. In Fremont, Lincoln and Sublette counties, these activities contributed approximately 5 percent of the total economic activity in the county in 2013. Arts, entertainment, and recreation make a slightly smaller contribution to the economic activity in the region. In 2013, activities in this sector contributed between 0.4 percent (Sweetwater County) and 1 percent (Fremont, Lincoln, and Sublette counties) of each county's total gross output.

Total Employment and Employment by Sector

Table 3-121 shows the employment history in each SFA county of the Wyoming socioeconomic analysis area from 1970 to 2014. Over the 44-year period, the number of jobs in Wyoming more than doubled from about 159,000 in 1970 to over 402,000 in 2014. However, Wyoming's economy has been strongly affected by periods of boom and bust. Statewide employment grew at a frenzied pace of 5.8 percent per year during the 1970s, but then declined by 0.3 percent per year during the 1980s. Since 1990, statewide employment growth has been much more stable, averaging between 1.7 percent and 1.8 percent per year between 1990 and 2010, but slowing slightly to 1.3 percent per year from 2010 through 2014.

Table 3-121. Employment History in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area, 1970–2014

Year	Fremont County		Lincoln County		Sublette County		Sweetwater County		Wyoming State Total	
	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change	No. of Jobs	Ave. Annual Change
1970	11,914	N/A	4,444	N/A	2,027	N/A	8,699	N/A	159,384	N/A
1980	19,903	5.3%	6,579	4.0%	2,804	3.3%	25,472	11.3%	278,978	5.8%
1990	16,828	-1.7%	6,844	0.4%	3,063	0.9%	22,749	-1.1%	270,832	-0.3%
2000	20,773	2.1%	7,924	1.5%	3,902	2.5%	23.895	0.5%	322,283	1.8%
2010	24,386	1.6%	9,856	2.2%	8,120	7.6%	29,387	2.1%	382,160	1.7%
2014	24,693	0.3%	9,823	-0.1%	7,475	-2.0%	30,127	0.6%	402,763	1.3%

Source: U.S Bureau of Economic Analysis 1970, 1980, 1990, 2000, 2010, 2014a.

The employment history within the Wyoming analysis area exhibits similar patterns, for the most part, with rapid growth during the 1970s, declining employment during the 1980s, and a comparatively stable period from 1990 through 2010. The exception to this pattern was Sublette County, which experienced a major oil and gas boom during the 2000s, and saw employment increase by 7.6 percent per year during that decade, followed by a contraction in employment of 2.0 percent per year since 2010. Overall, the analysis area economies have seen little or no employment growth since 2010.

The distribution of employment between 2001 and 2014 by industry sector for each SFA county is summarized in Table C-35 in Appendix C. In some cases, industry-specific employment totals were not disclosed due to confidentiality concerns in cases where there are very few establishments in the industry. In these instances, the Bureau of Economic Analysis uses the code (L) to indicate there were fewer than 10 jobs in the industry for that particular county, and the code (D) to indicate the data were not disclosed due to confidentiality concerns.

Where data for both 2001 and 2014 were available, Table C-35 in Appendix C provides insight into the concentration of employment by industry in each affected county. Farming continues to account for over 5 percent of employment in the SFA counties in Wyoming, except in Sweetwater County. The largest non-farm employment sectors in the SFA counties are generally retail trade, accommodation and food services, construction, and mining. Mining jobs provide a substantial share of total employment in all of the SFA counties, but are particularly important in Sublette and Sweetwater counties, where they account for about 20 percent of total employment.

Table C-35 also provides some insight into employment changes from 2001 to 2014 (Appendix C). Within the three counties where mining employment was disclosed in both 2001 and 2014, employment in mining increased more than employment in any other (fully disclosed) sector over the 14 year period. The same could be true in Sweetwater County, but cannot be determined from the Bureau of Economic Analysis data because mining employment in 2001 was not disclosed.

Labor Force and Unemployment

The labor force of an area is the population of working-age residents that are currently employed or are unemployed but actively seeking work. The unemployment rate reflects the number of unemployed persons as a percent of the total labor force. It is important to note that “unemployed” is specifically defined as individuals without jobs who are actively seeking work and does not include the entire non-working population.

As a result of the economic recession that began in late 2008, unemployment in communities across the state of Wyoming rose sharply and the SFA counties were no exception (Figure 3-17). In most of the SFA counties, unemployment peaked in 2009, 2010, or 2011 and has declined in the past four years. In general, the unemployment rate in Wyoming, and in each of the SFA counties, has been slightly lower than the national average during the past few years. However, unemployment rates in the Wyoming analysis area remain higher than they were prior to the recession. The most recent annual average unemployment rates (in 2015) for the SFA counties were: Fremont County 5.4 percent, Lincoln County 4.6 percent, Sublette County 5.1 percent, and Sweetwater County 4.6 percent. The statewide unemployment rate in Wyoming in 2015 was 4.2 percent.

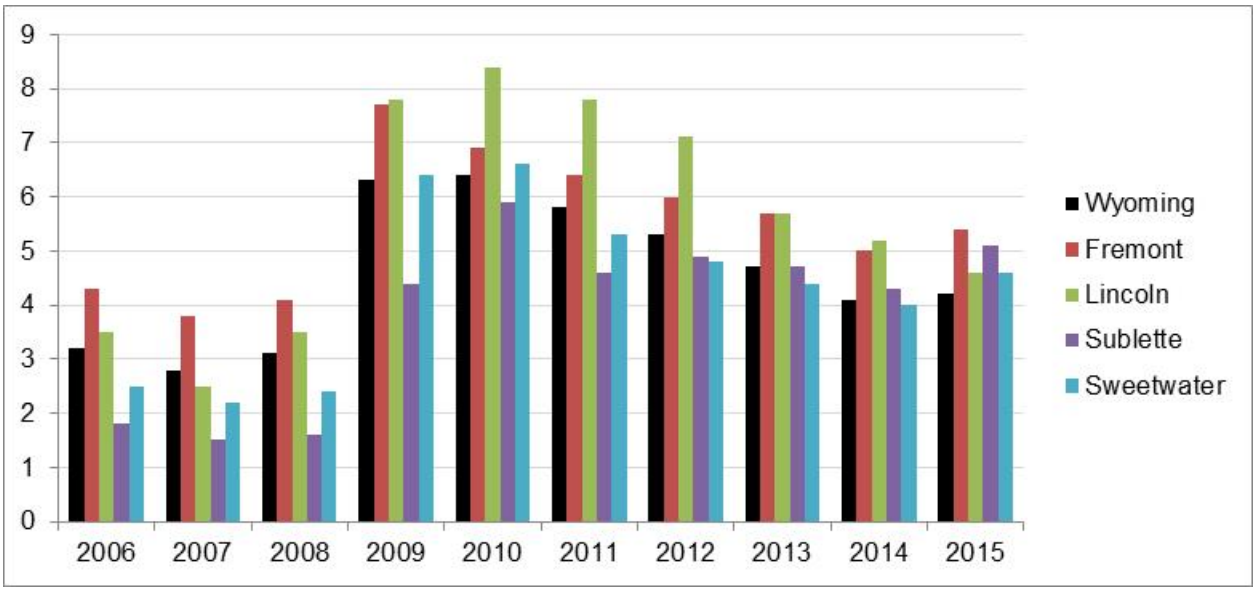

Figure 3-17. Unemployment Rates in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area, 2006–2015
Source: U.S Bureau of Labor Statistics 2016.

Personal Income

Statewide, total employee compensation in Wyoming grew by 102 percent between 2001 and 2014. Over the same time period, total compensation grew much more rapidly in Sublette County (351 percent), at about the same pace as the state as a whole in Fremont and Sweetwater counties (104 percent increase in both), and somewhat more slowly in Lincoln County (84 percent). In some cases industry-specific income totals were not disclosed due to confidentiality concerns. In these instances, the Bureau of Economic Analysis uses the code (D) to indicate the data were not disclosed due to confidentiality concerns.

In part, the increases in total employee compensation reflected increases in the number of jobs (as shown previously in Table C-35 in Appendix C). However, the average compensation per job in Wyoming did increase by 71 percent from 2001 to 2014, from $35,005 to $59,878. Compensation per job grew at a slightly faster rate than the state average over the 14-year period in Fremont County (81 percent increase), and at a much faster rate than the state average in Sublette County (134 percent increase). Earnings per job increased in Lincoln County at the same pace as the state as a whole (71 percent). In Sweetwater County, compensation per job increased as well (65 percent increase), but at a slightly slower pace than the statewide average.

Average earnings per job in 2014 were substantially higher in Sublette County ($75,124) and Sweetwater County ($73,007) than average in Wyoming ($59,878). In Fremont County ($53,313) and Lincoln County ($56,930), average compensation per job was slightly lower than the statewide average.

Table C-36 in Appendix C shows total labor compensation by industry, although some industries in some of the SFA counties were not disclosed by the Bureau of Economic Analysis. Employee compensation in the mining sector stands out in each of the SFA counties, and in 2014 represented over 10 percent of all employee compensation in Fremont County, over 20 percent of all employee compensation in Lincoln County, and more than one-third of all employee compensation in both Sublette and Sweetwater counties.

Employee compensation from mining jobs also grew substantially in the SFA counties in the Wyoming socioeconomic analysis area between 2001 and 2014. Compensation from the mining industry was not disclosed in Sweetwater County in 2001 (so growth from 2001 through 2014 cannot be identified). In the remaining three SFA counties, however, total employee compensation increased more in mining than in any other sector over this time period (in terms of total dollars paid in compensation).

Total personal income in the state of Wyoming was $32 billion in 2014 (Table 3-122). Total personal income in the four SFA counties in 2014 ranged from $2.5 billion in Sweetwater County to $519 million in Sublette County.

Table 3-122. Income by Source in Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area in 2014 (Thousands of 2015 dollars)

	Wyoming	Fremont County	Lincoln County	Sublette County	Sweetwater County
Total personal income	$31,917,118	$1,669,260	$747,461	$519,251	$2,516,542
Non-labor income share	42%	43%	42%	38%	21%
Non-labor income components	—	—	—	—	—
Dividends, interest, rent	71%	54%	63%	77%	55%
Age-related transfer payments	17%	26%	25%	15%	26%
Hardship-related payments	7%	15%	7%	3%	9%
Other transfer payments	5%	5%	5%	5%	10%

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S Bureau of Economic Analysis.

Statewide, non-labor income accounted for 42 percent of total personal income. In three of the four SFA counties in Wyoming, non-labor income accounted for between 38 percent and 43 percent of total personal income, shares similar to the statewide average. In Sweetwater County, however, non-labor sources accounted for 21 percent of personal income, about one half of the statewide average.

The largest component of non-labor income in each of the SFA counties, as well as the state as a whole, was income from dividends, interest and rent. These sources made up between 55 percent (in Sweetwater County) and 77 percent (in Sublette County) of all non-labor income in the SFA counties. Age-related transfer payments from Social Security and Medicare accounted for between 25 percent and 26 percent of all non-labor income in Fremont, Lincoln, and Sweetwater counties, a larger proportion of non-labor income than average in Wyoming (17 percent). Hardship-related payments (including Medicaid, income maintenance, and unemployment insurance) accounted for a larger share of non-labor income in Fremont County and Sweetwater County than average across Wyoming, and a smaller than average share of non-labor income in Sublette County.

Statewide, median annual household income in Wyoming increased by 46 percent from 1999 to 2014 from $39,988 to $58,291. After accounting for inflation, however, the statewide increase in median household income from 1999 to 2014 was about 9 percent.

In the SFA counties, median household income increased at about the same rate as the state as a whole in Fremont County (45 percent increase, 9 percent after inflation); Lincoln County (45 percent increase, 9 percent after inflation); and Sweetwater County (44 percent increase, 8 percent after inflation). In Sublette County, however, the effects of the oil and gas boom during the last decade can be seen in the changes in median household income, which increased by 79 percent (34 percent after inflation) between 1999 and 2014 (Table 3-123).

Table 3-123. Median Income in the SFA Counties in the Wyoming Socioeconomic Analysis Area

County	Year/Period	Median Household Income	% Change (1999 - 2014)
Fremont County	1999	$33,460	45%
	2010 to 2014	$48,624	
Lincoln County	1999	$43,814	45%
	2010 to 2014	$63,575	
Sublette County	1999	$43,254	79%
	2010 to 2014	$77,222	
Sweetwater County	1999	$50,357	44%
	2010 to 2014	$72,604	

Source: U.S Census Bureau 2000; ACS 5-Year Estimates 2010-2014.
Note: Values for 2010 to 2014 are medians for that time interval.

The median household income in Lincoln County ($63,575) between 2010 and 2014 was about 9 percent higher than the median household income for Wyoming as a whole ($58,291) for the same time period, while median household incomes in Sweetwater County and Sublette County were about 25 percent and 32 percent higher than the state median (respectively). The median household income in Fremont County ($48,624) between 2010 and 2014 was 17 percent below the statewide median.

Taxes and Revenues

The state of Wyoming relies very heavily on revenues tied to the extraction of natural resources, and on income from large funds saved from prior revenues from those same sources. Overall, an estimated 70 percent or more of the state's revenues come from severance taxes, royalties, and property taxes on the mineral industry (WyoFile 2014). In part, this reliance on mineral related revenues can be seen from the distribution of funding for the state's general fund in 2015, as shown in Table 3-124.

Table 3-124. Wyoming General Fund Revenues Sources as a Percent of Total for FY 2015

Tax Category	Percent of Total
Sales and use tax	36.1%
PWMTF income*	32.8%
Severance tax	13.3%
Pooled income**	7.6%
All other taxes and fees	11.2%

Note: *Income from Wyoming's Permanent Water and Mineral Trust Fund.
** Pooled income is income from the Legislative Stabilization Reserve Account, also known as the "rainy day" fund.
Source: Wyoming State Government 2016.

The general fund revenue distribution, however, reflects a portion of the effects of mineral extraction related revenues on the state of Wyoming. While approximately 25 percent of the state's severance tax revenues are allocated to the general fund, more than 60 percent of severance tax revenues are contributed to continuing to build the balances in the Permanent Water and Mineral Trust Fund and the rainy day

fund. Approximately 97 percent of Wyoming's severance tax revenues come from the production of energy-related natural resources, including oil, natural gas, and coal. Most of the remaining 3 percent come from the production of trona (primarily in Sweetwater County) (CREG 2016).

Federal mineral royalties are also a very significant source of revenues for the state of Wyoming. In 2015, the state collected more than $900 million in federal mineral royalties. These revenues are primarily used to fund K-12 public education, the highway fund, and contribute to the funding of the University of Wyoming. Approximately 2 percent of federal mineral royalties are allocated to the state's general fund (CREG 2016).

Local Government Revenues

The following discussion focuses on Fremont County, the only county in Wyoming anticipated to experience varying levels of mining operations under the Proposed Action and alternatives. Property taxes are the largest source of revenue for Fremont County, followed by state sales and use taxes. PILT on federal lands are also a significant source of general fund revenue in Fremont County, accounting for more than 10 percent of general fund revenues (Table 3-125).

Table 3-125. Fremont County General Fund Revenue Projections, 2014/2015

Revenues	Dollars
Property taxes	$7,675,985
Federal PILT	$2,618,000
State sales and use taxes	$5,300,000
State assistance	$1,044,000
All other sources	$6,755,000
Total revenues	$23,232,985

Source: Memo to Board of County Commissioners and County Clerk from Treasurer of Fremont County. April 21, 2015.

Mining Related Economy

The composite economic category of mining, quarrying, and oil and gas extraction (NAICS 21) accounted for 8.7 percent of all jobs in Wyoming (14,510 jobs) and 15.5 percent of labor income in the state ($2.8 billion) in 2014. In Fremont County, this composite category accounted for 5.8 percent of employment (1,428 jobs) and 10.9 percent of labor income ($103.7 million) in 2014 (BEA 2014).

Most of the mining operations in Wyoming is energy-related (oil, gas, and coal). More specific to the types of mining potentially affected by this EIS, there were 331 employees at eight metal ore mines in Wyoming in 2012, with a total payroll of about $25 million. The large trona mines in southwestern Wyoming employed more than 2,000 people, with a total payroll of approximately $160 million (2012 Economic Census).

Table 3-126 shows the value of mineral production in the SFA counties in 2013. Nearly all of the SFA counties in the Wyoming socioeconomic study employ a small number of people in mineral and hardrock mining, with the exception of Sublette County. Sweetwater County employs more than 1,600 people in potash, soda, and borate mining and mining services, but most of the employment figures from the remaining SFA counties are more modest. Still, mining is an important part of the local economies in the SFA counties as evidenced by the output of mining production. In three out of the four SFA counties, annual mining output was valued at more than $1.2 million dollars. Total mining output in Sublette County was valued at approximately $145,000, but in Sweetwater County, total output in 2013 was valued at more than $880 million dollars. This money flows through the local economy in the form of employee compensation, proprietor and other income, and tax revenue. Sweetwater County collected more than $15.5 million in tax revenue from potash, soda, and borate mining in 2013 alone.

Table 3-126. Mining Employment, Output, Compensation, Income, and Taxes by SFA County in the Wyoming Socioeconomic Analysis Area (2013 $)

Description	Employment	Output	Employee Compensation	Proprietor Income	Other Property Type Income	Tax On Production And Imports
Fremont County						
Metal mining services	5	$1,490,875	$800,650	-$5,904	$378,715	$38,181
Other nonmetallic minerals services	3	$418,489	$165,878	-$4,949	$105,539	$19,493
Lincoln County						
Stone mining and quarrying	6	$1,284,845	$41,332	-$21,919	$752,623	$62,753
Other nonmetallic minerals services	0	$17,202	$11,278	-$3,731	$3,956	$731
Sublette County						
Metal mining services	0	$60,191	$25,683	$5,066	$16,017	$1,615
Other nonmetallic minerals services	0	$86,951	$45,845	$9,099	$13,116	$2,422
Sweetwater County						
Potash, soda, and borate mineral mining	1,559	$862,393,860	$173,957,108	$80,958,054	$398,614,502	$15,503,453
Metal mining services	31	$9,632,271	$5,185,456	$123,327	$2,352,108	$237,130
Other nonmetallic minerals services	82	$11,466,946	$4,422,477	$52,430	$2,865,098	$529,176

Source: Minnesota IMPLAN Group, Inc. 2013.

Recreation and Tourism Related Economy

Recreation and tourism is a major industry in Wyoming and supports a number of jobs within the SFA counties. The industry primarily employs people through the retail trade, passenger transportation, arts, entertainment, and recreation, and accommodation and food sectors (Table 3-127). Approximately 6,000 jobs (16 percent of total employment in 2014) in the SFA counties are in sectors related to travel and tourism. This estimate is based on data from the U.S. Census Bureau County Business Patterns and includes industrial sectors that, at least in part, provide goods and services to visitors, the local economy, and the local population. It includes both full- and part-time jobs. Most of these jobs are concentrated in the accommodation and food services sector.

Table 3-127. Employment in Travel and Tourism Related Sectors for Wyoming and the SFA Counties in the Wyoming Socioeconomic Analysis Area in 2014

	Wyoming	Fremont County	Lincoln County	Sublette County	Sweetwater County
Retail Trade	6,625	441	168	95	539
Passenger Transportation	753	9	0	0	14
Arts, Entertainment, & Recreation	4,068	235	44	12	54
Accommodation & Food	28,926	1,783	367	342	1,926
Total	40,327	2,468	579	449	2,533

Source: Headwaters Economics 2016; U.S. Department of Commerce; U.S. Census Bureau County Business Patterns.

Visitor expenditures on goods and services in the state of Wyoming and the SFA counties produce business receipts at local businesses and create earnings and employment for local residents. In 2014, the proportion of travel and tourism-related jobs across the composite area of all four SFA counties was slightly lower (16.3 percent of all jobs) than the state average of 18.4 percent. In Fremont County, however, the proportion of employment in travel and tourism-related sectors (20.8 percent) was higher than the statewide average.

The annual salaries paid to employees in the travel and tourism sector were also substantially below comparable salaries in non-related sectors. The highest average annual wage in travel and tourism related sectors among the SFA counties was in Sublette County, but that average wage ($22,015) was more than 60 percent below the county's average wage across all private sector jobs ($60,011) (Headwaters Economics 2016).

Other Economic Uses of Federal Lands

Energy and minerals is the largest source of economic activity on Wyoming's federally-managed lands, but other activities also make significant economic contributions to the state's economy (Table 3-128). Value added measures the difference between the revenue received from selling a good or service and the costs of producing it. Summing the value added across every unit of output is the total value added. In Wyoming, activities on federal lands created almost $12.5 billion in value-added activity in 2015, including nearly $10.8 billion from energy and mineral activity, and over $800 million from recreation activity and major grants and payments. The latter includes Abandoned Mine Land grants, PILT grants, royalties, and certain other grants that affect federal land. DOI employees created an additional $40 million in valued-added activity by spending part of their income in Wyoming in 2015 (DOI 2015).

This economic activity has a direct translation into employment figures (Table 3-128). Visitor spending on BLM, Bureau of Reclamation, USFWS, Forest Service, and National Park Service land in Wyoming supported 16,250 jobs in the recreation sector in 2015. Energy and mineral-related activities on these

lands supported over 40,000 jobs. Timber harvests and grazing activities on BLM and Bureau of Indian Affairs land combined to support 3,300 jobs across the state in 2015. The revenue from major grants and other payments affecting federal lands supported over 11,000 jobs and the spending by DOI employees supported almost 500 jobs in various sectors in 2015.

Table 3-128. Contribution of Department of the Interior Activities to the State of Wyoming by Sector (FY 2015)

	Recreation	Energy and Minerals	Grazing and Timber	Major Grants and Payments	DOI Payroll	All Sectors
Estimated Valued Added ($ billions)	0.83	10.77	0	0.82	0.04	12.46
Estimate Total Output ($ billions)	1.47	16.59	0.29	1.14	0.06	19.55
Estimated Total Jobs	16,250	40,037	3,300	11,345	497	71,428

Source: U.S. Department of the Interior 2015.

Market Values Associated with Recreation and Tourism

Tourism and recreation are important to the Wyoming economy. According to the Wyoming Office of Tourism 2015 Year in Review, travelers in Wyoming enjoyed 10.5 million overnight stays resulting in $3.4 billion in direct expenditures. The tourism industry supported almost 32,000 jobs and the leisure and hospitality industry supported about 12 percent of all employment in the state (Wyoming Office of Tourism 2015).

Within the analysis area, tourism and recreation make important contributions to the local economy and to local government revenues. According to an economic impact study prepared for the Wyoming Office of Tourism in 2016, travelers spent more than $300 million in the four SFA counties in 2015, including $141 million in Fremont County, $62 million in Lincoln County, $41 million in Sublette County, and $167 million in Sweetwater County. Travel expenditures have grown by about 4 percent per year since 2000 (Wyoming Office of Tourism 2016).

In terms of outdoor recreation, specifically hunting and fishing, a 2006 study by the Sonoran Institute and the Theodore Roosevelt Conservation Partnership showed the following:

Total annual expenditures from hunting and fishing in Wyoming exceeded $335 million.

- Anglers accounted for $212 million in total annual expenditures (34 percent equipment, 45 percent trip-related, 21 percent other).
- Hunters accounted for $123 million in total annual expenditures (29 percent equipment, 58 percent trip-related, 14 percent other).
- Hunters in Wyoming spent 74 percent of their hunting days (960,000 days) on federal lands (Sonoran Institute 2006).

3.5.23 Environmental Justice

Environmental justice is defined as the fair treatment and meaningful involvement of all people—regardless of race, ethnicity, or income level—in environmental decision-making. Environmental justice programs promote the protection of human health and the environment, empowerment by means of public

participation, and the dissemination of relevant information to inform and educate affected communities. Consideration of environmental justice issues is mandated by EO 12898, which was published on February 11, 1994. This EO requires that all federal agencies incorporate environmental justice into their mission by "identifying and addressing…disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations, low-income populations, and Indian tribes and allowing all portions of the population a meaningful opportunity to participate in the development of, compliance with, and enforcement of federal laws, regulations and policies affecting human health or the environment regardless of race, color, national origin or income" (CEQ 1997).

This section of Chapter 3 assesses the presence and percentage of minority populations, low-income populations, and Indian tribes in the analysis areas. In Chapter 4, the Proposed Action and alternatives are evaluated to determine whether those communities would experience disproportionately high and adverse impacts as a result of the project. By establishing a reference population from definable communities and determining whether higher concentrations of environmental justice populations exist within the area of analysis, any disproportionately high or adverse impacts are identified, analyzed, and disclosed herein.

The following discussion of baseline conditions within the analysis areas uses data at the county level to determine if there are environmental justice communities within the analysis areas with meaningfully higher percentages of minority or low-income residents than the states in which they are located. Although it is generally preferable to identify and evaluate potential effects on environmental justice communities at the census tract level, the lack of information regarding the specific locations of potential future mines makes the more geographically specific approach infeasible for this EIS.

CEQ defines a community with potential environmental justice populations as one that has a greater percentage of minority or low-income populations than does an identified reference community. Minority populations are those populations having 1) 50 percent minority population in the affected area, or 2) a meaningfully greater minority population than the reference area (CEQ 1997). CEQ has not specified what percentage of the population can be characterized as "meaningfully greater" in order to define environmental justice populations. Therefore, for the purposes of this analysis, a conservative approach was used to identify potential environmental justice populations; it is assumed that if the affected area minority and/or poverty status populations are more than ten percentage points greater than those of the reference area (e.g., the states in which the counties are located), there may be an environmental justice population of concern. Low-income populations were defined as those individuals and families who are considered to be living below poverty levels.

Minority population data for the states and counties within each analysis area were obtained from the Census Bureau's American Community Survey 5-year estimates (2014), and were described earlier in this section for the analysis areas in each state. For this analysis, a population is considered a "minority" based on all races and ethnicities that are not "White (Non-Hispanic)."

Low-income populations in an affected area are populations below the annual statistical poverty thresholds published by the Census Bureau's current population reports on income and poverty. Families and persons are classified by the Census Bureau as below poverty level if their total family income or unrelated individual income is less than the poverty threshold specified for the applicable family size, age, and number of related children under 18 years of age. Poverty status is determined for all families (and, by implication, all family members). For persons not in families, poverty status is determined by their income in relation to the appropriate poverty threshold. Thus, two unrelated individuals living together may not have the same poverty status.

For determining the presence of low-income communities as environmental justice populations, counties in each analysis area were evaluated against a reference population (the states in which the counties are located). Thus, all counties where the percentage of individuals living below the poverty level was 10 percentage points or more above the corresponding percentage across their state, or in which the total minority population was over 50 percent, or in which the proportion of residents comprising individual minority groups was 10 percentage points or more greater than the average proportion of residents from those groups across the state, were considered potential environmental justice populations.

Based on the approach just described, the following counties can be considered to be environmental justice communities for this evaluation:

- **Idaho** – Clark County (proportion of Hispanic/ Latino and low-income population); Owyhee County (low-income population)
- **Montana** – none
- **Nevada** – none
- **Oregon** – Malheur County (proportion of Hispanic/ Latino and low-income population)
- **Utah** – none
- **Wyoming** – Fremont County (proportion of American Indian residents)

3.5.24 Public Health and Safety

It is important to note that no particular mining or exploration activity is being proposed or evaluated in this EIS. There would be no mining and exploration activity that would occur under the Proposed Action or other action alternatives that would not already be expected to occur under the No Action Alternative. That is, under the Proposed Action, and any of the action alternatives there would only be the potential for less mining and exploration activity, or mining and exploration activity on fewer acres, not more, compared to the No Action Alternative. Nevertheless, some mining operations are anticipated under all the alternatives, as described in the RFD (Appendix B), and these could result in public health and safety concerns.

All mine operations are required to comply with stringent safety and health standards administered by the Mine Safety and Health Administration (MSHA) through federal regulations at 30 CFR Parts 1 through 199 and, in particular, Part 57. MSHA regulations include requirements for ground support systems, mine ventilation, electrical systems, combustible fluid storage, underground shops, equipment specifications and maintenance, explosives storage and handling, dust control, monitoring and reporting requirements, alarm systems, worker personal safety equipment, and restrictions for public access. To comply with MSHA standards, all mineral exploration and development would require the necessary MSHA mine permits and an MSHA-approved miner training plan, escape and evacuation plan, and ventilation plan.

Mine employees are typically trained in basic rescue and first aid techniques. Additionally, MSHA (30 CFR Part 49) includes requirements for the availability of on-site rescue teams, or access to off-site rescue teams. Per 30 CFR 49, each mine rescue team is required to be fully qualified, trained, and equipped for providing emergency mine rescue service. Additionally, each mine is required to develop a mine rescue notification plan outlining the procedures to follow in notifying the mine rescue teams when rescue is needed. Mine operators in the area can enter into agreements with air rescue services (typically via helicopter) to augment their emergency response capabilities, or provide response capabilities for accidents that occur on the surface, or during hauling.

In general, public safety risks are mitigated by proposed safety mechanisms mandated by the land managing agencies such as BLM and Forest Service, as well as MSHA. In general, mine operations are secured with locking gates to prevent public access and are reclaimed to a standard to ensure that ground surface integrity is not compromised.

3.6 Vegetation, including Special Status Plants

The composition and distribution of plant communities in the vegetation analysis area is influenced by many factors, including climate, elevation, topography, soils, drought, insects, fire, cultivation, livestock grazing, and invasive plants. As a result, a wide variety of plant communities occur across the SFAs, many of which play a role in providing seasonal or year-round habitat for greater sage-grouse.

3.6.1 Special Status Species

Special status plants are those plants that are federally listed as endangered, threatened, or are candidates for protection under the ESA, or those that are considered sensitive by either the BLM or Forest Service. Special status plants are managed under the authority of the Endangered Species Act of 1973 (PL 93-205, as amended) and BLM Manual 6840 and the National Forest Management Act (PL 94-588). The ESA requires federal agencies to ensure that all actions, which they authorize, fund, or carry out, are not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of their critical habitat. Additionally, for species proposed to be listed, federal land management agencies must confer with the USFWS on any action that is “likely to jeopardize the continued existence of any species that is proposed to be listed or which results in the destruction or adverse modification of critical habitat proposed to be designated for such species” (50 CFR 402.10).

Plant species which are listed, candidates, or proposed for listing as threatened or endangered by the USFWS under the provisions of the ESA are collectively referred to in this report as federally-protected species. The federally-protected species list for each state was obtained from the USFWS for plant species that potentially occur within the vegetation analysis area, which is defined by the boundaries of each SFA.

BLM special status species are defined in BLM’s 6840 Manual as (1) species listed or proposed for listing under the ESA, and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as BLM sensitive by the State Directors. All federal candidate species, proposed species, and delisted species in the five years following delisting will be conserved as BLM sensitive species. Management for Forest Service sensitive species are accomplished by following policies outlined in Forest Service Manual 2670. Forest Service sensitive species are defined as those plant species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and habitat capability that would reduce a species’ existing distribution (FSM 2670.5). Management of sensitive species “must not result in a loss of species viability or create significant trends toward federal listing” (FSM 2670.32).

BLM has developed specific designations for special status plant species that occur on BLM-managed public lands where they have the capability to affect the conservation status of the species through management on these lands. Sensitive plant species are often given a numeric ranking through each states Natural Heritage Programs. These rankings are based on several criteria including risk of extinction, population size, distribution, and trend. Similarly, the Forest Service identifies sensitive species as those that are generally defined as plant species identified by a Regional Forester for which population viability is a concern, as evidenced by: a) significant current or predicted downward trends in population numbers or density, or b) significant current or predicted downward trends in habitat capability that would reduce a species’ existing distribution.

Threatened, Endangered, and Candidate Species

An official ESA species list was obtained from the USFWS Information, Planning, and Conservation (IPaC) System for each of the seven SFAs. This list identified five ESA-listed species; four of these federally-protected plant species are known or suspected to occur within the analysis area (Table 3-129). Ute ladies'-tresses (*Spiranthes diluvialis*), western prairie fringed orchid (*Platanthera praeclara*), and slickspot peppergrass (*Lepidium papilliferum*) have been designated as threatened under the ESA.

Ute ladies'-tresses (Spiranthes diluvialis)

Regulatory Status –Ute ladies'-tresses was listed as threatened on January 17, 1992 (57 FR 2048).

Critical Habitat – There has been no critical habitat designated for this species.

Taxonomy and Life History – Ute ladies'-tresses is a long-lived perennial forb that probably reproduces exclusively by seed. The occasional presence of clustered plants could be the result of asexual reproduction from a single root mass or broken root segment. Such clusters could also be from seed caches or germination of seed from an entire buried fruiting capsule. The life cycle of Ute ladies'- tresses consists of four main stages: seedling, dormant, vegetative, and reproductive (flowering or fruiting). Fruits are produced in late August or September across most of the plant's range, with seeds shed shortly thereafter. As with other orchid species, Ute ladies'-tresses seeds are microscopic, dust-like, and readily dispersed by wind or water. Because of their minute size, Ute ladies'-tresses seeds contain little stored food to sustain embryos and are probably short-lived in the soil. Recent attempts to germinate Ute ladies'-tresses seeds in lab culture found it took up to 1.5 years for germination to occur. It is hypothesized that germinated seedlings must quickly establish a symbiotic relationship with mycorrhizal soil fungi in order to survive. New vegetative shoots are produced in October and persist through the winter as small rosettes. These resume growth in the spring and develop into short-stemmed, leafy, photosynthetic plants. Depending on site productivity and conditions, vegetative shoots may remain in this state all summer or develop inflorescences. Vegetative individuals die back in the winter to subterranean roots or persist as winter rosettes. Across its range Ute ladies'-tresses blooms from early July to late October. Flowering typically occurs earlier in sites that have an open canopy and later in well-shaded sites. Bees are the primary pollinators of Ute ladies'-tresses, particularly solitary bees in the genus *Anthophora*.

Distribution and Habitat Requirements –Ute ladies'-tresses grows on moist sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 1,780 and 6,800 feet. Populations have been documented from alkaline sedge meadows, riverine floodplains, flooded alkaline meadows adjacent to ponderosa pine-Douglas-fir woodlands, sagebrush steppe, and streamside floodplains. The Ute ladies'-tresses is well adapted to disturbances from stream movement and is tolerant of other disturbances, such as light grazing, that are common to grassland riparian habitats and reduce competition between the orchid and other plants. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. New surveys have also expanded the elevational range of the species from 720-1,830 feet in Washington to 7,000 feet in northern Utah. Over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or oxbows associated with perennial streams. Ute ladies's-tresses has been identified by the USFWS as potentially occurring in the Bear River Watershed SFA and Southwestern/South Central Wyoming SFA (see Table 3-129).

Table 3-129. ESA Listed Species in the Analysis Area

Species	ESA Status*	SFA							State					
		North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/South Central Wyoming	Idaho	Montan	Nevada	Oregon	Utah	Wyoming
Ute ladies'-tresses (*Spiranthes diluvialis*)	T	—	—	—	—	—	X	X	—	—	—	—	X	X
Slickspot peppergrass (*Lepidium papilliferum*)	T	—	X	—	—	—	—	—	X	—	—	—	—	—
Western prairie fringed orchid (*Platanthera praeclara*)	T	—	—	—	—	—	—	X	—	—	—	—	—	X
Whitebark pine (*Pinus albicaulis*)	C	X	—	—	—	X	X	X	X	—	—	X	—	X
Fremont County rockcress (*Boechera pusilla*)	C	—	—	—	—	—	—	X	—	—	—	—	—	X

*The ESA of 1973 defines an "endangered species" as any species which is in danger of extinction throughout all or a significant portion of its range; and a "threatened species" (shown as T in the table) as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. "Candidate" species (shown as C in the table) are species that USFWS is considering listing as endangered or threatened but which are not yet the subject of a proposed rule. Candidate species are afforded no statutory protection under the ESA, but § 4(b)(3)(C)(iii) of the Act requires the agencies to monitor the status of certain candidate taxa "to prevent their extinction while awaiting listing."

Threats – USFWS identified habitat loss and modification (through urbanization, water development, and conversion of wetlands to agriculture), over collection, competition from exotic weeds, and herbicides as the main current and potential threats to the long term survival of Ute ladies'-tresses. Since the listing in 1992, other threats have been identified including impacts from recreation; mowing for hay production,; grazing by cattle or horses; hydrology change (modification of wetland habitats through development, flood control, de-watering, and other changes to hydrology); herbivory by native wildlife (particularly voles); reduction in the number and diversity of insect pollinators; drought; absence or rarity of mycorrhizal symbionts; and conflicting management with other rare species (USFWS ECOS 2016).

Slickspot peppergrass (Lepidium papilliferum)

Regulatory Status – Slickspot peppergrass was listed as threatened on August 17, 2016 (50 FR 66250).

Critical Habitat – Critical habitat is present within the Idaho portion of the Southern Idaho/Northern Nevada SFA.

Taxonomy and Life History – Slickspot peppergrass is a small, flowering plant in the mustard family (*Brassicaceae*). The plant grows in unique microsite habitats known as slickspots, which are found within the semiarid sagebrush-steppe ecosystem of southwestern Idaho.

Distribution and Habitat Requirements – Slickspot peppergrass is endemic to southwestern Idaho, and is known only from the Snake River Plain and its adjacent northern foothills (an area approximately 90 by 25 miles, or 2,250 square miles, with a smaller disjunct population on the Owyhee Plateau (an area of approximately 11 by 12 miles, or 132 square miles) (NatureServe 2015). The restricted distribution of slickspot peppergrass is likely due to its adaptation to the specific conditions within these slickspot habitats. Slickspot peppergrass has been identified by the USFWS as potentially occurring in the Idaho portion of the Southern Idaho/Northern Nevada SFA (see Table 3-129).

Threats – The primary threat to slickspot peppergrass is the present or threatened destruction, modification, or curtailment of its habitat and range due to the increased frequency and extent of wildfires under a wildfire regime modified and exacerbated by the spread of invasive nonnative plants, particularly nonnative annual grasses such as cheatgrass (*Bromus tectorum*) (74 FR 52014).

Western prairie fringed orchid (Platanthera praeclara)

Western prairie fringed orchid occurs on wet-mesic sub-irrigated prairies and sedge meadows along the floodplain of the Platte River. While the North Platte River does not provide habitat for this species, their habitat in the lower Platte River in Nebraska is sensitive to reductions in flows during critical periods as defined by the USFWS and a large portion of these flows come from the North and South Platte rivers in Wyoming and Colorado. The SFAs in Wyoming are located on the western half of Wyoming and although water from the SFA may eventually flow to the North Platte River the proposed withdrawal would not result in any water drawdowns or reductions which have the potential to impact the western prairie fringed orchid. Therefore the withdrawal is not expected to have any effect on this species and it will not be carried forward for further discussion.

Whitebark pine (Pinus albicaulis)

Regulatory Status – In July 2011, the USFWS determined that listing whitebark pine as threatened or endangered was warranted (76 FR 42631). However, that listing was precluded by higher priority actions identified by the USFWS. Therefore, whitebark pine was added to the candidate species list.

Critical Habitat – No critical habitat has been designated for whitebark pine.

Taxonomy and Life History – Whitebark pine is a 5-needled conifer species placed in the subgenus *Strobus*, which also includes other 5-needled white pines. Whitebark pine may occur as a climax species, early successional species, or seral (mid-successional stage) co-dominant associated with other tree species. Although it occurs in pure or nearly pure stands at high elevations, it typically occurs in stands of mixed species in a variety of forest community types. Whitebark pine is a slow-growing, long-lived tree with a life span of up to 500 years and sometimes more than 1,000 years. Whitebark pine provides important, highly nutritious seeds for a number of birds and mammals. Seed predation plays a major role in whitebark pine population dynamics, as seed predators largely determine the fate of seeds.

Distribution and Habitat Requirements – Whitebark pine occurs in scattered areas of the warm and dry Great Basin, but it typically occurs on cold and windy high-elevation or high-latitude sites in western North America. The Rocky Mountain distribution of whitebark pine ranges from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada, with extensive stands occurring in the Yellowstone ecosystem. The Wind River Range in Wyoming is the eastern most distribution of the species (76 FR 42631). Whitebark pine is a hardy conifer that tolerates poor soils, steep slopes, and windy exposures and is found at alpine tree line and subalpine elevations throughout its range. Whitebark pine has been identified by the USFWS as potentially occurring in the North-Central Idaho SFA, Sheldon-Hart Mountain NWR Complex Area SFA, Bear River Watershed Area SFA, and Southwestern/South Central Wyoming SFA (see Table 3-129).

Threats – Major threats to whitebark pine are white pine blister rust, the mountain pine beetle, and succession as a result of fire suppression (NatureServe 2015).

Fremont County rockcress (Boechera pusilla)

Regulatory Status – Fremont County rockcress is a candidate for listing under the ESA (76 FR 33924).

Critical Habitat – No critical habitat has been designated for this species.

Taxonomy and Life History – This perennial herb has several long, slender stems that grow along the ground. Its small, light lavender, four-petaled flowers blossom from May to mid-June. Fremont County rockcress is endemic to sparsely vegetated, coarse, granitic soil pockets in exposed granite-pegmatite outcrops, with slopes generally less than 10 degrees.

Distribution and Habitat Requirements – Fremont County rockcress occupies sparsely vegetated, coarse granite soil pockets in exposed granite-pegmatite outcrops, with slopes generally less than 10 degrees. The only known population of Fremont County rockcress is located at 8,000–8,100 feet in elevation on lands administered by the BLM in the southern foothills of the Wind River Range. Although the surrounding vegetation is sparse (less than 10 percent cover), Fremont County rockcress is associated with numerous mat-forming perennial herbs (e.g., *Erigeron caespitosus* (tufted fleabane)), perennial grasses (e.g., *Achnatherum hymenoides* (Indian ricegrass)), and shrubs (e.g., *Artemisia arbuscula* (low sagebrush)). Fremont County rockcress has been identified by the USFWS as potentially occurring in the Southwestern/South Central Wyoming SFA (see Table 3-129).

Threats – The primary threats to Fremont County rockcress have not yet been fully identified. However, threats appear to be acting on the species as evidenced by a recent decline in population size. Threats to the species may be related to drought, disease, or other factors such as recreation, energy development, etc. (76 FR 33924).

BLM and Forest Service Sensitive Plant Species

There are 330 BLM and Forest Service sensitive plant species with potential to occur within the analysis area for vegetation resources (see Table D-1 in Appendix D). There are 289 BLM and 81 Forest Service sensitive plant species with potential to occur within the analysis area for vegetation resources (see Table D-1 in Appendix D). Some of the species are classified for both BLM and Forest Service. There are 107 BLM and 42 Forest Service sensitive plants associated with the analysis area in Idaho, 1 BLM and 1 Forest Service sensitive plant in the Montana analysis area, 44 BLM and 30 Forest Service sensitive plants in the Nevada analysis area, 122 BLM and 2 Forest Service sensitive plants in the Oregon analysis area, 2 BLM and 15 Forest Service sensitive plants in the Utah analysis area, and 17 BLM and 5 Forest Service sensitive plants in the Wyoming analysis area.

Because BLM and Forest Service sensitive species often are found in very specific habitat types or exist within a narrow range of ecological conditions, it is not practical to list all of the possible locations these plants could occur within the analysis area.

3.6.2 Vegetation Communities

The major plant communities within the analysis area that provide greater sage-grouse habitat are detailed below. These plant communities vary greatly in their relative ecological health as a result of stressors that influence the distribution and abundance of the plant components within the general community. Greater sage-grouse are sagebrush obligate species and rely on a variety of sagebrush dominated communities to meet various needs throughout their lifecycle (Miller et al. 2011). In winter, greater sage-grouse feed almost exclusively on sagebrush leaves (Wallestad et al. 1975). A healthy vegetative understory complete with perennial grasses and a variety of forbs provide important components of nesting and brood rearing habitat (Barnett and Crawford 1994). These vegetative communities also support a wide variety of insects that provide additional food sources for brood rearing. Some plant communities play a role in providing seasonal habitat, such as riparian areas. Other habitat, such as annual grass communities or conifer stands, may only be occasionally used by greater sage-grouse.

Sagebrush

Sagebrush communities are typically co-dominants with perennial bunchgrasses (Miller et al. 2011). Sagebrush communities generally occur on the drier portions of pinyon-juniper woodlands and mesic portions of the desert shrub community. Precipitation in these areas averages 8 to 15 inches per year, and soils are dry, with a thin organic horizon. Sagebrush species present include big sagebrush (*Artemisia tridentata*), Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), black sagebrush (*Artemisia nova*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), silver sagebrush (*Artemisia cana* sp. *cana*), and low sagebrush.

Human alterations, uses, and impacts coupled with natural stressors (e.g., drought and fire) have changed the extent, condition, and distribution of sagebrush-steppe and the ecosystem services these communities provide (Meinke et al. 2009). Three of the fundamental characteristics of the sagebrush community that have been altered from prior to European contact conditions include: (1) the total area of sagebrush shrublands has been reduced; (2) the composition and structure of sagebrush communities has been changed, with increased abundance and vigor of invasive species and decreased abundance and vigor of native species; and (3) roads, power-lines, fences, energy developments, urbanization, and other anthropogenic features have increased fragmentation (Connelly et al. 2004). Much of the sagebrush-steppe occurring on private lands with deeper soils has been converted to agricultural croplands (Connelly et al. 2004). These changes are most intense at low elevations near valley floors and may have disproportionate effects on greater sage-grouse populations reliant on these habitats during critical portions of the year (Leu and Hanser 2011). Some portions of the analysis area contain relatively intact

sagebrush-steppe communities, which are in good to excellent ecological condition and maintain adequate forb and perennial grass in the understory to supply habitat requirements for greater sage-grouse. Sagebrush communities are essential to greater sage-grouse for all life stages because these areas provide the primary foraging, nesting, lekking, and brood rearing habitats for this species even though they may use adjacent non-sagebrush habitats periodically throughout the year. Current greater sage-grouse range is estimated to be 56 percent of distribution prior to Euro-American contact (Schroeder et al. 2004).

Data available for analysis in this effort are limited to general overstory vegetation classes of tall shrub (e.g., basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush) and low shrub (e.g., black sagebrush and low sagebrush). This information can be further stratified based upon landscape characteristics to approximate the relative proportion of the various types of sagebrush plant communities. The dominant sagebrush ecosystems, as described in the USGS Gap Analysis Program analysis data, that are found within the SFAs are described below (USGS 2005). These habitat types account for approximately 7.5 million acres of the SFAs (Table 3-130). Other less dominant vegetation communities comprise the remaining 2.5 million acres found within the SFAs and are briefly discussed below.

Inter-Mountain Basins Big Sagebrush Shrubland

Inter-Mountain Basins Big Sagebrush Shrubland ecosystems encompass the greatest amount of acreage, encompassing 2.5 million acres within the SFAs. This ecological system occurs throughout much of the western United States, typically in broad basins between mountain ranges, plains, and foothills between 5,000 and 7,500 feet elevation. Soils are typically deep, well drained, and nonsaline. These shrublands are dominated by basin big sagebrush and/or Wyoming big sagebrush. Scattered juniper (*Juniperus* spp.), greasewood (*Sarcobatus vermiculatus*), and atriplex (*Atriplex* spp.) may be present in some stands. Rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), antelope bitterbrush (*Purshia tridentata*), or mountain snowberry (*Symphoricarpos oreophilus*) may co-dominate disturbed stands. Perennial herbaceous components typically contribute less than 25 percent vegetative cover. Common graminoid species include Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), streamside wild rye (*Elymus lanceolatus*), Idaho fescue (*Festuca idahoensis*), needle-and-thread (*Hesperostipa comata*), Great Basin wildrye (*Leymus cinereus*), James' galleta (*Hilaria jamesii*), western wheatgrass (*Pascopyrum smithii*), Sandberg bluegrass (*Poa secunda*), or bluebunch wheatgrass (*Pseudoroegneria spicata*) (NatureServe 2015).

Inter-Mountain Basins Big Sagebrush Steppe

Inter-Mountain Basins Big Sagebrush Steppe ecosystems encompass 2.4 million acres of the SFAs. This matrix-forming ecological system is widespread, and soils are typically deep and nonsaline, often with a microphytic crust. This shrub-steppe is dominated by perennial grasses and forbs (over 25 percent cover) with basin big sagebrush, Wyoming big sagebrush, foothill big sagebrush (*Artemisia tridentata* ssp. *xericensis*), threetip sagebrush (*Artemisia tripartita* ssp. *tripartita*), silver sagebrush, and antelope bitterbrush dominating or co-dominating the open to moderately dense (10 to 40 percent cover) shrub layer. Shadscale (*Atriplex confertifolia*), yellow rabbitbrush, rubber rabbitbrush, horsebrush (*Tetradymia* spp.), or prairie sagebrush (*Artemisia frigida*) may be common especially in disturbed stands. Associated graminoids include Indian ricegrass, plains reedgrass (*Calamagrostis montanensis*), needle-and-thread, perennial rhizomatous wheatgrasses (typically *Pascopyrum smithii*), streamside wild rye, prairie junegrass, Sandberg bluegrass, bluebunch wheatgrass, and rhizomatous sedges (*Carex filifolia* and *Carex duriuscula*). Common forbs are Hood's phlox (*Phlox hoodii*), sandwort (*Arenaria* spp.), and milkvetch (*Astragalus* spp). The natural fire regime of this ecological system likely maintains a patchy distribution of shrubs, so the general aspect of the vegetation is grassland. Shrubs may increase following heavy grazing or with fire suppression, particularly in moist portions of the northern Columbia Plateau where it forms a landscape mosaic pattern with shallow-soil scabland shrublands (NatureServe 2015). Shrub canopy cover tends to be lower in the plains with a higher percentage of perennial grass composition.

Table 3-130. Ecosystem Types and Approximate Acres within the SFAs

Primary Ecosystem	North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/South Central Wyoming	Total Acres*
Inter-Mountain Basins Big Sagebrush Shrubland	265	1,548	0	419	113	37	79	2,461
Inter-Mountain Basins Big Sagebrush Steppe	515	384	603	367	425	107	10	2,411
Inter-Mountain Basins Montane Sagebrush Steppe	582	677	0	111	121	40	6	1,536
Columbia Plateau Low Sagebrush Steppe	53	220	0	367	74	0	0	715
Great Basin Xeric Mixed Sagebrush Shrubland	<1	229	0	37	35	0	0	301
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	0	0	0	0	0	20	22	42
Other: Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland	621	949	275	329	198	82	29	2,483
Totals	2,037	4,007	878	1,630	966	285	146	9,949

*Acreage is in thousands of acres

Inter-Mountain Basins Montane Sagebrush Steppe

Inter-Mountain Basins Montane Sagebrush Steppe ecosystems encompass 1.5 million acres of the SFAs, and are found within all of the states except for Montana. This ecological system includes sagebrush communities occurring at montane and subalpine elevations across the western United States from 3,200 to over 9,800 feet. Climate is cool, semi-arid to subhumid. This system primarily occurs on deep-soiled to stony flats, ridges, nearly flat ridgetops, and mountain slopes. In general this system shows an affinity for mild topography, fine soils, and some source of underground moisture. It is composed primarily of mountain sagebrush and related taxa such as spiked big sagebrush (*Artemisia tridentata* ssp. *spiciformis*). Antelope bitterbrush may co-dominate or even dominate some stands. Other common shrubs include snowberry, serviceberry (*Amelanchier* spp.), rubber rabbitbrush, squaw-apple (*Peraphyllum ramosissimum*), wax currant (*Ribes cereum*), and yellow rabbitbrush. Most stands have an abundant perennial herbaceous layer (over 25 percent cover), but this system also includes mountain sagebrush shrublands. Common graminoids include Arizona fescue (*Festuca arizonica*), Idaho fescue, needle-and-thread, muttongrass, slender wild rye (*Elymus trachycaulus*), mountain brome (*Bromus marginatus*), Sandberg bluegrass, spike fescue (*Leucopoa kingii*), tufted hairgrass (*Deschampsia caespitosa*), pine reedgrass (*Calamagrostis rubescens*), and bluebunch wheatgrass. In many areas, frequent wildfires maintain an open herbaceous-rich steppe condition, although at most sites, shrub cover can be unusually high for a steppe system (over 40 percent), with the moisture providing equally high grass and forb cover (NatureServe 2015).

Columbia Plateau Low Sagebrush Shrubland

Columbia Plateau Low Sagebrush Shrubland ecological systems encompass 715,000 acres within the SFAs. This ecological system occurs in a variety of shallow-soil habitats throughout eastern Oregon, northern Nevada, southern Idaho, and eastern Washington. Substrates are shallow, fine-textured soils, poorly drained clays, and shallow soil areas, almost always very stony, characterized by recent rhyolite or basalt. It includes open shrublands and steppe dominated by Wyoming big sagebrush, stiff sagebrush (*Artemisia rigida*), mountain big sagebrush with an understory of Idaho fescue, Sandberg bluegrass, bluebunch wheatgrass, and prairie junegrass (*Koeleria macrantha*). Other shrubs and dwarf-shrubs present may include antelope bitterbrush and buckwheat (*Eriogonum* spp.). Many forbs also occur and may dominate the herbaceous vegetation, especially at the higher elevations (NatureServe 2015).

Great Basin Xeric Mixed Sagebrush Shrubland

Great Basin Xeric Mixed Sagebrush Shrubland ecological systems encompass 301,000 acres of the SFAs and occur in the Great Basin on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, saddles, and ridges at elevations between 3,300 and 8,500 feet. Sites are dry, often exposed to desiccating winds, with typically shallow, rocky, nonsaline soils. Shrublands are dominated by black sagebrush at mid and low elevations and low sagebrush at higher elevations and may be co-dominated by Wyoming big sagebrush or yellow rabbitbrush. Other shrubs that may be present include shadscale, ephedra, rabbitbrush, spiny hop-sage (*Grayia spinosa*), Shockley's desert-thorn (*Lycium shockleyi*), bud sagebrush (*Picrothamnus desertorum*), greasewood, and horsebrush. The herbaceous layer is likely sparse and composed of perennial bunchgrasses such as Indian ricegrass, desert needlegrass (*Achnatherum speciosum)*, Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*), or Sandberg bluegrass (NatureServe 2015).

Wyoming Basins Low Sagebrush Shrubland

Wyoming Basins Low Sagebrush Shrubland ecosystems encompass the least amount of acreage within the SFAs, accounting for 42,000 acres. This vegetation community is composed of sagebrush dwarf-shrublands that occur in a variety of dry habitats throughout the basins of central and southern Wyoming. Wyoming threetip sagebrush-dominated dwarf-shrublands typically occur on wind-swept ridges and south

and west aspect slopes above 7,000 feet in central and southeastern Wyoming. Substrates are shallow, fine-textured soils. Black sagebrush-dominated dwarf-shrublands occur on shallow, coarse-textured, calcareous substrates at lower elevations. Other shrubs and dwarf-shrubs present may include antelope bitterbrush and other species of sagebrush. Common graminoids include Idaho fescue, prairie junegrass, bluebunch wheatgrass, and Sandberg bluegrass. Many forbs also occur and may dominate the herbaceous vegetation (NatureServe 2015).

Other Plant Community Types

The remaining 2.5 million acres within the SFAs are encompassed by a variety of other plant communities such as Desert Shrub/Salt Desert Scrub, Grassland, Riparian and Wetlands, Forest and Woodland, and Modified Grasslands. A brief description of these ecosystems is presented below.

Desert Shrub/Salt Desert Scrub

Desert shrub includes the salt shrubs—shadscale, greasewood, blackbrush, and desert grassland vegetation cover types. Located primarily on the valley floors, this vegetation community is most common on well-drained, sandy to rocky soils. It can, however, tolerate saline and alkaline soils. Plants within this community are adapted to a wide temperature range, and many are capable of photosynthesis at temperatures as low as 11°F (Simonin 2001). Precipitation in these areas ranges from 6 to 14 inches annually but is mostly from 8 to 12 inches per year. Depending on the elevation, typical desert shrub/salt desert scrub plant species include shadscale, greasewood, blackbrush, a variety of *Atriplex* species, halogeton (*Halogeton glomeratus*), Mormon tea (*Ephedra* spp.), horsebrush, creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and snakeweed (*Gutierrezia sarothrae*). In general, desert shrub/salt desert scrub vegetation is not considered suitable greater sage-grouse habitat (Connelly et al. 2000).

Grassland

Grassland types include native perennial grasslands, seedings of native species, exotic perennial grasses (primarily crested wheatgrass (*Agropyron cristatum*)) and some cheatgrass (*Bromus tectorum*). In general, grassland vegetation does not provide suitable greater sage-grouse habitat unless it is within a wet meadow complex or opening in sagebrush vegetation (Connelly et al. 2000).

Riparian and Wetlands

Riparian vegetation includes plants that require higher amounts of available water supply than those found in adjacent upland areas and are generally associated with water courses and wet meadow areas. Riparian areas, wetlands, and wet meadows provide valuable greater sage-grouse late summer brood rearing habitat because these areas provide succulent forbs and insects later in the summer when most forbs in upland habitats have dried out and are senescent. These communities make up a small percentage of the vegetation in relation to other types but are quite important in providing the seasonal habitat mentioned.

Forest and Woodland

The conversion of sagebrush-steppe communities into conifer woodlands is a factor contributing to greater sage-grouse habitat decline in portions of the planning area. Trees increase raptor perch and nest sites, potentially making greater sage-grouse more vulnerable to predation. Conifer expansion is generally attributed to fire suppression reducing fire frequency and allowing conifers to expand into riparian areas, shrublands, and grasslands. This conversion is mostly an issue in the mountain big sagebrush types where reduced fire frequency has allowed the invasion of juniper (Utah, Rocky Mountain, or Western) and in some areas Douglas-fir (*Pseudotsuga menziesii*) and pine (*Pinus* sp.) may be expanding into shrub habitats.

Modified Grasslands

Some portions of the analysis area formerly composed of sagebrush plant communities currently support introduced perennial bunchgrasses or in some cases a mixture of introduced and native bunchgrasses. These communities have been modified by vegetation treatments, wildfires, or rehabilitation efforts, among other things. These communities can include common native forbs and over time may develop a sagebrush overstory. Introduced bunchgrasses that may inhabit these areas include numerous crested wheatgrass varieties as well as Siberian wheatgrass and, in the case of higher precipitation zones, pubescent (*Pascopyrum smithii*) or intermediate wheatgrass (*Thinopyrum intermedium*). Some of these species are native to the analysis area and have been introduced to new areas through seeding or management actions. In some cases, nonnative grasses were seeded to increase livestock forage. These plant communities also provide habitat for greater sage-grouse once the overstory of sagebrush is re-established.

3.6.3 Invasive and Noxious Species

Invasive species include plants able to establish on a site where they were not present in the original plant composition, and are of particular concern following a disturbance. Invasive species aggressively out-compete native species within a community and often alter the physical and biotic components enough to affect the entire ecological community. They are often exotic species that do not have naturally occurring, local predators. Noxious weeds are a subset of invasive species; that are listed as “noxious” by state laws. These species are known to alter the dynamics of native plant communities by replacing native plants through competition or altering some ecological process to the detriment of the native plant community such as in the case of annual bromes increasing fire frequency.

Once converted to exotic annual grasses, these plant communities have crossed a threshold that precludes their returning to traditional plant community composition through normal plant succession processes. These areas are essentially lost in their ability to provide greater sage-grouse habitat unless significant investment in restoration inputs are undertaken. Even then, these projects may fail if conditions do not exist for successful establishment of desired species. The potential for cheatgrass occurrence has been modeled, which can help discern locations and habitats that have the greatest risk of cheatgrass dominance after disturbance events such as fire.

Specific noxious weeds causing localized impacts within the analysis area include rush skeletonweed (*Chondrilla juncea*), leafy spurge (*Euphorbia esula*), Russian knapweed (*Acroptilon repens*), diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea stoebe*), dalmatian toadflax (*Linaria dalmatica*), Canada thistle (*Cirsium arvense*), and musk thistle (*Carduus nutans*). Although not yet well established in the analysis area, yellow starthistle (*Centaurea solstitialis*) is known to have a similar range as cheatgrass, and many of the areas currently supporting annual grass communities could support this noxious weed. Other weeds listed as noxious occur within the analysis area, but are not as widespread or as detrimental as those listed.

Invasion by exotic annual grass species has resulted in dramatic increases in number and frequency of fires with widespread, detrimental effects on habitat conditions (Connelly et al. 2004). Increased fire frequency typically results in removal of the sagebrush canopy in affected areas with replacement by annual species that provide little to no habitat value (Rowland et al. 2010; Baker 2011). Wyoming big sagebrush plant communities are particularly susceptible to conversion to annual grasslands after fire when the understory contains higher densities of annual grass. Invasive annuals include numerous species of annual bromes, most notably cheatgrass as well as medusahead rye (*Taeniatherum caput-medusae*). An annual species that may be a threat in higher elevation communities providing greater sage-grouse habitat is ventenata (*Ventenata dubia*).

3.7 Wildlife and Special Status Animals, including Greater Sage-Grouse

BLM and Forest Service manage wildlife habitat on public lands and state wildlife agencies are responsible for managing wildlife populations. Wildlife habitats in the analysis area for wildlife resources reflect the influence of a variety of past and ongoing human activities and disturbances, resulting in increases in some species populations, declines in others, and modification of large blocks of habitat. These habitats and the wildlife species that rely on them rarely exist solely on BLM and Forest Service-administered federal lands, but more often extend across administrative boundaries to other federal, state, and private lands.

The BLM and Forest Service have broad responsibility to the public under FLPMA and other acts and presidential orders to maintain and improve habitat for wildlife. While the BLM conducts habitat inventories, monitoring, protection, restoration, and development activities, FLPMA specifically reserves some responsibilities, particularly managing the wildlife itself (e.g., hunting regulations, wildlife damage control, and translocations/re-introductions) to the individual states (43 USC 1732).

The diversity and populations of fish and wildlife throughout the wildlife analysis area provide considerable recreational opportunities and economic benefits for the states of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming. Several species of game and nongame fish are present in water bodies in and adjacent to greater sage-grouse habitat. Other nongame wildlife species provide value to the state through birding, photography, and wildlife viewing opportunities.

The wildlife habitats that occur in the analysis area are characterized in the vegetation descriptions described above in Section 3.6, Vegetation, including Special Status Plants. The proposed withdrawal is associated with sagebrush habitat within the SFAs, which were designated due to their ability to support sage-grouse habitat. Therefore, only those species that depend on sagebrush habitat or that are strongly associated with these habitat types will be analyzed. The descriptions below identify attributes of vegetation resources that are particularly important to their role in providing habitat.

Wildlife species in this section are divided into three main categories: special status species; migratory birds; and general wildlife. Due to the nature of the project, greater sage-grouse, which is a BLM and Forest Service sensitive species, is covered in more detail than other special status species.

3.7.1 Special Status Species

The ESA mandates the protection of species listed as threatened or endangered and the habitats on which they depend. Section 7 of the ESA clarifies the responsibility of federal agencies to use their authority to carry out programs for the conservation of listed species. Species are listed as either threatened or endangered under the ESA. Endangered species are those in danger of extinction throughout all or a significant portion of its range. Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Some listed species may have critical habitat designated as essential to species conservation, or requiring special management consideration or protection. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 et seq.), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

Some species may be proposed for listing or candidate species for the ESA, but are not officially listed. Proposed species are those that are proposed in the Federal Register to be listed as endangered or threatened under section 4 of the ESA but have not had a final rule issued. Candidate species are those for which the USFWS has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened. Other species may be designated as experimental, non-essential populations. This designation is for a population of a listed species designated by rule published

in the Federal Register that is wholly separate geographically from other populations of the same species. An experimental population may be subject to less stringent prohibitions than are applied to the remainder of the species to which it belongs. An experimental, non-essential population is a population whose loss would not appreciably reduce the prospect of survival of the species in the wild. Experimental, non-essential populations are established pursuant to section 10(j) of the ESA. Section 7 consultation is not required for proposed or candidate species or for experimental, non-essential species on lands managed by the BLM or Forest Service; however, conferencing is required between BLM, Forest Service, and USFWS concerning these species if the action agency determines that a proposed project is "likely to jeopardize the continued existence" of a proposed species or cause "destruction or adverse modification" of proposed critical habitat. Conferencing can also be conducted on a voluntary basis if the action agency determines that a proposed project may affect a candidate or proposed species or proposed critical habitat.

The BLM's and Forest Service's objectives for special status species are to conserve and recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species, and to initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing of these species under the ESA. BLM special status species are defined in BLM's 6840 Manual (Special Status Species Management) as (1) species listed or proposed for listing under the ESA, and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as BLM sensitive by the State Directors. All federal candidate species, proposed species, and delisted species in the five years following delisting will be conserved as BLM sensitive species. The BLM 6840 Manual, Special Status Species Management, sets policy for the management of candidate species and their habitat. The 6840 Manual directs the BLM to undertake conservation actions for such species before listing is warranted and also to "work cooperatively with other agencies, organizations, governments, and interested parties for the conservation of sensitive species and their habitats to meet agreed on species and habitat management goals."

The BLM 6840 Manual requires the BLM to identify strategies, restrictions, management actions, and provisions necessary to conserve or recover ESA-listed species and conserve BLM sensitive species. The 6840 Manual also requires managers to determine to the extent practicable, the distribution, abundance, population condition, current threats, and habitat needs for sensitive species, and evaluate the significance of actions in conserving those species.

Management for Forest Service sensitive species is accomplished by following policies outlined in Forest Service Manual 2670. Forest Service sensitive species are defined as those plants and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and habitat capability that would reduce a species' existing distribution (FSM 2670.5). Management of sensitive species "must not result in a loss of species viability or create significant trends toward federal listing" (FSM 2670.32).

Threatened, Endangered, and Proposed Species

Species are listed as either threatened or endangered under the ESA. Some listed species have critical habitat designated as essential to species conservation, or requiring special management consideration or protection. Under the ESA all federal agencies must participate in the conservation and recovery of listed threatened and endangered species. The ESA also states that federal agencies shall ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The mission of USFWS is to work with other federal, state, and local agencies to conserve, protect, and enhance fish, wildlife, and plant species and their habitats. USFWS manages threatened and endangered species and designated critical habitat, in cooperation with other federal agencies, in order to support recovery. The BLM and Forest Service cooperate with USFWS in order to determine and manage habitats to support the species.

An official ESA species list was obtained from the USFWS IPaC System for each of the seven SFAs. Table 3-131 lists those sensitive species identified as occurring within the SFAs.

According to the IPaC species lists, 21 species may occur within the analysis area including five mammalian species, five avian (bird) species, and eleven fish species. There is designated or proposed "*Critical Habitat*" identified for four of these species. All of the listed bird species occur within shoreline habitat and riparian areas.

Black-footed ferret (Mustela nigripes)

Regulatory Status – Black-footed ferret is listed as an experimental, non-essential population (under section 10j of the ESA) for the states of Montana, Utah, and Wyoming (80 FR 19263). Reintroduction measures have taken place in suitable habitat in Uintah County, Utah.

The black-footed ferret was listed as endangered in 1967 pursuant to ESA. Eight black-footed ferret populations reintroduced between 1991 and 2003 have been designated as experimental, non-essential under section 10(j) of the ESA, and several other populations have been introduced in the United States and Mexico without being designated as such. In 2015, the USFWS proposed a rule that would designated black-footed ferrets in the entire state of Wyoming as experimental, non-essential, clarifying that all black-footed ferrets are the result of releases and that all further reintroductions would take place under the statewide experimental, non-essential designation (80 FR 19263).

Critical Habitat – No critical habitat rules have been published for the black-footed ferret.

Taxonomy and Life History – The black-footed ferret is solitary, except for during breeding and the period when mother and young are together. The black-footed ferret is generally a nocturnal predator, appearing above ground at irregular intervals and for irregular durations. The black-footed ferret depends entirely on prairie dog colonies, utilizing prairie dog burrows for shelter and den sites and preying almost exclusively on prairie dogs. They will modify burrows, dig out hibernating prairie dogs, or remove a soil plug in a behavior called trenching.

Distribution and Habitat Requirements – As a prairie dog obligate, the black-footed ferret is associated exclusively with prairie dog colonies in the grasslands and semi-desert shrublands. The historical distribution was closely associated with the ranges of the black-tailed prairie dog, white-tailed prairie dog, and Gunnison's prairie dog. The species historical range (in North America) has been estimated at nearly 250 million acres across Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah and Wyoming. The significant reduction in the distribution and abundance of prairie dogs throughout North America during the 20th century resulted in the near extirpation of the black-footed ferret. The population was thought to be extinct until the discovery of a small population in 1981 in Meeteetse, Wyoming. In 1987, all remaining black-footed ferrets were captured and placed in a captive breeding program. Since 1991, 18 black-footed ferret reintroduction projects have been conducted in eight states and Mexico. There are two restoration sites close to, but not within the boundaries of, the North Central Montana SFA. These sites are the UL Bend NWR and the Fort Belknap Indian Reservation, both in Montana. The Fort Belknap population is in Blaine County near Snake Butte, and has 19 breeding adults. The UL Bend NWR population is located south of BLM lands in the proposed SFA, and currently has 18 breeding adults. Resting and birthing sites are in underground burrows, generally made by prairie dogs. The black-footed ferret may occur within the counties associated with the Southwestern/ South Central Wyoming SFA, North Central Montana SFA, and Bear River Watershed Area SFA.

Table 3-131. ESA Listed Wildlife Species in the Analysis Area

Species	Status*	SFA							State					
		North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/ South Central Wyoming	Idaho	Montana	Nevada	Oregon	Utah	Wyoming
Mammals														
Black-footed ferret (*Mustela nigripes*)	EXPN	—	—	X	—	—	X	X	—	X	—	—	X	X
Canada lynx (*Lynx canadensis*)	T	X	—	—	—	—	X	X	X	—	—	—	X	X
Canada lynx Critical Habitat	DCH	—	—	—	—	—	X	—	—	—	—	—	X	X
Gray wolf (*Canis lupus*)	EXPN	—	—	—	—	—	X	X	—	—	—	—	—	X
Grizzly bear (*Ursus arctos horribilis*)	T	—	—	—	—	—	X	X	—	—	—	—	—	X
North American wolverine (*Gulo gulo luscus*)	PT	X	—	—	—	X	—	—	X	—	X	—	—	—
Birds														
Yellow-billed cuckoo (*Coccyzus americanus*)	T	X	—	—	—	—	X	X	X	—	—	—	X	X
Yellow-billed cuckoo Critical Habitat	PCH	X	—	—	—	—	—	—	X	—	—	—	—	—
Piping plover (*Charadrius melodus*)	T	—	—	X	—	—	—	X	—	X	—	—	—	X
Red knot (*Calidris canutus rufa*)	T	—	—	X	—	—	—	—	—	X	—	—	—	—
Whooping crane (*Grus americana*)	E	—	—	X	—	—	—	X	—	X	—	—	—	X
Least tern (*Sterna antillarum*)	E	—	—	—	—	—	—	X	—	X	—	—	—	X

Table 3-131. (continued)

Species	Status*	SFA							State					
		North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/ South Central Wyoming	Idaho	Montana	Nevada	Oregon	Utah	Wyoming
Fish														
Foskett speckled dace (*Rhinichthys osculus ssp.*)	T	—	—	—	—	X	—	—	—	—	—	X	—	—
Shortnose sucker (*Chasmistes brevirostris*)	E	—	—	—	—	X	—	—	—	—	—	X	—	—
Warner sucker (*Catostomus warnerensis*)	T	—	—	—	—	X	—	—	—	—	—	X	—	—
Warner sucker Critical habitat	DCH	—	—	—	—	X	—	—	—	—	—	X	—	—
Borax Lake chub (*Gila boraxobius*)	E	—	—	—	X	—	—	—	—	—	—	X	—	—
Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*)	T	—	—	—	X	—	—	—	—	—	X	X	—	—
Bonytail chub (*Gila elegans*)	E	—	—	—	—	—	X	X	—	—	—	—	—	X
Colorado pikeminnow (*Ptychocheilus lucius*)	E	—	—	—	—	—	X	X	—	—	—	—	—	X
Humpback chub (*Gila cypha*)	E	—	—	—	—	—	X	X	—	—	—	—	—	X
Pallid sturgeon (*Scaphirhynchus albus*)	E	—	—	—	—	—	—	X	—	—	—	—	—	X
Razorback sucker (*Xyrauchen texanus*)	E	—	—	—	—	—	X	X	—	—	—	—	—	X
Bull trout (*Salvelinus confluentus*)	T	X	—	—	—	—	—	—	X	—	X	—	—	—
Bull trout Critical Habitat	DCH	X	—	—	—	—	—	—	X	—	—	—	—	—

*The ESA of 1973 defines an "endangered species" (E in table) as any species which is in danger of extinction throughout all or a significant portion of its range; and a "threatened species" (T in table) as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Experimental populations, non-essential (EXPN in table) are species that are being reintroduced into their former range. Designated or proposed critical habitat (DCH or PCH, respectively, in table) exists for some species within the analysis area.

Threats – Black-footed ferret populations declined for three principal reasons. First, a major conversion of native range to cropland, particularly in the eastern portion of the species' range, began in the late 1800s. Second, poisoning of prairie dogs to reduce competition with domestic livestock for forage began in the early 1900s. The ferret's close association with prairie dogs was an important factor in the ferret's decline. From the late 1800s to approximately the 1960s, prairie dog occupied habitat and prairie dog numbers were dramatically reduced by conversion of native grasslands to cropland, poisoning, and disease. Third, the exotic disease sylvatic plague first impacted prairie dogs and ferrets in the 1930s.

Canada lynx (Lynx canadensis)

Regulatory Status – Canada lynx was listed as threatened by the USFWS on March 24, 2000 (65 FR 16052).

Critical Habitat – The USFWS has designated revised critical habitat for the contiguous United States distinct population segment of the Canada lynx under the ESA on September 12, 2014. In total, approximately 1.8 square miles fall within the boundaries of the critical habitat designation, in three units in the States of Minnesota, Montana, and Washington (71 FR 66008).

Taxonomy and Life History – The lynx is a medium-sized cat with long legs, large, well-furred paws, long tufts on the ears, and a short, black-tipped tail. The lynx's long legs and large feet make it highly adapted for hunting in deep snow. Within these general forest types, lynx are most likely to persist in areas that receive deep snow and have high-density populations of snowshoe hares, the principal prey of lynx.

Distribution and Habitat Requirements – The distribution of lynx in North America is closely associated with the distribution of North American boreal forest. The range of lynx populations extends south from the classic boreal forest zone into the subalpine forest of the western United States, and the boreal/hardwood forest ecotone in the eastern United States. Forests with boreal features extend south into the contiguous United States along the North Cascade and Rocky Mountain Ranges in the west, the western Great Lakes Region, and northern Maine. Individual lynx maintain large home ranges generally between 12 to 83 square miles. The size of lynx home ranges varies depending on abundance of prey, the animal's gender and age, season, and the density of lynx populations. When densities of snowshoe hares decline, for example, lynx enlarge their home ranges to obtain sufficient amounts of food to survive and reproduce. Canada lynx habitat is comprised of primary and secondary vegetation. Primary lynx vegetation is defined as subalpine fir habitat types, even if the dominant cover is of Douglas-fir or lodgepole pine (*Pinus contorta*) (Ulev 2007). However, there are subalpine fir (*Abies lasiocarpa*) habitat types which are not considered primary lynx vegetation because the result is a lodgepole pine climax seral stage; these are subalpine fir with a grouse whortleberry or a pine grass understory. Secondary lynx vegetation includes other cool, moist habitat types of Douglas fir, when intermingled with and immediately adjacent to primary vegetation. Dry forest habitat types of Douglas fir or lodgepole pine do not appear to be associated with lynx and so are not included as lynx habitat (Ulev 2007).

Preferred lynx habitats provide denning and foraging for lynx. Sub-adult lynx disperse at 10 months of age prior to the next mating period. Dispersal distances vary from 3.1 to 167 miles, with a median of 8 miles. Adults also exhibit long-range exploratory movements (Squires and Oakleaf 2006). The duration of these movements is one week to several months (Ruediger et al. 2000). Documented movement distances have been as much as 621 miles (Squires and Oakleaf 2005). For example, lynx from Colorado have traveled to Arizona, Idaho, Iowa, Kansas, Montana, Nebraska, Nevada, New Mexico, South Dakota, Utah, and Wyoming (Shenk 2009). In addition, a male lynx from the Wyoming Range trekked from the Wyoming Range, along the Wind River Range, through Yellowstone National Park, and to the eastern Centennial Range two consecutive summers, returning to the Wyoming Range each fall (Squires and Oakleaf 2005). Habitats used by lynx during movements and dispersal are not well understood (USFWS 2005). Lynx may prefer to move through continuous forest, using geographic features such as

ridges, saddles, and riparian areas (Ulev 2007), but lynx have been documented in sagebrush steppe outside of home ranges (Ruediger et al. 2000). It is not known how dispersing and moving lynx respond to roads and highways (Squires and Oakleaf 2006). Suitable lynx habitat within the SFAs is limited and marginal. It is anticipated that it would be classified as linkage habitat in areas where present.

Threats – The USFWS concluded the single factor threatening the contiguous United States distinct population segment is the inadequacy of existing mechanisms and guidance for lynx conservation on Forest Service land. In all regions within the range of the lynx in the contiguous United States, timber harvest, recreation, and their related activities are the predominant land uses affecting lynx habitat. The primary factor that caused the lynx to be listed was the lack of guidance for the conservation of lynx and snowshoe hare habitat in plans for federally managed lands. Lynx movements may be negatively affected by high traffic volume on roads that bisect suitable lynx habitat, such as in the southern Rockies, and in some areas, mortalities due to road kill are high.

Gray wolf (Canis lupus)

Regulatory Status – In May 2011, the USFWS published a direct final rule delisting wolves in Idaho, Montana, and parts of Oregon, Washington, and Utah (76 FR 25590). In August 2012, the USFWS announced that the Wyoming population of gray wolves was recovered and no longer warranted protection under the ESA and management of the wolves in Wyoming reverted to the state under an approved management plan, as is the case for their management in the states of Idaho and Montana. In September 2014, the Federal District Court for the District of Columbia vacated the delisting of wolves in Wyoming under the ESA. Therefore, wolves are again listed as a nonessential experimental population in all of Wyoming. The gray wolf has been removed as a federally listed species from the other states associated with the proposed withdrawal and are managed under state approved management plans.

Critical Habitat – Critical habitat has been designated for the grey wolf but not for the populations that occur within the analysis area.

Taxonomy and Life History – Ungulates are the typical prey of wolves, but wolves also readily scavenge. Beaver are among the smallest important prey but wolves can utilize smaller mammals, birds, and fish. Wolf packs defend their territories from other wolves. Territory size is a function of prey density and can range from 25 to 1,500 square miles. Both male and female wolves disperse at equal rates and equal distances, sometimes >600 miles (NatureServe 2015).

Distribution and Habitat Requirements – Wolves are habitat generalists and live throughout the northern hemisphere. They only require ungulate prey and human-caused mortality rates that are not excessive. Home ranges are very large but very variable as well, generally ranging from less than 40 square miles to more than 4,000 square miles (NatureServe 2015). Multiple pack home ranges overlap the SFAs associated with the analysis area.

Threats – Landscape change resulting from development may interfere with restoration in some areas. The threats to the northern Rocky Mountain wolf population have been reduced or eliminated as evidenced by the population exceeding the numerical, distributional, and temporal recovery goals each year since 2002 (USFWS 2006).

Grizzly bear (Ursus arctos horribilis)

Regulatory Status – Grizzly bear was listed as threatened in 1975 (40 FR 31734). In March 2016, the USFWS proposed a rule to remove the Greater Yellowstone Ecosystem population of grizzly bears from the threatened and endangered list (81 FR 13174). Prior to this action happening, the participating States of Idaho, Montana, and Wyoming must adopt the necessary post-delisting management objectives, which

adequately ensure that the Greater Yellowstone Ecosystem population of grizzly bears remains recovered, into enforceable regulations before the USFWS will proceed with a final delisting rule. The latest comment period for this proposed rule closed in October 2016 (81 FR 61658) and the USFWS are currently considering comments related to the delisting of this species.

Critical Habitat – No critical habitat has been designated for this species.

Taxonomy and Life History – The grizzly bear is one of the largest North American land mammals and is the largest North American omnivore. Grizzly bears den when food availability and air temperatures decline.

Distribution and Habitat Requirements – Most existing grizzly bear habitat is characterized by contiguous, relatively undisturbed mountainous habitats that have a high level of topographic and vegetative diversity. Cover seems to be important to grizzly bears in the northern Rockies, particularly during bedding periods. Generally cover used is not more than 0.6 miles from open parks or meadows. Den sites are generally at higher elevations in areas where snow is not likely to melt during warm periods through the winter. Bears dig a den in the fall, entering for hibernation around November. Portions of the SFAs in Idaho and Wyoming are within the distinct population segment for the Yellowstone grizzly bear and just outside the designated grizzly bear Conservation Strategy Management Area and suitable grizzly bear habitat (NatureServe 2015).

Threats – Threats to grizzly bears include the present or threatened destruction, modification, or curtailment of its habitat or range. The 1975 listing of the grizzly bear identified a substantial decrease in the range of the species in the conterminous United States and stated that timbering and other practices have resulted in an increase in road and trail construction into formerly inaccessible areas. Since 1975, habitat protection measures have focused on providing secure habitat for bears that lessens the opportunity for human-caused mortality. Threats to habitat remain through alteration of habitat, road construction, and the resulting increase in human access; all of which may result in displacement from important habitat and grizzly bear mortality. Cumulative impacts of timber harvest activities, mining, recreation, and other forest uses, and the associated road construction, can reduce the amount of secure, effective habitat for grizzly bears (NatureServe 2015).

North American wolverine (Gulo gulo luscus)

Regulatory Status – In February 2013, the USFWS Proposed to list the distinct population segment of the North American wolverine as threatened in the contiguous United States (78 FR 7863). On August 13, 2014, the USFWS withdrew a proposal to list this species as a threatened species under the ESA. Based on a court ruling in 2016, the 2013 proposed rule is currently back in effect and USFWS has reopened the public comment period on the proposed rule to list the North American wolverine as threatened under the ESA.

Critical Habitat – No critical habitat rules have been published for the wolverine.

Taxonomy and Life History – The wolverine is the largest terrestrial member of the family *Mustelidae*. It resembles a small bear with a bushy tail. Breeding generally occurs from late spring to early fall. Persistent, stable snow greater than 1.5 meters (m) (5 feet (ft)) deep appears to be a requirement for natal denning, because it provides security for offspring and buffers cold winter temperatures.

Distribution and Habitat Requirements – Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season. The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are

warmest, wolverine distribution is restricted to high elevations, while at more northerly latitudes, wolverines are present at lower elevations and even at sea level in the far north. Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States. Wolverines have large spatial requirements; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range.

Threats – The primary threat to the North American wolverine is from habitat and range loss due to climate warming. Other threats are minor in comparison to the driving primary threat of climate change; however, they could become significant when working in concert with climate change if they further suppress an already stressed population. These secondary threats include harvest, i.e., trapping; inadequate regulatory mechanisms to protect against human recreational disturbance, infrastructure developments, and transportation corridors; and demographic stochasticity (variability) and loss of genetic diversity due to small effective population sizes.

Yellow-billed cuckoo (Coccyzus americanus) and Designated Critical Habitat

Regulatory Status – In November 2014, the USFWS listed the western North American population of yellow-billed cuckoos as a threatened species (79 FR 59992).

Critical Habitat – On August 15, 2014, the USFWS proposed to designate critical habitat for the western distinct population segment of the yellow-billed cuckoo under the ESA (79 FR 48547). In total, approximately 546,335 acres are being proposed for designation as critical habitat in Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming. This proposal is still under consideration by the USFWS. Portions of the proposed critical habitat are located within or in close proximity to the North Central Idaho SFA.

Taxonomy and Life History – The male and female yellow-billed cuckoo build flat, oblong platform nests constructed of loose sticks collected from the ground or snapped from nearby trees and shrubs. The pair may line the nest sparingly with strips of bark or dried leaves. The male sometimes continues bringing in nest materials after incubation has begun. Pairs may visit prospective nest sites multiple times before building a nest together.

Distribution and Habitat Requirements – Yellow-billed cuckoos are riparian obligate species that breed in cottonwood forests with thick understory, usually below 6,600 feet in elevation. Yellow-billed cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes (NatureServe 2015). Small areas containing these habitats are present within the SFAs.

Threats – The USFWS determined that riparian habitat destruction and modification and vulnerability of small, isolated populations were the greatest threats to the western population. In the West, much of the yellow-billed cuckoo's riparian habitat has been converted to farmland and housing, leading to population declines and the possible extirpation of cuckoos (NatureServe 2015).

Piping plover (Charadrius melodus)

Regulatory Status – The piping plover was listed as endangered in the Great Lakes-Big Rivers Region and threatened in the Northeast Region in December 1985 (50 FR 50726). Within the analysis area they are listed for Montana and Wyoming.

Critical Habitat – Critical habitat has been designated for the piping plover but does not occur within the analysis area. Portions of the proposed critical habitat are located in close proximity (within 10 miles) to the North Central Montana SFA.

Taxonomy and Life History – Breeding season begins when adults reach breeding grounds in mid- to late-April or in mid-May in northern parts of the range. They often return to the same nesting area in consecutive years (but few return to natal sites), and sometimes shift breeding location by up to several hundred miles between consecutive years. Nest sites are simple depressions or scrapes in the sand. The average nest is about 2 to 4 inches in diameter, and is often lined with pebbles, shells, or drift wood to enhance the camouflage effect. Nesting territory may or may not contain the foraging area. Home range during the breeding season generally is confined to the vicinity of the nest. Food consists of worms, fly larvae, beetles, crustaceans, mollusks, and other invertebrates (NatureServe 2015).

Distribution and Habitat Requirements – Piping plovers are a migratory species that use the Great Plains region for breeding. This species uses shoreline habitat for breeding, nesting, and foraging habitat, where they scratch shallow nests in the sand along the banks of large waterbodies. Vegetation cover on nesting islands is generally less than 25 percent. The North Central Montana SFA and Southwestern/South Central Wyoming SFA are on the western extent of the listed area for the piping plover.

Threats – Primary threats are destruction and degradation of summer and winter habitat, shoreline erosion, human disturbance of nesting and foraging birds, and predation. Habitat loss and degradation on winter and migration grounds from shoreline and inlet stabilization efforts, both within and outside of designated critical habitat, remain a serious threat to all piping plover populations.

Red knot (Calidris canutus rufa)

Regulatory Status – The red knot was listed as threatened in the Northeast Region in January 2015 (79 FR 73705). They are only listed for Montana within the analysis area. The North Central Montana SFA is on the western extents of the listed area for the red knot.

Critical Habitat – No critical habitat rules have been published for the red knot.

Taxonomy and Life History – The red knot is a shoreline bird species that breeds, nests, and forages adjacent to open water habitats. Populations including subspecies rufa migrate in large flocks northward through the contiguous United States mainly March to early June, and southward July to August (NatureServe 2015).

Distribution and Habitat Requirements – Montana is situated in the extreme west of the red knot migratory habitat. Red knots migrate long distances between nesting areas in mid- and high arctic latitudes and southern nonbreeding habitats as far north as the coastal U.S. (low numbers) and southward to southern South America. Habitat for the red knot is known to occur in close proximity to the North Central Montana SFA.

Threats – Increased commercial harvest of red knot food resources has resulted in a reduction of body condition during spring migration, reducing the percentage of annual survival.

Whooping crane (Grus americana)

Regulatory Status – The whooping crane was listed as endangered in the analysis area within Montana in 1967 (32 FR 4001) and is listed as an experimental, non-essential population in Idaho, Utah, and western Wyoming.

Critical Habitat – Critical habitat has been designated for the whooping crane but does not occur within the analysis area.

Taxonomy and Life History – There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at Aransas. The last remaining wild bird in the reintroduced Rocky Mountain Population died in the spring of 2002. The whooping crane breeds, migrates, winters, and forages in a variety of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields.

Distribution and Habitat Requirements – Bulrush is the dominant vegetation type in the potholes used for nesting. Nest sites are primarily located in shallow diatom ponds that contain bulrush. During migration, whooping cranes use a variety of habitats; however wetland mosaics appear to be the most suitable. For feeding, whooping cranes primarily use shallow, seasonally and semi permanently flooded palustrine wetlands for roosting, and various cropland and emergent wetlands. The whooping crane is a bi-annual migrant, traveling between its summer habitat in central Canada, and its wintering grounds on the Texas coast, across the Great Plains of the United States in the spring and fall of each year. The migratory corridor runs in an approximately straight line from the Canadian Prairie Provinces of Alberta and Saskatchewan through the Great Plains states of eastern Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. There is limited habitat present within the North Central Montana SFA, which may be used during seasonal migration.

Threats – Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. The species was listed because of low population numbers, slow reproductive potential (sexual maturity is delayed and pairs average less than one chick annually), cyclic nesting and wintering habitat suitability, a hazardous 2,485-mile migration route that is traversed twice annually, and many human pressures on the wintering grounds. Current threats to wild cranes include collisions with manmade objects such as power lines and fences, shooting, chemical spills along the Intracoastal Waterway that bisects its winter habitat, predators, disease, habitat destruction, severe weather, and a loss of two thirds of the original genetic material.

Least tern (Sterna antillarum)

Regulatory Status – The least tern was listed as endangered in May 1985 (50 FR 21784) and is listed as potentially occurring in Montana and Wyoming.

Critical Habitat – No critical habitat has been designated for this species.

Taxonomy and Life History – The least tern is the smallest North American tern (length 8-10 inches). It eats mainly small fishes (generally less than 3.5 inches long), sometimes crustaceans or insects, obtained by diving from air into shallow water usually less than 13 feet deep. Interior populations depend almost entirely on cyprinids. Feeding in newly plowed fields has been observed. Courtship behavior includes chases, vocalizations, and sometimes presentation of a fish to the female by the male.

Distribution and Habitat Requirements – The least tern is a migratory species which breeds and uses habitats located in seacoasts, beaches, bays, estuaries, lagoons, lakes, and rivers. Interior populations nest mainly on riverine sandbars or salt flats that become exposed during periods of low water, as a result of vegetational succession and/or erosion; preferred nesting habitat typically is ephemeral. The North Central Montana and Southwestern/South Central Wyoming SFAs are located on the extreme western extent of the seasonal migration of the interior population of the least tern.

Threats – Major threats are human use and development of nesting habitat and predation on adults, eggs, and young by birds and mammals. Exposed eggs or young may succumb to overheating and be subject to increased predation. Potential threats include chemical spills and pesticide or heavy metal pollution. Decline of interior nesting populations has been coincident with human modification of river flow

(e.g., reduction of spring floods by dams) and bank stabilization and channelization, resulting in reduced availability of bare island/sandbar nesting habitat; loss of aquatic habitat diversity and resulting changes in fish species composition and abundance also may have contributed to the reduced tern population.

Bull trout (Salvelinus confluentus)

Regulatory Status – The Klamath River and Columbia River distinct population segments of bull trout was listed as threatened in June 1998 (63 FR 31647) and the Jarbidge River population segment of bull trout was listed as threatened in April 1999 (64 FR 17110). This species is listed as potentially occurring in Idaho, Montana, Nevada, Oregon, and Washington.

Critical Habitat – Critical habitat was designated for bull trout in October 2010 (75 FR 63898) and occurs within the North Central Idaho SFA and Southern Idaho/Northern Nevada SFA.

Taxonomy and Life History – Bull trout are members of the family Salmonidae. Spawns in late summer or fall when temperatures begin to fall. Eggs hatch in late winter or early spring. Fry emerge from gravel in April or May.

Distribution and Habitat Requirements – Bull trout are char native to Washington, Oregon, Idaho, Nevada, Montana, and western Canada. Compared to other salmonids, bull trout have more specific habitat requirements that appear to influence their distribution and abundance. Habitat includes the bottom of deep pools in cold rivers and large tributary streams, often in moderate to fast currents with temperatures of 45-50 F; also large coldwater lakes and reservoirs. They also require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors.

Threats – Bull trout are threatened by activities that damage riparian areas and cause stream siltation; logging, road construction, mining, and overgrazing may be harmful to spawning habitat. This species is very sensitive and severely impacted by siltation of spawning streams. Hybridization appears to be a common problem where isolated or remnant resident populations overlap with introduced brook trout (spawning times and conditions are similar). Introduced brown trout and rainbow trout have been associated with bull trout declines, apparently due to competitive interactions; lake trout may have a negative impact on bull trout, due to predation by lake trout on juvenile bull trout, probable competitive interactions, and increased harvest associated with increased fishing pressure for lake trout.

Lahontan cutthroat trout (Oncorhynchus clarkia henshawi)

Regulatory Status – The Lahontan cutthroat trout was listed as threatened in June 1975 (40 FR 29863).

Critical Habitat – No critical habitat has been designated for the Lahontan cutthroat trout.

Taxonomy and Life History – Lahontan cutthroat trout inhabit lakes and streams, but are obligatory stream spawners. Distance traveled to spawning sites varies with stream size. Spawning generally occurs from April through July, depending upon stream flow, elevation, and water temperature.

Distribution and Habitat Requirements – Optimal stream habitat is characterized by clear, cold water with silt-free substrate and a 1:1 pool-riffle ratio. Streams should have a variety of habitats including areas with slow deep water, abundant instream cover (i.e., large woody debris, boulders, undercut banks), and relatively stable streamflow and temperature regimes. Streambanks should be well vegetated to provide cover, shade, and bank stabilization. Lacustrine Lahontan cutthroat trout populations have adapted to a wide variety of lake habitats from oligotrophic (with low nutrient levels and primary productivity) alpine lakes (e.g., Independence Lake) to large, productive desert terminal lakes (e.g., Pyramid Lake). Unlike

most freshwater fish species, Lahontan cutthroat trout have been reported to tolerate alkalinity and total dissolved solid levels as high as 3,000 milligrams/liter (mg/L) (3,000 parts per million (ppm)) and 10,000 mg/L (10,000 ppm), respectively (Dickerson and Vinyard 1999a, pp. 510-514).

Threats – This fish has been detrimentally affected by damage to spawning areas caused by timber harvesting, forest fires, and grazing livestock; by damming and water diversion for irrigation and municipal uses; and by water pollution. USFWS (1994) stated that principal threats are habitat loss due to urbanization, reclamation, mineral development, livestock grazing, hybridization with nonnative trout, and competition with exotic species of fishes. Lahontan cutthroat trout evolved in the absence of other trout and are highly susceptible to hybridization and competition from introduced trout species.

Colorado pikeminnow (Ptychocheilus lucius)

Regulatory Status – The Colorado pikeminnow was listed as endangered in March 1967 (32 FR 4001).

Critical Habitat – Critical habitat has been designated for humpback chub in March 1994 (59 FR 13374), and occurs south and east of the Bear River Watershed SFA and Southwestern/South Central Wyoming SFA. No designated critical habitat occurs within the analysis area.

Taxonomy and Life History – The Colorado pikeminnow is a fish that can reach a length of about 6 feet. This species spawns under decreasing flow regimen with increasing temperatures in summer. In the Green River, Wyoming, this species spawns from July to August. Larvae enter stream drift and are transported downstream for about 6 days, traveling an average distance of 160 km to reach low gradient nursery areas.

Distribution and Habitat Requirements – Historical range included rivers of the Colorado River basin: mainstem Colorado River and major tributaries (Gunnison, White, Yampa, Dolores, San Juan, Uncompahgre, Animas, and Green rivers), from Mexico and Arizona to Wyoming. Present distribution is drastically reduced. By the mid-1980s, this species occurred only in the Upper Colorado River basin of Colorado, Utah, New Mexico, and Wyoming; mainly in the Green River in Utah and in the Yampa and Colorado rivers in Colorado and portions of Utah (NatureServe 2016).

Habitat includes medium to large rivers. Young prefer small, quiet backwaters. Adults use various habitats, including deep turbid strongly flowing water, eddies, runs, flooded bottoms, or backwaters (especially during high flow). Lowlands inundated during spring high flow appear to be important habitats.

Threats – Decline resulted probably from a combination of threats, including direct loss of habitat, changes in flow and temperature, and blockage of migration routes by the construction of large reservoirs. In addition, interactions with nonnative fishes may have had an adverse effect in waters not affected by dams (NatureServe 2016).

Bonytail chub (Gila elegans)

Regulatory Status – The bonytail chub was listed as endangered in April 1980 (45 FR 27710).

Critical Habitat – Critical habitat has been designated for humpback chub in March 1994 (59 FR 13374), and occurs south and east of the Bear River Watershed SFA and Southwestern/South Central Wyoming SFA. No designated critical habitat occurs within the project area.

Taxonomy and Life History – The bonytail chub is a large minnow with a long, slender caudal peduncle. Natural reproduction of bonytail was last documented in the Green River in Dinosaur National Monument in the 1960s (NatureServe 2016).

Distribution and Habitat Requirements – Bonytails were formerly abundant throughout the Colorado River and its larger tributaries, including the Green River north to the reach now inundated by Flaming Gorge Reservoir in Wyoming and Utah, the Yampa and Gunnison rivers in Colorado, and the Colorado River in Arizona, Colorado, Nevada, and California, and likely also the San Juan River in New Mexico and the Gila and Salt rivers in Arizona.

The bonytail chub is a warm-water species that appears to favor main-stem rivers regardless of turbidity, usually in or near deep swift water, in flowing pools and eddies just outside the main current. It also has been found in reservoirs. Available data suggest that habitats required for conservation include river channels and flooded, ponded, or inundated riverine habitats, especially those where competition from nonnative fishes is absent or reduced (59 FR 13374),

Threats – Threats to the species include habitat modifications resulting from streamflow regulation, dams that function as movement barriers on main-stem rivers, competition with and predation by nonnative fish species, hybridization (possibly), and pesticides and pollutants (NatureServe 2016).

Humpback chub (Gila cypha)

Regulatory Status – The humpback chub was listed as endangered in March 1967 (32 FR 4001).

Critical Habitat – Critical habitat was designated for humpback chub in March 1994 (59 FR 13374), and occurs south and east of the Bear River Watershed SFA and Southwestern/South Central Wyoming SFA. No designated critical habitat occurs within the analysis area.

Taxonomy and Life History – Humpback chubs are a large minnow with a slender caudal peduncle and (in large individuals) a hump behind the head. They spawn in spring shortly after peak flow.

Distribution and Habitat Requirements – Humpback chubs inhabit large rivers. Adults use various habitats, including deep turbulent currents, shaded canyon pools, areas under shaded ledges in moderate current, riffles, and eddies (59 FR 13374).

This species formerly occurred throughout much of the Colorado River basin, from western Colorado and southwestern Wyoming to northern Arizona (and perhaps California), including not only the Colorado River, but also major tributary systems such as the Green River, lower Yampa River, and White River in Utah. Currently, six populations of humpback chub are known to exist. Five of the populations occur in the upper basin recovery unit: 1) Black Rocks, Colorado River, Colorado; 2) Westwater Canyon, Colorado River, Utah; 3) Yampa Canyon, Yampa River, Colorado; 4) Desolation/Gray Canyons, Green River, Utah; and 5) Cataract Canyon, Colorado River, Utah (NatureServe 2016).

Threats –The endangered status of this species has been attributed primarily to the following factors: loss, fragmentation, and modification of habitat through impoundment (e.g., stream inundation, reduced water temperatures, reduced spring flows, and increased daily fluctuation in flows, resulting from construction and operation of Hoover Dam, Glen Canyon Dam, and Flaming Gorge Dam); and introduced competitors and predators.

Pallid sturgeon (Scaphirhynchus albus)

Regulatory Status – Pallid sturgeon was listed as endangered in September 1990 (55 FR 36641).

Critical Habitat – No critical habitat has been designated for the Pallid sturgeon.

Taxonomy and Life History – Pallid sturgeon have a flattened shovel-shaped snout; a long, slender, and completely armored caudal peduncle (the tapered portion of the body which terminates at the tail); and lack a spiracle (small openings found on each side of the head).

Distribution and Habitat Requirements – Pallid sturgeon are a bottom-oriented, large river obligate fish inhabiting the Missouri and Mississippi rivers and some tributaries from Montana to Louisiana. Pallid sturgeon evolved in the diverse environments of the Missouri and Mississippi river systems. Pallid sturgeon have been documented over a variety of available substrates, but are often associated with sandy and fine bottom materials.

Threats – Construction and operation of large dams and river channelization have eliminated and degraded preferred sturgeon habitat. On the main stem of the Missouri River, approximately 36 percent of riverine habitat within the pallid sturgeon's range was eliminated by construction of six massive earthen dams between 1926 and 1952; the dams are believed to block migrations, and the reservoirs probably inundated historical spawning and nursery areas.

Razorback sucker (Xyrauchen texanus)

Regulatory Status – Razorback sucker was listed as endangered in October 1991 (56 FR 54957).

Critical Habitat – Critical habitat was designated for razorback sucker in March 1994 (59 FR 13374), and occurs south and east of the Bear River Watershed SFA and Southwestern/South Central Wyoming SFA. No designated critical habitat occurs within the analysis area.

Taxonomy and Life History – Also known as the humpback sucker, the adult razorback sucker is readily identifiable by the abrupt sharp-edged dorsal keel behind its head and a large fleshy subterminal mouth that is typical of most suckers.

Distribution and Habitat Requirements – The razorback sucker was once abundant throughout 3,500 miles of the Colorado River basin, primarily in the mainstem and major tributaries in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and in the States of Baja California Norte and Sonora of Mexico. In recent times, razorback sucker distribution has been reduced to about 750 miles in the upper basin. In the lower basin a substantial population exists only in Lake Mohave, but they do occur upstream in Lake Mead and the Grand Canyon and downstream sporadically on the mainstem and associated impoundments and canals (56 FR 54957).

Habitats required by adults in rivers include deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools often in shallow water associated with submerged sandbars in summer; and low-velocity runs, pools, and eddies in winter. Spring migrations of adult razorback sucker were associated with spawning in historic accounts, and a variety of local and long-distance movements and habitat-use patterns have been documented. Spawning in rivers occurs over bars of cobble, gravel, and sand substrates during spring runoff at widely ranging flows and water temperatures (NatureServe 2016).

Threats – Threats to the species include streamflow regulation, habitat modification, competition with and predation by nonnative fish species, and pesticides and pollutants.

Foskett speckled dace (Rhinichthys osculus ssp. 3)

Regulatory Status – Foskett speckled dace was listed as threatened in March 1985 (50 FR 12302).

Critical Habitat – No critical habitat has been designated for the Foskett speckled dace.

Taxonomy and Life History – Foskett speckled dace are small fish which occur in freshwater habitats. They spawn in June and July. They are bottom browsers which feed on insects, detritus, and the eggs of other fishes.

Distribution and Habitat Requirements – They require clean fresh water of fairly constant temperature.

Threats – Habitat for this species is susceptible to destruction by activities in support of agriculture and by livestock trampling. Encroachment of wetland vegetation into open water areas of habitat is a threat at Foskett Spring (NatureServe 2016).

Shortnose sucker (Chasmistes brevirostris)

Regulatory Status – Shortnose sucker was listed as endangered in July 1988 (53 FR 27130).

Critical Habitat – Critical habitat was designated for shortnose sucker in December 2012 (77 FR 73739), and occurs west of the Sheldon-Hart Mountain NWR Complex Area SFA. No designated critical habitat occurs within the analysis area.

Taxonomy and Life History – Spawning occurs in lake tributaries, in riffles or runs with gravel or cobble substrate, moderate flows, and depths of 4-51 inches. Spawning occurs mainly from early April to early May. This species is long-lived, but apparently it has the shortest life span among the lakesuckers (NatureServe 2016).

Distribution and Habitat Requirements – Adults and juveniles prefer shallow, turbid, and highly productive lakes that are cool, but not cold, in summer, have adequate dissolved oxygen, and are moderately alkaline.

Threats – Spawning migrations have declined significantly in recent years, due in part to alteration of habitat (especially damming). Chiloquin Dam, constructed in 1928 on the Sprague River, Oregon, cut off 85 percent of spawning range. Human-caused increases in nutrient inputs to Upper Klamath Lake have resulted in massive summer and fall blooms of cyanobacteria and elevated lake pH levels to 9.5-10.5, which in turn have led to mass mortalities and curtailed reproduction of the species.

Warner sucker (Catostomus warnerensis)

Regulatory Status – Warner sucker was listed as threatened in October 1985 (50 FR 39117).

Critical Habitat – Critical habitat was designated for Warner sucker in October 1985 (50 FR 39117), directly associated with Borax Lake Oregon.

Taxonomy and Life History – Warner sucker is endemic to the streams and lakes of the Warner Basin in southcentral Oregon. This species is part of a relic fauna isolated in remaining waters of a larger Pleistocene lake that previously covered much of the basin floor. Although primarily lacustrine, this species spawns in headwaters of streams, tributary to lakes.

Distribution and Habitat Requirements – Habitat of Warner sucker includes large natural lakes and associated marshes. The Warner sucker is known to occur in portions of Crump and Heart Lakes, the spillway canal north of Hart Lake, and portions of Snyder, Honey, Twentymile, and Twelvemile Creeks.

Threats – The major threats to the continued existence of the Warner sucker and other native fishes in the Warner Basin and Alkali Subbasin are human-induced stream channel and watershed degradation, irrigation diversion practices, and predation and competition from introduced fishes (NatureServe 2016).

Borax Lake chub (Gila borazobius)

Regulatory Status – Borax Lake chub was listed as endangered in May 1980 through an emergency determination.

Critical Habitat – Critical habitat was designated for Borax Lake chub in October 1982 (47 FR 43957), directly associated with Borax Lake in Oregon.

Taxonomy and Life History – Most reproduction appears to occur in spring and fall. Feeds opportunistically on aquatic invertebrates; midge larvae, diatoms, and microcrustaceans are important throughout year.

Distribution and Habitat Requirements – The sole habitat consists of a clear, shallow (less than 3 feet deep), alkaline lake (Borax Lake) fed by thermal springs, outflow of the lake, and a pond (Lower Borax Lake) fed by the outflow. Precipitation of minerals from the water over thousands of years has raised the level of the lake approximately 30 feet above the desert playa, isolating the fish from the surrounding watershed. The springs flowing into the lake have temperatures of about 95-104°F. The chub prefers water of 84-86°F; temperatures above 93°F are potentially lethal.

Threats – The thermal waters feeding Borax Lake face a long-term threat from geothermal energy development. The small area of available habitat makes the species vulnerable to decreases in water level. Proposals to drill wells near the lake prompted an emergency listing of this species as endangered in 1980. Protection afforded by the ESA has greatly curtailed exploratory drilling for geothermal energy development by creation of a zone of no surface disturbance around the most sensitive habitats.

BLM and Forest Service Sensitive Animal Species

BLM and Forest Service sensitive species in the analysis area are managed as necessary to protect the species and their habitat from loss in accordance with FLPMA, agency guidelines, and federal directives. In addition, BLM sensitive species are managed in accordance with BLM Manual 6840, Special Status Species Management. Special status species lists were provided by the BLM and Forest Service offices associated with the proposed withdrawal area. These lists include sensitive animal species in addition to ESA-listed species, which are recognized by the BLM, Forest Service Region 4, Forest Service Region 6, and individual state wildlife management agencies. Many of the sensitive species listed by the BLM overlap with Forest Service sensitive and focal species lists. These lists are subject to periodic updates.

The special status species lists obtained from the agencies within the six states associated with the proposed withdrawal identify 40 mammals, 53 birds, 10 amphibians, six reptiles, 8 invertebrates, 38 fish, and seven mollusks. Because of a lack of suitable habitat or risk of impact, those species occurring in open water habitat or riparian fringe habitat were not carried forward for analysis and are not listed in the table below. The low risk of impact from mining in these areas is related to the difficulty in mining wet areas in addition to regulations afforded to them under the Clean Water Act and other federal regulations. Additionally, those species that are on BLM and Forest Service sensitive species lists that do not have suitable habitat in the analysis area or are not known to occur in close proximity to the withdrawal area were not carried forward for analysis. Table D-2 in Appendix D lists the BLM and Forest Service special status species that have potentially suitable habitat within the SFAs that are not included in the list of ESA-listed species above.

Seventeen of the sensitive mammal species are bat and myotis species, of which 14 have been identified as occurring within potential habitat present within the SFAs (Table D-2). The remaining three species are more closely dependent on forest habitats, which are limited within the SFAs. The bat and myotis species that have been identified as potentially occurring in the SFAs primarily occur on the fringe of forested areas or in desert habitats with rock outcrops containing narrow crevices and caves.

Seventeen of the mammal species listed in Table D-2 are small rodents or small mammals such as mice, ground squirrels, gophers, and prairie dogs. Of these 17 sensitive mammal species, 14 species occur primarily in shrub and grassland habitats, with loose soils that are available for burrows. The remaining sensitive mammals are larger such as Rocky Mountain and California bighorn sheep and kit fox. The Canada lynx, gray wolf, wolverine, and grizzly bear are discussed above under the federally listed species. These species occur in a variety of habitats ranging from forested and shrub-steppe to grassland habitats.

Of the bird species identified on the BLM and Forest Service sensitive species lists, 15 occur in sagebrush steppe habitats or habitat types that are dominant within the SFAs. The remaining species are associated with agricultural lands, grasslands, riparian areas, or wet meadows that are absent or limited within the analysis area and will not be analyzed further in this document. Many of the BLM and Forest Service sensitive species are migratory species that use sagebrush-steppe habitat within the SFAs for seasonal nesting, rearing, and foraging habitat during the late spring, summer, and early fall periods. These species are discussed below under migratory bird species. Greater sage-grouse is discussed individually because of the direct relationship of that species to the proposed withdrawal.

Some of the Forest Service sensitive species are also identified by the Forest Service as management indicator species or focal species. Management indicator species and focal species are used as surrogate measures in the evaluation of ecological sustainability, including species and ecosystem diversity. The key characteristic of a management indicator species or focal species is that its status and trend provide insights to the integrity of the larger ecological system to which it belongs. Individual species, or groups of species that use habitat in similar ways or which perform similar ecological functions, may be identified as focal species. Management indicator species or focal species serve an umbrella function in terms of encompassing habitats needed for many other species, play a key role in maintaining community structure or processes, are sensitive to the changes likely to occur in the area, or otherwise serve as an indicator of ecological sustainability. A list of the management indicator species or focal species that occur in each forest within the withdrawal area is included in Table D-3 in Appendix D.

Greater Sage-Grouse

On March 23, 2010, the USFWS determined that rangewide listing of the greater sage-grouse was warranted but precluded by higher priority listing actions (75 FR 13910). On November 21, 2012, the USFWS assigned greater sage-grouse a listing priority number of 8 indicating that the rangewide threat to sage-grouse was moderate to low (77 FR 699940). Most recently on September 22, 2015, a status review conducted by the USFWS determined that the greater sage-grouse remains relatively abundant and well-distributed across the species' 173-million acre range and does not face the risk of extinction now or in the foreseeable future. The greater sage-grouse remains a BLM and Forest Service sensitive species.

The USFWS determined that protection for the greater sage-grouse under the ESA is no longer warranted and withdrew the species from the candidate species list on October 2, 2015 (80 FR 59857). The USFWS's decision not to list the bird at that time follows an unprecedented conservation partnership across the western U.S. that has significantly reduced threats to the greater sage-grouse across 90 percent of the species' breeding habitat. In making that decision, the USFWS stated that rangewide, a number of relatively large greater sage-grouse populations continue to be distributed across the landscape and are supported by undisturbed expanses of habitat. Some habitat loss associated with energy development, infrastructure, wildfire, and invasive plants will continue into the future. However, regulatory

mechanisms provided by federal and three state plans reduce threats on approximately 90 percent of the breeding habitat across the species' range. They also stated that fire and invasive species continue to occur in greater sage-grouse habitats, especially in the Great Basin, but existing management and commitments for suppression, restoration, and noxious weed treatments are reducing that impact.

Potential impacts to greater sage-grouse associated with all activities on BLM lands are managed under the multiple LUP amendments. The LUP amendments identified three greater sage-grouse habitat designations: PHMA, GHMA, and OHMA. An additional category was assigned to the PHMA designation as SFAs. SFAs are the primary focus of this document and were derived from greater sage-grouse stronghold areas described by the USFWS in a memorandum to the BLM titled "Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes" (USFWS 2013). PHMA lands are defined as "BLM-administered lands identified as having the highest value to maintaining sustainable greater sage-grouse populations. Areas of PHMA largely coincide with areas identified as PACs in the USFWS's Conservation Objectives Team Report. These areas include breeding, late brood-rearing, winter concentration areas and migration or connectivity corridors" (USDI 2015).

Greater sage-grouse were historically found from 4,000 feet to over 9,000 feet in elevation in the Great Basin and Colorado Plateau regions. Early pioneer accounts mentioned that greater sage-grouse were present wherever there was sagebrush (Beck and Mitchell 1997). Historically, greater sage-grouse occurred in parts of 13 states within the western United States and three Canadian provinces (Schroeder et al. 2004). Greater sage-grouse populations have declined throughout much of their former range and have been extirpated from Nebraska and British Columbia (Schroeder et al. 2004). Since European settlement of the West began, the amount, distribution, and quality of sagebrush habitats and the greater sage-grouse populations that depend on them have declined. The 155.5 million acres of sagebrush that existed historically were reduced to 119 million acres by 2004 (Connelly et al. 2004). The loss of habitat is attributed to large-scale conversions to cultivated croplands or pastures, altered fire frequencies resulting in pinyon-juniper invasion at higher elevations and annual nonnative grass and noxious weed invasion at lower elevations, improper livestock grazing, herbicide use, chaining, crested wheatgrass seedings, mineral and energy development, and recreational activities related to urban growth and increased human populations (Manier et al. 2013; USFWS 2013a). Currently, sagebrush communities and greater sage-grouse continue to be at risk from multiple sources across multiple scales (Manier et al. 2013).

Greater sage-grouse are considered a sagebrush ecosystem-obligate species; they rely on sagebrush on a landscape level and on a micro-habitat scale. Obligate species are restricted to certain habitats or to limited conditions during one or more seasons of the year to fulfill their life requirements. Greater sage-grouse is a landscape-scale species inhabiting large, interconnected sagebrush plant communities. Greater sage-grouse are dependent on the presence of sagebrush for their survival (i.e., they are sagebrush obligate species). Despite management and research efforts that date to the 1930s, breeding populations of sage-grouse have declined 17 to 47 percent throughout much of their range (Connelly et al. 2000). Prior to 19th century European settlement, greater sage-grouse habitat covered 463,322 square miles while today, due to long-term population declines, they are absent from almost half of their estimated distribution prior to Euro-American settlement (Knick and Connelly 2011). Currently sage-grouse occupy only 56 percent of their historic range (Schroeder et al. 2004). A study by Doherty et al. (2016), found that on average, approximately half of the breeding population is predicted to be within 10 percent of the current occupied range, and 80 percent of populations were contained in 25-34 percent of the occupied range within each management zone (i.e., Southern Great Basin, Snake River Plain, Northern Great Basin, Wyoming Basin, and Northern Great Plains).

As a landscape-scale species, greater sage-grouse move between habitats seasonally and require contiguous winter, breeding, nesting, and summering habitats to sustain a population (Connelly et al.

2011). These habitat requirements increase their vulnerability to habitat loss, fragmentation and degradation from development, infrastructure, inappropriate grazing management, and other disturbances (Connelly et al. 2011). Seasonal movements of populations vary by the amount of sage-grouse habitat available and year-to-year conditions. Populations in areas with a large amount of contiguous habitat move longer distances than those in isolated habitats (Dahlgren et al. 2015). While greater sage-grouse exhibit site fidelity to seasonal habitats, current conditions dictate seasonal habitat selection (Connelly et al. 2004; Knick and Connelly 2011; Dahlgren et al. 2015). Should the condition of a seasonal habitat change from the previous year, greater sage-grouse, as a species, are highly adaptable in terms of shifting use to optimal habitats, though individuals may display different behavior (Dahlgren et al. 2015).

During winter, the availability of sagebrush above the snow determines species distribution. Availability of sagebrush above the snow is influenced by a variety of topographic factors (e.g., slope, aspect, elevation), environmental factors (e.g., wind speed, snow hardness), and vegetation characteristics (e.g., canopy cover, shrub height). At the onset of winter, greater sage-grouse move to areas with the proper characteristics for sagebrush availability. These movements may include moving to local microsites with suitable habitat, or may entail migrations of up to 100 miles (Knick and Connelly 2011).

In the spring and summer, greater sage-grouse use several types of habitats. During the breeding season in the spring, males will congregate at leks, the traditional strutting grounds, to perform courtship displays to attract females. Strutting grounds vary and can include old fire scars, sparse hillsides, or even rights of way. Lekking sites remain fairly consistent year-to-year and there is evidence that some leks have been in use for up to 130 years. In many populations, greater sage-grouse leks are associated with quality nesting habitat, but in others greater sage-grouse hens choose nesting locations without regard to lek locations.

The number of leks with some level of recorded male greater sage-grouse activity over the last 10 years (2006-2016) along with the most recent lek count data for each of the SFAs and by state is shown in Table 3-132. The lek count data is generally peak male attendance at a lek and can be reflective of the overall greater sage-grouse population in an area. The density of the leks and male sage-grouse at each lek varies from year to year. The location of these lek sites in each of the SFAs are presented in Figures 3-18 through 3-22.

Table 3-132. Lek Data within the SFAs and States

State/SFA	Leks	Most recent male counts based on sampling protocol
Idaho	517	8,249
Montana	63	1,862
Nevada	323	4,704
Oregon	147	3,737
Utah	13	256
Wyoming	28	1,523
Total	1,091	20,331
North-Central Idaho	277	4,114
Southern Idaho / Northern Nevada	425	6,972
North Central Montana	63	1,1862
SE Oregon/NC Nevada	225	3,428
Sheldon-Hart Mountain NWR Complex Area	63	2,215
Bear River Watershed Area	26	931
Southwestern/ South Central Wyoming	12	809
Total	**1,091**	**20,331**

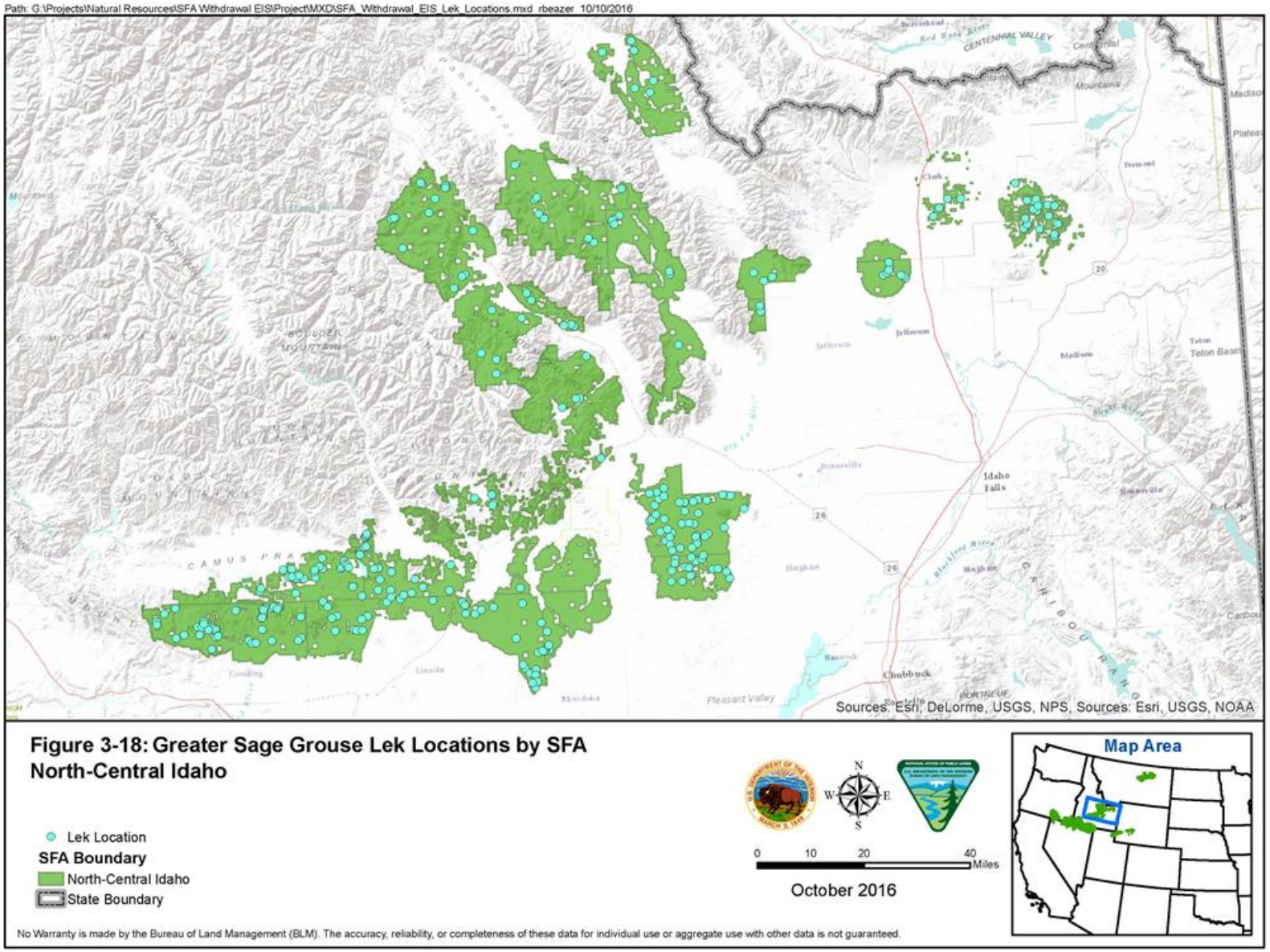

Figure 3-18. Lek Locations in the North-Central Idaho SFA

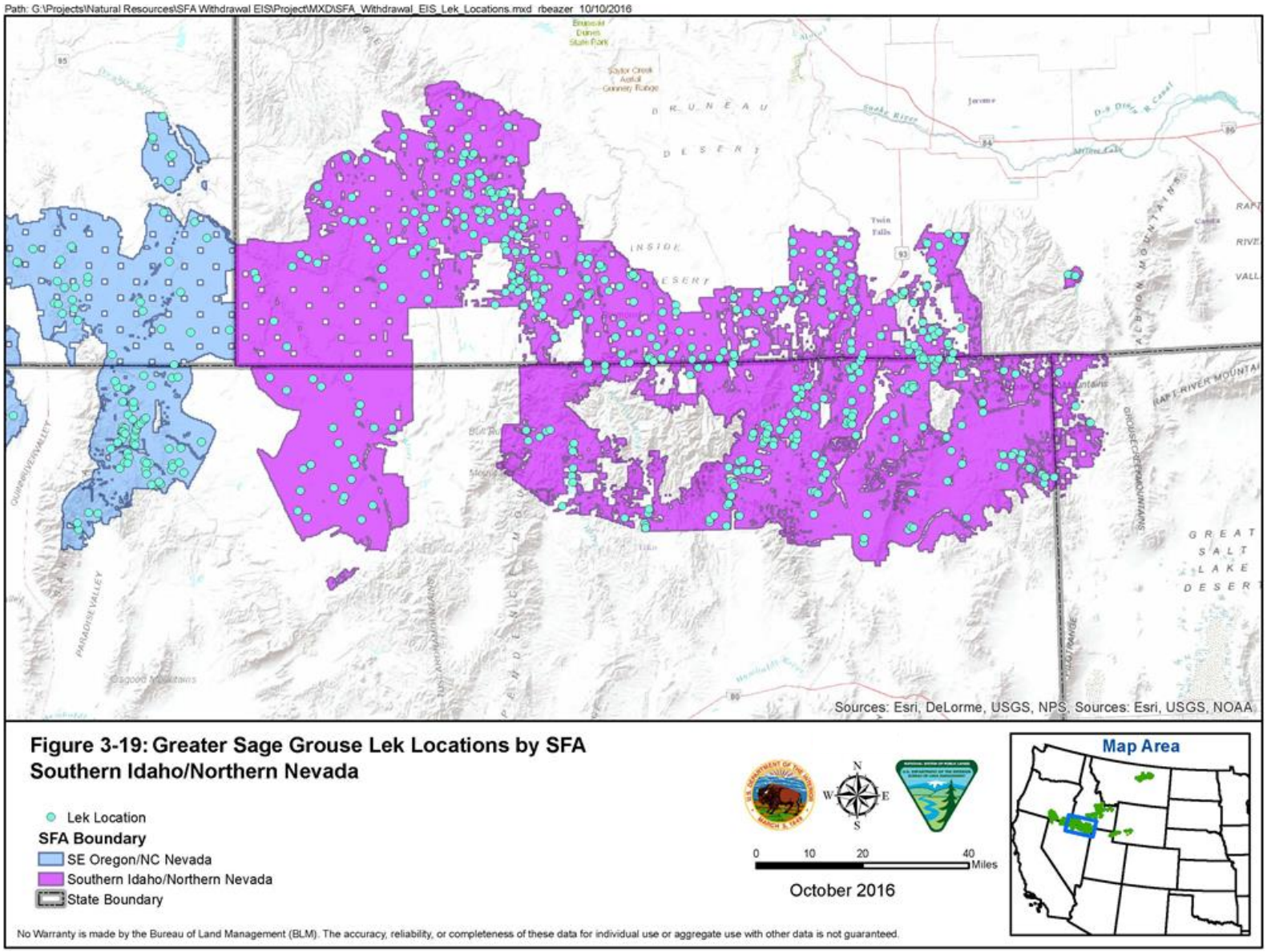

Figure 3-19. Lek Locations in the Southern Idaho/Northern Nevada SFA

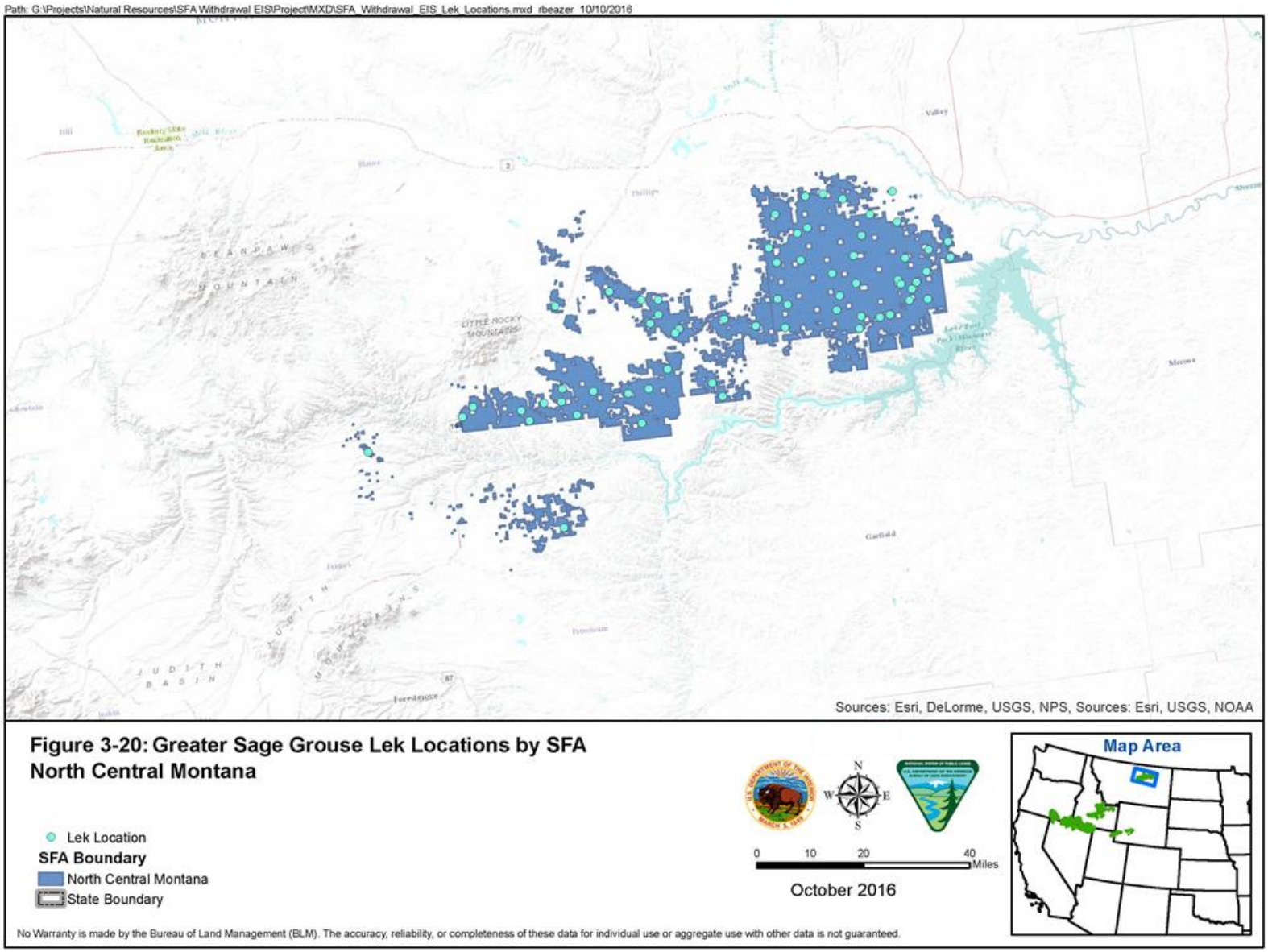

Figure 3-20. Lek Locations in the North Central Montana SFA

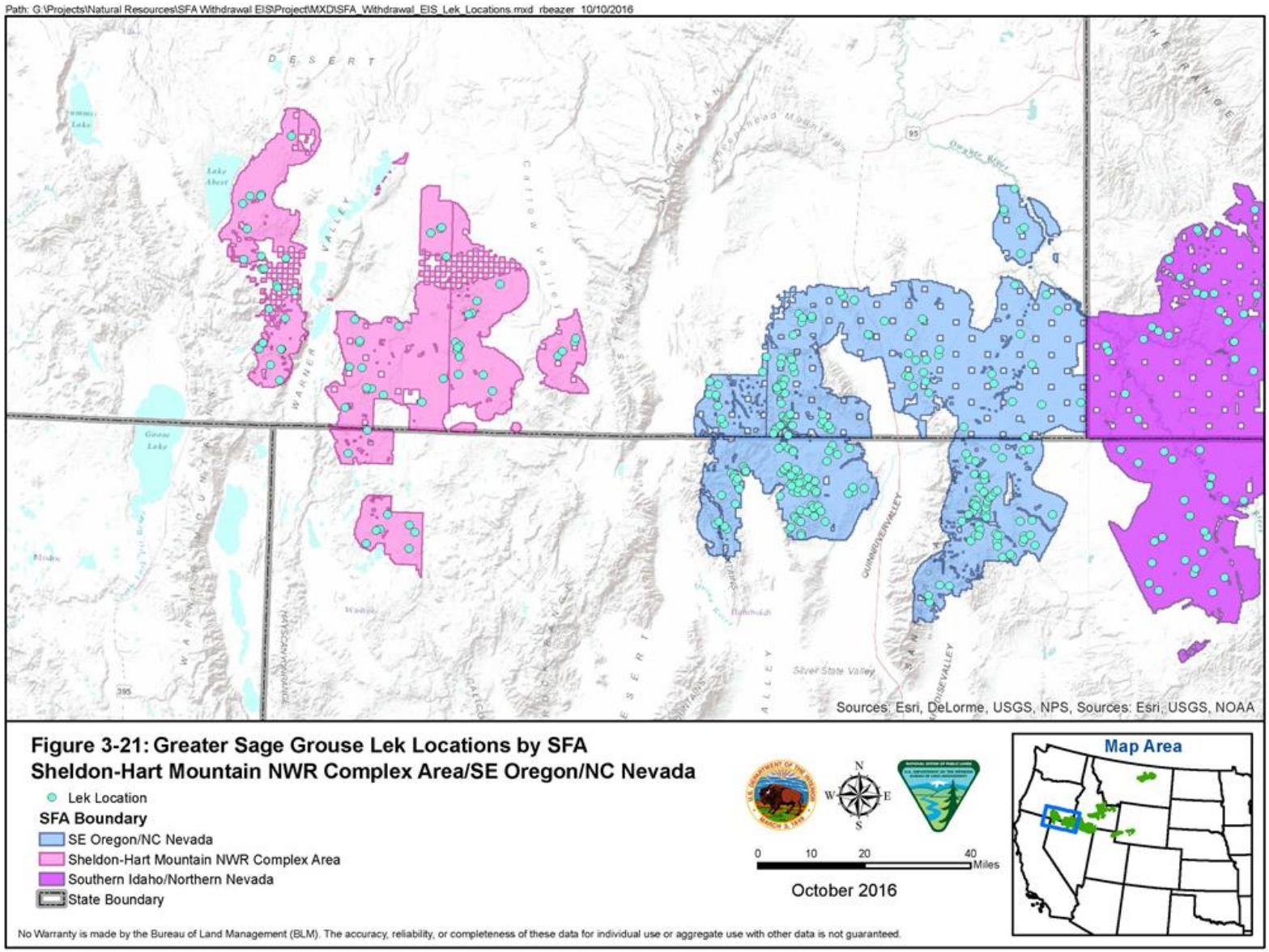

Figure 3-21. Lek Locations in the Sheldon-Hart Mountain NWR Complex Area and SE Oregon/NC Nevada SFAs

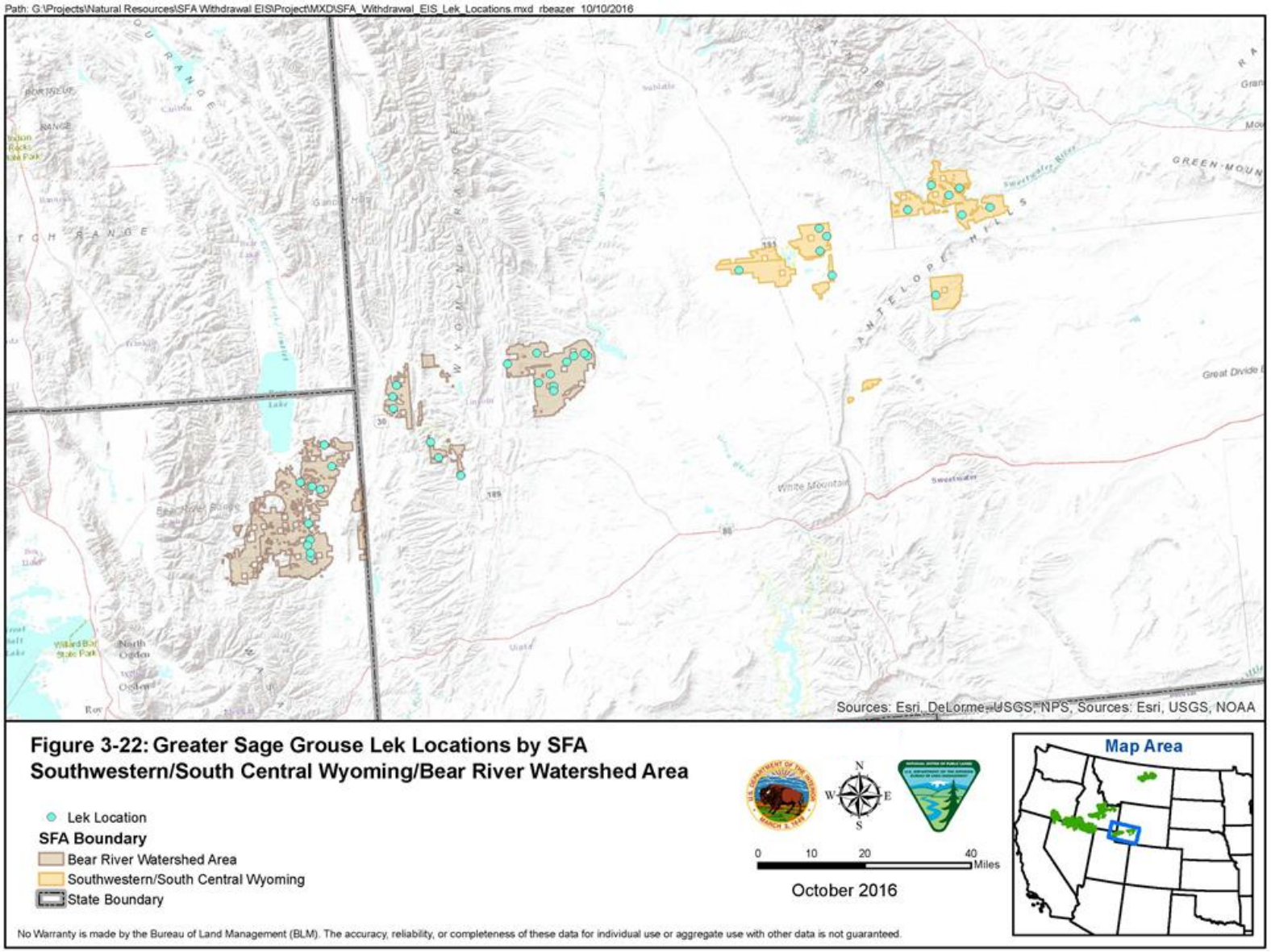

Figure 3-22. Lek Locations in the Southwestern/South Central Wyoming and Bear River Watershed Area SFAs

Productive nesting areas are typically characterized by sagebrush with an understory of native grasses and forbs, with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while incubating eggs (Gregg et al. 1994; Connelly et al. 2000; Connelly et al. 2004; Connelly et al. 2011a). Hens with successful nests select for areas with relatively less sagebrush cover, taller grass, greater forb cover, and greater grass cover than random locations to raise their broods. The proximity, configuration, and abundance of nesting habitat are key factors influencing lek locations (Connelly et al. 1988; Connelly et al. 2011a). These areas provide greater sage-grouse chicks with insects and forbs, which are the primary components of their diets. Shrub canopy and grass cover provide concealment for greater sage-grouse nests and for chicks which is critical for reproductive success (Barnett and Crawford 1994; Gregg et al. 1994; Connelly et al. 2004). As vegetation in these areas desiccates (further into the summer), brood rearing sage-grouse, and sage-grouse without broods, move to riparian or higher elevation areas where succulent vegetation is still available (Knick and Connelly 2011).

Greater sage-grouse gradually move from sagebrush uplands to more mesic areas (moist areas, such as streambeds or wet meadows) during the late brood-rearing period (three weeks post hatch) in response to summer desiccation of herbaceous vegetation in the sagebrush uplands (Connelly et al. 2000). Summer use areas include sagebrush habitats as well as riparian areas, wet meadows, and alfalfa fields that provide an abundance of forbs and insects for both hens and chicks (Schroeder et al. 1999). Forbs and insects are essential nutritional components for chicks (Klebenow and Gray 1968; Connelly et al. 2004; Thompson et al. 2006). Late brood-rearing habitats are often associated with sagebrush, but selection is based on the availability of forbs, correlated to a shift in the diet of chicks as they mature (Connelly et al. 1988 and references therein; Connelly et al. 2011a).

In the fall, sage-grouse transition between summer habitats and winter habitats. The timing of this transition depends largely on the weather in a particular year. Greater sage-grouse generally remain in summer habitat until plant phenology or frost eliminates the succulent vegetation they consume during the summer. At this time, they move to their winter habitat and transition their diet to mostly sagebrush (Knick and Connelly 2011). In the winter, greater sage-grouse select winter- use sites based on snow depth and topography, and snowfall can affect the amount and height of sagebrush available to grouse.

Proximate reasons for population declines differ across the greater sage-grouse distribution, but ultimately, the underlying cause is loss, fragmentation, and/or degradation of suitable sagebrush habitat. The quality and quantity of pristine sagebrush habitat has declined over the last 50 years to the extent that little pristine sagebrush habitat undisturbed by human activity remains (Connelly et al. 2000; Miller and Eddleman 2001; Schroeder and Baydack 2001; Aldridge and Brigham 2003; Pedersen et al. 2003; Connelly et al. 2004; Schroeder et al. 2004; Leu and Hanser 2011).

Greater sage-grouse persistence is linked to functioning sagebrush-steppe habitats. The vast landscapes this species occupies can range in size from 1 to 50s of square miles to provide all of the greater sage-grouse life requirements for habitat use (Beever and Aldridge 2011; Connelly et al. 2011; Connelly et al. 2011a; Leu and Hanser 2011). Sagebrush patch size requirements are poorly understood because of the behavioral complexity of the species (e.g., migratory or resident population), local variability of ecological sites, and quality and quantity of sagebrush and herbaceous understory. Sagebrush ecosystems vary in plant species composition (shrubs, perennial grasses, and forbs), which provide food, cover, and nesting habitat (Connelly et al. 2000). General habitat characteristics for rangelands supporting greater sage-grouse have been developed by Braun et al. 1977 and later updated by Connelly et al. 2000. These parameters require local consideration of sagebrush shrub cover, annual precipitation, herbaceous understory and soils (Connelly et al. 2000). Greater sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder et al. 2004, Connelly et al. 2011b) especially with big sagebrush (e.g., Wyoming big sagebrush, mountain big sagebrush, and basin big sagebrush) (Braun et al. 1976; Connelly et al. 2000; Connelly et al. 2004; Miller et al. 2011).

Greater sage-grouse populations have been found to be both non-migratory and migratory in their spatial and temporal distribution. Non-migratory populations often move 5 to 6 miles between seasonal habitats and use home ranges no more than 40 square miles in size while annual movements of migratory populations may be 9 to 60 miles and have home ranges that cover hundreds of square miles. Because greater sage-grouse use almost exclusively sagebrush habitat for all of their activities, actions to limit further disturbance or fragmentation to this habitat is desired. Conservation of sagebrush within an 11-mile radius of leks has been recommended to maintain the locations used for nesting and early brood-rearing by migratory greater sage-grouse populations (Connelly et al. 2000; Holloran et al. 2005).

Fish and Aquatic Resources

BLM and Forest Service have identified sensitive fish species that are present within the analysis area; these species consist primarily of cold-water species. Native fish species consist primarily of salmonids, sculpin, and minnows, and suckers. Aquatic habitat within the analysis area includes perennial and intermittent streams, springs, lakes, and reservoirs that support fish during at least a portion of the year. The climate throughout the analysis area is generally arid, with runoff being dominated by spring snowmelt. Summer flows are provided by snowmelt, subsurface storage, and thunderstorm events. The quality and condition of aquatic habitat is often influenced by upland and riparian processes. Uplands influence aquatic habitat primarily through hydrologic processes. For example, impacts on uplands, such as compaction, that reduce water infiltration have the potential to reduce the amount of groundwater being released into streams. Water in compacted areas can pond on the surface and be lost into the atmosphere through evaporation or be delivered rapidly to channels during high flows. The amount of water and whether it enters stream channels via surface flow or subsurface flow can have a significant effect on sediment delivery and deposition, streamside vegetation, and water quality. Riparian areas influence aquatic habitat more directly due to their proximity to water. For example, riparian vegetation shades streams from solar radiation which reduces increases in water temperature, and provides organic material to streams which act as a food source for aquatic macroinvertebrates. Well-vegetated floodplains dissipate energy of flood flows, provide velocity refugia for juvenile and adult fish during flood events, filter sediment during floods, and store water for release during lower flows. Fine sediment deposition within the substrate; and water quality, including, temperature, turbidity, and dissolved oxygen affect fish and fish habitat. Due to the isolated or specialized regions associated with many of these species, potential impacts are better addressed on a case-by-case basis during the evaluation of operation plans for each individual mine location, where impacts to water quality and specific design features to protect water quality would be analyzed and discussed.

3.7.2 Migratory Birds

There are more than 900 species of birds that occur regularly in North America, of which approximately 400 can be found in the SFA boundaries of the six states at one time or another throughout the year. Many of these birds regularly breed within the six states, whereas a handful occurs in the states only in the winter or during migration. Approximately half of the breeding bird species that could occur within the SFAs are considered migrants – that is, they come to the states only to nest and raise their young. Many of the well-known passerine songbirds, flycatchers, vireos, swallows, thrushes, warblers, and hummingbirds, as well as raptors, fall in this category. These species may spend their winters in states to the south (e.g., California, Arizona, and Texas) or may travel thousands of miles to countries in Central and South America, during annual migrations. Species traveling south of the U.S.-Mexico border are called Neotropical migratory birds and are of particular interest to ornithologists because so many of them are experiencing significant population declines. Due to these declines, a number of birds within the SFAs have been classified as priority species for conservation. These species are also protected by the Migratory Bird Treaty Act of 1918, as amended. Under EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, federal agencies are responsible for implementing the provisions of the

Migratory Bird Treaty Act by promoting conservation principles and management practices in agency activities. Federal agencies must ensure that federal actions are evaluated for potential impacts on migratory birds.

A MOU (BLM MOU WO-230-2010-04) between the BLM and USFWS provides management direction to promote the conservation of migratory bird species. Similarly, the Forest Service also has a memorandum of understanding with USFWS (Forest Service Agreement #08-MU-1113-2400-264) for the same purpose. The BLM and Forest Service memoranda of understanding provide direction for evaluating the effects of the agencies' actions on migratory birds through the NEPA process. This includes identifying potential measurable negative effects on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. In such situations, the BLM or Forest Service would implement approaches to lessen impacts. The 1988 amendment to the Fish and Wildlife Conservation Act mandates that the USFWS "identify species, sub species, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The USFWS's Birds of Conservation Concern 2008 is the most recent effort to carry out that mandate. It identifies those species in greatest need of conservation action in specific geographic bird conservation regions as emphasized with the issuance of EO 13186. Expansion of funding opportunities under the North American Wetlands Conservation Act and other partnership opportunities through the North American Bird Conservation Initiative will support increased management consideration for these species.

The land bird initiative known as Partners-In-Flight has developed a series of bird conservation plans for every state. Partners-In-Flight has gained wide recognition as a leader in the land bird conservation arena. Partners-In-Flight Bird Conservation Regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. Bird Conservation Regions are a hierarchical framework of nested ecological units delineated by the Commission for Environmental Cooperation. The overall goal of these Bird Conservation Regions is to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent the federal agencies highest conservation priorities by ecoregions. Lists for the Bird Conservation Regions are updated every five years by the USFWS.

Portions of the SFAs associated with the proposed withdrawal are located within Region 9 Great Basin, Region 10 Northern Rockies, and Region 16 Southern Rockies/Colorado Plateau, and Region 17 Badlands and Prairies. The USFWS Birds of Conservation Concern identifies nongame birds, gamebirds without hunting seasons, as well as ESA candidate, proposed threatened or endangered, and recently delisted birds (USFWS 2008). Many raptor species, including a wide variety of hawks (*Buteo* spp.) as well as bald and golden eagles, inhabit the analysis area permanently or as migrants. Bald eagles inhabit many greater sage-grouse population areas throughout the analysis area and may be found in greater sage-grouse habitat. Bald eagles and golden eagles are recognized as a sensitive species by the BLM, Forest Service, and the States of Idaho, Utah, Nevada, Oregon, and Montana. Bald eagles prefer to nest in tall trees close to open bodies of water with access to fish and waterfowl. Bald eagles are known to use sagebrush habitats such as deer winter range, where they often forage for deer and other mammal carcasses during winter months and to a lesser extent throughout the year. Golden eagles are the primary avian predators of greater sage-grouse; hawks also prey on greater sage-grouse (Boyko et al. 2004; Dinkins et al. 2012). In addition, bald eagle and golden eagle, which are both migratory species, occur within the proposed withdrawal area. Both are afforded added protection under the Bald and Golden Eagle Protection Act (16 USC 668–668c).

Numerous migratory bird species occur within the boundaries of the proposed withdrawal area. Many of the species classified as BLM and Forest Service sensitive species are also classified as migratory (e.g., black-throated sparrow, Brewer's sparrow, burrowing owl, grasshopper sparrow, juniper titmouse,

loggerhead shrike, pinyon jay, sage sparrow, sage thrasher). The smaller passerine and songbird species migrate from winter habitat in the southwest United States, Mexico, and South America to breed, nest, and raise their young in sagebrush and shrub habitats found within the analysis area.

3.7.3 General Wildlife Species

Big Game Species

Big game, including elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*), are among the species that use habitat in the analysis area. These and other big game species such as white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), and bighorn sheep (*Ovis canadensis*) are supported by the diversity of habitat and availability of essential resources throughout the analysis area. The success of big game species can be attributed to habitat conditions, the availability of resources, and the level of human disturbance activities. There are critical periods during an animal's life cycle when they are particularly vulnerable to disturbances related to human activities. Degradation or unavailability of habitat will lead to significant declines in carrying capacity and/or numbers of wildlife species in question.

Big game winter range is an example of important habitat and represents the area where deer, elk, pronghorn, and other big game animals spend the snowy, cold winter months. Big game animals migrate from summer and fall ranges to winter ranges, which are usually found at low elevations where cover, food, and security are available and conditions are less harsh than in other areas. Although it is the most important seasonal range that big game occupies during the year, it is usually the most limited in size of all the seasonal ranges (Vore 2012). Winter range can shift locations in different years, depending on weather and other factors. The use of winter range can also vary from year to year for a variety of reasons including annual variations in habitat quality, animal population fluctuations, and winter severity that concentrates animals differently from year to year. Habitat quality can vary because of things such as slope, aspect, elevation, and vegetation and winter conditions like snow depth, wind, and temperature. The vegetation can vary due to fires, logging, weed infestations, forest encroachment or succession, etc. Animal populations themselves go up and down because of hunting by humans, predators, diseases, weather, natural population cycles, and other reasons. Winter severity markedly affects the number of animals using a winter range and often determines whether animals will be spread out over the landscape or concentrated within a small "core" or "critical" winter range area (Vore 2012).

Although winter range is often further classified into "critical" or "crucial" winter range to separate it from seasonal winter range areas, the use and application of this terminology is not consistent across state wildlife departments. Therefore, seasonal winter big game range in its broadest sense is presented in this analysis. Table 3-133 displays the acres of winter big game habitat for mule deer, elk, and pronghorn that is present within the analysis area by SFA and by state. Figures 3-23 through 3-27 display designated big game winter habitats within the analysis area.

Although less important than winter range, primarily because there is more of it, big game are also vulnerable in parturition areas where lambing, fawning and calving occurs. These are the areas that mothers tend to their young by providing food resources and protection from predators. These areas are often located in migration corridors or in seasonal summer ranges. They tend to be much more abundant and spread out than winter ranges but are also susceptible to encroachment by humans and development. Like winter range, the distribution and use of summer ranges can vary by year for a variety of reasons including annual variations in habitat quality, animal population fluctuations, and winter severity that delays snowmelt in summer use areas. Table 3-134 and Figures 3-28 through 3-32 display the acres and location of seasonal summer big game habitat within the analysis area.

Table 3-133. Big Game Winter Habitat (acres) within the SFAs and States in the Analysis Area

SFA / Species	North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/ NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/ South Central Wyoming
Mule deer	745,522	1,451,931	585,722	416,553	290,460	182,298	31,372
Elk*	1,049,401	464,626	230,345	0	22,674	195,287	44,183
Pronghorn**	N/A	82,904	505,801	19,114	N/A	85,369	63,340
State / Species	**Idaho**	**Montana**	**Nevada**	**Oregon**	**Utah**	**Wyoming**	**Total**
Mule deer	1,640,631	585,722	613,785	603,174	123,986	136,559	3,703,857
Elk*	1,049,401	230,345	397,784	22,674	163,662	144,797	2,008663
Pronghorn**	N/A	505,801	102,018	N/A	23,837	124,872	756,529

*There was no winter elk data for southern Idaho at the time of the analysis
**There was no winter pronghorn data for Oregon and Idaho at the time of analysis.

Table 3-134. Big Game Summer Habitat (acres) within the SFAs and States in the Analysis Area

SFA / Species	North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/ NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/ South Central Wyoming
Mule deer	101,876	589,282	302,139	226,161	32,218	146,968	56,601
Elk	137,436	669,055	165,385	N/A	N/A	69,299	43,833
Pronghorn	N/A*	1,473,155*	378,242	492,541	116,557	187,350	145,651
State / Species	**Idaho**	**Montana**	**Nevada**	**Oregon**	**Utah**	**Wyoming**	**Total**
Mule deer	164,844	302,139	761,904	N/A**	112,356	114,003	1,455,245
Elk	137,436	165,385	602,213	N/A**	123,713	56,261	1,085,008
Pronghorn	N/A*	378,242	2,071,568	N/A**	125,924	217,762	2,793,496

*There was no summer pronghorn data for Idaho or summer elk data for southern Idaho at the time of the analysis.
**There was no summer big game data for Oregon at the time of analysis.

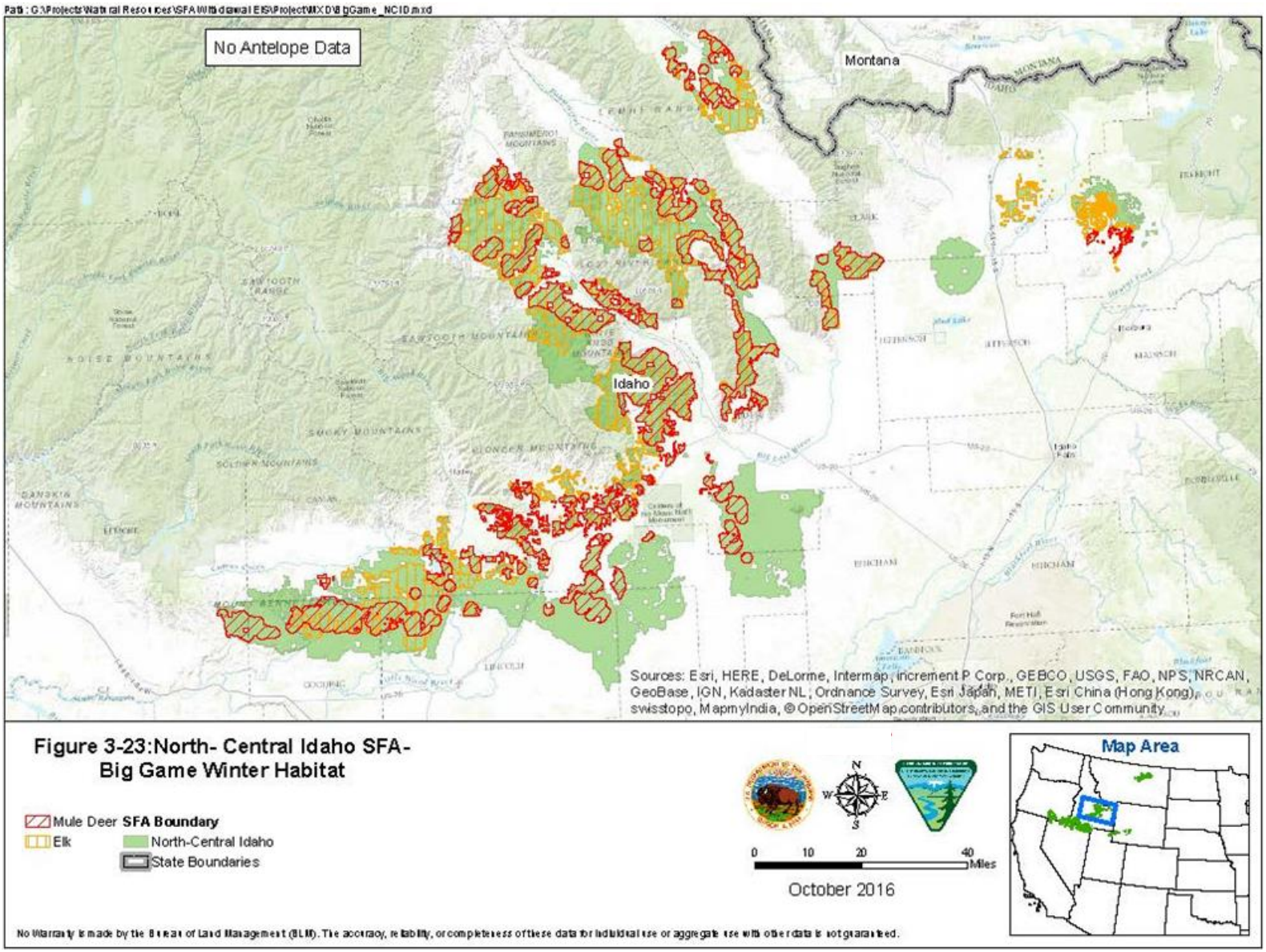

Figure 3-23. Big Game Winter Range in the North-Central Idaho SFA

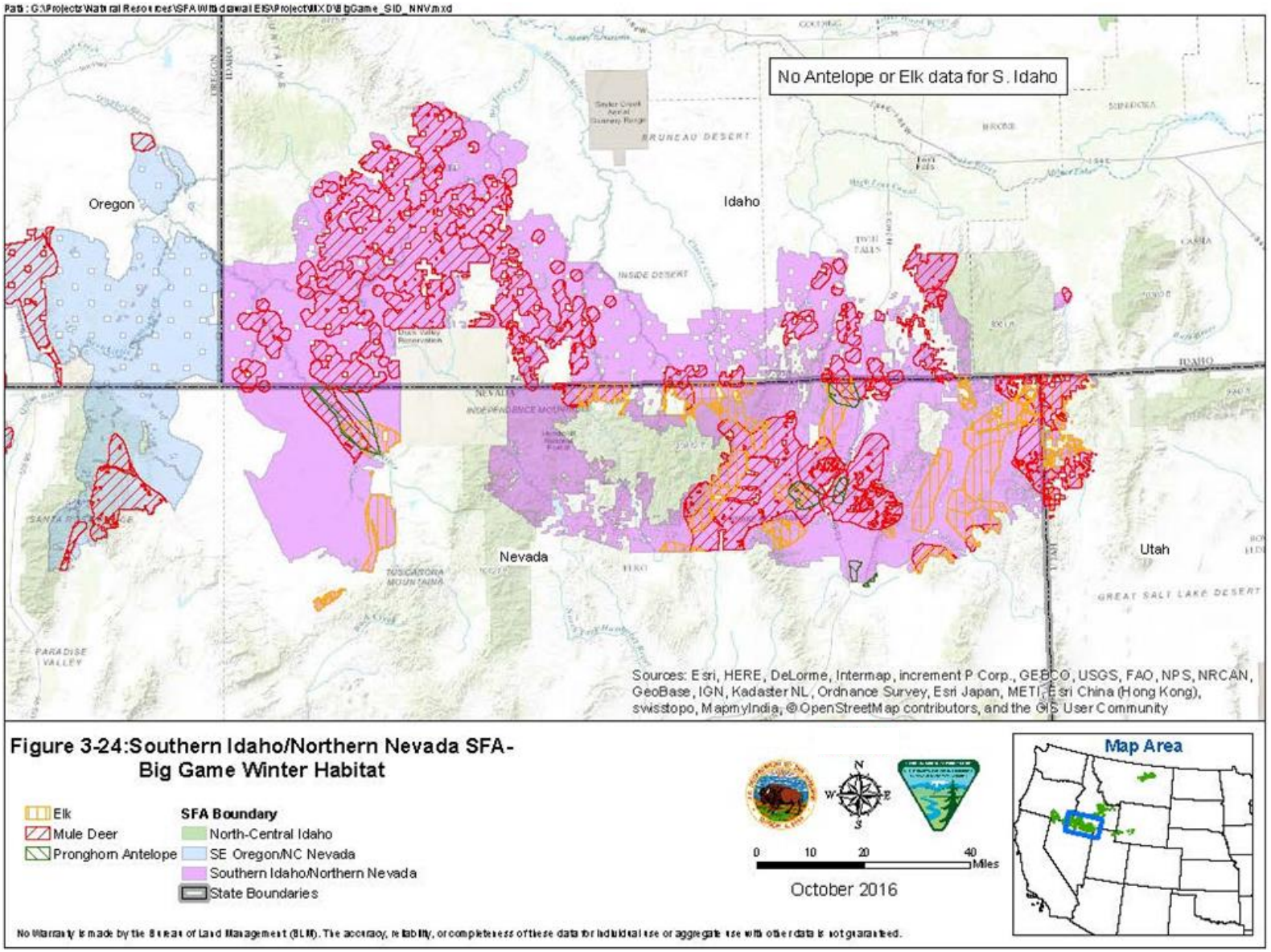

Figure 3-24. Big Game Winter Range in the Southern Idaho/Northern Nevada SFA

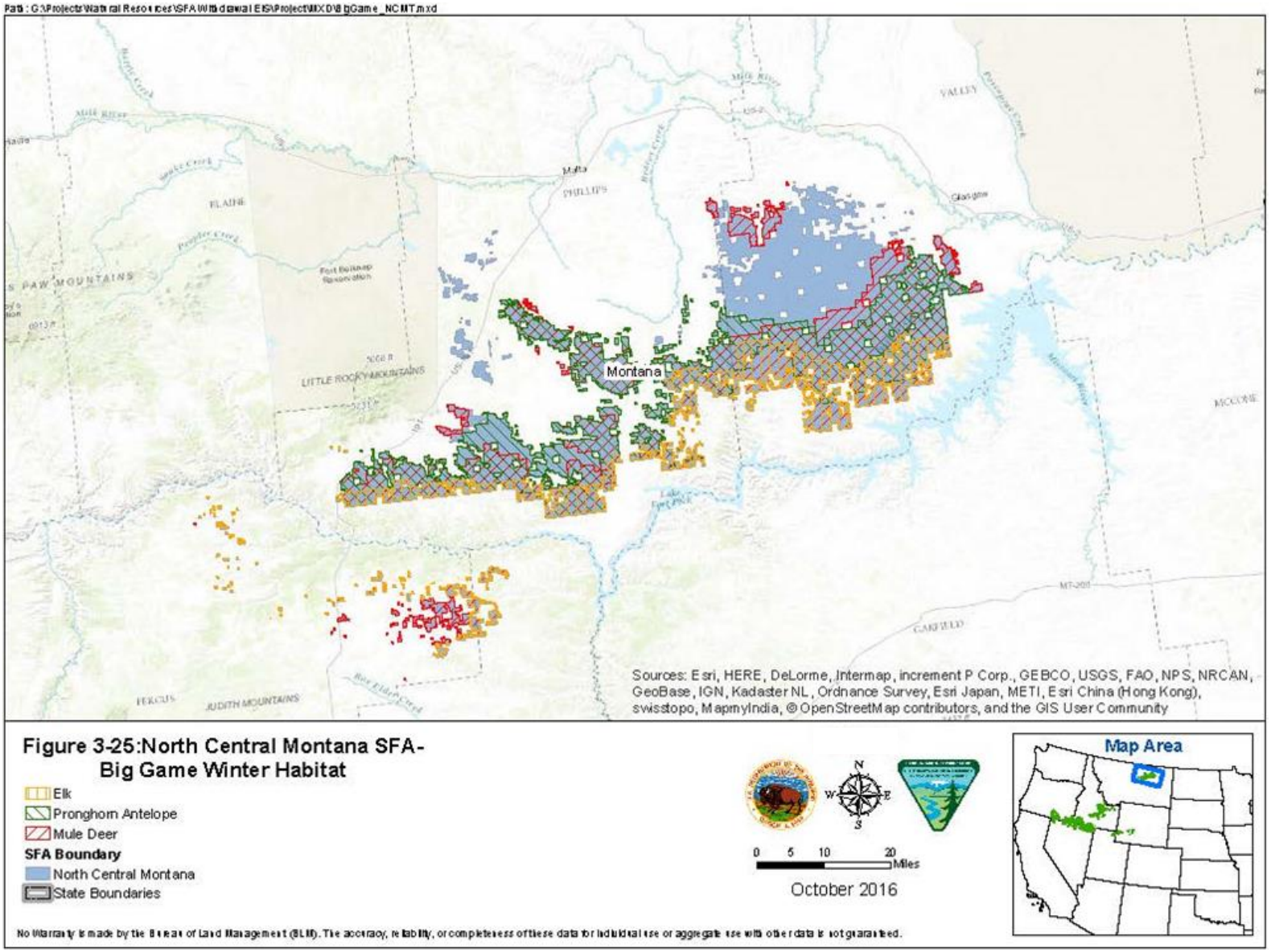

Figure 3-25. Big Game Winter Range in the North Central Montana SFA

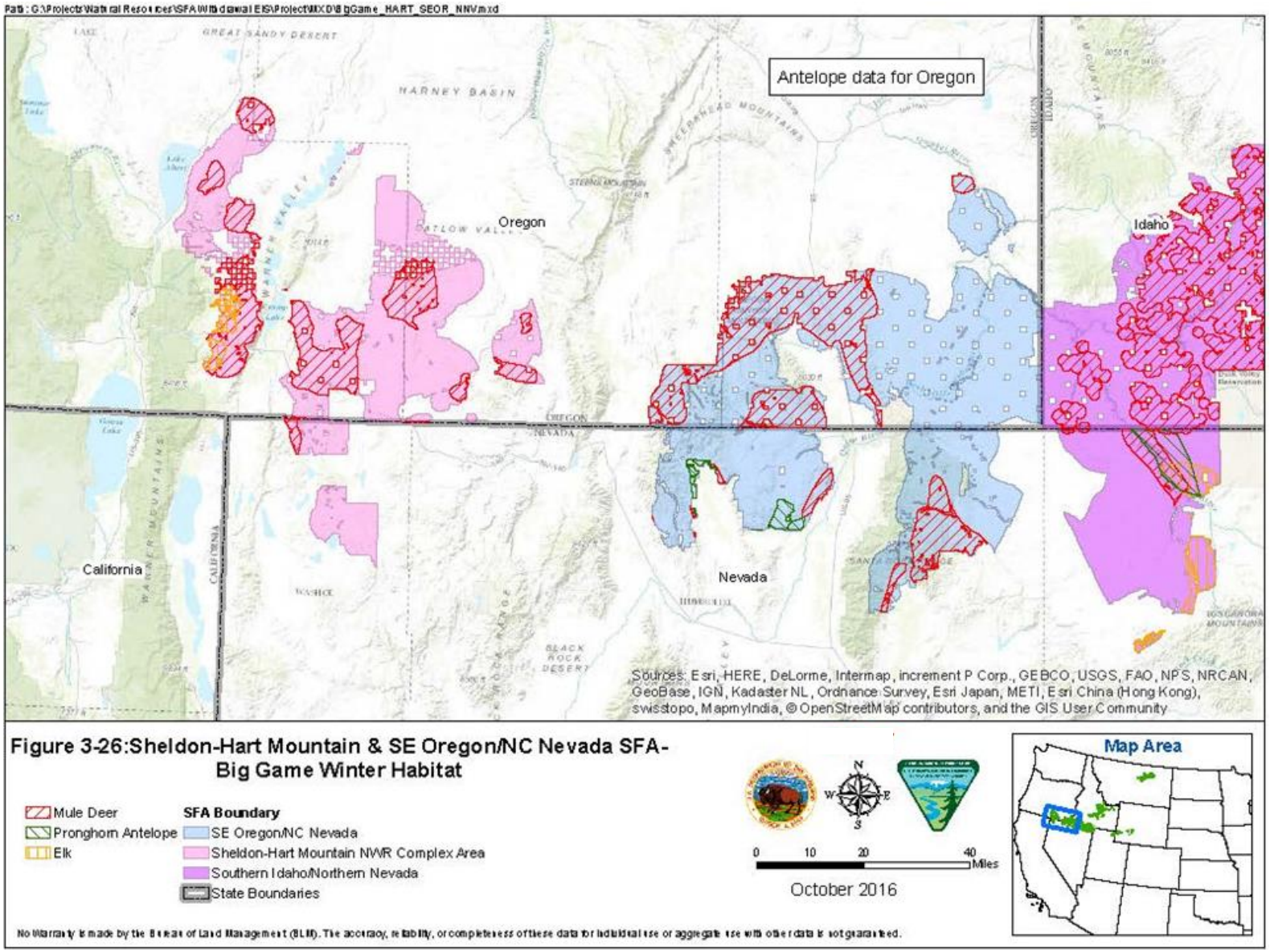

Figure 3-26. Big Game Winter Range in in the Sheldon-Hart Mountain NWR Complex Area and SE Oregon/NC Nevada SFAs

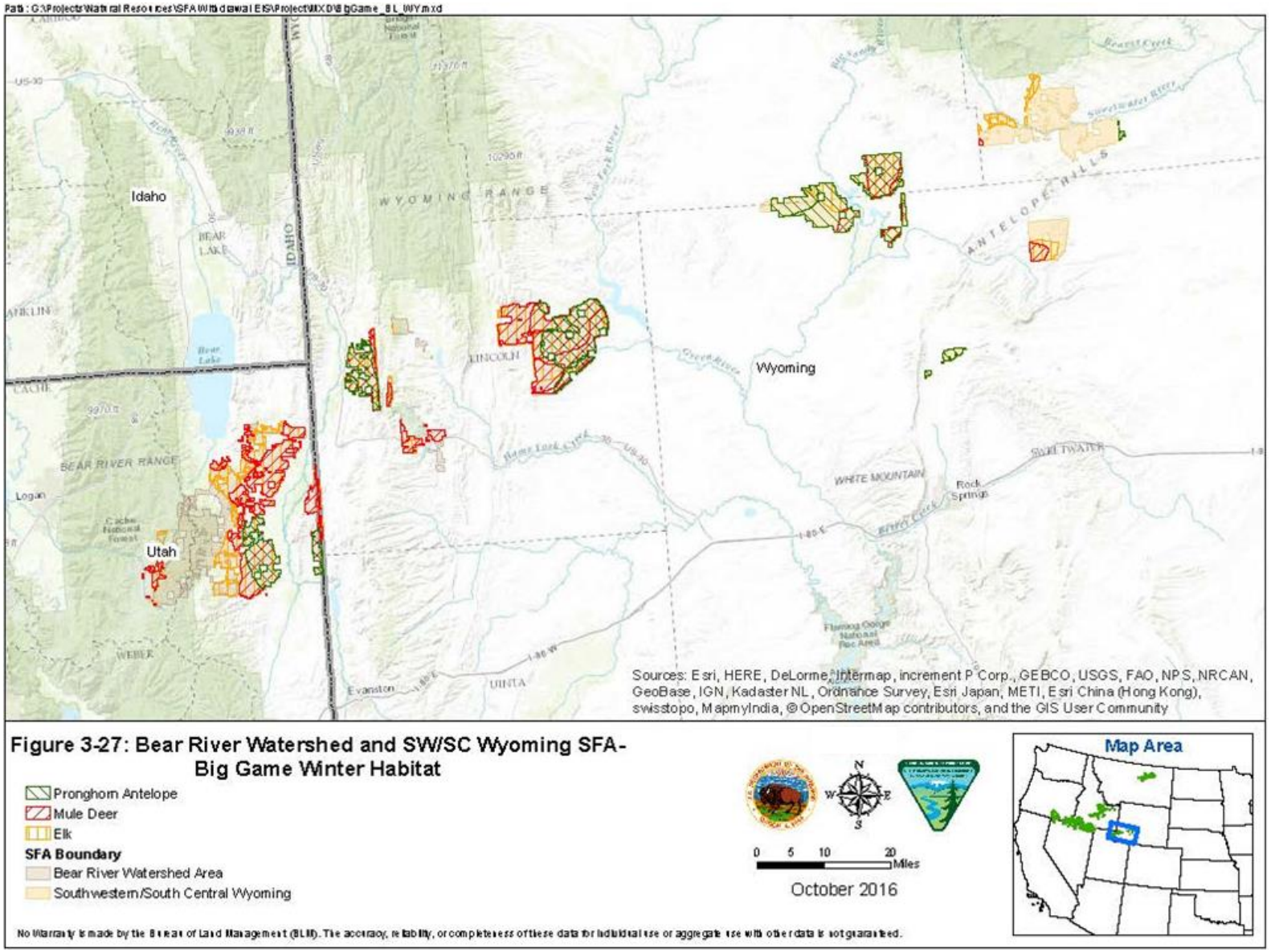

Figure 3-27. Big Game Winter Range in the Southwestern/South Central Wyoming and Bear River Watershed Area SFAs

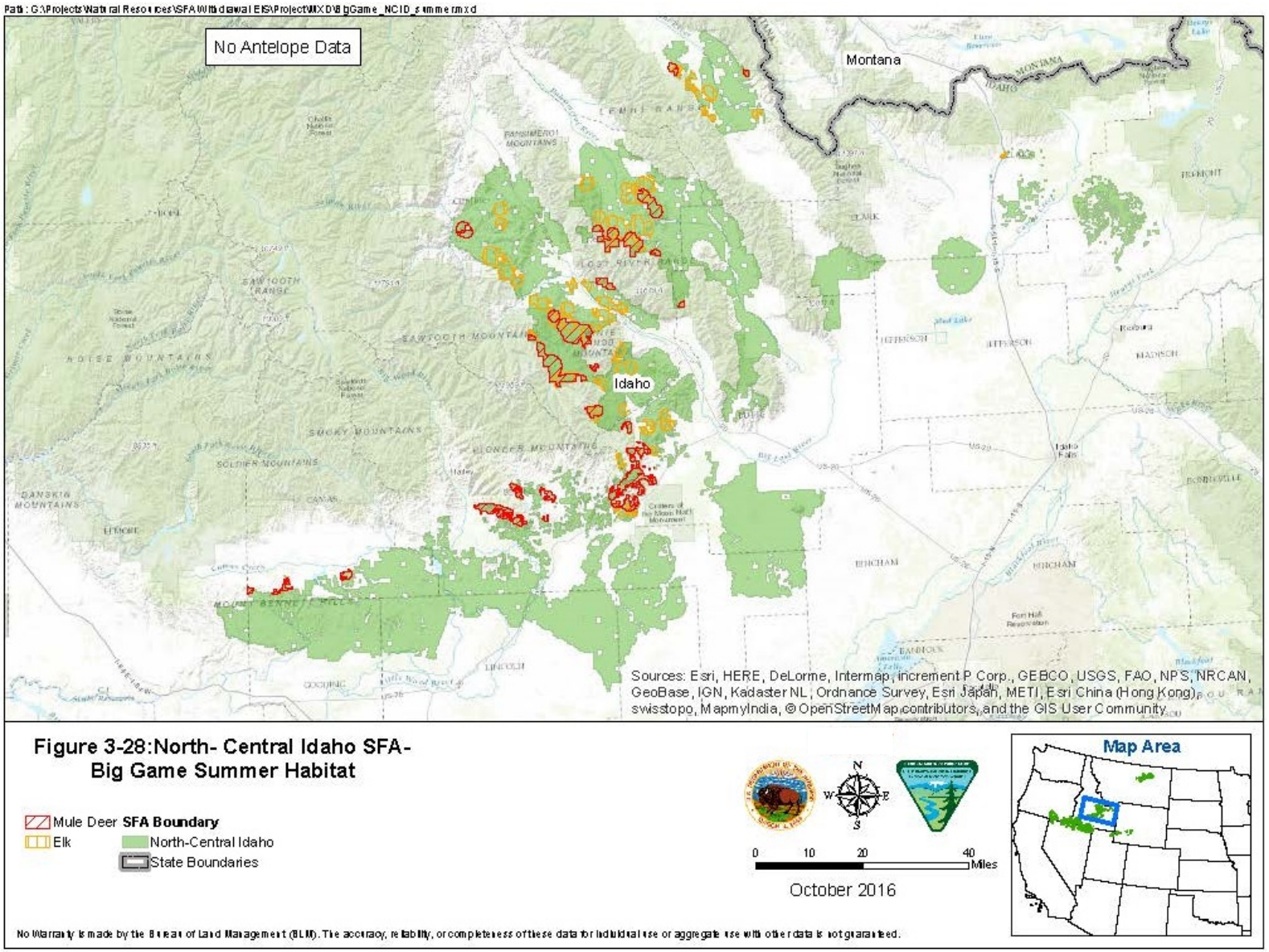

Figure 3-28. Big Game Summer Range in the North-Central Idaho SFA

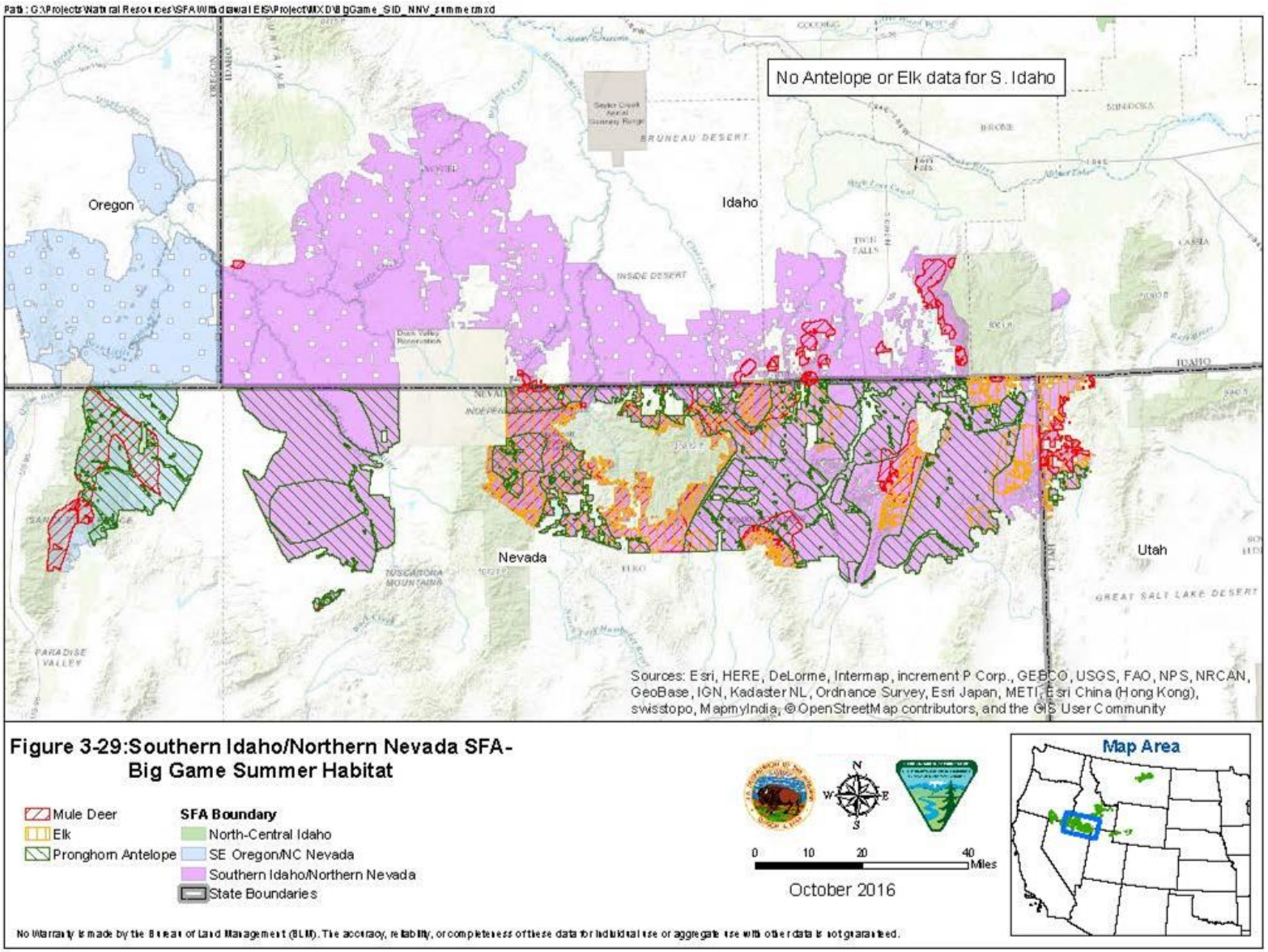

Figure 3-29. Big Game Summer Range in the Southern Idaho/Northern Nevada SFA

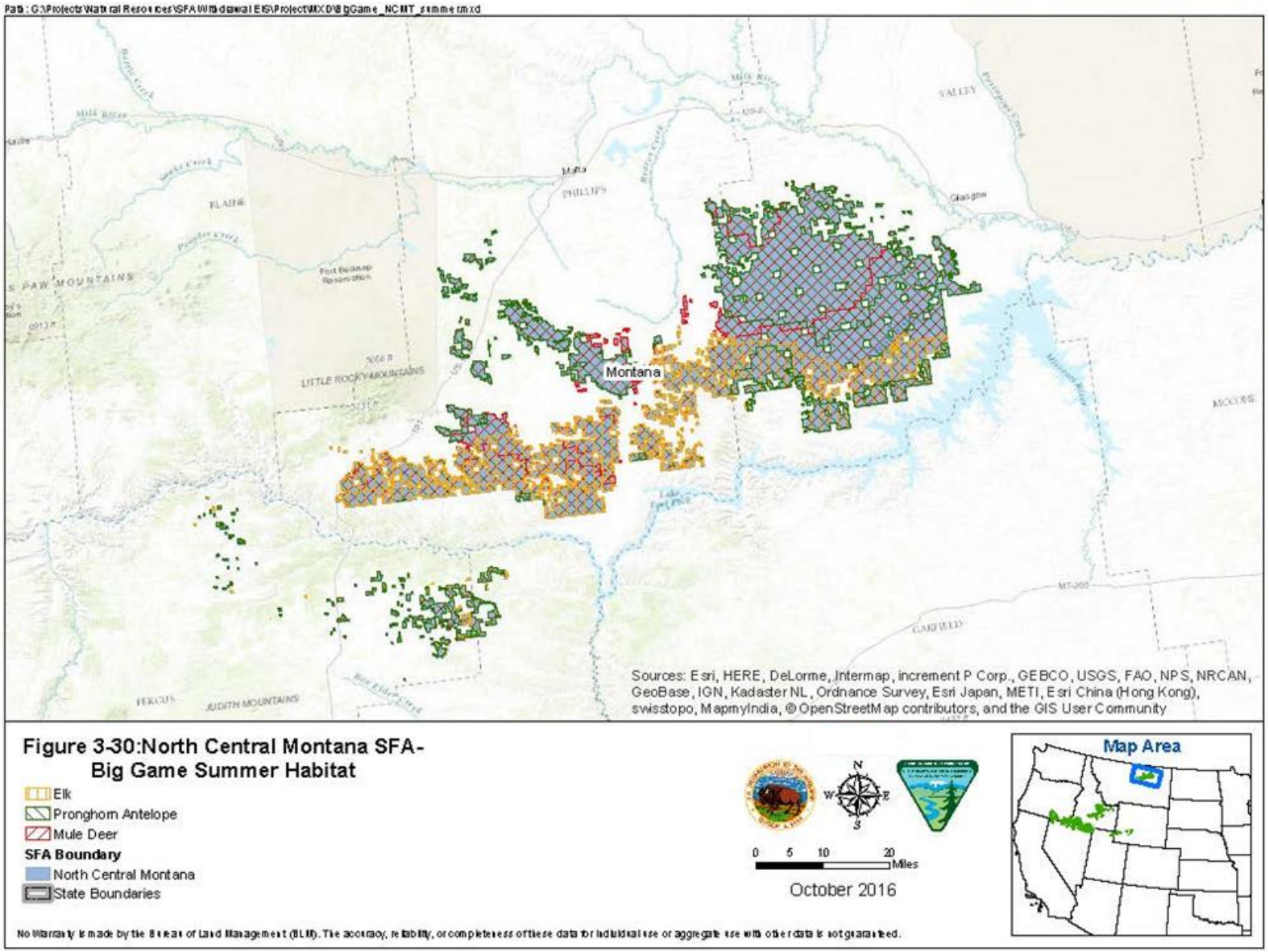

Figure 3-30. Big Game Summer Range in the North Central Montana SFA

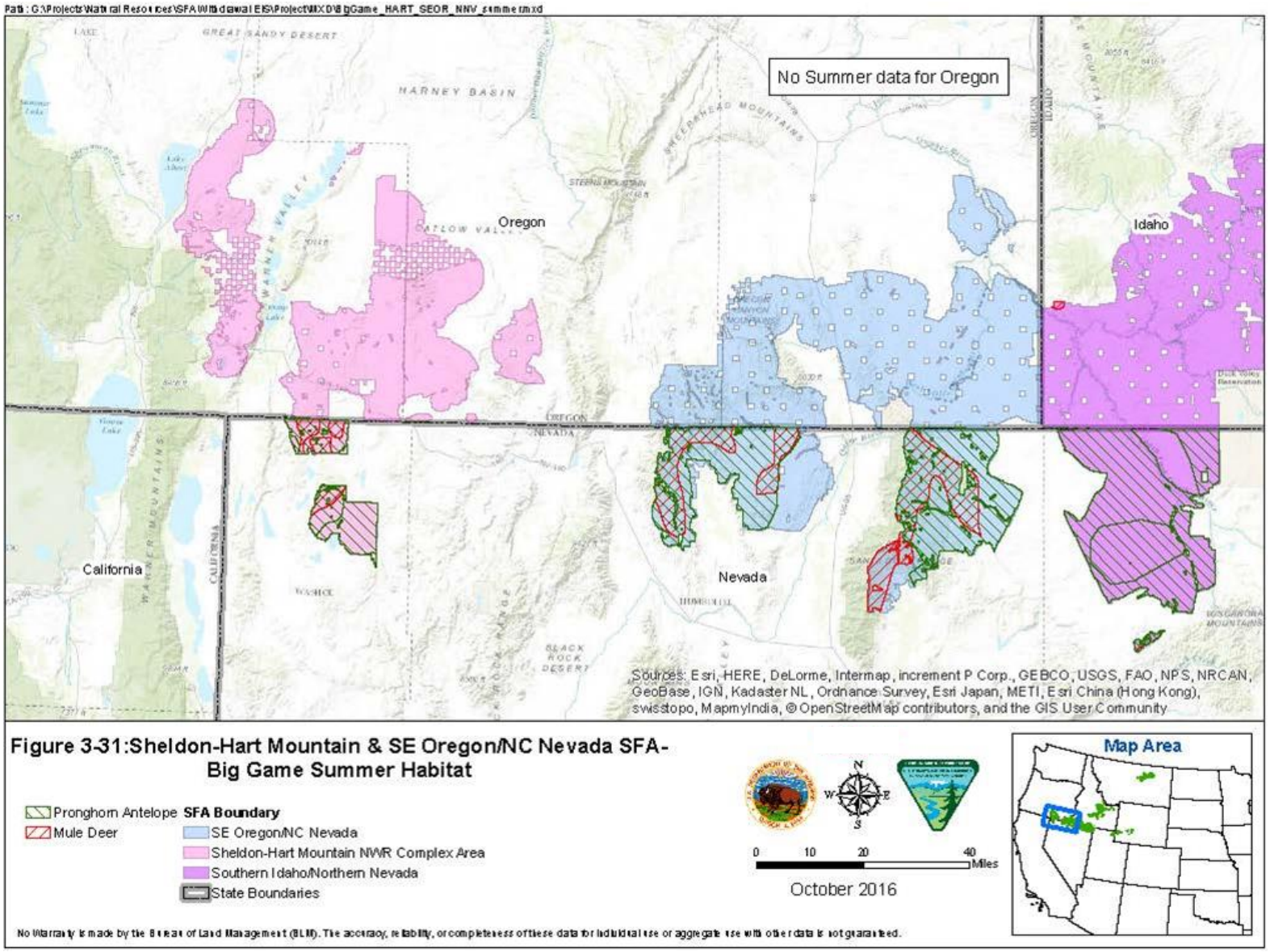

Figure 3-31. Big Game Summer Range in in the Sheldon-Hart Mountain NWR Complex Area and SE Oregon/NC Nevada SFAs

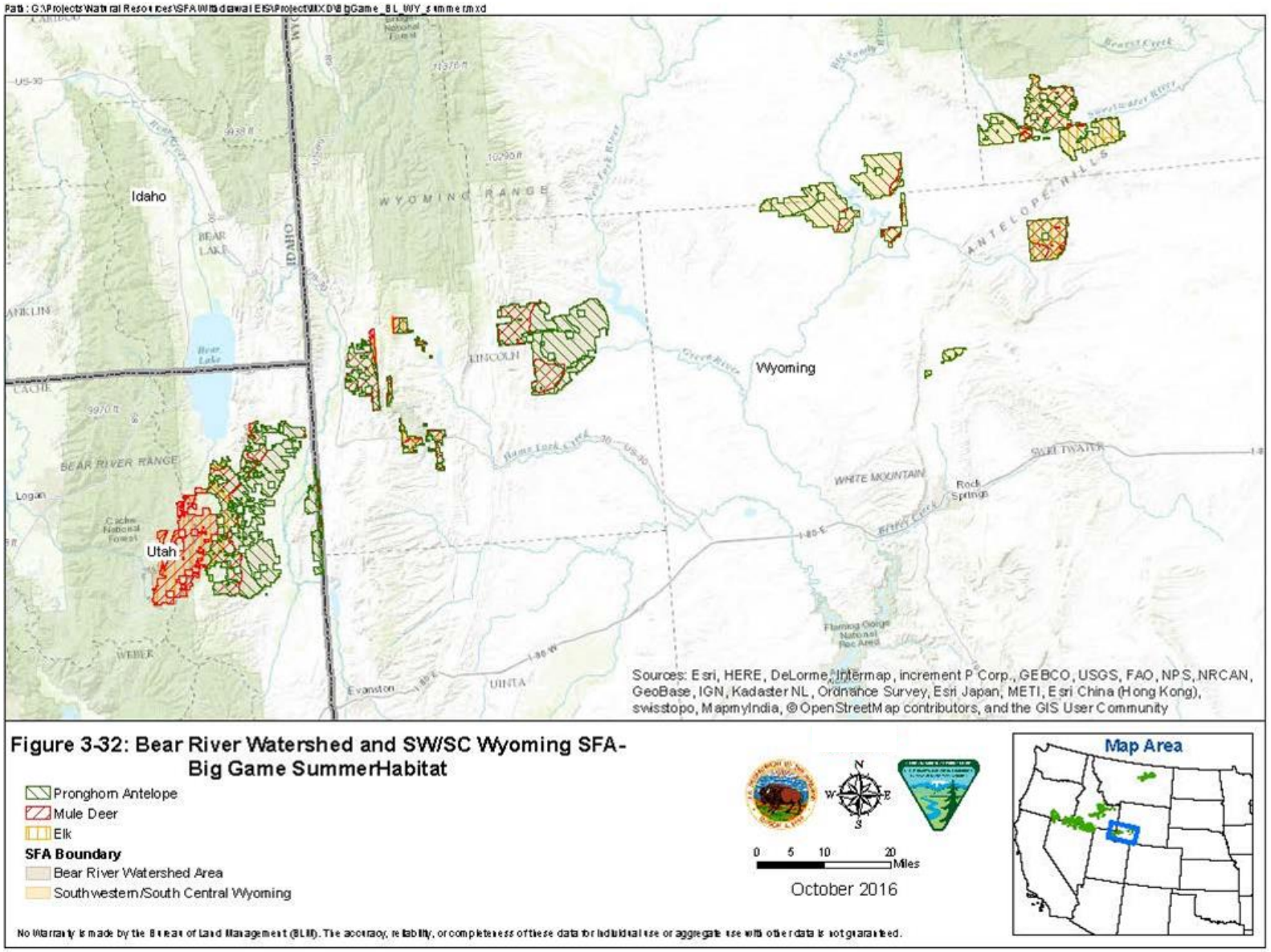

Figure 3-32. Big Game Summer Range in the Southwestern/South Central Wyoming and Bear River Watershed Area SFAs

Mule deer are primarily browsers and their diet is composed mostly of leaves and twigs of shrubs, especially during the winter. Browse species include sagebrush, bitterbrush, serviceberry, snowbrush, and snowberry. When deer are feeding on browse, they prefer the most tender parts, the new shoots and tips or leaders (the most nutritious, most easily bitten off, most flavorful, and most easily digested part of the browse). Grasses and forbs are also crucial components of their diet in the spring and summer. The quality and quantity of nutritious forage in spring (April to July) has major implications on the production and survival of fawns. Summer-fall ranges are important because this is where deer produce fat reserves that will allow survival through winter. The quality of summer-fall forage also directly influences pregnancy and ovulation rates and, therefore, fawn production. Changes in mule deer habitats (reduced shrubs, increased invasive annual grasses and juniper) particularly on winter ranges have likely reduced the ability of mule deer to survive unfavorable weather conditions, especially with a higher abundance of predators. There are 3.7 million acres of mule deer winter habitat and 1.5 million acres of mule deer summer habitat present within the analysis area associated with the withdrawal project (Tables 3-133 and 3-134). In mountainous regions, mule deer tend to migrate up to 120 miles, from high summer range to lower winter range. In the intermountain west, deer often migrate in response to snowfall patterns. Increasing levels of development and disturbance due to increases in human population have contributed to habitat fragmentation and decreased habitat effectiveness for mule deer.

Pronghorn use open plains and open sagebrush steppe habitats throughout the analysis area. In sagebrush habitats, pronghorn diets consist of sagebrush and other shrubs during all seasons, but particularly in the fall and winter (Yoakum 2004). There are 756,000 acres of pronghorn winter habitat and 2.8 million acres of pronghorn summer habitat within the analysis area associated with the withdrawal project (Tables 3-133 and 3-134). Forbs are preferred by pronghorn when available (Yoakum 2004). The availability of forbs may have important implications for pronghorn because they are rich in nutritional values required for reproduction (Pyrah 1987; Yoakum 2004). Large landscape level fires have reduced the availability of sagebrush in parts of their range. Predation of pronghorn fawns may be a factor limiting populations on marginal pronghorn rangelands or in areas where numbers of predators are high in relation to pronghorn numbers.

Rocky Mountain elk are found in the analysis area in sagebrush steppe and associated conifer/forested woodlands. Rocky Mountain elk are considered generalists and are not totally dependent upon sagebrush steppe, but they do require food, water, and, where hunted, hiding cover and security areas. The combination of the resources determines the distribution and number of Rocky Mountain elk within sagebrush steppe. Cow elk prefer rolling topography and riparian areas during the spring, especially during the calving period. Cow elk tend to increase the use of flat terrain as the season progresses. Peak use of flat terrain by cow and bull elk occurs in the fall and winter seasons when forage availability is limited. There are 2.0 million acres of elk winter habitat and 1.1 million acres of elk summer habitat present within the analysis area (Tables 3-135 and 3-136).

Other big game species, such as moose, bighorn sheep, and white-tailed deer, are also found in the analysis area. Moose and white-tailed deer are generally associated with riparian/wetland habitats. Bighorn sheep usually are found near escape terrain, composed of steep rugged slopes, and make use of sagebrush steppe adjacent to the escape terrain year-round.

Furbearers/Upland Game/Nongame

A large variety of other wildlife species use sagebrush steppe, riparian/wetland habitats, nonnative grasslands and conifer woodland/forests habitats in and next to sagebrush steppe in the analysis area. Furbearers commonly found in these habitats are red fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), muskrat (*Ondatra zibethicus*), beaver (*Castor Canadensis*), and mink (*Mustela* sp.). River otter (*Lontra canadensis*) may be present, but the species is generally associated with larger river riparian systems. Cottontail

(*Sylvilagus nattallii*) and jack rabbits (*Lepus californicus*) are found throughout the analysis area; their numbers are variable because populations are cyclic. Upland game birds common in the analysis area are Columbian sharp-tailed grouse, pheasant (*Phasianus colchicus*), mourning dove (*Zenaida macroura*), chukar (*Alectoris chukar*), gray partridge (*Perdix perdix*), California quail (*Callipepla californica*), dusky (blue) grouse (*Dendragapus obscurus*), and ruffed grouse (*Bonasa umbellus*).

There is limited information on the distribution or life history requirements of many other species of nongame wildlife. Information on these species is maintained by the individual fish and wildlife departments within each state. There is a variety of nongame wildlife species located within the seven SFAs; however, population counts, distribution, and comprehensive species lists are not generally available and impacts to these species are better addressed at the project level.

Other Species

Amphibians, specifically frogs and toads, have been recognized as important indicators of ecosystem health, as many populations are declining in the western U.S. Amphibians are generally found near some form of water. There are numerous reptiles found in sagebrush habitats and riparian/wetland habitat in the analysis area, including lizard, turtle, and snake species. The sagebrush lizard (*Sceloporus graciosus*) and short-horned lizard (*Phrynosoma douglasii*) are two of the most common species associated with sagebrush habitats.

Insect occurrence and distribution are not often considered in detail in broad-ranging land management activities. Insects provide important food sources for many species of wildlife, including adult and juvenile greater sage-grouse. Although there are thousands of species of insects in sagebrush and riparian and wetland habitats, species in the *Scarabeidae* and *Tenebrionidae* (beetle) families, *Formicidae* (thatch ants) family, and *Orthopthera* (grasshopper) family are a high protein food source of many wildlife species, including greater sage-grouse (Klebenow and Gray 1968; Peterson 1970; Drut et al. 1994).

4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

Implementation of any of the alternatives described in Chapter 2 has the potential to result in direct or indirect consequences for the human and physical/natural environment in and around the proposed withdrawal area. The EIS considers the possibility of both beneficial and adverse consequences of any withdrawal alternative. Mining operations that may occur under the No Action Alternative or under the individual withdrawal alternatives under consideration may contribute to effects associated with other past, present, or reasonably foreseeable future actions in and around the proposed withdrawal area. This chapter assesses and analyzes the potential effects, as well as the significance of these effects.

This chapter is organized by resource (as described in Chapter 3) as follows: geology and mineral resources; social and economic conditions; vegetation, including special status plant species; and wildlife and special status animal species, including greater sage-grouse. Impacts to these resources that may occur under the No Action Alternative or under the individual withdrawal alternatives under consideration were determined using both quantitative and qualitative approaches. The analysis area for direct and indirect effects for each resource as well as the analysis area for cumulative effects is described in Chapter 3.

4.1.1 Foreseeable Activity Assumptions

In order to complete a meaningful impacts assessment, the BLM prepared an RFD of anticipated mining-related exploration and development within the proposed withdrawal area. This analysis is included in Appendix B. The purpose of the RFD is to provide an estimate of the amount and type of future locatable mineral exploration and development that could occur in the proposed withdrawal area over the 20-year duration of the withdrawal. The RFD was prepared as an estimation based on past events, currently available data, and a series of assumptions about future economic, regulatory, legal, and technological conditions. As stated, the estimate in the RFD relies upon several assumptions, and is provided solely to establish an analytical basis for the purpose of informing an evaluation of the environmental consequences associated with the action alternatives.

The estimate of future exploration and mining in the RFD represents the No Action Alternative (what is reasonably expected to occur in the absence of the withdrawal). Different adjustments were made to the RFD, as described in Chapter 2, to reflect the different levels of realization of the RFD that might take place under each of the action alternatives. This provides a uniform set of assumptions about reasonably foreseeable future locatable mineral exploration and development under each alternative. The future mineral development project assumptions presented in Appendix B, in conjunction with existing conditions, serve as the basis for the resource impact analysis of each alternative, as presented in this chapter.

The RFD makes assumptions about past and present mining-related operations, mineral potential, and future mineral development in order to assess the environmental impacts of the withdrawal proposal and alternatives. It is important to remember that the importance of the RFD is not the exact estimated number of future mines, but rather the relative levels of estimated future mineral development projects across the alternatives. The assumptions made in the RFD are necessarily broad due to the diversity of locatable minerals on federal lands, variety of mining and exploration methods, geographic scope, inherent uncertainty of the commodities markets, and the principle of self-initiation under the Mining Law. The assumptions and analysis produced in the RFD were designed to focus on the technical information that is needed to quantify the impacts analyzed for two of the main resources being discussed in this chapter, namely social and economic conditions and wildlife. For example, an in-situ mining method may be very different from an underground mining method, but it is the surface disturbance area of each that is the primary driver for evaluating wildlife impacts; therefore, mine size was evaluated but not mining method.

The overarching assumptions from the RFD are summarized here (refer to the discussion in Appendix B for a complete list of assumptions). The location of past exploration projects and mines is fundamentally based on the existence of mineral deposits and the likelihood of those lands to yield minerals in economically viable quantities. This likely remains true for the future, so the general geographic location of projects was estimated using mineral potential in conjunction with past project location.

How and when minerals were mined in the past was based in large part on the price of the target commodity being mined. Past economic conditions included significant swings in commodity prices, which created swings in the development of exploration projects and mines. The fact of these variations suggests that it would not be useful to base an analysis on a fixed estimate of future commodity prices. Instead, the RFD considers past events as a prediction of future development under the assumption that future swings in commodity prices would be similar to past swings over a similar timeframe. Other factors that may impact future project development include changes in technology, market conditions, and geopolitical climate. Mine development and exploration projects that occurred over the past 20 years were used as the primary basis for estimating the baseline number and size of mineral development projects that would potentially occur in the proposed 20-year withdrawal period. In some cases, conditions in a particular industry or region necessitated overriding the baseline future mineral development estimates. The rationale for, and results of, these overrides were discussed individually in the RFD. Finally, tables were prepared that estimate the number and size of mineral development projects over the 20-year timeframe within the proposed withdrawal area by states and counties.

The proposed withdrawal area, which encompasses portions of six states, covers irregular patches over a large geographic region which makes spatial analysis difficult. Additionally, it is not possible to predict the exact location of a future mine or exploration project. Factors determining the optimal place to explore or mine may include historic exploration records, estimated ore body geometry, surface topography, regional hydrology, land ownership, permitting constraints, and access to necessary infrastructure. Thus, the RFD examined a larger, more contiguous area compared to the proposed withdrawal area. The larger extent of the area examined in the RFD provides a conservative estimate of the number and geographic distribution of possible future development. The area examined also includes lands adjacent to the proposed withdrawal area that were proposed by the state of Nevada as an alternative to the proposed withdrawal. Refer to Appendix B (Figure 2) for a map of the larger area examined in relation to the extent of the proposed withdrawal.

The RFD focuses on federal surface and minerals administered by the BLM and Forest Service. Activities on private or state lands were included where informative, but are not subject to the proposed withdrawal.

4.1.2 Impact Assessment Methodology and Definitions

This chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this EIS. Impact thresholds for each resource, methods used to analyze impacts, and the analysis methods used for determining cumulative impacts are discussed under each resource section. A brief overview description of these general definitions is included in this section to set the stage for the analysis. Table 4-1 provides standard definitions of degree and duration of impact that are broadly applicable to all resources; certain analyses in the sections that follow have further refined these definitions to be more specific to that particular resource, as necessary. A summary of the environmental consequences for each alternative is provided in Table 2-19, in Chapter 2.

Table 4-1. Standard Definitions for Impact Thresholds

Threshold	Description Relative to Resource
Magnitude	
No impact	Would not produce obvious changes in baseline condition of the resources.
Minor	Impacts would occur, but resources would retain existing character and overall baseline conditions.
Moderate	Impacts would occur, but resources would partially retain existing character. Some baseline conditions would remain unchanged.
Major	Impacts would occur that would create a high degree of change within the existing resource character and overall condition of resources.
Duration	
Temporary	Up to 3 year (periods of development and reclamation).
Short-term	4 to 10 years.
Long-term	Greater than 10 to 20 years.

The impacts of each action alternative on a specific resource are generally characterized as no impact, minor, moderate, or major as compared to the resource impacts that would otherwise occur under the No Action alternative, which represents the status quo or baseline and is described in the Affected Environment chapter. Here, the Proposed Action is the withdrawal of lands from location and entry under the Mining Law for 20 years, subject to valid existing rights. Any withdrawal under the Proposed Action or its alternatives is expected to reduce the amount of mineral development and exploration as compared to the No Action Alternative. The analysis in this chapter thus focuses on the degree to which each withdrawal alternative would reduce the impacts of mineral exploration and development activities on a specific resource under the No Action Alternative and the impacts of those activities under that particular alternative. Discussing impacts from potential mineral exploration and development in this EIS does not imply that the Proposed Action is a mining plan of operations.

4.1.3 Definition of Key Terms

This section defines and clarifies the concepts and terms used in this EIS when discussing the impacts assessment.

Impacts

Impacts may refer to ecological, social, or economic phenomena that may be caused by implementation of the Proposed Action or any of the other alternatives. The terms “impact” and “effect” are used synonymously. Impacts, both beneficial and adverse, may be direct, indirect, or cumulative.

It is important to note that the Proposed Action (and, in fact, any of the action alternatives) are proposing to withdraw lands from appropriation under the Mining Law, and thus are entirely protective in character to ecological (e.g., vegetation and wildlife) resources. Therefore, the BLM and Forest Service expect that the Proposed Action or any of the action alternatives may affect ecological resources in a beneficial way, as detailed below. At the same time, any withdrawal of public land may have an adverse impact on social and economic resources as those lands are no longer available to the public for the purposes for which they are withdrawn.

Direct Impacts

A direct impact is an effect on a resource that is caused by the action and occurs at the same time and place.

Indirect Impacts

An indirect impact is a reasonably foreseeable effect that would occur later in time or be separated by some distance from the action while remaining consistent with the temporal and spatial boundaries of analysis established for the resource.

Cumulative Impacts

A cumulative impact is an impact induced by a proposed action that, when added to the effects of other past, present, and reasonably foreseeable future actions, results in an incremental effect on the resource. Individually minor actions can become collectively more significant taking place over a period of time. Note that the temporal and spatial bounds for cumulative impacts assessment may be larger than those for a direct impacts assessment.

Significance

Significance is defined by CEQ (40 CFR 1508.27) as a measure of the context and intensity of the impacts of a major federal action on, or the importance of that action to, the human environment. Intensity refers to the severity or level of magnitude of impact. Proximity to sensitive areas or protected resources, public health and safety, level of controversy, unique risks, or potentially precedent-setting results are all factors considered in determining the intensity of the effect.

Context means that the effect(s) of an action must be analyzed within a framework or within physical or conceptual limits. Resource disciplines, location, type, or size of area affected (e.g., local, regional, national), and affected interests are all elements of context that ultimately determine significance. Both short- and long-term impacts are relevant.

Impact Indicators

Use of the term significant when referring to resource impacts indicates that some threshold was exceeded for a particular impact indicator. Impact indicators are the consistent parameters used to determine quality, intensity, and duration of change in a resource. Working from an established existing condition (i.e., the baseline conditions described in Chapter 3), one or more condition indicators are used to predict or detect change in a resource related to causal impacts of proposed actions. These thresholds are consistent with the CEQ's guidance on the criteria for a significant impact. Table 1-11 lists the key issues for analysis in this EIS, as derived from public scoping and agency input, and the corresponding resource condition indicators that were used in the impact analyses described in this chapter.

4.1.4 Resource Impact Indicators

For each resource category, the relevant issues from Chapter 1 are presented below, along with the resource impact indicators. These resource impact indicators have been developed to provide an issue-focused analysis of potential impacts from the proposed withdrawal or alternatives. The resource impact indicators listed in Table 4-2 represent measures of change that have been used to guide the impacts analysis presented in this chapter. These impact indicators were based on issues identified through scoping (refer to Table 1-11 in Chapter 1).

Table 4-2. Resource Impact Indicators

Issue	Description of Relevant Issue	Resource Impact Indicator
Geology and Mineral Resources		
Availability of mineral resources	Development of federal locatable mineral resources is authorized by law on BLM and NFS lands, unless lands are closed to mineral entry. Restrictions or withdrawals individually and cumulatively may decrease development of mineral resources; consequently, some mineral resources would be unavailable to the public if the proposed withdrawal is approved. There are areas of high, moderate, and low mineral resource potential in the proposed withdrawal area that the public, industries, and communities utilize and that may be unavailable if these areas are withdrawn from the Mining Law.	• Estimated number of mines and exploration projects that would and would not be developed as a result of the alternative. • Distribution of mineral potential of the lands proposed for withdrawal. • Reduction in domestic mineral production that could result from the withdrawal. • Cumulative amount of lands withdrawn.
Social Conditions		
Impacts to way of life	A withdrawal could have direct and/or indirect effects on social conditions within the analysis area.	• Proportion of total county land area within proposed withdrawal area. • Proportion of federally managed lands in the county within the proposed withdrawal area. • Percent changes in total county employment. • Percent changes in total county labor income. • Changes in the proportion of county jobs directly and indirectly related to mining. • Direction, magnitude, and rate of change in demographic conditions. • Changes in local government revenues.
Environmental justice	EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to address environmental justice when implementing their respective programs. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and Indian tribes that may experience common conditions of environmental exposure or effect associated with a plan or project. A withdrawal could potentially have disproportionately high and adverse environmental or socioeconomic impacts on minority populations, low income populations or Indian tribes. If such disproportionate effects were to occur, they would represent an environmental justice issue.	
Human health and safety	A withdrawal would not have an impact to human health and safety, but potential mining could present potential risks to human health and safety.	• Safety issues related to mine operations and MSHA regulations.
Economic Conditions		
Economic activity from mineral development	A withdrawal could result in fewer future mines being developed in SFAs with corresponding effects on mining-related mineral output, employment, earnings, government tax and fee revenues, and costs of public service provisions. The manner and degree of the proposed withdrawal could directly affect the economic activity in the area, particularly in smaller communities. Withdrawal may also, however, increase non-market economic values and potentially increase activity in other economic sectors tied to recreation or amenity-based migration.	• Gross value of metals or commodities produced by mining in each county (direct output). • Exploration-related expenditures in each county. • Direct mining-related employment. • Direct labor compensation related to mining. • Secondary jobs and labor compensation related to mining. • Direct and indirect revenue for state, and local governments resulting from mining operations.

Table 4-2. (continued)

Issue	Description of Relevant Issue	Resource Impact Indicator
Vegetation, Including Special Status Plant Species		
Disturbance of vegetation and loss of productivity	The proposed withdrawal could have beneficial impacts to vegetative communities by potentially reducing mining that may cause adverse impacts to structure, productivity, vigor, abundance, and diversity, as well as a movement away from current or natural vegetation conditions. The proposed withdrawal may have beneficial impacts to special status plant species by potentially reducing mining that cause habitat alteration and fragmentation, which in turn could impact overall health of the plant. The proposed withdrawal could reduce the potential for disturbance to vegetation communities.	• Acres of surface disturbance estimated for potential mineral exploration and development activities. • Potential for the introduction or spread of invasive species.
Wildlife and Special Status Animal Species, Including Greater Sage-Grouse		
Disturbance of habitat for greater sage-grouse and other wildlife species	The proposed withdrawal could have beneficial impacts to wildlife by potentially reducing mining that may cause disturbance to wildlife, including greater sage-grouse and other special status species, and associated habitat within and adjacent to the proposed withdrawal area.	• Acres of disturbance from potential mineral exploration and development activities under each alternative. • Habitat fragmentation of greater sage-grouse habitat – this could include fragmentation of seasonal habitats (i.e., nesting/brooding and winter) and connected populations (i.e., leks). • Calculations of vegetation/habitat impacts relative to the availability of these resources within the proposed withdrawal area.

4.1.5 Compliance with the Existing Regulatory Framework under All Alternatives

The regulatory framework associated with locatable mineral development (including exploration activities, mine development, mine operations, and mine closure/reclamation) on federal lands is discussed in Section 2.5 of Chapter 2. These laws and regulations would apply to the mineral development operations described in the RFD. In addition to complying with federal laws and regulations, mine operators must also comply with other federal, state, and local laws and regulations, including obtaining applicable permits.

Each of the six states containing SFAs have established a conservation plan or strategy for reducing impacts to greater sage-grouse from development activities, including mineral development (see Section 2.5.3). These plans vary by state; therefore some plans are more robust and protective of greater sage-grouse habitat than others. The state regulatory framework could necessitate incorporation of additional design features and/or mitigation measures into a plan of operations for future mineral development, as necessary, to comply with such requirements as state drinking water standards, noxious weed prevention requirements, and state water rights. Generally, the plans identify conservation measures to be applied to mineral development activities to reduce, and avoid in some cases, adverse impacts to greater sage-grouse and its habitat. The state-level greater sage-grouse conservation plans would reduce potential adverse impacts to vegetation and wildlife, by reducing the amount of surface disturbance and human activity allowed to occur near active leks and within greater sage-grouse habitat.

Although these federal, state, and local requirements would likely minimize or reduce potential adverse effects to biological resources, including greater sage-grouse, the existing regulatory framework, such as federal surface management regulations and other permitting requirements at the state and local levels would not adequately constrain nondiscretionary uses such as location and entry under the Mining Law, as well as other mining-related activities, which could result in loss of greater sage-grouse habitat important for the persistence of the species. As a result of the potential for continued impacts to sage-grouse and their habitat from future mineral development, this withdrawal was recommended, as described in Section 1.3 of Chapter 1. The existing regulatory framework stipulates a process through which social, economic, and natural resource impacts are accounted for in project-specific planning.

4.2 Geology and Mineral Resources

This section discloses the potential impacts from the Proposed Action and alternatives on access to and availability of geology and mineral resources. There are areas of high, moderate, and low mineral resource potential in the proposed withdrawal area that the public, industries, and communities have historically explored, occupied, and developed. Withdrawing lands from location and entry under the Mining Law can adversely impact the public's access to these mineral resources because, under all action alternatives, future mining operations could only take place on valid mining claims. Mineral resources that are not subject to active mining claims cannot be explored or developed under any of the action alternatives. Consequently, assuming that some mineral resources on the lands proposed for withdrawal are not subject to valid mining claims, the mineral resources in the withdrawal area would be less available under all of the action alternatives than they would be absent a withdrawal.

4.2.1 Impact Assessment Methodology and Assumptions

To evaluate the potential impacts of the action alternatives on access to and availability of geology and mineral resources, the following indicators are used:

- Estimated number of mines and exploration projects that would and would not be developed as a result of the alternative.
- Volume of mineral potential of the lands proposed for withdrawal.
- Reduction in domestic mineral production that could result from the withdrawal.
- Cumulative amount of lands withdrawn.

The impact indicators listed above do not distinguish between direct and indirect impacts; as a result the analysis does not differentiate between them. The duration of impacts discussed in this section is long term. Given the diversity of commodities, geologic deposit types and extent of the withdrawal area, no evaluation was made as to ore production from estimated mines. As a result, it is not possible to estimate the direct impact on the volume of mineral resources that could be mined for each alternative. Rather, the amount of lands with high or moderate potential to yield minerals in economically viable quantities that would be withdrawn under each alternative is used in combination with the number of estimated future mines and exploration projects under each alternative to define impacts to geology and mineral resources. Alternatives that withdraw more acres of high and moderate mineral potential lands are assumed to have greater impacts on mineral availability because they are assumed to result in fewer future mines and exploration projects. The No Action Alternative and action alternatives that withdraw fewer acres of high and moderate mineral potential lands are assumed to have lesser impacts on mineral availability because they are assumed to result in more future mines and exploration projects.

The sources of data used in this evaluation are:

- The RFD (Appendix B), which developed the estimated numbers of future mines and exploration projects that could be developed under the No Action Alternative.
- Chapter 2, which calculated the estimated numbers of future mines and exploration projects that could be developed under the action alternatives.
- The Mineral Potential Report, which estimated and ranked the mineral potential in the analysis area as high, moderate, low, and none, and evaluated mineral availability compared to domestic production.
- Publically available spatial data for lands within the maximum extent of all action alternatives that are already withdrawn from the Mining Law.

The RFD (Appendix B) estimated the amount and type of future locatable mineral exploration and development that could occur in the analysis area over the 20-year duration of the withdrawal. The analysis area for geology and mineral resources was described in Section 3.3 in Chapter 3 and is shown on Figure 3-1; it is the same as the analysis area considered in the RFD. The outputs of the analysis in the RFD are estimated numbers and sizes of future mines and exploration projects.

The number of mines and exploration projects that were estimated to be developed under the action alternatives was calculated using the methods discussed in Chapter 2. Given the statistical nature of the method used to produce these estimates, it is not possible to list what commodity or commodities would be produced from the mines or exploration projects, beyond the information provided for the No Action Alternative in the RFD.

The degree of the impact of each alternative is assessed based on the impact threshold and duration definitions presented in Table 4-3.

Table 4-3. Impact Threshold Definitions for Geology and Mineral Resources

Threshold	Description Relative to Resource
No impact	Would not produce changes in the estimated number of future mines or exploration projects or the availability of high and moderate mineral potential lands.
Minor	May reduce the estimated number of future mines and exploration projects by less than 20%, or may reduce the availability of high and moderate mineral potential lands by less than 20%.
Moderate	May reduce the estimated number of future mines and exploration projects by 20% to 50%, or may reduce the availability of high and moderate mineral potential lands by 20% to 50%.
Major	May reduce the number of future mines and exploration projects by more than 50%, or reduce the availability of high and moderate mineral potential lands by more than 50%.

Mineral Potential

Evidence of past mining in the geology and mineral resources analysis area indicates that the majority of mineral development projects take place in high and moderate mineral potential areas (see Table 2-2). As a result, the impacts to the availability of high and moderate mineral potential lands are used as an impact indicator threshold. Table 4-4 presents a summary table of the amount of acreage in each category of mineral potential by alternative. The No Action Alternative is not presented because under that alternative lands would remain open for location and entry under the Mining Law.

Table 4-4. Withdrawal Area (in Acres) by Mineral Potential, State, and Alternative

State	Mineral Potential	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Idaho	High	25,988	25,988	0	1,981
	Moderate	216,472	216,472	216,472	71,957
	Low	1,634,529	1,634,529	1,634,529	1,333,004
	None*	2,084,836	2,084,836	2,084,836	2,016,244
Idaho Total		**3,961,824**	**3,961,824**	**3,935,837**	**3,423,185**
Montana	High	57,761	57,761	0	57,761
	Moderate	43,466	43,466	43,466	43,466
	Low	405,738	405,738	405,738	405,738
	None*	370,659	370,659	370,659	370,659
Montana Total		**877,624**	**877,624**	**819,863**	**877,624**
Nevada	High	403,808	240,662	0	403,808
	Moderate	100,371	72,004	100,371	100,371
	Low	860,055	715,954	860,055	860,055
	None*	1,403,317	1,641,669	1,403,317	1,403,317
Nevada Total		**2,767,552**	**2,670,289**	**2,363,743**	**2,767,552**
Oregon	High	66,581	66,581	0	66,581
	Moderate	21,133	21,133	21,133	21,133
	Low	73,562	73,562	73,562	73,562
	None*	1,682,263	1,682,263	1,682,263	1,682,263
Oregon Total		**1,843,539**	**1,843,539**	**1,776,958**	**1,843,539**
Utah	High	3,452	3,452	0	3,452
	Moderate	34,025	34,025	34,025	34,025
	Low	39,044	39,044	39,044	39,044
	None*	157,327	157,327	157,327	157,327
Utah Total		**233,848**	**233,848**	**230,396**	**233,848**
Wyoming	High	1,328	1,328	0	1,328
	Moderate	109,723	109,723	109,723	109,723
	Low	79,126	79,126	79,126	79,126
	None*	74,907	74,907	74,907	74,907
Wyoming Total		**265,085**	**265,085**	**263,757**	**265,085**
Total	High	558,918	395,772	0	534,911
	Moderate	525,191	496,824	525,191	380,675
	Low	3,092,053	2,947,952	3,092,053	2,790,528
	None*	5,773,310	6,011,661	5,773,310	5,704,718
	Grand Total	**9,949,472**	**9,852,208**	**9,390,553**	**9,410,832**

* Not Determined or No Potential

Mines and Exploration Projects

The RFD (Appendix B) used available data on past mining and exploration projects, assumptions, spatial analysis methodologies, and industry-provided data to estimate the number and size of future mines and exploration projects in the analysis area over the proposed 20-year withdrawal timeframe. The number of

mines and exploration projects presented in the RFD was used to define the level of future mineral development that is reasonably anticipated to occur under the No Action Alternative. As described in detail in Chapter 2, the number of mines and exploration projects anticipated to occur under the action alternatives was calculated using the RFD as the baseline for the analysis. In order to quantify the number of future mines and exploration projects likely to occur within the withdrawal areas associated with each action alternative, assumptions were applied to the No Action Alternative to estimate the areas of mineral potential where mineral development was most likely to occur. Table 4-5 lists the number of future mineral development projects estimated to occur over the 20-year timeframe for the No Action Alternative and the action alternatives.

Table 4-5. Estimated Number of Mines and Exploration Projects by State and Alternative*

State	No Action		Proposed Action		State of Nevada Alternative		HMP Alternative		State of Idaho Alternative	
	Mines	Exploration Projects	Mines	Exploration Projects	Mines	Exploration Projects	Mines	Exploration Projects	Mines	Exploration Projects
Idaho	9	26	1	3	1	3	2	9	4	13
Montana	1	2	0	1	0	1	0	2	0	1
Nevada	3	78	1	32	2	47	2	55	1	32
Oregon	10	8	1	3	1	3	3	5	1	3
Utah	0	0	0	0	0	0	0	0	0	0
Wyoming	3	0	0	0	0	0	0	0	0	0
Total	**26**	**114**	**3**	**38**	**4**	**54**	**8**	**72**	**7**	**48**

*It should be noted that the numbers of mines or exploration projects in this analysis can be less than 1 but, in reality, partial mines or partial exploration projects cannot occur. Therefore, data are rounded up or down to whole numbers. Differences in the total row from the sum of the numbers within each of the state rows is due to rounding.

4.2.2 Incomplete or Unavailable Information

A projection of the possible commodities associated with those mines and exploration projects was also given. It is not possible, within the context of the RFD and this EIS, to predict the location and design of a future mine or exploration project. Factors determining the optimal place and design of a mine or exploration project may include historic exploration records, estimated ore body geometry, surface topography, regional hydrology, land ownership, permitting constraints, and access to necessary infrastructure. While the RFD attempts to predict the amount of future mining operations, neither the RFD nor the data presented in this EIS may be used to assert or refute the validity of a particular mining claim or for any other purpose. These estimates and analysis are intended only to help the agency make a decision on the Proposed Action and alternatives.

The action alternatives all contain within them islands of lands that are not part of the withdrawal proposal. These are federal, state, or private lands that are not subject to the Mining Law; consequently, geology and mineral resources on these lands would be unaffected by the action alternatives. These lands, as well as lands immediately outside the lands proposed for withdrawal, would continue to be available for mineral development to the same extent that they are currently available. The amount of mine development that could result on state and private lands in the vicinity of the withdrawal area has not been quantified; instead the estimates here only consider the amount of future mine development estimated to occur on the lands proposed for withdrawal.

4.2.3 Impacts Common to All Action Alternatives

Domestic mineral production would be reduced directly or indirectly as a result of the action alternatives. It is not possible to determine what commodities would be mined from the mineral development projects estimated to occur in each of the action alternatives. As a result, it is not possible to estimate which commodity markets would be most impacted by the variation in each alternative. The analysis of the impact to domestic mineral production, and thence to commodity markets, is discussed qualitatively in this section as impacts common to all alternatives.

In the analysis area for geology and mineral resources, a variety of locatable mineral commodities have high potential for occurrence and/or are estimated in the RFD to be developed, in the form of mines or exploration projects, in the 20-year withdrawal period. Table 4-6 lists these commodities by the states in which they may be located.

Table 4-6. Commodities with High Potential for Occurrence and/or Estimated to be Developed in the Analysis Area

State	Metalliferous Minerals	Nonmetallic Minerals	Industrial Minerals
Idaho	Silver, Gold, Copper, Lead, Zinc, Platinum, Palladium	Diatomite, Zeolite Mineral Specimen	Jasper and Agate (both are quartz gemstones)
Montana	—	Bentonite	—
Nevada	Silver, Gold, Barite, Copper, Gallium, Mercury, Lithium, Molybdenum, Lead, Antimony, Uranium, Tungsten, Zinc, Tellurium	Zeolite	Clay, Gemstone
Oregon	Silver, Gold, Copper, Gallium, Mercury, Lithium, Uranium	Zeolite	Clay, Gemstone, Sunstone
Utah	Silver, Gold, Copper, Lead	—	—
Wyoming	Silver, Gold, Tungsten	—	—

Market demand profiles for the locatable mineral commodities relevant to the Mineral Potential Report are listed in Appendix 5 of Chapter 1 of that report (Day et al. 2016). These have the potential to occur within the USGS assessment area which extends beyond the geology and mineral resources analysis area, and about 15.5 miles beyond the withdrawal area. Excerpts of those profiles for the commodities listed in Table 4-6 are given below as consideration of the direct and indirect impact that the action alternatives may have on domestic mineral production.

- **Barite** – Nevada is thought to contain the leading share of U.S. barite resources and has long led domestic barite production. The bulk of Nevada's production has been concentrated in Elko and Lander counties, within or near the boundaries of the USGS assessment area. The action alternatives may impact domestic barite production.

- **Bentonite** – Production of bentonite has been reported in parts of Oregon, Montana, and Nevada in the assessment area since 2005. Nevada and Oregon do not list bentonite in the table above because future production is not estimated there and the commodity is not considered of high potential for occurrence. While these areas have produced bentonite in the past, the leading domestic production areas are not within the assessment area therefore the action alternatives are unlikely to impact domestic bentonite production.

- **Copper** – No significant copper production has been reported within the assessment area since at least 1990. There is high mineral potential for occurrence in Idaho, Nevada, Oregon, and Utah, and it is estimated that one small mine in Idaho may produce copper in conjunction with other metals. The action alternatives would have no impact on domestic copper production.

- **Diatomite** – Production of diatomite has occurred in the assessment area since 2005 in Nevada and Oregon, and a high potential deposit was identified in Idaho. The commodity was also produced in California and Washington. The U.S. is a net exporter of diatomite and, in 2014, was the world leader in diatomite production. While production has occurred in the assessment area in the past, the No Action Alternative, the leading domestic production areas are not within the assessment area therefore the action alternatives are unlikely to impact domestic diatomite production.

- **Gallium** – There is high potential for occurrence of gallium in Nevada and Oregon but the No Action Alternative does not estimate development to occur in the 20-year withdrawal period so the action alternatives are unlikely to impact domestic gallium production. While gallium is considered strategic and critical, none has been recovered from U.S. mines since 1987.

- **Gemstone** – Jasper, agate, and sunstone have high potential for occurrence in the assessment areas of Idaho, Nevada, and/or Oregon. The No Action Alternative estimates small mines for these commodities to occur in Idaho and Oregon. Jasper and agate are part of the quartz family and the action alternatives are likely to have no impact on the domestic market for these gemstones. Sunstone is the Oregon state gem and a reduction in the availability of this gemstone as a result of the action alternatives may significantly impact the local commodity market, although they are unlikely to have an impact on the U.S. market.

- **Gold** – Idaho, Oregon, Nevada, Utah, and Wyoming have high potential for occurrences of gold. Under the No Action Alternative, mines producing gold are estimated to occur in Idaho, Nevada, and Wyoming. Nevada accounted for about 15 percent of domestic gold mine production in 2014. While none of that production came from within the withdrawal areas, 30 percent of it came from mines in Elko and Humboldt counties that are within the USGS assessment area. The action alternatives may impact domestic gold production.

- **Lead** – No significant lead production has been reported within the assessment area. There is high mineral potential for occurrence in Idaho, Nevada, and Utah, and under the No Action Alternative it is estimated that one small mine in Idaho may produce lead in conjunction with other metals. The action alternatives would have negligible impact on domestic lead production.

- **Lithium** – In 2013, the Silver Peak mine in Esmeralda County, Nevada (outside the USGS assessment area) produced approximately 3 percent of the world supply of lithium. Lithium is used in the production of batteries, and the high potential for occurrence of this commodity in Nevada has spurred new economic development. Under the No Action Alternative, a future large lithium mining operation is estimated to occur in the assessment area over the 20 year period. It is not possible to estimate what percentage this project may contribute to domestic supply but, given that current import reliance was estimated to be greater than 60 percent, the action alternatives may impact the domestic supply of lithium.

- **Silver** – One silver producing mine is within the USGS assessment area but the bulk of the domestic silver production comes from projects outside the area. There is high mineral potential for occurrence in Idaho, Nevada, Oregon, Utah, and Wyoming, and under the No Action Alternative, it is estimated that mines in Idaho and Nevada may produce silver in conjunction with other metals. The action alternatives would have negligible impact on domestic silver production.

- **Clay: Hectorite** – The U.S. is the world's leading producer of hectorite and the largest such mine is located in California. Hectorite is a lithium bearing clay. A new mine came on-line at the end of 2014 and is within the Nevada USGS assessment area but not within the proposed withdrawal area. Given that the bulk of hectorite supply comes from a project outside of the proposed withdrawal area, the action alternatives would have little impact on the domestic supply of hectorite.

- **Zeolite** – Production of zeolite has occurred within or near the USGS assessment area in Idaho, Nevada, Oregon, and Wyoming since 2005. One small zeolite mine is estimated to occur under the No Action Alternative in Idaho in the 20-year withdrawal period. Given that zeolite is produced in a variety of other locations, the action alternatives are unlikely to impact the domestic supply of zeolite.

- **Zinc** – No significant zinc production has been reported within the assessment area since at least 1990. There is high mineral potential for occurrence in Idaho, and under the No Action Alternative, it is estimated that one small mine there may produce zinc in conjunction with other metals. The action alternatives would have negligible impact on domestic zinc production.

- **Antimony, mercury, molybdenum, tungsten, platinum, palladium, tellurium, and uranium** – These commodities have high potential to occur in Oregon, Idaho, Nevada, and/or Wyoming in conjunction with other metalliferous minerals. No mineral production is estimated under the No Action Alternative for the 20-year withdrawal period although some exploration for these commodities is estimated to occur. No impacts to domestic supply from the action alternatives are anticipated.

4.2.4 Impacts of the No Action Alternative

Under the No Action Alternative, no withdrawal would occur; therefore, there would be no impact to access to and availability of geologic and mineral resources. New mineral development could take place over the next 20 years on all lands in the study area that are otherwise open to location and entry under the Mining Law, subject to compliance with all applicable laws. So long as the lands remain open to location under the Mining Law, the public may continue to access, explore, for and develop geologic and mineral resources, including staking or "locating" future mining claims.

As described in the RFD and summarized in Table 4-5 above, a total of 26 mines and 114 exploration projects are estimated to occur under the No Action Alternative. All lands within the extent of the proposed withdrawal would remain open, 11 percent of which fall into high and moderate mineral potential categories.

4.2.5 Impacts of Proposed Action

The Proposed Action would have the greatest potential impact on access to and availability of geology and mineral resources by withdrawing approximately 9,949,448 acres of federal lands from location and entry under the Mining Law for 20 years, subject to valid existing rights. Withdrawing lands "subject to valid existing rights" means that future exploration or mining could occur only on mining claims within the withdrawal area that the agencies determine to be valid[15].

The estimated number of future mines and exploration projects that could occur under the Proposed Action and the percent reduction in the number of mineral development projects that would result from the Proposed Action are shown in Table 4-7. This table also includes the amount of acreage of high and moderate mineral potential lands that would be withdrawn by the Proposed Action.

[15] The agencies' process to determine mining claim validity is described in greater detail in Section 1.6.

Table 4-7. Estimated Number of Mines and Exploration Projects and Mineral Potential by State under the Proposed Action and No Action Alternative

State	No Action			Proposed Action			Percent Reduction		
	Mines	Exploration Projects	HM* Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)
Idaho	9	26	0	1	3	242,460	89%	88%	100%
Montana	1	2	0	0	1	101,227	100%	50%	100%
Nevada	3	78	0	1	32	504,179	67%	59%	100%
Oregon	10	8	0	1	3	87,714	90%	63%	100%
Utah	0	0	0	0	0	37,477	0%	0%	100%
Wyoming	3	0	0	0	0	111,051	100%	0%	100%
Total	**26**	**114**	**0**	**3**	**38**	**1,084,109**	**88%**	**67%**	**100%**

*HM = High and Moderate

The withdrawal of 9,949,448 acres of federal lands under the Proposed Action would reduce the estimated number of future mines to three mines in the six-state area, which represents an 88 percent reduction from the 26 mines estimated under the No Action Alternative. Exploration projects would be reduced to 38 total or a 67 percent reduction from the No Action alternative. The Proposed Action would reduce the high and moderate mineral potential area open to the Mining Law by 1,084,109 acres. When compared to the No Action Alternative, the Proposed Action would have a major impact to access to and availability of geology and mineral resources because the number of future mines and exploration projects would be reduced by more than 50 percent, as would the availability of high and moderate mineral potential lands.

When compared to the other action alternatives, the Proposed Action would have the greatest potential impact on access to and availability of geology and mineral resources because the greatest amount of high and moderate mineral potential areas would be withdrawn from the Mining Law, and the Proposed Action would result in the fewest number of estimated future mines and exploration projects.

4.2.6 Impacts of the State of Nevada Alternative

The Nevada Alternative would alter the Proposed Action only with respect to those areas proposed for withdrawal within the state of Nevada; areas proposed for withdrawal in all other states would be the same as described under the Proposed Action. The Nevada Alternative excludes 486,376 acres of land from the Proposed Action. These are lands that are considered by the state of Nevada to have high mineral potential or limited greater sage-grouse habitat. The Nevada Alternative includes withdrawing 389,899 acres of land that were not in the Proposed Action. The Governor's Office believes that this alternative would reduce the potential social and economic impact of the proposed withdrawal to the state of Nevada while still meeting the purpose of the proposal. In total, the Nevada Alternative would reduce the amount of acres of federal lands proposed for withdrawal in Nevada to 2,671,075, thereby reducing the total acreage of geology and mineral resources that would experience access and availability impacts to 9,852,971 acres. The impacts to availability of geology and mineral resources on lands that are excluded from the Nevada Alternative would be the same as those under the No Action Alternative.

The estimated number of mines and exploration projects that could occur under the Nevada Alternative and the percent reduction in the number of mineral development projects as a result of the Nevada Alternative are shown in Table 4-8. This table also includes the high and moderate mineral potential lands that would be impacted by the Nevada Alternative.

Table 4-8. Estimated Number of Mines and Exploration Projects and Mineral Potential by State under the Nevada Alternative and No Action Alternative

State	No Action			State of Nevada Alternative			Percent Reduction		
	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)
Idaho	9	26	0	1	3	242,460	89%	88%	100%
Montana	1	2	0	0	1	101,227	100%	50%	100%
Nevada	3	78	0	2	47	312,666	33%	40%	100%
Oregon	10	8	0	1	3	87,714	90%	63%	100%
Utah	0	0	0	0	0	37,477	0%	0%	100%
Wyoming	3	0	0	0	0	111,051	100%	0%	100%
Total	**26**	**114**	**0**	**4**	**54**	**892,595**	**85%**	**53%**	**100%**

HM = High and Moderate

The withdrawal of 9,852,971 acres of federal lands under the Nevada Alternative would reduce the estimated number of future mines to four mines total in the six-state area, which represents an 85 percent reduction from the 26 mines estimated under the No Action Alternative. Exploration projects would be reduced to 54 projects total, which represents a 53 percent reduction from the 114 exploration projects estimated under the No Action Alternative. In comparison to the Proposed Action, the Nevada Alternative would increase the estimated number of future mines from three to four and the number of exploration projects from 38 to 54.

The Nevada Alternative would reduce the high and moderate mineral potential area open to the Mining Law by 892,595 acres. In comparison to the Proposed Action, the Nevada Alternative would withdrawal 191,514 fewer acres of high and moderate mineral potential lands.

When compared to the No Action Alternative, the Nevada Alternative would have a major impact to access to and availability of geology and mineral resources because the number of future mines and exploration projects would be reduced by more than 50 percent, as would the availability of high and moderate mineral potential lands.

The impact to access to and availability of geology and mineral resources in areas with high and moderate mineral potential in Nevada is less in this alternative in comparison to all other action alternatives. For the other five states in the analysis area, there is no difference in impacts between the Nevada Alternative and the Proposed Action. When comparing the full, six state area, the Nevada Alternative has a greater impact than the HMP Alternative, but less impact than the Proposed Action.

4.2.7 Impacts of the High Mineral Potential Alternative

The HMP Alternative would exclude from withdrawal all areas with high mineral potential across all six states, reducing the amount of acres of federal lands withdrawn to 9,390,530. By focusing on excluding just the HMP lands from the proposed withdrawal, this alternative would leave the lands with the highest mineral potential open to the Mining Law. The impacts to availability of geology and mineral resources on lands that are excluded from the HMP Alternative would be the same as those under the No Action Alternative. The estimated number of mines and exploration projects that could occur under the HMP Alternative is shown in Table 4-9. This table also includes the high and moderate mineral potential lands that would be impacted by the HMP Alternative.

Table 4-9. Estimated Number of Mines and Exploration Projects and Mineral Potential by State under the High Mineral Potential Alternative and No Action Alternative

State	No Action			HMP Alternative			Percent Reduction		
	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)
Idaho	9	26	0	2	9	216,472	78%	65%	100%
Montana	1	2	0	0	2	43,466	100%	0%	100%
Nevada	3	78	0	2	55	100,371	33%	29%	100%
Oregon	10	8	0	3	5	21,133	70%	38%	100%
Utah	0	0	0	0	0	34,025	0%	0%	100%
Wyoming	3	0	0	0	0	109,723	100%	0%	100%
Total	**26**	**114**	**0**	**8**	**72**	**525,191**	**69%**	**37%**	**100%**

HM = High and Moderate

The withdrawal of approximately 9,390,530 acres of federal lands under the HMP Alternative would reduce the estimated number of future mines to eight mines total in the six-state area, which represents a 69 percent reduction from the 26 mines estimated under the No Action Alternative. Exploration projects would be reduced to 72 projects total, which represents a 37 percent reduction from the 114 exploration projects estimated under the No Action Alternative. In comparison to the Proposed Action, the HMP Alternative would increase the estimated number of future mines from three to eight and the number of exploration projects from 38 to 72.

While the HMP Alternative would exclude all areas of high mineral potential from withdrawal, it would still reduce the moderate mineral potential area open to the Mining Law by 525,191 acres. In comparison to the Proposed Action, the HMP Alternative would withdraw 558,919 fewer acres of high and moderate potential lands.

When compared to the No Action Alternative, the HMP Alternative would have a moderate to major impact to access to and availability of geology and mineral resources because the number of future mines would be reduced by more than 50 percent and exploration projects would be reduced by more than 20 percent but less than 50 percent.

The HMP alternative would result in the highest estimated number of mines and exploration projects of all of the action alternatives and it would withdraw the smallest number of acres of high and moderate potential lands. Thus, this alternative is estimated to have the least impact on access to and availability of geology and mineral resources of all of the action alternatives.

4.2.8 Impacts of the State of Idaho Alternative

The Idaho Alternative would alter the Proposed Action only with respect to those areas proposed for withdrawal within the state of Idaho; areas proposed for withdrawal in all other states would be the same as described under the Proposed Action. The Idaho Alternative excludes 538,639 acres of land from the Proposed Action. The lands excluded from the withdrawal in Idaho contain primarily lands with high mineral potential. The Idaho Alternative would reduce the amount of acres of federal lands proposed for withdrawal in Idaho to 3,423,185, thereby reducing the total acreage of geology and mineral resources that would experience access and availability impacts to 9,410,832. The impacts to availability of geology and mineral resources on lands that are excluded from the Idaho Alternative would be the same as those under the No Action Alternative.

The estimated number of future mines and exploration projects that could occur under the Idaho Alternative and the percent reduction in the number of mineral development projects as a result of the Idaho Alternative are shown in Table 4-10. This table also includes the high and moderate mineral potential lands that would be impacted by the Idaho Alternative.

Table 4-10. Estimated Number of Mines and Exploration Projects and Mineral Potential by State under the Idaho Alternative and No Action Alternative

State	No Action			State of Idaho Alternative			Percent Reduction		
	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)	Mines	Exploration Projects	HM Mineral Potential Area Withdrawn (Acres)
Idaho	9	26	0	4	13	73,938	56%	50%	100%
Montana	1	2	0	0	1	101,227	100%	50%	100%
Nevada	3	78	0	1	32	504,179	67%	59%	100%
Oregon	10	8	0	1	3	87,714	90%	63%	100%
Utah	0	0	0	0	0	37,477	0%	0%	100%
Wyoming	3	0	0	0	0	111,051	100%	0%	100%
Total	**26**	**114**	**0**	**7**	**48**	**915,586**	**73%**	**58%**	**100%**

HM = High and Moderate

The withdrawal of 9,410,809 acres of federal lands under the Idaho Alternative would reduce the estimated number of future mines to seven mines total in the six-state area, which represents a 73 percent reduction from the 26 mines estimated under the No Action Alternative. Exploration projects would be reduced to 48 projects total, which represents a 58 percent reduction from the 114 exploration projects estimated under the No Action Alternative. In comparison to the Proposed Action, the Idaho Alternative would increase the estimated number of future mines from three to seven and the number of exploration projects from 38 to 48.

The Idaho Alternative would reduce the high and moderate mineral potential area open to the Mining Law by 915,586 acres. In comparison to the Proposed Action, the Idaho Alternative would withdraw 538,640 fewer acres of high and moderate mineral potential lands.

When compared to the No Action Alternative, the Idaho Alternative would have a major impact to access to and availability of geology and mineral resources because the number of future mines and exploration projects would be reduced by more than 50 percent, as would the availability of high and moderate mineral potential lands.

The impact to access to and availability of geology and mineral resources in areas with high and moderate mineral potential in Idaho is less in this alternative in comparison to all other action alternatives. For the other five states in the analysis area, there is no difference in impacts between the Idaho Alternative and the Proposed Action. When comparing the full, six state area, the Idaho Alternative has a greater impact than the HMP Alternative and the Nevada Alternative, but less impact than the Proposed Action.

4.2.9 Cumulative Geology and Mineral Resource Impacts

As discussed in Chapter 1, federal land withdrawals are formal lands actions (statutes or Secretarial orders) that set aside, withhold, or reserve federal land from the operation of some or all of the public land laws, including the mining laws. Withdrawals are established to eliminate or reduce resource conflicts. Withdrawing the lands from the operation of some or all of the public land laws, including the mining laws, ensures that the withdrawn lands will be used only for the purposes for which they were set aside. Withdrawals are most often used to preserve sensitive environmental values and major federal investments in facilities or other improvements, to support national security, and to provide for public health and safety.

The evaluation of cumulative impacts on access to and availability of geology and mineral resources considers the direct and indirect impacts of the alternatives, in the context of past, present, and reasonably foreseeable future activities related to the withdrawal. For this analysis, the amount of lands currently withdrawn from location and entry under the Mining Law, such as wilderness areas and national monuments, were evaluated. Only those areas currently withdrawn that intersect with the proposed withdrawal (i.e., have some amount of overlap with the action alternatives) were evaluated. There are additional areas that are withdrawn in each state, but these are areas that do not directly overlap with the proposed withdrawal and so were not included in this analysis. The already withdrawn areas in proximity to the proposed SFA withdrawal area are those most likely to have the potential for cumulative effects to the resources analyzed in this EIS.

Table 4-11 shows the amount of lands currently withdrawn from location and entry under the Mining Law and the amount of those withdrawn lands that overlaps the withdrawal area for each alternative. Lands already withdrawn for other purposes, such as national security, administrative sites, or reclamation projects, to name a few, are not considered in the tables below, as they are not withdrawn specifically for environmental preservation purposes, and thus do not provide a useful comparison. The wilderness areas already withdrawn include lands that are managed the BLM or Forest Service and national monuments that are managed by jointly with the National Park Service. They are included because they still constitute areas that are withdrawn from the Mining Law for environmental preservation purposes.

The approximate number of acres of these currently withdrawn areas that overlap the proposed withdrawal under each of the alternatives is shown in Table 4-11. Approximately 581,785 acres within the extent of the Proposed Action, Nevada Alterative, and HMP Alternative, and 578,243 acres within the extent of the Idaho Alternative have been previously withdrawn from location and entry under the Mining Law.

Table 4-11. Existing Withdrawn Areas by Name and State in the Analysis Area

State	Withdrawal Area	Total Acres of Existing Withdrawn Area	Acres Overlapping Proposed Action, Nevada Alternative, and HMP Alternative	Acres Overlapping Idaho Alternative
Idaho	Craters of the Moon National Monument	661,287	139,452	134,919
	Big Jacks Creek Wilderness	52,753	47,788	47,788
	Bruneau-Jarbidge Rivers Wilderness	89,820	48,937	49,937
	Jim McClure-Jerry Peak Wilderness	116,898	13,707	13,707
	Little Jacks Creek Wilderness	50,930	49,329	49,329
	Owyhee River Wilderness	267,137	262,299	262,297
	Pole Creek Wilderness	12,529	12,346	12,339
	Idaho Total	**1,251,354**	**573,858**	**570,316**
Montana	Upper Missouri River Breaks National Monument	495,502	31	31
	Montana Total	**495,502**	**31**	**31**
Nevada	Jarbidge Wilderness	110,445	5,678	5,678
	Santa Rosa-Paradise Peak Wilderness	32,058	2,218	2,218
	Nevada Total	**142,503**	**7,896**	**7,896**
Total		**1,889,359**	**581,785**	**578,243**

Given the large amount of federally-managed land within the withdrawal area, existing withdrawals from the Mining Law in the withdrawal area may contribute to the cumulative impacts of the proposed withdrawal under any of the action alternatives because any new withdrawal would increase the total amount of federal lands within the six-state area that are withdrawn. The large area encompassed by the action alternatives indicates that they all could have the cumulative impact of further reducing the availability of geology and mineral resources.

The Proposed Action and other alternatives would add an additional number of acres to already withdrawn lands, as shown in Table 4-12, resulting in a cumulative increase in the withdrawal area of 8.8 to 9.3 million acres, depending on the alternative, of land that would no longer be available for mineral development over the next 20 years.

Table 4-12. Cumulative Additional Withdrawal Areas by Alternative

State	Proposed Action (acres)	Nevada Alternative (acres)	HMP Alternative (acres)	Idaho Alternative (acres)
Idaho	3,387,966	3,387,966	3,361,978	2,852,869
Montana	877,602	877,602	819,841	877,602
Nevada	2,759,043	2,671,075	2,355,235	2,759,043
Oregon	1,843,405	1,843,539	1,776,824	1,843,405
Utah	233,590	233,824	230,138	233,590
Wyoming	265,085	265,085	263,757	265,085
Proposed Additional Acres Withdrawn	9,366,691	9,270,827	8,807,773	8,831,594
Currently Withdrawn Acreage	1,889,359	1,889,359	1,889,359	1,889,359
Cumulative Withdrawn Acreage	11,256,050	11,160,186	10,697,132	10,720,953

4.3 Social and Economic Conditions

Potential economic and social impacts from the Proposed Action and other action alternatives are discussed in the following section. Existing social and economic conditions in the states and counties most likely to be affected by the withdrawal alternatives are presented in Chapter 3, Section 3.5. Although the relative impacts of the alternatives could be largest at the community level (e.g., in individual towns or portions of counties closest to potential future mines) projected impacts were estimated at the county level due to the limitations of available data and models, as well as uncertainty regarding specific locations of potential future mines. County level impacts were then aggregated to statewide totals.

4.3.1 Impact Assessment Methodology and Assumptions

The Proposed Action, and other action alternatives evaluated in this EIS, would withdraw selected lands managed by the BLM and Forest Service in six western states from the Mining Law, subject to valid existing rights. This section compares the economic and social impacts of future mineral development projects that could occur over the next 20 years under the No Action Alternative to the economic and social impacts of a reduced number of future mineral development projects that would be expected to occur under the Proposed Action and other action alternatives.

To evaluate these potential impacts, the following indicators are used:

- Proportion of total county land area within proposed withdrawal area.
- Proportion of federally managed lands in the county within the proposed withdrawal area.
- Percent changes in total county employment.
- Percent changes in total county labor income.
- Changes in the proportion of county jobs directly and indirectly related to mining.
- Direction, magnitude, and rate of change in demographic conditions.
- Changes in local government revenues.
- Safety issues related to mine operations and MSHA regulations.
- Gross value of metals or commodities produced by mining in each county (direct output).
- Exploration-related expenditures in each county.
- Direct mining -related employment.
- Direct labor compensation related to mining.
- Secondary jobs and labor compensation related to mining.
- Direct and indirect revenue for state, and local governments resulting from mining operations.

To assess the overall degree of social and economic impact associated with each of the action alternatives, the impact thresholds described in Table 4-13 were used to characterize social and economic impacts of the alternatives. For this analysis, alternatives projected to lead to lower employment, labor compensation or population were characterized as adverse impacts, recognizing that some people may not agree with that characterization.

Table 4-13. Impact Threshold Definitions for Social and Economic Resources

Threshold	Description Relative to Resource
No impact	Would not produce quantifiable changes in economic and social impact indicators relative to No Action.
Minor	Would lead to projected changes of less than 2% in overall employment, population or labor compensation compared to No Action Alternative.
Moderate	Would lead to projected changes of between 2% and 5% in overall employment, population or labor compensation compared to No Action Alternative.
Major	Would lead to projected changes of more than 5% in overall employment, population or labor compensation compared to No Action Alternative.

Economic Impacts

The starting point for projecting future mining operations under the No Action Alternative is the RFD created for this EIS (Appendix B). The RFD projected that 114 future exploration projects could occur within the withdrawal areas during the 20-year withdrawal period and that 26 future mines could be developed. In the RFD, future mines were defined by primary commodity, location (state and county), and size (in terms of projected surface disturbance area). Additional information was needed for the economic analysis, including projected employment and output for each of the potential mines identified in the RFD. The study team developed this additional information from several sources, including prior NEPA documents for similar mines in the same states, mine pre-feasibility study information developed for proposed mines, data from state agencies, and data from the 2012 Economic Census of Mining produced by the U.S. Department of Commerce. Table 4-14 depicts the estimated economic characteristics associated with each of the potential mines identified in the RFD. The levels of employment and output shown in Table 4-14 are projected average annual values for each individual mine in each location during active mine operations. For example, the five jasper mines projected to be developed within Custer County, Idaho, would each be projected to employ 16 people and produce approximately $4 million in annual revenues in an average year during their operation. All dollar values provided in the impact analysis are reported in 2013 dollars and do not include a projection of future inflation.

Projected annual employment and output associated with each potential mine were entered into regional IMPLAN economic models for the relevant socioeconomic analysis areas identified in Chapter 3 to estimate their impacts on regional employment, output, earnings, and tax revenues. The results of those analyses describe the projected direct and indirect[16] economic impacts from future mining that could be precluded from occurring under the withdrawal alternatives. Due to the geographic scope of this analysis, 2013 IMPLAN data files were used as provided by IMPLAN and the data files were not customized based on other sources of local information. While some errors may exist in the IMPLAN data files, the effect on the results of the economic impact analysis from such errors is likely small relative to the uncertainty involved in the direct effects assumptions regarding the number of potential future mines, and their sizes and locations.

[16] The term “indirect” impact sometimes creates confusion in NEPA documents where input-output models are used. In this chapter, the term “indirect” generally has the standard meaning in NEPA documentation of describing effects that are removed from the action causing those effects by differences in time or place. This includes effects termed “induced impacts” in input-output modeling using tools such as IMPLAN. Where specific outputs from the IMPLAN modeling are described in this chapter, indirect impacts are sometimes further broken down into “indirect” and “induced” impacts.

Table 4-14. Estimates of Annual Economic Characteristics of RFD Mines

State	County Name	RFD Mines	RFD Mine Size	RFD Primary Commodities	Revenue	Jobs
Idaho						
	Butte	1	Large	Gold; silver	$66,429,739	80[a]
	Custer	5	Small	Jasper	$4,069,384	16[a]
		1	Small	Plume agate	$4,069,384	16[a]
		1	Small	Zeolite	$4,069,384	16[a]
		1	Small	Gold; silver; copper; lead; zinc	$1,356,857	6[a]
ID Total		**9**			$96,272,282	198
Montana						
	Valley	1	Large	Bentonite	$22,069,394	73[b]
MT Total		**1**			$22,069,394	73
Nevada						
	Elko	1	Large	Barite	$11,096,720	39[c]
		1	Large	Gold; silver	$164,249,345	188[a]
	Humboldt	1	Large	Lithium	$124,000,000	235[d]
NV Total		**3**			$299,346,065	462
Oregon						
	Lake	7	Small	Gemstone	$4,069,384	16[a]
		2	Small	Gemstone; sunstone	$4,069,384	16[a]
	Malheur	1	Small	Gemstone	$4,069,384	16[a]
OR Total		**10**			$40,693,837	160
Utah						
	None	0	—	—	—	—
UT Total		**0**				
Wyoming						
	Fremont	2	Large	Gold	$66,665,536	78[a]
		1	Large	Tungsten	$59,511,360	155[a]
WY Total		**3**			$192,842,432	311
Grand Total		**26**			**$651,224,010**	**1,204**

Sources: a) Estimates derived from 2012 Economic Census; b) Estimates based on Environmental Assessment for American Colloid Company, 2015; c) Estimate based on Nevada Department of Taxation data, 2015-2016; d) Estimate based on 2011 pre-feasibility study.

The RFD also identified potential future exploration projects that could occur within the proposed withdrawal areas in the absence of a withdrawal. To further define these exploration projects in economic terms, the study team used exploration cost models developed for the Final EIS on Surface Management Regulations for Locatable Mineral Operations (BLM 2000) in 2000, but updated the cost estimates for inflation to 2013 dollars. Based on those cost models, each small exploration project (as defined in the RFD) was projected to involve approximately $24,000 in expenditures – including about $9,800 in labor cost and about $14,200 in equipment rental cost. Each large exploration project was projected to involve approximately $275,000 in expenditures – including approximately $72,000 in labor cost and $203,000 in equipment rental cost.

Based on the updated exploration project cost models, the 114 potential future exploration projects in the withdrawal area would require the total expenditure of approximately $12 million over the 20-year withdrawal period, as shown in Table 4-15, or an average of $600,000 per year over the 20-year period. In comparison to the direct economic impacts from the potential future mines identified in the RFD (which would total about $650 million in annual revenues if all 26 mines were in production at the same time), the direct economic impacts from the exploration projects would be very small. Consequently, the study team did not conduct an IMPLAN analysis of the regional economic impacts associated with the potential exploration projects.

Table 4-15. Projected Direct Economic Expenditures for Future Exploration Projects (Totals over 20-Year Period)

State	County Name	Projected Exploration Projects (RFD)			Projected Direct Expenditures Over 20 Years		
		Large	Small	Unknown	Labor	Equipment Rental	Total
Idaho							
	Butte	2	4	—	$182,552	$462,495	$645,048
	Cassia	—	4	—	$39,231	$56,655	$95,886
	Clark	—	6	—	$58,847	$84,983	$143,830
	Custer	—	2	—	$19,616	$28,328	$47,943
	Lemhi	—	2	—	$19,616	$28,328	$47,943
	Lincoln	—	4	—	$39,231	$56,655	$95,886
	Owyhee	—	2	—	$19,616	$28,328	$47,943
ID Total		**2**	**24**	—	**$378,708**	**$745,772**	**$1,124,480**
Montana							
	Valley	2	—	—	$143,321	$405,840	$549,161
MT Total		**2**	—	—	**$143,321**	**$405,840**	**$549,161**
Nevada							
	Elko	12	30	20	$1,968,843	$5,030,793	$6,999,636
	Humboldt	—	2	14	$589,894	$1,547,914	$2,137,808
NV Total		**12**	**32**	**34**	**$2,558,737**	**$6,578,707**	**$9,137,444**
Oregon							
	Lake	—	2	—	$19,616	$28,328	$47,943
	Malheur	4	2	—	$306,258	$840,008	$1,146,265
OR Total		**4**	**4**	—	$325,873	$868,335	$1,194,209
Grand Total		**20**	**60**	**34**	**$3,406,640**	**$8,598,654**	**$12,005,294**

Source: Cost estimates based on Surface Management Regulations for Locatable Mineral Operations, Environmental Impact Statement. October 2000. Updated to 2013 dollars for this analysis.

Social Impacts

Given the nature of the alternatives under consideration, it is reasonable to anticipate two different sources of potential social impacts, *tangible social impacts* and *intangible social impacts*.

As defined for this analysis, tangible social impacts would result from economic impacts, such as impacts on population, housing, and community services due to projected differences in employment between the action alternatives and the No Action Alternative. Tangible social impacts may be small or large, depending on the scale of differences in economic and demographic conditions between the alternatives, and the magnitude of these differences in the context of existing economic and demographic conditions. In this analysis, economic and demographic differences are quantitatively estimated based on existing

relationships between employment and earnings and demographic characteristics. These quantitative estimates provide indicators of potential, tangible social impacts, but the social impacts themselves are evaluated qualitatively.

The Proposed Action, and the other action alternatives, have the potential to result in social impacts tied to local perceptions of federal land management. In this evaluation, these perceptual impacts are termed intangible social impacts. Because it is not possible to determine differences in these intangible social impacts between the various states and counties that could be impacted by the action alternatives, or to reliably determine differences in these impacts between the action alternatives, the potential for intangible social impacts is discussed in Section 4.3.3, Impacts Common to All Action Alternatives.

4.3.2 Incomplete or Unavailable Information

The direct result of the Proposed Action, and the other action alternatives, would be to withdraw selected lands managed by the BLM and Forest Service from the Mining Law, subject to valid existing rights. While there is no uncertainty regarding that potential action, there is considerable uncertainty concerning the economic and social impacts of the action alternatives.

The economic and social impacts of the Proposed Action and other action alternatives are uncertain because the extent and exact nature of future mineral development projects under the No Action Alternative on the lands proposed for withdrawal is uncertain. Put simply, if no mines would be developed in the proposed withdrawal areas over the next 20 years even without the proposed withdrawal, there would be no economic and social impact from the withdrawal (with the potential exception of intangible social impacts discussed later). On the other hand, if the proposed withdrawal areas would experience extensive mining operations over the next 20 years if a withdrawal is not implemented, the economic and social impacts could be substantial.

In this context, the key assumptions for the economic and social impacts analysis begin with the number of future mines projected to be developed over the next 20 years in the RFD, the types of commodities projected to be mined, the locations of the projected mines (by county), and the size of those mines. The actual number of future mines in the proposed withdrawal areas could be larger or smaller than the number projected in the RFD due to variability in commodity prices or numerous other factors. To the extent that any of these projections are inaccurate, economic, and social impacts could be larger or smaller, or have a different geographic distribution, than projected in this chapter.

Beyond uncertainty regarding the projections in the RFD, additional uncertainty arises from the economic characterization of the projected mines. While the primary commodities and projected locations of the future mines provide an indication of their likely size (in terms of employment and revenues), there can be considerable variation in mine sizes and levels of activity even among mines focused on the same primary commodities in the same counties.

Another area of uncertainty is the timing and duration of future mining operations under the No Action Alternative. Given the amount of time typically required for planning, feasibility studies and permitting of large mining operations, it appears unlikely that many of the future mines projected in the RFD would commence operations within the first few years of the proposed withdrawal. It is also unlikely that all of the projected future mines would operate continuously throughout the full 20-year withdrawal period if there is no withdrawal.

Since it was not possible to forecast the schedule of mine construction, operations, and reclamation associated with the potential future mines identified in the RFD, the economic and social impacts analysis was based on the projected annual impacts during the operation of each mine. Consequently, this analysis

considers the regional economic impacts as if all of the projected mines were operating simultaneously. This approach likely overstates the regional economic stimulus from future mines under the No Action Alternative, and may correspondingly overestimate the differences in future economic and social impacts that would arise from the action alternatives.

4.3.3 Impacts Common to All Action Alternatives

While each of the action alternatives is expected to reduce future mining operations on the withdrawn lands, the impacts of the alternatives may vary depending on which areas would be withdrawn. In the remainder of this section, projected future mining operations under each action alternative are compared to projected future mining operations under the No Action Alternative in order to evaluate potential economic and social impacts and compare impacts between the alternatives.

There are several areas where it is difficult, if not impossible, to quantitatively distinguish between the impacts of the action alternatives and/or to quantify impacts at the state-level. These areas include intangible social impacts, impacts on the national mining industry, and impacts on market values associated with recreation and non-market values.

Intangible Social Impacts

In this evaluation, the term “intangible social impacts” refers to social impacts stemming more from public and stakeholder perceptions regarding the proposed withdrawal alternatives than from actual impacts on future employment and demographic conditions. Although these impacts are related more to perception than actual effect, they should not be dismissed from consideration. With the exception of a few counties projected to have substantial mining operations within the proposed withdrawal areas under the No Action Alternative, the intangible or perceptual impacts from the proposed withdrawal could be larger, and would likely be more widespread, than the actual economic and more tangible social impacts.

The management of federal lands across the western United States has become increasingly contentious. Although there are a wide variety of public views concerning federal lands and their management, concerns regarding restrictions on the use of federal lands seem to be most prevalent in rural communities that have historically relied on the extraction and development of natural resources for their livelihoods. These characteristics apply to many of the counties containing proposed withdrawal areas.

Implementation of any of the action alternatives is likely to contribute to further polarization concerning federal land management. Individuals and organizations that place a high priority on wildlife and ecosystem conservation are likely to perceive any of the action alternatives as beneficial, though some might prefer further or more extensive conservation efforts. Individuals and organizations that place a high priority on the economic development of natural resources are likely to have the opposite view. These potentially divisive, intangible social impacts may occur regardless of the extent of more tangible economic and social impacts projected to result from the alternatives.

Impacts on the National and International Mining Industry

The economic and social impacts evaluation in this EIS focuses on the projected impacts in the counties and states containing areas that would be withdrawn under the action alternatives. However, mining is a national and international industry. Development and operation of future mines often involves specialized expertise and equipment that would be procured from areas outside of the states and counties that are the focus of this EIS.

Based on the RFD and other assumptions regarding future mining operations (described earlier), the action alternatives would also lead to broader economic impacts on the national and international mining industry in other locations. This evaluation assumes that the mining industry benefits from having more potential locations to explore and develop, and would be adversely affected by the proposed withdrawal. Under any of the action alternatives, however, extensive areas of federally managed lands throughout the western United States would remain open to the Mining Law. Mining companies would likely reprioritize investments away from the proposed withdrawal areas to other potential mining areas. Given the small amount of mining currently taking place within the proposed withdrawal areas, the net impacts on the overall mining industry would likely be relatively modest and widely dispersed across the United States and other countries from which specialized equipment and expertise would be procured.

To help put the projected economic impacts of the proposed withdrawal in broader perspective, the summary of projected impacts across the six states that include potential withdrawal areas can be compared to overall national economic metrics for relevant portions of the United States mining industry. In 2012, there were approximately 630 active mines in the United States producing metallic and non-metallic minerals (excluding sand and gravel operations and coal mining). Those mines produced approximately $34 billion in total output and about $3.5 billion in labor compensation, while directly providing about 50,000 jobs (2012 Economic Census).

The Proposed Action is projected to result in approximately $700 million less annual output, $120 million less in labor compensation, and about 1,700 fewer jobs than the No Action Alternative. The magnitude of these potential impacts corresponds to between 2 and 4 percent of the national economic metrics for metallic and non-metallic mineral mining.[17]

Impacts on Market Values Associated with Recreation and Non-market Values

As described in Chapter 3, recreation is the largest or second largest (after mineral extraction) source of employment associated with the use of federal land in each of the states containing lands that could be withdrawn under the action alternatives. The potential development of 26 future mines and 114 future mineral exploration projects under the No Action Alternative could affect the quality of the recreation experience and/or recreation activity levels in areas closely proximate to the future mines. Development of the future mines could also, however, establish new roads in these areas that could subsequently provide additional recreation access in these areas.

The term non-market values refers to the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions and therefore lack prices. This includes direct and indirect use values and also non-use values (sometimes referred to as passive use values). Use value includes the benefits an individual directly derives from some experience or activity, such as climbing a spectacular peak, hunting, or wildlife viewing. Use value also includes indirectly received benefits, such as from ecosystem services, which are environmental functions, processes, and characteristics that are valuable to people because they support, enable or protect human activity. Examples include crop pollination services provided by wild bees and other insects, and flood control from intact wetlands. In contrast, non-use value refers to the utility or psychological benefit some people derive from the existence of some environmental condition that may never be directly experienced.

[17] This comparison is illustrative of the scale of possible effects from the action alternatives relative to the overall scale of national mining, but is not a pure “apples to apples” comparison. There would be additional effects on mining industry activity outside of the areas proposed for withdrawal which are not captured in this analysis. On the other hand, the projected effects from the alternatives also include secondary impacts on employment, earnings and output beyond effects on the mining industry alone.

There are many non-market values associated with federal land. Perhaps the most relevant non-market values in this case are the values associated with the existence and preservation of greater sage-grouse. As discussed in Chapter 3, many people place value on protecting any species perceived to be threatened or endangered. It is reasonable to assume these values would also extend to greater sage-grouse. To the extent that the action alternatives are successful in helping to protect greater sage-grouse populations from further decline and promote their recovery, the alternatives would provide non-market benefits. Conversely, some people may also attach a non-market value to local control over nearby public lands. These values could be diminished by the Proposed Action and other action alternatives.

The following portions of this section evaluate the potential direct and indirect social and economic impacts of the No Action Alternative and the action alternatives. Since many readers may want to focus on potential impacts in specific geographic areas, the structure of this evaluation differs from the impact analyses for other resources provided in this chapter. Rather than being organized by alternative, the social and economic impacts reported in this section are initially examined on a state by state basis, and then summarized across the six states later in the section.

4.3.4 Economic and Social Impacts in Idaho

The following sections describe projected social and economic impacts on a state-by-state and alternative-by-alternative basis. Readers primarily interested in an overall comparison of the social and economic impacts of the alternatives can find the summary comparison in Section 4.3.10 later in this chapter.

No Action Alternative

As described in the RFD, during the 20-year period of the proposed withdrawal, a total of nine mines are projected to be developed within the proposed Idaho withdrawal area if a withdrawal is not implemented. These mines are anticipated to include one large gold/silver mine in Butte County, one small gold/silver mine in Custer County, and seven small gem mines in Custer County. Table 4-16 summarizes the estimated annual economic and fiscal impacts in Butte County during operations of the large gold/silver mine projected to be developed there. Including indirect and induced[18] economic impacts (often termed "multiplier effects"), operation of the mine is projected to support approximately 89 jobs and annual labor income of about $10.5 million. Operations of the projected Butte County gold/silver mine are also projected to produce an average of nearly $2.3 million per year in state and local tax revenues.

Table 4-16. Estimated Annual Economic Impacts in Butte County, Idaho during Operations of Projected Future Gold/Silver Mine under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$67,836,782	80.0	$10,027,500	N/A
Indirect Impact	$1,038,331	6.2	$377,373	N/A
Induced Impact	$401,579	3.2	$95,417	N/A
Total Impact	**$69,276,692**	**89.4**	**$10,500,290**	**$2,273,487**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

[18] In economic input-output analysis using tools such as the IMPLAN model, indirect effects refers to jobs and other economic activity supported by the mine's purchases of supplies, services and equipment. Induced effects refers to jobs and other economic activity supported by the household spending of mine employees and employees at local vendors supplying goods and services to the mine.

Table 4-17 provides a similar summary of the estimated economic and fiscal impacts in Custer County during operations of the small gold/silver mine and the seven small gem mines projected to be developed in that county under the No Action Alternative. If all of these projected future mines were in operation at the same time, they would support approximately 225 jobs and about $11.9 million in labor income in Custer County. The projected mines in Custer County are also estimated to produce a little over $1 million per year in state and local tax revenues.

Table 4-17. Estimated Annual Economic Impacts in Custer County, Idaho during Operations of Projected Future Small Gold/Silver Mine and Seven Small Gem Mines under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$34,391,270	118.0	$8,967,156	N/A
Indirect Impact	$7,664,646	66.8	$1,752,660	N/A
Induced Impact	$4,737,658	39.9	$1,132,185	N/A
Total Impact	**$46,793,574**	**224.7**	**$11,852,001**	**$1,046,491**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

The projected mines in Butte and Custer counties could support additional jobs in nearby counties. Table 4-18 summarizes the projected total annual economic and fiscal impacts from these projected mines across all of the counties in Idaho containing proposed withdrawal areas. The estimated impacts in Butte and Custer counties are slightly larger than shown in Tables 4-16 and 4-17 because the regional summary also includes estimated job impacts in Custer County from the projected mine in Butte County, and vice-versa.

Table 4-18. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Idaho Counties with Proposed Withdrawal Areas under the No Action Alternative

County	Output	Employment	Labor Income	State/Local Tax Revenue
Butte*	$69,360,104	90.0	$10,524,714	$2,274,768
Custer*	$47,318,730	225.9	$11,929,619	$1,065,399
Bingham	$106,374	0.6	$33,109	$7,479
Blaine	$445,922	3.5	$155,460	$15,403
Camas	$3,514	0.0	$805	$153
Clark	$9,063	0.1	$2,084	$390
Elmore	$1,278	0.0	$269	$0
Fremont	$45,495	0.3	$10,878	$1,558
Gooding	$7,005	0.0	$2,120	$328
Jefferson	$108,112	0.8	$28,413	$3,547
Lemhi	$606,567	5.2	$134,716	$18,696
Lincoln	$5,891	0.0	$1,470	$455
Minidoka	$1,251	0.0	$206	$36
Total	**$118,019,305**	**326.5**	**$22,823,863**	**$3,388,212**

*Counties with projected future mines under No Action Alternative.
Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the counties.

As shown in Table 4-18, the estimated economic and fiscal impacts in other Idaho counties from potential future mines in Butte and Custer counties would be relatively small. Apart from Butte and Custer counties, only two other Idaho counties are projected to gain more than one full job from the projected mines. Blaine County is projected to gain between three and four jobs if the projected mines are developed in Butte and Custer counties. Lemhi County is projected to gain approximately five jobs from the projected mines.

Apart from the projected future mines under the No Action Alternative, an estimated $1.1 million is forecast to be expended on 26 mineral exploration projects across the Idaho counties with proposed withdrawal areas over the next 20 years. Average annual expenditures on exploration activities in the Idaho counties are projected to be approximately $55,000 under the No Action Alternative. While some of this money would recirculate as workers rent hotel rooms, and purchase meals and other goods and services, the secondary (indirect and induced) economic impacts from the anticipated exploration activities would be too small to quantify.

Assessment of Economic and Social Impacts in Idaho under the No Action Alternative

As described in Chapter 3, total employment in Butte County declined by more than 1,400 jobs between 2001 and 2014. The 90 new jobs in Butte County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 1 percent increase compared to the county's current total employment. The additional $10.5 million in projected annual labor income projected to result from the future mines would represent an increase of about 1.5 percent in the county's total employee compensation.

Butte County has a very small mining sector at present, which almost entirely consists of oil and gas related activity. The county's unemployment rate is less than 4 percent, which is lower than average in Idaho. Given these circumstances, it appears likely that many of the projected new jobs associated with potential future mines in the Butte County portion of the proposed withdrawal area would have to be filled by workers that either move to the county for those jobs or commute to work from nearby counties.

The potential that most new jobs associated with potential future mines in the Butte County portions of the proposed withdrawal area would be filled by commuters is further indicated by the unusual relationship between employment and population in Butte County. As of 2013, there were more than 10,000 jobs located in Butte County[19], but only 2,500 residents. The large majority of the current jobs in Butte County are held by workers commuting from other counties in Idaho, including Bonneville, Bingham, and Bannock counties (ACS 2013). Much of the in-commuting is likely attributable to the location of facilities of the Department of Energy's Idaho National Laboratory in Butte County.

The potential future mine in Butte County under the No Action Alternative would provide a boost to county tax revenues. Approximately $750,000 of the projected annual state and local tax revenues from the mine would come from property taxes, typically the largest source of revenue for county governments.

In Custer County, employment has grown by about 400 jobs (or about 15 percent) since year 2000. The nearly 226 new jobs projected to be supported by potential mines in the proposed withdrawal area portions of the county under the No Action Alternative would represent about a 7.6 percent increase in county employment. The $11.9 million in projected labor earnings in Custer County from the potential future mines would represent an 11.6 percent increase in total employee compensation from jobs in the county.

[19] The estimated number of jobs in Butte County varies depending on the source. The Bureau of Economic Analysis estimated total county employment in 2014 at approximately 8,200 jobs. IMPLAN estimated total county employment in 2013 at almost 13,000 jobs.

The potential jobs from the projected mines in Custer County under the No Action Alternative could lead to a corresponding increase in the county's population. In some circumstances, a rapid influx of newcomers seeking to fill new jobs can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions. However, since the total population of Custer County has declined by about 6 percent since 2000, migration into the county to work at the projected mines (and other jobs indirectly supported by their activity) would likely be perceived as beneficial. The labor income from the mining jobs would also be a benefit, particularly since Custer County currently has a higher poverty rate than average across Idaho.

Unlike Butte County, Custer County does have an existing mineral mining sector with about 87 existing jobs, and about $5.4 million in employee compensation, from jobs in metal and nonmetallic mineral mining. The potential future mines projected for the proposed withdrawal area portions of Custer County under the No Action Alternative could both expand and extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations.

The potential future mines in Custer County under the No Action Alternative would also provide a boost to county tax revenues. Approximately $300,000 of the projected annual state and local tax revenues from the mines would come from property taxes.

Proposed Action

The Proposed Action would withdraw nearly 4 million acres of federally managed land across 16 counties in Idaho. This alternative would allow future mines only on valid mining claims. No future mining would occur in areas where there are no mining claims.

Under the No Action Alternative, 26 mines are projected to be developed in the withdrawal area, nine of which are expected be located in Idaho. Under the Proposed Action three mines are projected to be developed in the withdrawal area, as compared to 26 mines under the No Action Alternative, one of which is expected to be in Idaho. Because it is not possible to know where the one mine might be developed in Idaho under the Proposed Action, the best estimate of the potential economic impacts from future mines in the Idaho socioeconomic analysis area under the Proposed Action is that those impacts would be 1/9th of the projected impacts under the No Action Alternative (since the Proposed Action includes one projected mine, while the No Action Alternative includes nine). The economic impact estimates based on the 1/9th ratio are termed the "proportionate expected values" in Table 4-19.

The economic impacts in the Idaho socioeconomic analysis area could, however, differ considerably depending on which of the nine mines projected under the No Action Alternative was developed under the Proposed Action. The largest potential economic impacts in the Idaho socioeconomic analysis area under the Proposed Action would occur if the one mine projected to be developed was the large gold mine in Butte County. The smallest potential economic impacts would be if the one mine to be developed was the projected small gold mine in Custer County. Table 4-19 also shows the range of potential economic impacts based on these possibilities, which are termed "Maximum Potential Values" and "Minimum Potential Values" in the table.

Table 4-19 compares the projected economic impacts of future mines in the Idaho socioeconomic analysis area under the Proposed Action to existing conditions and projected economic impacts under the No Action Alternative.

Table 4-19. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Idaho Counties under the Proposed Action Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	**$13,113,256**	**36**	**$2,535,985**	**$376,468**
Maximum Potential Values	$70,279,108	94	$10,735,903	$2,311,934
Minimum Potential Values	$3,568,426	11	$457,347	$119,245
Impacts Relative to Existing Conditions				
Proportionate Expected Values	**$13,113,256**	**36**	**$2,535,985**	**$376,468**
Maximum Potential Values	$70,279,108	94	$10,735,903	$2,311,934
Minimum Potential Values	$3,568,426	11	$457,347	$119,245
Impacts Relative to No Action Alternative				
Proportionate Expected Values	**-$104,906,049**	**-290**	**-$20,287,878**	**-$3,011,744**
Maximum Potential Values	-$47,740,197	-233	-$12,087,959	-$1,076,278
Minimum Potential Values	-$114,450,879	-316	-$22,366,516	-$3,268,967

*One future mine projected in region.

As shown in Table 4-19, the Proposed Action is projected to result in approximately $105 million less annual regional output, 290 fewer regional jobs, and $20.3 million less in annual labor income in the Idaho socioeconomic analysis area than the No Action Alternative. The Proposed Action is also projected to result in about $3 million less in state and local tax revenue.

There would also be less future mining exploration projects under the Proposed Action than under the No Action Alternative. Three future mineral exploration projects are projected to occur in the Idaho socioeconomic analysis area under the Proposed Action, compared to 26 exploration projects projected under the No Action Alternative. Under the Proposed Action total exploration expenditures in the Idaho socioeconomic analysis area are projected to be about $72,000 over the proposed 20-year withdrawal period (compared to $1.1 million under the No Action Alternative).

Assessment of Economic and Social Impacts in Idaho under the Proposed Action

Because more than 95 percent of the economic impacts of the potential mines under the No Action Alternative would occur in Butte County and Custer County, the following discussion focuses on the impacts of the Proposed Action in those two counties.

Since mining could still continue under existing authorizations under the Proposed Action, there would be minimal economic or tangible social impacts from the Proposed Action relative to existing conditions in Butte County. There would, however, be economic impacts from the Proposed Action relative to the projected economic activity associated with potential future mines under the No Action Alternative. Under the Proposed Action, Butte County would likely not experience the growth in employment and labor income projected to occur under the No Action Alternative as a result of the potential future mine in the proposed withdrawal area. Total county employment is projected to be about 1 percent lower under the Proposed Action than under the No Action Alternative, and total county earnings are projected to be about 1.4 percent lower than under the No Action Alternative.

As noted in the discussion of No Action Alternative impacts in Butte County, the majority of jobs in the county are current filled by residents from other counties. If this relationship also holds true for new mining jobs that would occur under the No Action Alternative, the Proposed Action would have relatively little impact on Butte County's population. The Proposed Action is projected to result in 1 percent fewer Butte County residents (about 25 fewer county residents) than the No Action Alternative.

Considering the lack of an existing mining sector in Butte County, and the relatively small projected differences in population under the Proposed Action compared to the No Action Alternative, tangible social impacts from the Proposed Action would likely be minimal. As discussed earlier in this chapter, intangible, or perceptual, social impacts in response to the Proposed Action could be larger.

As in Butte County, there would also be few if any economic or tangible social impacts from the Proposed Action relative to existing conditions in Custer County. However, under the Proposed Action, Custer County would not experience most of the growth in employment and labor income projected to occur under the No Action Alternative as a result of the potential future mines in the proposed withdrawal area. Total county employment is projected to be almost 7 percent lower under the Proposed Action than under the No Action Alternative, and total county earnings are projected to be more than 10 percent lower than under the No Action Alternative. Assuming the population to employment ratio for the projected new mining-related jobs in Custer County is the same as the county's current ratio, Custer County is projected to have about 320 fewer residents (7 percent less future population) under the Proposed Action than under the No Action Alternative.

Relative to the No Action Alternative, the Proposed Action would not produce the same influx of newcomers into Custer County. The Proposed Action would also not contribute as much to extending the longevity of the existing mining sector in the county and would provide fewer ongoing employment opportunities for current miners living in the county.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the proposed withdrawal. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Assessment of Economic and Social Impacts in Idaho under the Nevada Alternative

In the Idaho socioeconomic analysis area, the projected economic and social impacts of the Nevada Alternative are projected to be the same as the impacts under the Proposed Action.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with HMP, as defined by the Mineral Potential Report prepared by the USGS would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Under the HMP Alternative, two of the nine future mines anticipated in the Idaho withdrawal areas under the No Action Alternative are expected to be developed. However, which of the nine projected No Action Alternative mines would be developed under the HMP Alternative is not known. Consequently, the best estimate of the potential economic impacts from future mines in the Idaho socioeconomic analysis area under the HMP Alternative is that those impacts would be 2/9th of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-7.

Under the HMP Alternative, one large exploration project and eight small exploration projects are projected to occur in the Idaho withdrawal area. Total exploration expenditures in the Idaho socioeconomic analysis area are projected to be about $466,000 over the proposed 20-year withdrawal period (compared to $1.1 million under the No Action Alternative).

Assessment of Economic and Social Impacts in Idaho under the High Mineral Potential Alternative

The economic impacts in the Idaho socioeconomic analysis area would differ considerably depending on which of the nine mines projected under the No Action Alternative were developed under the HMP Alternative. The largest potential economic impacts in the Idaho socioeconomic analysis area under the HMP Alternative would occur if the two mines projected to be developed were the large gold mine in Butte County and one of the gemstone mines in Custer County. The smallest potential economic impacts under the HMP Alternative would be if the two mines to be developed were the projected small gold mine in Custer County and one of the gemstone mines in that county. Table 4-20 also shows the range of potential economic impacts based on these possibilities.

Table 4-20. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Idaho Counties under the High Mineral Potential Alternative Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
HMP Alternative*				
Proportionate Expected Values	**$26,226,512**	**73**	**$5,071,970**	**$752,936**
Maximum Potential Values	$76,589,361	126	$12,397,420	$2,448,653
Minimum Potential Values	$9,878,679	43	$2,118,863	$255,964
Impacts Relative to Existing Conditions				
Proportionate Expected Values	**$26,226,512**	**73**	**$5,071,970**	**$752,936**
Maximum Potential Values	$76,589,361	126	$12,397,420	$2,448,653
Minimum Potential Values	$9,878,679	43	$2,118,863	$255,964
Impacts Relative to No Action Alternative				
Proportionate Expected Values	**-$91,792,793**	**-254**	**-$17,751,893**	**-$2,635,276**
Maximum Potential Values	-$41,429,944	-201	-$10,426,443	-$939,559
Minimum Potential Values	-$108,140,626	-284	-$20,705,000	-$3,132,248

*Two mines projected in region.

As shown in Table 4-20, the best estimate is that future mines under the HMP Alternative would support about $26 million in annual output, 73 jobs, and $5.1 million in annual labor income in the Idaho socioeconomic analysis area. However, depending on which mine was developed under the HMP Alternative, the economic impacts could be considerably larger (up to 126 jobs and $12.4 million in annual labor income) or considerably smaller (as few as 43 jobs and $2.1 million in annual labor income).

Relative to the No Action Alternative, the HMP Alternative is projected to support between 201 and 284 fewer jobs in the Idaho socioeconomic analysis area, and between $10.4 and $20.7 million less in labor income.

At the county level, demographic and social impacts would depend on which of the nine projected mines under the No Action Alternative were developed under the HMP Alternative. If the two mines developed under the HMP Alternative were the large gold mine projected to occur in Butte County and one of the projected mines in Custer County anticipated under the No Action Alternative, the demographic and social impacts in Butte County would be essentially the same as under the No Action Alternative, while the demographic and social impacts in Custer County would be closer to the projected impacts under the Proposed Action. If both mines developed under the HMP Alternative were in Custer County, the demographic and social impacts in Butte County would likely be the same as under the Proposed Action, while the impacts in Custer County would also be closer to the Proposed Action than the projected impacts under the No Action Alternative.

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Under the Idaho Alternative, four of the nine future mines anticipated in the Idaho withdrawal area under the No Action Alternative are expected to be developed. As is the case under the other action alternatives, which of the nine projected No Action Alternative mines would be developed under the Idaho Alternative is not known. Consequently, the best estimate of the potential economic impacts from future mines in the Idaho socioeconomic analysis area under the Idaho Alternative is that those impacts would be 4/9th of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-21.

Table 4-21. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Idaho Counties under the Idaho Alternative Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Idaho Alternative*				
Proportionate Expected Values	**$52,453,024**	**145**	**$10,143,939**	**$1,505,872**
Maximum Potential Values	$89,209,867	189	$15,720,452	$2,722,091
Minimum Potential Values	$22,499,185	106	$5,441,895	$529,402
Impacts Relative to Existing Conditions				
Proportionate Expected Values	**$52,453,024**	**145**	**$10,143,939**	**$1,505,872**
Maximum Potential Values	$89,209,867	189	$15,720,452	$2,722,091
Minimum Potential Values	$22,499,185	106	$5,441,895	$529,402
Impacts Relative to No Action Alternative				
Proportionate Expected Values	**-$65,566,281**	**-181**	**-$12,679,924**	**-$1,882,340**
Maximum Potential Values	-$28,809,438	-138	-$7,103,411	-$666,121
Minimum Potential Values	-$95,520,120	-221	-$17,381,968	-$2,858,810

*Four mines projected in region.

Under the Idaho Alternative, one large and 12 small exploration projects are projected to occur in the Idaho withdrawal area. Total exploration expenditures in the Idaho socioeconomic analysis area are projected to be about $562,000 over the proposed 20-year withdrawal period (compared to $1.1 million under the No Action Alternative).

Assessment of Economic and Social Impacts in Idaho under the Idaho Alternative

The economic impacts in the Idaho socioeconomic analysis area would differ considerably depending on which of the nine mines projected under the No Action Alternative were developed under the Idaho Alternative. The largest potential economic impacts in the Idaho socioeconomic analysis area under the Idaho Alternative would occur if the four mines projected to be developed were the large gold mine in Butte County and three of the small gemstone mines in Custer County. The smallest potential economic impacts under the Idaho Alternative would be if the four mines to be developed were the projected small gold mine and three of the small gemstone mines in Custer County. Table 4-21 also shows the range of potential economic impacts based on these possibilities.

As shown in Table 4-21, the best estimate is that future mines under the Idaho Alternative would support about $52 million in annual output, 145 jobs, and $10.1 million in annual labor income in the Idaho socioeconomic analysis area. However, depending on which mines were developed under the Idaho Alternative, the economic impacts could be considerably larger (up to 189 jobs and $15.7 million in annual labor income) or considerably smaller (as few as 106 jobs and $5.4 million in annual labor income).

Relative to the No Action Alternative, the Idaho Alternative is projected to support between 138 and 221 fewer jobs in the Idaho socioeconomic analysis area, and between $7.1 and $17.4 million less in labor income.

At the county level, demographic and social impacts would depend greatly on which of the nine projected mines under the No Action Alternative were developed under the Idaho Alternative. If mines under the Idaho Alternative included the large gold mine projected to occur in Butte County under the No Action Alternative, the demographic and social impacts in Butte County would be essentially the same as under the No Action Alternative. If all of the mines under the Idaho Alternative were the smaller mines projected to be developed under the No Action Alternative in Custer County, the demographic and social impacts in in Butte County would likely be the same as under the Proposed Action, while the demographic and social impacts in Custer County would be about one-half the size of the projected impacts in that county under the No Action Alternative.

4.3.5 Economic and Social Impacts in Montana

No Action Alternative

As described in the RFD (and depicted earlier in Table 4-5), during the 20-year period of the proposed withdrawal, one future mine is projected to be developed within the Montana withdrawal area if a withdrawal is not implemented. This future mine is anticipated to be a large bentonite mine in Valley County. Table 4-22 summarizes the estimated annual economic and fiscal impacts in Valley County during operations of the projected bentonite mine. Including indirect and induced[20] economic impacts (often termed “multiplier impacts”), operation of the mine is projected to support approximately 107 jobs and annual labor income of about $5.7 million. Operations of the projected Valley County bentonite mine is also projected to produce an average of approximately $0.6 million per year in state and local tax revenues.

[20] In economic input-output analysis using tools such as the IMPLAN model, indirect effects refers to jobs and other economic activity supported by the mine’s purchases of supplies, services and equipment. Induced effects refers to jobs and other economic activity supported by the household spending of mine employees and employees at local vendors supplying goods and services to the mine.

Table 4-22. Estimated Annual Economic Impacts in Valley County, Montana during Operations of Projected Future Bentonite Mine under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$23,637,059	73	$4,541,208	N/A
Indirect Impact	$2,007,772	13	$538,764	N/A
Induced Impact	$2,304,590	20	$636,454	N/A
Total Impact	**$27,949,421**	**106**	**$5,716,426**	**$600,846**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

The projected mine in Valley County could also support additional jobs in nearby counties. Table 4-23 summarizes the projected total annual economic and fiscal impacts from the projected mine across all of the counties in Montana containing proposed withdrawal areas and in Judith Basin County, which was included in the socioeconomic analysis area because of substantial commuting ties to the Montana counties with proposed withdrawal areas.

Table 4-23. Projected Annual Total Economic Impacts from Operations of Future Mine throughout Montana Analysis Area under the No Action Alternative

County	Output	Employment	Labor Income	State/Local Tax Revenue
Valley*	$27,949,421	106	$5,716,426	$600,846
Fergus	$1,100	0	$274	$48
Judith Basin	$39	0	$5	$0
Petroleum	$92	0	$18	$5
Phillips	$138,085	1	$28,823	$7,723
Analysis Area Total	**$28,088,737**	**107**	**$5,745,546**	**$608,622**

*Counties with projected future mines under No Action Alternative.
Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data files for the counties.

As shown in Table 4-23, the estimated economic and fiscal impacts in other counties within the Montana socioeconomic analysis area from the projected future mine in Valley County would be relatively small. Apart from Valley County, only one other county in the Montana socioeconomic analysis area is projected to gain at least one full job from the projected mine (Phillips County).

Apart from the projected future bentonite mine under the No Action Alternative, approximately $550,000 is forecast to be expended on two large mineral exploration projects in the proposed Montana withdrawal area counties during the next 20 years under this alternative. Average annual expenditures on exploration activities in the Montana withdrawal area are projected to be less than $30,000 per under the No Action Alternative. While some of this money would recirculate as workers rent hotel rooms, and purchase meals and other goods and services, the secondary (indirect and induced) economic impacts from the anticipated exploration activities would be too small to quantify.

Assessment of Economic and Social Impacts in Montana under the No Action Alternative

Between 1990 and 2010, the population of Valley County declined by more than 10 percent, but the county's population has been growing over the past few years. The recent growth appears to have been fueled by increases in the number of jobs in Valley County, which has added more than 400 jobs since 2010. The 107 new jobs in Valley County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 2 percent increase compared to the county's current total employment. The additional $5.7 million in projected annual labor income projected to result from the future mines would represent an increase of about 3.7 percent in the county's total employee compensation.

While Valley County had 138 mining sector jobs in 2014, these jobs were almost entirely oil and gas related. The county's current unemployment rate is approximately 3 percent, about 1 percent lower than average in Montana. Given these circumstances, it appears likely that many of the projected new jobs associated with the potential future mine in the Valley County portion of the proposed withdrawal area would be filled by workers that either move to the county for those jobs or commute to work from nearby counties.

Based on the current population to employment ratio in Valley County, and assuming that ratio holds true for new mining jobs in the county, Valley County's population would increase by about 170 residents (2.1 percent) if the projected future bentonite mine is developed. While a rapid influx of newcomers seeking to fill new jobs can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions, this level of projected growth in Valley County's population would appear to be manageable.

The potential future mine in Valley County under the No Action Alternative would provide a boost to county tax revenues. Approximately $160,000 of the projected annual state and local tax revenues from the mine would come from property taxes, which are Valley County's largest source of revenues.

Proposed Action

The Proposed Action would withdraw almost 900,000 acres of federally managed land across four counties in Montana. This alternative would allow future mines only on valid mining claims. No future mining would be allowed where there are no valid existing mining claims.

Three of the 26 mines projected to be developed under the No Action Alternative across the six states with proposed withdrawal areas are expected to still be developed under the Proposed Action. However, the projected bentonite mine in Montana's Valley County is not projected to be developed under the Proposed Action.

Table 4-24 summarizes the projected economic impacts of future mines in the Montana socioeconomic analysis area under the Proposed Action relative to existing conditions and the No Action Alternative.

As shown in Table 4-24, the Proposed Action is projected to result in approximately $28 million less annual regional output, 107 fewer regional jobs, and $5.7 million less in annual labor income in the Montana socioeconomic analysis area than the No Action Alternative. The Proposed Action is also projected to result in almost $0.6 million less in state and local tax revenue.

Table 4-24. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Montana Counties under the Proposed Action Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	$0	0	$0	$0
Impacts Relative to Existing Conditions				
Proportionate Expected Values	$0	0	$0	$0
Impacts Relative to No Action Alternative				
Proportionate Expected Values	-$28,088,737	-107	-$5,745,546	-$608,622

*No future mines projected in region.

There would also be less future mining exploration operations under the Proposed Action than under the No Action Alternative. Only one future mineral exploration project is projected to occur in the Montana socioeconomic analysis area under the Proposed Action, while two exploration projects were projected under the No Action Alternative. Under the Proposed Action, total exploration expenditures in the Montana socioeconomic analysis area are projected to be about $275,000 over the proposed 20-year withdrawal period ($13,750 per year on average). Exploration expenditures were projected to be twice as large under the No Action Alternative.

Assessment of Economic and Social Impacts in Montana under the Proposed Action

Because more than 99 percent of the economic impacts of the potential mines under the No Action Alternative were projected to occur in Valley County, the following discussion focuses on the impacts of the Proposed Action in that county.

Since existing mines could continue to operate under existing authorizations under the Proposed Action, there would be no economic or tangible social impacts from the Proposed Action relative to existing conditions in Valley County. There would, however, be economic impacts from the Proposed Action relative to the projected economic activity associated with the potential future mine under the No Action Alternative. Under the Proposed Action, Valley County would not experience the growth in employment and labor income projected to occur under the No Action Alternative as a result of the potential future mine in the proposed withdrawal area. Total county employment is projected to be about 2.1 percent lower under the Proposed Action than under the No Action Alternative, and total county earnings are projected to be about 3.7 percent lower than under the No Action Alternative.

If the current relationship between population and employment in Valley County also holds true for future mining jobs that would occur under the No Action Alternative, the Proposed Action would result in 2.1 percent fewer Valley County residents in the future (about 168 fewer county residents) than the No Action Alternative.

Relative to the No Action Alternative, the Proposed Action would not produce the same influx of newcomers into Valley County. Given the current, relatively stable economic and demographic conditions in the county, the tangible social impacts from the Proposed Action are likely to be fairly small. As described in Chapter 3, however, there is already substantial concern in many parts of Montana regarding the management of federal lands. Intangible social impacts from the Proposed Action might well be larger, in both Valley County and across Montana, than any tangible social impacts.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the proposed withdrawal. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Assessment of Economic and Social Impacts in Montana under the State of Nevada Alternative

In the Montana socioeconomic analysis area, the projected economic and social impacts of the Nevada Alternative are projected to be the same as the impacts under the Proposed Action.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with high mineral potential, as defined by the Mineral Potential Report prepared by the USGS, would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Assessment of Economic and Social Impacts in Montana under the High Mineral Potential Alternative

Under the HMP Alternative, the one projected mine in Montana under the No Action Alternative (the bentonite mine in Valley County) is not expected to be developed. Consequently, the projected mine-related economic, demographic, and fiscal impacts of the HMP Alternative are projected to be the same, in Montana, as the impacts of the Proposed Action (see previous Table 4-24).

One relatively minor distinction in Montana between the HMP Alternative and the Proposed Action is that both of the two exploration projects projected to occur under the No Action Alternative are expected to move forward under the HMP Alternative. These projects would be projected to involve approximately $550,000 in labor and equipment expenditures over the proposed 20-year withdrawal period, or an average of approximately $27,500 per year in Montana under the HMP Alternative. These projections are double the projected exploration expenditures under the Proposed Action.

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Assessment of Economic and Social Impacts in Montana under the Idaho Alternative

In the Montana socioeconomic analysis area, no future mines or exploration projects are projected to occur during the proposed withdrawal period under the Idaho Alternative. The projected economic and social impacts of the Idaho Alternative are projected to be the same as the impacts under the Proposed Action.

4.3.6 Economic and Social Impacts in Nevada

No Action Alternative

As described in the RFD (and depicted in Table 4-5), during the 20-year period of the proposed withdrawal, a total of three mines are projected to be developed within the Nevada withdrawal area if a withdrawal is not implemented. These three mines are anticipated to include one large gold/silver mine in Elko County, a large barite mine in Elko County, and a large lithium mine in Humboldt County.

Table 4-25 summarizes the estimated annual economic and fiscal impacts in Elko County during operations of the large gold/silver mine and large barite mine projected to be developed there. As in the impacts analysis for the other states, Table 4-12 incorporates the assumption that both mines are operating at the same time. Including indirect and induced[21] economic impacts (often termed "multiplier impacts"), operation of the two projected mines in Elko County are projected to support approximately 431 jobs and annual labor income of about $38.6 million. Operations of the projected mines are also projected to produce an average of nearly $8.2 million per year in state and local tax revenues.

Table 4-25. Estimated Annual Economic Impacts in Elko County, Nevada during Operations of Projected Future Gold/Silver Mine and Future Barite Mine under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$176,704,258	227	$25,972,256	N/A
Indirect Impact	$23,065,595	93	$8,830,339	N/A
Induced Impact	$15,092,054	110	$3,825,114	N/A
Total Impact	**$214,861,907**	**430**	**$38,627,709**	**$8,184,445**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

Table 4-26 provides a similar summary of the estimated economic and fiscal impacts in Humboldt County during operations of the large lithium mine projected to be developed in that county under the No Action Alternative. The mine is projected to support approximately 327 jobs and about $19.2 million in labor income in Humboldt County. The projected lithium mine is also estimated to produce about $3.1 million per year in state and local tax revenues.

Table 4-26. Estimated Annual Economic Impacts in Humboldt County, Nevada during Operations of Projected Large Lithium Mine under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$151,401,431	235	$14,324,928	N/A
Indirect Impact	$12,545,100	56	$3,348,698	N/A
Induced Impact	$5,393,012	36	$1,568,429	N/A
Total Impact	**$169,339,544**	**327**	**$19,242,055**	**$3,089,358**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

[21] In economic input-output analysis using tools such as the IMPLAN model, indirect effects refers to jobs and other economic activity supported by the mine's purchases of supplies, services and equipment. Induced effects refers to jobs and other economic activity supported by the household spending of mine employees and employees at local vendors supplying goods and services to the mine.

The projected mines in Elko and Humboldt counties could support additional jobs in nearby counties. Table 4-27 summarizes the projected total annual economic and fiscal impacts from these projected mines across all of the counties in Nevada containing proposed withdrawal areas and the additional counties included in the socioeconomic analysis area due to their strong commuting ties to the counties with proposed withdrawal areas. The estimated impacts in Elko and Humboldt counties are slightly larger than shown in Tables 4-26 and 4-27 because the regional summary also includes estimated job impacts in Elko County from the projected mine in Humboldt County, and vice-versa.

Table 4-27. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Nevada Counties under the No Action Alternative

County	Output	Employment	Labor Income	State/Local Tax Revenue
Elko*	$215,864,191	435	$39,568,472	$8,207,491
Humboldt*	$173,778,772	335	$20,007,478	$3,297,212
Lander	$546,286	1	$91,988	$18,527
Lyon	$206,632	1	$42,296	$7,013
Pershing	$5,366,388	10	$607,964	$209,996
Storey	$41,360	>1	$13,445	$1,490
Washoe	$2,779,410	19	$1,210,129	$106,723
Analysis Area Total	**$398,583,038**	**801**	**$61,541,773**	**$11,848,452**

*Counties with projected future mines under No Action Alternative.
Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the counties.

As shown in Table 4-27, more than 95 percent of the estimated economic and fiscal impacts from potential future mines in Elko and Humboldt counties under the No Action Alternative are expected to occur in those counties. Apart from Elko and Humboldt counties, two other counties in the Nevada socioeconomic analysis area are projected to gain more than five jobs from the projected mines. Washoe County is projected to gain approximately 19 jobs if the projected mines are developed in Elko and Humboldt counties. Pershing County is projected to gain approximately 10 jobs from the projected mines.

Apart from the projected future mines under the No Action Alternative, an estimated $9.1 million is forecast to be expended on 78 mineral exploration projects across the Nevada withdrawal areas over the next 20 years. Average annual expenditures on exploration activities in the Nevada withdrawal areas are projected to be approximately $450,000 under the No Action Alternative. While some of this money would recirculate as workers rent hotel rooms, and purchase meals and other goods and services, the secondary (indirect and induced) economic impacts from the anticipated exploration activities would be relatively small, and were not estimated for this analysis.

Assessment of Economic and Social Impacts in Nevada under the No Action Alternative

As described in Chapter 3, Elko County has been steadily growing in population and employment for more than 20 years. The 431 new jobs in Elko County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 1.6 percent increase compared to the county's current total employment. The additional $38.6 million in projected annual labor income projected to result from the future mines would represent an increase of about 2.8 percent in the county's total employee compensation.

The potential jobs from the projected mines in Elko County under the No Action Alternative could lead to a corresponding increase in the county's population. This increase is expected to be relatively modest at about 1.6 percent, based on assumed continuation of the current population to employment ratio in the county.

The Elko County economy is primarily driven by mining operations. Thirteen mines are currently active in the county, and approximately 15 percent of all labor income in the county comes directly from the mining sector (excluding multiplier effects). Most mining jobs are high paying jobs, and the median household income in Elko County is nearly 40 percent higher than the median household income across the state of Nevada. The county's unemployment rate is about 5 percent, which is lower than average in Nevada.

The potential future mines projected for the proposed withdrawal areas in Elko County under the No Action Alternative could expand the existing mining sector in Elko County. If the future mines are developed, and both are in operation at the same time, they are projected to expand mining employment in Elko County by about 11 percent. The potential future mines could also extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations.

The potential future mines in Elko County under the No Action Alternative would also provide a boost to county tax revenues. Approximately $2 million of the projected annual state and local tax revenues from the mines are projected to come from property taxes.

Economic and social conditions in Humboldt County are generally similar to conditions in Elko County. Population and employment in Humboldt County have also been growing steadily, though not rapidly, over the past few decades. The 327 new jobs in Elko County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 3 percent increase compared to the county's current total employment. The additional $19.2 million in projected annual labor income projected to result from the future mines would represent an increase of about 3.4 percent in the county's total employee compensation.

The potential jobs from the projected mines in Humboldt County under the No Action Alternative could lead to a corresponding increase in the county's population. This increase is projected to be about 3 percent (approximately 524 residents), based on assumed continuation of the current population to employment ratio in the county. A rapid influx of newcomers seeking to fill new jobs can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions in some circumstances. Given, Humboldt County's extensive experience with the ebbs and flows of the mining industry, and the large role of mining in the economy at present, the potential for adverse social impacts from new mining jobs (and potential new miners migrating into the county) under the No Action Alternative appears minor.

The potential future mines projected for the proposed withdrawal areas in Humboldt County under the No Action Alternative could expand the existing mining sector in the county. If the future lithium mine is developed, it is projected to expand mining employment in Humboldt County by about 11 percent. The potential future mine could also extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations.

The projected lithium mine in Humboldt County is also associated with the statewide effort to develop a vertically integrated industry to produce batteries for electric cars (e.g., the Tesla "gigafactory" outside of Sparks, Nevada is under construction). The IMPLAN-based economic analysis conducted for this

evaluation focuses only on "backward linkages" that describe direct and secondary employment of the projected mines, and the suppliers to those mines and their employees. It does not capture "forward linkages" that could result from the use of the commodities produced by those mines. In the case of the projected lithium mine in Humboldt County, the forward economic linkages in Nevada related to development of the projected mine could be substantial.

The potential future lithium mine in Humboldt County under the No Action Alternative would also provide a boost to county tax revenues. Approximately $750,000 of the projected annual state and local tax revenues from the mine are projected to come from property taxes.

Proposed Action

The Proposed Action would withdraw approximately 2.8 million acres of federally managed land across three counties in Nevada. This alternative would allow future mines only on valid mining claims. No future mining would occur where there are no mining claims.

Under the Proposed Action, future mines could still be developed in Nevada, or in the other states with proposed withdrawal areas, on valid mining claims. Three of the 26 mines projected to be developed under the No Action Alternative across the six states with SFA withdrawal areas are expected to still be developed under the Proposed Action.

Assessment of Economic and Social Impacts in Nevada under the Proposed Action

One of the three mines projected to be developed in Nevada under the No Action Alternative is expected to move forward under the Proposed Action, but which of the three mines it would be is unknown. Consequently, the best estimate of the potential economic impacts from future mines in the Nevada socioeconomic analysis area under the Proposed Action is that those impacts would be 1/3rd of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-28.

Table 4-28. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Nevada Socioeconomic Analysis Area under the Proposed Action, Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	**$132,861,013**	**267**	**$20,513,924**	**$3,956,429**
Maximum Potential Values	$200,336,674	388	$35,720,834	$8,090,318
Minimum Potential Values	$25,057,521	62	$5,053,327	$540,975
Impacts Relative to Existing Conditions				
Proportionate Expected Values	**$132,861,013**	**267**	**$20,513,924**	**$3,956,429**
Maximum Potential Values	$200,336,674	388	$35,720,834	$8,090,318
Minimum Potential Values	$25,057,521	62	$5,053,327	$540,975
Impacts Relative to No Action Alternative				
Proportionate Expected Values	**-$265,722,025**	**-534**	**-$41,027,848**	**-$7,912,857**
Maximum Potential Values	-$198,246,364	-414	-$25,820,938	-$3,778,968
Minimum Potential Values	-$373,525,517	-739	-$56,488,446	-$11,328,311

*One mine projected in region.

The economic impacts in the Nevada socioeconomic analysis area would differ considerably depending on which of the three mines projected under the No Action Alternative were developed under the Proposed Action. The largest potential economic impacts in the Nevada socioeconomic analysis area would occur if the one mine projected to be developed was the large gold/silver mine in Elko County. The smallest potential economic impacts under the Proposed Action would be if the one mine that was developed was the projected barite mine in Elko County. Table 4-15 also shows the range of potential economic impacts based on these possibilities.

As shown in Table 4-28, the best estimate is that future mines under the Proposed Action would support about $133 million in annual output, 267 jobs, and $20.5 million in annual labor income in the Nevada socioeconomic analysis area. However, depending on which mine was developed under the Proposed Action, the economic impacts could be considerably larger (up to 388 jobs and $35.7 million in annual labor income) or considerably smaller (as few as 62 jobs and $5.1 million in annual labor income).

Relative to the No Action Alternative, the Proposed Action is projected to support between 414 and 739 fewer jobs in the Nevada socioeconomic analysis area, and between $25.8 and $56.5 million less in annual labor income.

At the county level, demographic and social impacts would depend greatly on which of the projected mines under the No Action Alternative was developed under the Proposed Action, and which mines were not developed because of the Proposed Action.

If the one mine developed under the Proposed Action was the large gold/silver mine projected to occur in Elko County under the No Action Alternative, the demographic and social impacts in Elko County would be approximately 85 percent of the impacts described previously under the No Action Alternative. The projected mine could lead to about a 1.3 percent increase in county employment and population, and approximately a 2.4 percent increase in county labor income.

If the one mine developed under the Proposed Action was the smaller barite mine in Elko County anticipated under the No Action Alternative, the demographic and social impacts in Elko County would be approximately 15 percent of the impacts described previously under the No Action Alternative. The projected mine could lead to about a 0.3 percent increase in county employment and population, and approximately a 0.4 percent increase in county labor income.

In either of the two scenarios outlined above (in which the one mine that is developed under the Proposed Action is in Elko County), the projected economic and demographic impacts from the anticipated lithium mine in Humboldt County would not occur. Relative to the No Action Alternative, future employment and population in Humboldt County would be about 3 percent lower than anticipated under the No Action Alternative, and future labor earnings would be about 3.4 percent lower.

The final possibility is that the one mine that would be developed under the Proposed Action could be the anticipated lithium mine in Humboldt County. In that case, the economic, demographic, and social impacts of the Proposed Action would be nearly the same as under the No Action Alternative in Humboldt County, but the future increase in employment, population, and labor income in Elko County would not occur. This outcome would result in approximately 1.6 percent fewer future jobs and residents in Elko County and approximately 2.8 percent less labor income in Elko County in the future, compared to the No Action Alternative.

Under the Proposed Action, 32 exploration projects are projected to occur in the Nevada withdrawal area (compared to 78 projected exploration projects under the No Action Alternative). Total exploration expenditures in the Nevada socioeconomic analysis area under the Proposed Action are projected to be

about $3.8 million over the proposed 20-year withdrawal period (compared to $9.1 million under the No Action Alternative).

The reduction in future mining operations under the Proposed Action could have tangible social impacts in Elko and Humboldt counties. In particular, the potential reduction in future employment opportunities in the mining sector could lead to an increase in future unemployment, and/or potential future out-migration of some of the workers in that sector, relative to the No Action Alternative. Intangible social impacts from the Proposed Action could be larger than the tangible social impacts – particularly outside of Elko and Humboldt counties.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the withdrawal identified under the Proposed Action. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Under the Nevada Alternative, two of the three future mines anticipated in the Nevada withdrawal area under the No Action Alternative are expected to be developed. As with the Proposed Action, which of the mines would be developed under the Nevada Alternative is uncertain. Consequently, the best estimate of the potential economic impacts from future mines in the Nevada socioeconomic analysis area under this alternative is that those impacts would be 2/3rd of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-28.

Under the Nevada Alternative, 47 exploration projects are projected to occur in the Nevada socioeconomic analysis area. Total exploration expenditures in the Nevada socioeconomic analysis area are projected to be about $5.5 million over the proposed 20-year withdrawal period (compared to $9.1 million under the No Action Alternative and $3.8 million under the Proposed Action).

Assessment of Economic and Social Impacts in Nevada under the Nevada Alternative

The economic impacts in the Nevada socioeconomic analysis area would differ considerably depending on which of the three mines projected under the No Action Alternative were developed under the Nevada Alternative. The largest potential economic impacts in the Nevada socioeconomic analysis area under this alternative would occur if the two mines were the projected gold/silver mine in Elko County and the projected lithium mine in Humboldt County. The smallest potential economic impacts under this alternative would occur if the two mines to be developed were the projected barite mine in Elko County and the lithium mine in Humboldt County. Table 4-29 also shows the range of potential economic impacts based on these possibilities.

As shown in Table 4-29, the best estimate is that future mines under the Nevada Alternative would support about $266 million in annual output, 534 jobs, and $41 million in annual labor income in the Nevada socioeconomic analysis area. However, depending on which mines were developed under this alternative, the economic impacts could be considerably larger (up to 739 jobs and $56.5 million in annual labor income) or considerably smaller (as few as 414 jobs and $25.8 million in annual labor income).

Relative to the No Action Alternative, the Nevada Alternative is projected to support between 62 and 388 fewer jobs in the Nevada socioeconomic analysis area, and between $5.1 and $35.7 million less in labor income.

Table 4-29. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Nevada Counties under the Nevada Alternative Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
State of Nevada Alternative*				
Proportionate Expected Values	**$265,722,025**	**534**	**$41,027,848**	**$7,912,857**
Maximum Potential Values	$373,525,517	739	$56,488,446	$11,328,311
Minimum Potential Values	$198,246,364	414	$25,820,938	$3,778,968
Impacts Relative to Existing Conditions				
Proportionate Expected Values	**$265,722,025**	**534**	**$41,027,848**	**$7,912,857**
Maximum Potential Values	$373,525,517	739	$56,488,446	$11,328,311
Minimum Potential Values	$198,246,364	414	$25,820,938	$3,778,968
Impacts Relative to No Action Alternative				
Proportionate Expected Values	**-$132,861,013**	**-267**	**-$20,513,924**	**-$3,956,429**
Maximum Potential Values	-$25,057,521	-62	-$5,053,327	-$540,975
Minimum Potential Values	-$200,336,674	-388	-$35,720,834	-$8,090,318

*Two mines projected in region.

At the county level, economic, demographic, and social impacts would vary depending on which of the three projected mines under the No Action Alternative were developed under the Nevada Alternative. If the future mines under the Nevada Alternative included both of the mines projected to be developed in Elko County under the No Action Alternative, the economic, demographic, and social impacts in that county would be essentially the same as under the No Action Alternative. Under that scenario, however, the economic, demographic, and social impacts in Humboldt County would be essentially the same as under the Proposed Action.

Alternatively, if the two mines developed under the Nevada Alternative were the anticipated lithium mine in Humboldt County and only one of the two mines projected in Elko County under the No Action Alternative, economic, demographic, and social impacts in Humboldt County would be similar to the No Action Alternative, while impacts in Elko County would be more comparable to projected impacts under the Proposed Action.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with high mineral potential, as defined by the Mineral Potential Report prepared by the USGS, would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Assessment of Economic and Social Impacts in Nevada under the High Mineral Potential Alternative

Under the HMP Alternative, two mines are projected to be developed in the Nevada withdrawal areas. Consequently, the economic, demographic, and social impacts from future mines under the HMP Alternative would likely be similar to the impacts under the Nevada Alternative, which also anticipates that two mines would develop in the socioeconomic analysis area.

Somewhat more future exploration projects are anticipated under the HMP Alternative than under the Nevada Alternative. Under the HMP Alternative, 55 exploration projects are projected in the Nevada socioeconomic analysis area during the proposed 20-year withdrawal period, compared to 47 under the Nevada Alternative and 32 under the Proposed Action. Total expenditures on exploration projects over the 20-year period under the HMP Alternative are projected to be approximately $6.3 million (or an average of about $315,000 per year).

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Assessment of Economic and Social Impacts in Nevada under the Idaho Alternative

In the Nevada socioeconomic analysis area, the number of mines and future exploration projects under the Idaho Alternative is projected to be the same as under the Proposed Action. Consequently, economic, demographic, and social impacts from this alternative are projected to be the same as under the Proposed Action in Nevada.

4.3.7 Economic and Social Impacts in Oregon

No Action Alternative

As described in the RFD (and depicted in Table 4-5), during the 20-year period of the proposed withdrawal, a total of 10 small gemstone mines are projected to be developed within the Oregon withdrawal area if a withdrawal is not implemented. These 10 mines are anticipated to include nine gemstone mines in Lake County and one gemstone mine in Malheur County.

Table 4-30 summarizes the estimated annual economic and fiscal impacts in Lake County during operations of the nine gemstone mines projected to be developed there. As in the impacts analysis for the other states, Table 4-30 incorporates the assumption that all of the mines are operating at the same time, which provides a maximum view of their potential annual economic impacts. Including indirect and induced[22] economic impacts (often termed “multiplier effects”), operations of the nine projected mines in Lake County are projected to support approximately 205 jobs and annual labor income of about $12.5 million. Operations of the projected mines are also projected to produce an average of approximately $1.3 million per year in state and local tax revenues.

[22] In economic input-output analysis using tools such as the IMPLAN model, indirect effects refers to jobs and other economic activity supported by the mine’s purchases of supplies, services, and equipment. Induced effects refers to jobs and other economic activity supported by the household spending of mine employees and employees at local vendors supplying goods and services to the mine.

Table 4-30. Estimated Annual Economic Impacts in Lake County, Oregon during Operations of Nine Projected Future Gemstone Mines under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$35,910,022	144	$10,577,916	N/A
Indirect Impact	$3,610,737	28	$967,273	N/A
Induced Impact	$4,023,634	32	$1,001,742	N/A
Total Impact	**$43,544,393**	**204**	**$12,546,931**	**$1,332,594**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

Table 4-31 provides a similar summary of the estimated economic and fiscal impacts in Malheur County during operations of the one small gemstone mine projected to be developed in that county under the No Action Alternative. The mine is projected to support approximately 25 jobs and about $1.3 million in labor income in Malheur County. The projected mine is also estimated to produce about $0.1 million per year in state and local tax revenues.

Table 4-31. Estimated Annual Economic Impacts in Malheur County, Oregon during Operations of Projected Future Gemstone Mine under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$3,840,893	16	$1,037,223	N/A
Indirect Impact	$435,783	4	$118,188	N/A
Induced Impact	$570,495	5	$168,393	N/A
Total Impact	**$4,847,170**	**25**	**$1,323,805**	**$139,027**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

The projected mines in Lake and Malheur counties could support additional jobs in nearby counties. Table 4-32 summarizes the projected total annual economic and fiscal impacts from these projected mines across the three counties in Oregon containing proposed withdrawal areas. The estimated impacts in Lake and Malheur counties are slightly larger than shown in Tables 4-31 and 4-32 because the regional summary also includes estimated job impacts in Malheur County from the projected mines in Lake County, and vice-versa.

Table 4-32. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Oregon Counties under the No Action Alternative

County	Output	Employment	Labor Income	State/Local Tax Revenue
Lake*	$43,544,554	204	$12,546,945	$1,332,603
Malheur*	$4,849,418	25	$1,324,718	$139,108
Harney	$151,238	1	$9,774	$3,491
Analysis Area Total	**$48,545,210**	**230**	**$13,881,437**	**$1,475,202**

*Counties with projected future mines under No Action Alternative.
Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the counties.

As shown in Table 4-32, nearly all of the estimated economic and fiscal impacts from potential future mines in the Oregon counties under the No Action Alternative are expected to occur in Lake and Malheur counties.

Apart from the projected future mines under the No Action Alternative, $1.2 million is projected to be expended on eight mineral exploration projects across the Oregon withdrawal areas over the next 20 years. Average annual expenditures on exploration activities in the Oregon withdrawal areas are projected to be approximately $60,000 under the No Action Alternative. While some of this money would recirculate as workers rent hotel rooms, and purchase meals and other goods and services, the secondary (indirect and induced) economic impacts from the anticipated exploration activities would be relatively small, and were not estimated for this analysis.

Assessment of Economic and Social Impacts in Oregon under the No Action Alternative

The total population of Lake County has grown slightly over the past 25 years, although the number of jobs in the county has declined slightly since year 2000. The 205 new jobs in Lake County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 3.6 percent increase compared to the county's current total employment. The additional $12.5 million in annual labor income projected to result from the future mines would represent an increase of about 6.7 percent in the county's total labor income.

The potential jobs from the projected mines in Lake County under the No Action Alternative could lead to a corresponding increase in the county's population. Assuming continuation of the current population to employment ratio in the county, the future mines could add up to 205 new residents to the county.

Lake County has an active mining sector, though it is relatively small. An estimated 34 people are currently employed in non-metallic mineral mines in the county. These mines account for a little over 1 percent of all labor income in Lake County. The county's unemployment rate in 2015 was a little below 8 percent, which was about 1 percentage point higher than the statewide average.

The potential future mines projected for the proposed withdrawal areas in Lake County under the No Action Alternative could substantially expand the existing mining sector in Lake County. If all of the future mines were developed, and all were operating at the same time, mining employment could be more than five times as large as it is at present. With smaller gemstone mines such as the mines anticipated in Lake County, it is more likely that most of the projected mines would be active for shorter periods and that not all of the mines would produce at the same time. However, the potential future mines could also extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations.

The potential future mines in Lake County under the No Action Alternative would also provide a boost to county tax revenues. Approximately $500,000 of the projected annual state and local tax from the mine revenues (assuming all mines operate at the same time) are projected to come from property taxes.

Malheur County is considerably larger than Lake County, with a current population of about 30,000 residents. The County's population has declined slowly over the past 15 years, as have the number of jobs located in the county. The 25 new jobs in Malheur County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent less than a 0.2 percent increase compared to the county's current total employment. The additional $1.3 million in projected annual labor income projected to result from the future mines would represent an increase of about 0.2 percent in the county's total employee compensation.

The potential jobs from the projected mines in Malheur County under the No Action Alternative would likely have a minimal impact on the county's total population. Assuming continuation of the current population to employment ratio in the county, the mines might lead to an increase of about 44 residents.

The potential future mine projected for the proposed withdrawal areas in Malheur County under the No Action Alternative could expand the existing mining sector in the county. At present there are approximately 85 mining jobs in the county, so the future mine projected under the No Action Alternative could increase employment in the sector by about 16 percent. The potential future mine could also extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations.

The potential future mine in Malheur County under the No Action Alternative would also provide a modest boost to county tax revenues. Approximately $54,000 of the projected annual state and local tax revenues from the mine are projected to come from property taxes.

Proposed Action

The Proposed Action would withdraw approximately 1.8 million acres of federally managed land across three counties in Oregon. This alternative would allow future mines only on valid existing mining claims. No future mining would occur where there are no mining claims.

Under the Proposed Action, future mines could still be developed in Oregon, or in the other states with proposed withdrawal areas, on valid mining claims. Three of the 26 mines projected to be developed under the No Action Alternative across the six states with proposed withdrawal areas are expected to still be developed under the Proposed Action.

Assessment of Economic and Social Impacts in Oregon under the Proposed Action

One of the 10 mines projected to be developed in Oregon under the No Action Alternative is expected to move forward under the Proposed Action, but which mine it would be is unknown. Consequently, the best estimate of the potential economic impacts from future mines in the Oregon socioeconomic analysis area under the Proposed Action is that those impacts would be 1/10th of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-33.

Table 4-33. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Oregon Socioeconomic Analysis Area under the Proposed Action, Compared to Existing Conditions and No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	$4,854,521	23	$1,388,144	$147,520
Impacts Relative to Existing Conditions				
Proportionate Expected Values	$4,854,521	23	$1,388,144	$147,520
Impacts Relative to No Action Alternative				
Proportionate Expected Values	-$43,690,689	-208	-$12,493,293	-$1,327,682

*One future mine projected in region.

Since all of the 10 mines projected to be developed in the Oregon withdrawal areas under the No Action Alternative appear to be similar from an economic standpoint, the projected regional impacts of the Proposed Action are not as sensitive to which mines are developed as they are for other states with more variation among the projected future mines, such as Idaho and Nevada. Consequently, Table 4-33 does not show a range of potential impacts under the Proposed Action.

As shown in Table 4-33, the best estimate is that future mines under the Proposed Action would support about $4.9 million in annual output, 23 jobs, and $1.4 million in annual labor income in the Oregon socioeconomic analysis area. Relative to the No Action Alternative, the Proposed Action is projected to support about 208 fewer jobs in the Oregon socioeconomic analysis area, and about $12.5 million less in annual labor income.

At the county level, economic, demographic, and social impacts would depend on which of the projected mines under the No Action Alternative was developed under the Proposed Action, and which mines were not developed because of the Proposed Action.

If the mine developed under the Proposed Action was among the nine mines projected to occur in Lake County under the No Action Alternative, the economic, demographic, and social impacts in that county would be approximately 11 percent of the impacts described previously under the No Action Alternative. The projected mines could lead to about a 0.4 percent increase in county employment and population, and approximately a 0.7 percent increase in county labor income compared to existing conditions. Under this scenario, the projected mine in Malheur County would not be among the mines that are developed, and most of the projected impacts in Malheur County under the No Action Alternative would not occur.

If the mine developed under the Proposed Action was the projected future mine in Malheur County, the economic, demographic, and social impacts in Malheur County would be essentially the same as under the No Action Alternative. In this scenario, Lake County would experience few, if any, of the projected increases in employment, earnings, tax revenues, and population anticipated under the No Action Alternative.

Under the Proposed Action, two exploration projects are projected to occur in the Oregon socioeconomic analysis area (compared to eight projected exploration projects under the No Action Alternative). Total exploration expenditures in the Oregon socioeconomic analysis area under the Proposed Action are projected to be about $0.3 million over the proposed 20-year withdrawal period (compared to $1.2 million under the No Action Alternative).

The reduction in future mining operations under the Proposed Action could have tangible impacts on social conditions, particularly in Lake County. In particular, the potential reduction in future employment opportunities in the mining sector could lead to an increase in future unemployment, and/or potential future out-migration of some of the workers in that sector, relative to the No Action Alternative. Intangible social impacts from the Proposed Action could be larger than the tangible social impacts – particularly outside of Lake County.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the proposed withdrawal. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Assessment of Economic and Social Impacts in Oregon under the Nevada Alternative

In the Oregon socioeconomic analysis area, the projected economic and social impacts of the Nevada Alternative are projected to be the same as the impacts under the Proposed Action.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with high mineral potential, as defined by the Mineral Potential Report prepared by the USGS, would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Under the HMP Alternative, three of the 10 future mines anticipated in the Oregon withdrawal area under the No Action Alternative are expected to be developed. However, which of the 10 projected No Action Alternative mines would be developed under the HMP Alternative is not known. Consequently, the best estimate of the potential economic impacts from future mines in the Oregon socioeconomic analysis area under the HMP Alternative is that those impacts would be 3/10th of the projected impacts under the No Action Alternative. These estimates are termed the "proportionate expected values" in Table 4-34.

Table 4-34. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Oregon Counties under the High Mineral Potential Alternative Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	$14,563,563	69	$4,164,431	$442,561
Impacts Relative to Existing Conditions				
Proportionate Expected Values	$14,563,563	69	$4,164,431	$442,561
Impacts Relative to No Action Alternative				
Proportionate Expected Values	-$33,981,647	-162	-$9,717,006	-$1,032,641

*Three future mines projected in region.

Under the HMP Alternative, six exploration projects are projected to occur in the Oregon socioeconomic analysis area. Total exploration expenditures in the Oregon socioeconomic analysis area are projected to be about $900,000 over the proposed 20-year withdrawal period (compared to $1.2 million under the No Action Alternative).

Assessment of Economic and Social Impacts in Oregon under the High Mineral Potential Alternative

As shown in Table 4-34, the best estimate is that future mines under the HMP Alternative would support about $15 million in annual output, 69 jobs, and $4.2 million in annual labor income in the Oregon socioeconomic analysis area. Relative to the No Action Alternative, the HMP Alternative is projected to support about 162 fewer jobs in the Oregon socioeconomic analysis area, and about $9.7 million less in labor income.

At the county level, economic, demographic, and social impacts would vary depending on which three of the 10 projected mines under the No Action Alternative were developed under the HMP Alternative. If all three of the mines were developed under the HMP Alternative, the impacts in Lake County would be

about 1/3rd of the projected impacts under the No Action Alternative, while the impacts in Malheur County would be similar to the Proposed Action. If one of the eight mines developed under the HMP Alternative was the projected mine in Malheur County, impacts in that county would be essentially the same as the No Action Alternative, while impacts in Lake County would be about 22 percent of projected impacts under the No Action Alternative.

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Assessment of Economic and Social Impacts in Oregon under the Idaho Alternative

In the Oregon socioeconomic analysis area, the number of mines and future exploration projects under the Idaho Alternative are projected to be the same as under the Proposed Action. Consequently, economic, demographic, and social impacts in Oregon from this alternative are also projected to be the same as under the Proposed Action.

4.3.8 Economic and Social Impacts in Utah

No Action Alternative

As described in the RFD (and depicted in Table 4-5), no future mines are projected to be developed in the proposed Utah withdrawal areas during the 20-year period of the proposed withdrawal if a withdrawal is not implemented.

Assessment of Economic and Social Impacts in Utah under the No Action Alternative

Based on the projection that there would not be any future mines developed in the Utah withdrawal area, even if a withdrawal is not implemented, there would not be any economic or tangible social impacts from future mining operations in the Utah socioeconomic analysis area.

Proposed Action

The Proposed Action would withdraw approximately 234,000 acres of federally managed land across three counties in Utah. This alternative would allow future mines only on valid existing mining claims. No future mining would occur in areas where there are no mining claims.

None of the 26 mines projected to be developed under the No Action Alternative across the six states with proposed withdrawal areas are expected to be located in Utah.

Assessment of Economic and Social Impacts in Utah under the Proposed Action

As noted above, no future mines are projected to be developed in the proposed Utah withdrawal areas during the proposed 20-year withdrawal period under either the No Action Alternative or the Proposed Action. No future exploration projects are projected to occur in this area under either alternative. Consequently, there would be no economic or tangible social impacts from the Proposed Action in Utah. There could, however, be intangible social impacts from the withdrawal under the Proposed Action, as discussed under Section 4.3.3, Impacts Common to All Action Alternatives.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the proposed withdrawal. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Assessment of Economic and Social Impacts in Utah under the Nevada Alternative

In the Utah socioeconomic analysis area, the economic and social impacts of the Nevada Alternative are projected to be the same as the impacts under the Proposed Action. No economic or tangible social impacts are anticipated from the Nevada Alternative in Utah.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with high mineral potential, as defined by the Mineral Potential Report prepared by the USGS, would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Assessment of Economic and Social Impacts in Utah under the High Mineral Potential Alternative

In the Utah socioeconomic analysis area, the economic and social impacts of the HMP Alternative are projected to be the same as the impacts under the Proposed Action. No economic or tangible social impacts are anticipated from the HMP Alternative in Utah.

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Assessment of Economic and Social Impacts in Utah under the Idaho Alternative

In the Utah socioeconomic analysis area, the economic and social impacts of the Idaho Alternative are projected to be the same as the impacts under the Proposed Action. No economic or tangible social impacts are anticipated in Utah from the Idaho Alternative.

4.3.9 Economic and Social Impacts in Wyoming

No Action Alternative

As described in the RFD (and depicted in Table 4-5), during the 20-year period of the proposed withdrawal, two large gold/silver mines and one large tungsten mine are projected to be developed within the Wyoming socioeconomic analysis area if a withdrawal is not implemented. All of these mines are anticipated to be developed in Fremont County.

Table 4-35 summarizes the estimated annual economic and fiscal impacts in Fremont County during operations of the three mines projected to be developed there. As in the impacts analysis for the other states, Table 4-35 incorporates the assumption that all of the mines are operating at the same time, which provides a maximum view of their potential annual economic impacts. Including indirect and induced[23] economic impacts (often termed "multiplier effects"), operations of the three projected mines in Fremont County are projected to support approximately 557 jobs and annual labor income of about $36.7 million. Operations of the projected mines are also projected to produce an average of approximately $8.8 million per year in state and local tax revenues.

Table 4-35. Estimated Annual Economic Impacts in Fremont County, Wyoming during Operations of the Three Projected Mines under the No Action Alternative

Economic Impacts	Output	Employment	Labor Income	State/Local Tax Revenue
Direct Impact	$206,281,053	311	$26,345,764	N/A
Indirect Impact	$24,425,221	108	$5,888,890	N/A
Induced Impact	$16,581,749	138	$4,416,987	N/A
Total Impact	**$247,288,023**	**557**	**$36,651,641**	**$8,770,088**

Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the county.

The projected mines in Fremont County could support additional jobs in nearby counties. Table 4-36 summarizes the projected total annual economic and fiscal impacts from these projected mines across the three counties in Wyoming containing proposed withdrawal areas.

Table 4-36. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Wyoming Counties under the No Action Alternative

County	Output	Employment	Labor Income	State/Local Tax Revenue
Fremont*	$247,288,023	557	$36,651,641	$8,770,088
Lincoln	$43,008	<1	$4,311	$4,453
Sublette	$145,258	<1	$30,056	$15,978
Sweetwater	$3,867,057	7	$713,433	$427,183
Analysis Area Total	**$251,343,346**	**564**	**$37,399,441**	**$9,217,702**

*Counties with projected future mines under No Action Alternative.
Source: Estimates based on RFD, projected economic characteristics of potential future mines described earlier in this chapter, and IMPLAN 2013 data file for the counties.

As shown in Table 4-36 more than 98 percent of the estimated economic and fiscal impacts from potential future mines in the Wyoming withdrawal areas under the No Action Alternative are expected to occur in Fremont County.

Based on the RFD, no future exploration projects or expenditures are expected to occur in the proposed withdrawal area in Wyoming under the No Action Alternative.

[23] In economic input-output analysis using tools such as the IMPLAN model, indirect effects refers to jobs and other economic activity supported by the mine's purchases of supplies, services and equipment. Induced effects refers to jobs and other economic activity supported by the household spending of mine employees and employees at local vendors supplying goods and services to the mine.

Assessment of Economic and Social Impacts in Wyoming under the No Action Alternative

Over the past 15 years, Fremont County's population has grown by about 15 percent, while total employment in the county has increased by about 20 percent. The 557 new jobs in Fremont County projected to be directly or indirectly supported by future mines under the No Action Alternative would represent about a 2.2 percent increase compared to the county's current total employment. The additional $37.4 million in projected annual labor income projected to result from the future mines would represent an increase of about 3.9 percent in the county's total employee compensation.

While Fremont County had more than 1,400 mining sector jobs in 2014, these jobs were almost entirely related to oil and gas production, coal mining, and sand and gravel mining. There were an estimated eight jobs in Fremont County in metal mining services and non-metallic mining services in 2014, but no jobs at locatable mines in the county. The county's current unemployment rate is approximately 5 percent, about 1 percent higher than average in Wyoming. Given these circumstances, it appears likely that many of the projected new jobs associated with the potential future mines in Fremont County could be filled by workers that move to the county for those jobs.

Based on the current population to employment ratio in Fremont County, and assuming that ratio holds true for new mining jobs in the county, Fremont County's population would increase by about 924 residents (2.2 percent) if the projected future mines are developed. While a rapid influx of newcomers seeking to fill new jobs can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions, this level of projected growth in Fremont County's population would appear to be manageable.

The potential future mine in Fremont County under the No Action Alternative would provide a boost to county tax revenues. Approximately $3 million of the projected annual state and local tax revenues from the mine would come from property taxes, which are Fremont County's largest source of revenues.

Proposed Action

The Proposed Action would withdraw about 265,000 acres of federally managed land across four counties in Wyoming. This alternative would allow future mines only on valid mining claims. No future mining would occur in areas where there are no mining claims.

Under the No Action Alternative, 26 mines are projected to be developed in the withdrawal area, three of which are anticipated to be located in Wyoming. Three of the 26 mines projected to be developed under the No Action Alternative across the six states with proposed withdrawal areas are expected to still be developed under the Proposed Action. However, none of the future mines anticipated in Wyoming under the No Action Alternative are projected to be developed under the Proposed Action.

Table 4-37 summarizes the projected economic impacts of future mines in the Wyoming socioeconomic analysis area under the Proposed Action relative to existing conditions and the No Action Alternative. As shown in Table 4-37, the Proposed Action is projected to result in approximately $251 million less annual regional output, 565 fewer regional jobs, and $37.4 million less in annual labor income in the Wyoming socioeconomic analysis area than the No Action Alternative. The Proposed Action is also projected to result in approximately $9.2 million less in state and local tax revenue.

Table 4-37. Projected Annual Total Economic Impacts from Operations of Future Mines throughout Wyoming Counties under the Proposed Action Compared to Existing Conditions and the No Action Alternative

EIS Alternative	Output	Employment	Labor Income	State/Local Tax Revenue
Proposed Action*				
Proportionate Expected Values	$0	0	$0	$0
Impacts Relative to Existing Conditions				
Proportionate Expected Values	$0	0	$0	$0
Impacts Relative to No Action Alternative				
Proportionate Expected Values	-$251,343,346	-565	-$37,399,441	-$9,217,702

Note: No future mines projected in region.

Assessment of Economic and Social Impacts in Wyoming under the Proposed Action

Because more than 98 percent of the economic impacts of the potential mines under the No Action Alternative were projected to occur in Fremont County, the following discussion focuses on the impacts of the Proposed Action in that county. As shown in Table 4-36, less than one job is projected to be impacted by the Proposed Action in Sublette County and in Lincoln County. While seven future jobs are projected to be impacted in Sweetwater County, that impact would represent less than 0.03 percent of total employment in that county.

Since mining could still continue under existing authorizations under the Proposed Action, there would be no economic or tangible social impacts from the Proposed Action relative to existing conditions in Fremont County. There would, however, be economic impacts from the Proposed Action relative to the projected economic activity associated with the potential future mines under the No Action Alternative. Under the Proposed Action, Fremont County would not experience the growth in employment and labor income projected to occur under the No Action Alternative as a result of the potential future mines in the proposed withdrawal area. Total county employment is projected to be about 2.2 percent lower under the Proposed Action than under the No Action Alternative, and total county earnings are projected to be about 3.9 percent lower than under the No Action Alternative.

Although the Proposed Action would not affect county tax revenues relative to existing conditions, the local tax revenues associated with the projected mines in Fremont County under the No Action Alternative could be quite substantial relative to the county's existing revenue sources. This increase in local tax revenues would not occur under the Proposed Action.

If the current relationship between population and employment in Fremont County also holds true for new mining jobs that would occur under the No Action Alternative, the Proposed Action would result in 2.2 percent fewer Fremont County residents in the future (about 924 fewer county residents) than the No Action Alternative.

Relative to the No Action Alternative, the Proposed Action would not produce the same influx of newcomers into Fremont County. Given the current, relatively stable economic and demographic conditions in the county, the tangible social impacts from the Proposed Action are likely to be fairly small. Intangible social impacts from the Proposed Action (as discussed previously in Section 4.3.3, Impacts Common to All Action Alternatives), could be larger than the tangible social impacts – particularly outside of Fremont County.

State of Nevada Alternative

Under the Nevada Alternative, 487,426 acres of lands deemed by the Nevada Governor's Office to have high mineral potential or provide limited sage-grouse habitat in the Southeast Oregon/Northcentral Nevada SFA and Southern Idaho/Northern Nevada SFA would be excluded from the proposed withdrawal. These acres would be offset by withdrawing 388,351 acres of priority sage-grouse habitat located contiguous to but outside of the SFAs.

Assessment of Economic and Social Impacts in Wyoming under the Nevada Alternative

In the Wyoming socioeconomic analysis area, the projected economic and social impacts of the Nevada Alternative are projected to be the same as the impacts under the Proposed Action. None of the three mines projected to be developed in Fremont County under the No Action Alternative are anticipated to be developed under the Nevada Alternative.

High Mineral Potential Alternative

Under the HMP Alternative, all areas within the proposed withdrawal areas that contain lands with high mineral potential, as defined by the Mineral Potential Report prepared by the USGS, would not be withdrawn. This alternative would reduce the amount of withdrawal acreage across the six states by about 559,000 acres.

Assessment of Economic and Social Impacts in Wyoming under the High Mineral Potential Alternative

Under the HMP Alternative, none of the three projected mines in the Wyoming withdrawal area under the No Action Alternative are expected to be developed. Consequently, the economic and tangible social impacts from the HMP Alternative in Wyoming are projected to be the same as under the Proposed Action.

State of Idaho Alternative

Under the Idaho Alternative, the Office of the Governor of Idaho has proposed that areas of high and moderate mineral potential (including a buffer around those areas) within the state of Idaho that are economically developable in the Northcentral Idaho SFA and Southern Idaho/Northern Nevada SFA would not be withdrawn from location and entry under the Mining Law. The Idaho Alternative would reduce the amount of land withdrawn by approximately 537,854 acres compared to the Proposed Action.

Assessment of Economic and Social Impacts in Wyoming under the Idaho Alternative

In the Wyoming socioeconomic analysis area, the projected economic and social impacts of the Idaho Alternative are projected to be the same as the impacts under the Proposed Action. None of the three mines projected to be developed in Fremont County under the No Action Alternative are anticipated to be developed under the Idaho Alternative.

4.3.10 Summary of Projected Economic and Social Impacts by Alternative

The preceding sections assessed the potential economic, demographic, and social impacts of the No Action Alternative, the Proposed Action, and the other action alternatives on a state-by-state and county-by-county basis across six states and 33 counties. In some cases, where substantial commuting ties exist between additional counties and the counties containing proposed withdrawal areas, those counties were also included in the assessment. The detailed, state-by-state and county-by-county evaluation was chosen because the projected economic and tangible social impacts needed to be considered in the context of existing conditions in the areas that could be most affected by the alternatives.

Summary of Projected Economic Impacts

To facilitate overall evaluation and comparison of the alternatives, it is also useful to summarize the projected impacts at the state level. Table 4-38 summarizes projected annual regional economic output associated with the potential future mines under each alternative. Each of the tables in this summary section, like the tables in the preceding state-by-state evaluation, assumes that all of the projected mines are in operation at the same time. This assumption provides a maximum view of the potential annual economic impacts, but likely overstates actual impacts (and potential differences between the alternatives).

Table 4-38. Summary of Projected Annual Economic Output from Operations of Future Mines throughout Socioeconomic Analysis Areas under Each Alternative (in millions)

	No Action	Proposed Action	State of Nevada	High Mineral Potential	State of Idaho
Idaho	$118.0	$13.1	$13.1	$26.2	$52.5
Estimated Potential Range	—	*$3.6 - $70.3*	*$3.6 - $70.3*	*$9.9 - $76.6*	*$22.5 - $89.2*
Montana	$28.1	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Nevada	$398.6	$132.9	$265.7	$265.7	$132.9
Estimated Potential Range	—	*$25.1 - $200.3*	*$198.2 - $373.5*	*$198.2 - $373.5*	*$25.1 - $200.3*
Oregon	$48.5	$4.9	$4.9	$14.6	$4.9
Estimated Potential Range	—	—	—	—	—
Utah	$0.0	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Wyoming	$251.3	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
All Socioeconomic Analysis Areas	$844.6	$150.8	$283.7	$306.5	$190.2
Estimated Potential Range	—	$33.6 - $270.5	$206.7 - $448.7	$222.7 - $464.7	$52.5 - $294.4

Note: These estimates assume all projected mines are operating simultaneously, which produces a maximum estimate of potential annual economic impacts. Actual impacts in any particular year during the withdrawal period would likely be less.

As shown in Table 4-38, projected total annual economic output from potential mines in the socioeconomic analysis area ranges from nearly $845 million under the No Action Alternative to approximately $151 million under the Proposed Action. As described previously in the state-by-state evaluation, in some cases the projected impacts under the action alternatives could differ depending on which of the mines anticipated under the No Action Alternative occur under those alternatives. In such cases, potential impacts are also shown as a potential range of values.

Table 4-39 provides a similar summary of projected direct and indirect[24] employment across the socioeconomic analysis areas from the potential future mines under each alternative. Projected total employment ranges from approximately 2,031 jobs under the No Action Alternative to about 326 jobs under the Proposed Action.

[24] Indirect economic activity also includes projected induced economic effects from expenditures by employee households.

Table 4-39. Summary of Projected Direct and Indirect Employment from Operations of Future Mines throughout Socioeconomic Analysis Areas under Each Alternative

	No Action	Proposed Action	State of Nevada	High Mineral Potential	State of Idaho
Idaho	327	36	36	73	145
Estimated Potential Range	—	*11 - 94*	*11 - 94*	*43 - 126*	*106 - 189*
Montana	107	0	0	0	0
Estimated Potential Range	—	—	—	—	—
Nevada	801	267	534	534	267
Estimated Potential Range	—	*62 - 388*	*414 - 739*	*414 - 739*	*62 - 388*
Oregon	231	23	23	69	23
Estimated Potential Range	—	—	—	—	—
Utah	0	0	0	0	0
Estimated Potential Range	—	—	—	—	—
Wyoming	565	0	0	0	0
Estimated Potential Range	—	—	—	—	—
All Socioeconomic Analysis Areas	2,031	326	594	676	435
Estimated Potential Range	—	*96 - 505*	*448 - 856*	*526 - 934*	*191 - 600*

Note: These estimates assume all projected mines are operating simultaneously, which produces a maximum estimate of potential annual economic impacts. Actual impacts in any particular year during the withdrawal period would likely be less.

Table 4-40 summarizes projected labor income across the socioeconomic analysis areas from the potential future mines under each alternative. Projected annual labor earnings range from approximately $141 million under the No Action Alternative to about $24 million under the Proposed Action.

Table 4-40. Summary of Projected Direct and Indirect Labor Income from Operations of Future Mines throughout Socioeconomic Analysis Area under Each Alternative (in millions)

	No Action	Proposed Action	State of Nevada	High Mineral Potential	State of Idaho
Idaho	$22.8	$2.5	$2.5	$5.1	$10.1
Estimated Potential Range	—	*$0.5 - $10.7*	*$0.5 - $10.7*	*$2.1 - $12.4*	*$5.4 - $15.7*
Montana	$5.7	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Nevada	$61.5	$20.5	$41.0	$41.0	$20.5
Estimated Potential Range	—	*$5.1 - $35.7*	*$25.8 - $56.5*	*$25.8 - $56.5*	*$5.1 - $35.7*
Oregon	$13.9	$1.4	$1.4	$4.2	$1.4
Estimated Potential Range	—	—	—	—	—
Utah	$0.0	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Wyoming	$37.4	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
All Socioeconomic Analysis Areas	$141.4	$24.4	$45.0	$50.3	$32.0
Estimated Potential Range	—	*$7.0 - $47.8*	*$27.7 - $68.6*	*$32.1 - $73.1*	*$11.9 - $52.8*

Note: These estimates assume all projected mines are operating simultaneously, which produces a maximum estimate of potential annual economic impacts. Actual impacts in any particular year during the withdrawal period would likely be less.

Finally, Table 4-41 summarizes the projected annual state and local tax revenue associated with operations of the projected future mines under each alternative. Projected tax revenues range from about $27 million per year under the No Action Alternative to less than $5 million per year under the Proposed Action.

Table 4-41. Summary of Projected Annual State and Local Tax Revenue from Operations of Future Mines throughout Socioeconomic Analysis Areas under Each Alternative (in millions)

	No Action	Proposed Action	State of Nevada	High Mineral Potential	State of Idaho
Idaho	$3.4	$0.4	$0.4	$0.8	$1.5
Estimated Potential Range	—	*$0.1 - $2.3*	*$0.1 - $2.3*	*$0.3 - $2.4*	*$0.5 - $2.7*
Montana	$0.6	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Nevada	$11.9	$3.9	$7.9	$7.9	$3.9
Estimated Potential Range	—	*$0.5 - $8.1*	*$3.8 - $11.3*	*$3.8 - $11.4*	*$0.5 - $8.1*
Oregon	$1.5	$0.1	$0.1	$0.4	$0.1
Estimated Potential Range	—	—	—	—	—
Utah	$0.0	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
Wyoming	$9.2	$0.0	$0.0	$0.0	$0.0
Estimated Potential Range	—	—	—	—	—
All Socioeconomic Analysis Areas	$26.6	$4.5	$8.4	$9.1	$5.6
Estimated Potential Range	—	*$0.7 - $10.5*	*$4.0 - $13.7*	*$4.5 - $14.2*	*$1.1 - $10.9*

Note: These estimates assume all projected mines are operating simultaneously, which produces a maximum estimate of potential annual economic impacts. Actual impacts in any particular year during the withdrawal period would likely be less.

Overall, relative to the No Action Alternative, each of the action alternatives would have adverse direct and indirect economic impacts (that is, a reduction in monies realized from exploration and development of mineral resources) in the counties where future mines were estimated to be developed in the RFD. County level impacts would range from minor to major, depending on the size of the county economies and the projected differences between mineral related economic activity under the action alternatives and projected mineral-related economic activity under the No Action Alternative. In other counties with proposed withdrawal areas where mines were not estimated to be developed in the RFD, the action alternatives would have minor adverse direct and indirect economic effects, or no impact. The Nevada Alternative would have less economic impact within the state of Nevada than the Proposed Action, but the same impact in the other states. The Idaho Alternative would have less economic impact in Idaho than the Proposed Action, but the same impact in the other states. The HMP Alternative would have less impact in Oregon than the other action alternatives, the same impact in Nevada as the Nevada Alternative, and less impact than the Proposed Action in Idaho (but more impact than the Idaho Alternative), and the same impact as the Proposed Action in Montana, Utah, and Wyoming. At the statewide levels, the economic impacts of any of the action alternatives would be minor, based on the thresholds described in Table 4-13.

Summary of Anticipated Social Impacts

The preceding narrative has distinguished between tangible social impacts related to changes in economic and demographic conditions and intangible social impacts related to changes in public or social perceptions regarding public land management.

The tangible social impacts from the various alternatives depend greatly on the existing economic, demographic, and social context in the counties that could be most affected by the alternatives. In rural counties which have experienced long periods of declining employment and population, the potential new jobs associated with the projected mines under the No Action Alternative could lead to improvements in existing social conditions. Custer County, Idaho; Valley County, Montana; and Malheur County, Oregon appear to fit this profile. To the extent that the Proposed Action, and/or the other action alternatives, would preclude the projected economic benefits in these counties, they would also preclude associated, tangible social benefits.

Conversely, to the extent to which a reduction in future mineral exploration and development associated with the Proposed Action or other action alternatives may encourage the development of other wildlife-related recreation industries, there may be offsetting social or economic benefits.

In some circumstances, development of large mines or other major new facilities in small rural counties can result in a rapid influx of newcomers seeking to fill new jobs that can strain the capacity of existing infrastructure, lead to increases in prices for housing and other goods and services, and adversely affect social conditions. Based on the magnitude of projected population increases associated with future mines under the No Action Alternative, this does not appear likely to be a major concern in most of the counties examined in this analysis, though such impacts could occur in specific communities (e.g., towns) depending on exactly where the future mines were located. The largest projected impact on population (in terms of percentage change) under the No Action Alternative would be expected to occur in Custer County, Idaho. That county could experience an increase in population of more than 7 percent. None of the other counties anticipated to be most affected by projected future mines in the proposed withdrawal area would be expected to experience an increase in population of more than 3.6 percent.

A number of the counties containing proposed withdrawal areas have an existing mining sector, though in most cases those sectors are either relatively small or primarily related to energy-based activity, including oil and gas production and coal mining. The major exceptions are Elko County and Humboldt County in Nevada. In those two counties, the local economy is primarily based on extensive locatable mineral mining operations. The potential future mines in the proposed withdrawal areas in those counties could further expand and extend the longevity of the existing mining sector in the county, and potentially help provide ongoing employment for current miners living in the county as some of the current mines in the county reach the end of their operations. To the extent that the action alternatives preclude the development of the potential mines anticipated under the No Action Alternative, there could be a tangible adverse social impact from correspondingly higher unemployment among miners and other mine-related workers in the future.

Overall, relative to the No Action Alternative, each of the action alternatives would have adverse direct and indirect social impacts in the counties where future mines were estimated to be developed in the RFD. County level impacts would range from minor to major, depending on the size of the county populations and the projected differences between future population under the action alternatives and future population under the No Action Alternative. In other counties with proposed withdrawal areas where mines were not estimated to be developed in the RFD, the action alternatives would have minor adverse direct and indirect social effects, or no impact. The Nevada Alternative would have less social impact within the state of Nevada than the Proposed Action, but the same impact in the other states. The Idaho Alternative would have less social impact in Idaho than the Proposed Action, but the same impact in the

other states. The HMP Alternative would have less impact in Oregon than the other action alternatives, the same impact in Nevada as the Nevada Alternative, and less impact than the Proposed Action in Idaho (but more impact than the Idaho Alternative), and the same impact as the Proposed Action in Montana, Utah, and Wyoming. At the statewide levels, the tangible social impacts of any of the action alternatives would be minor, based on the thresholds described in Table 4-13.

As noted earlier in the economic and social impacts evaluation, intangible or perceptual impacts from the withdrawal alternatives could be larger, and would likely be more widespread, than the more tangible social impacts. It appears likely that implementation of the Proposed Action could contribute to further polarization among residents of the six states and other stakeholders concerning federal land management. These intangible social impacts might be reduced if one of the other action alternatives is implemented, but the degree to which the public and other stakeholders would distinguish between the different withdrawal alternatives is not known.

4.3.11 Environmental Justice

Chapter 3 presents the methodology for screening the socioeconomic analysis area for potential environmental justice populations, and the results. Once potential environmental justice populations are identified, environmental justice impact analysis consists of determining if the subject populations would experience disproportionately high and adverse environmental or human health effects – as defined by the CEQ and described in Chapter 3 – under one or more of the alternatives. Environmental health effects may include cultural, economic, or social impacts when those impacts are interrelated to impacts on the natural or physical environment.

Based on the definitions and threshold values noted above, and the data obtained for this analysis, the following places in the socioeconomic analysis area were flagged as areas of potential concern from an environmental justice perspective, for the populations noted:

- **Idaho** – Clark County (low-income population); Owyhee County (low-income population)
- **Montana** – none
- **Nevada** – none
- **Oregon** – Malheur County (low-income population)
- **Utah** – none
- **Wyoming** – Fremont County (proportion of American Indian residents).

Based on the projected direct and indirect economic and social impacts described earlier in this chapter, the counties in Idaho (Clark County and Owyhee County) flagged as areas of potential concern from an environmental justice perspective would not experience disproportionate adverse impacts. Future mines are not projected to be developed within the proposed withdrawal areas in those counties under the No Action Alternative and neither of those counties is projected to experience economic or tangible social impacts from any of the action alternatives.

While the proposed alternatives are not expected to result in any adverse health or environmental effects, the counties in Oregon (Malheur County) and Wyoming (Fremont County) flagged as areas of potential concern from an environmental justice perspective could experience disproportionately adverse economic and social impacts from the withdrawal alternatives. Whether these adverse impacts qualify as

disproportionately "high" and adverse is not as clear. As described earlier in this chapter, the Proposed Action is projected to reduce future employment and population in Malheur County by about 0.2 percent relative to the No Action Alternative. The projected impacts in Fremont County are larger, with a projected difference of about 2.2 percent between future employment and population under the Proposed Action and future employment and population under the No Action Alternative.

4.3.12 Public Health and Safety

This EIS is not intended to analyze or authorize any particular future mine but rather to estimate the effects of the withdrawal. The decision to withdraw an area from mining would not directly impact public health and safety. Indirect, beneficial effects could be realized by reducing the potential for adverse effects from mining.

As described in Chapter 3, any future mine operations would be required to comply with stringent safety and health standards administered by MSHA through federal regulations at 30 CFR Parts 1 through 199 and, in particular, Part 57. MSHA regulations include requirements for ground support systems, mine ventilation, electrical systems, combustible fluid storage, underground shops, equipment specifications and maintenance, explosives storage and handling, dust control, monitoring and reporting requirements, alarm systems, worker personal safety equipment, and restrictions for public access. To comply with MSHA standards, any future mining operations would require the necessary MSHA mine permit and an MSHA-approved miner training plan, escape and evacuation plan, and ventilation plan.

Potential safety risks associated with mining operations could affect users of public lands, such as recreationists and visitors; however, these risks would be mitigated by safety mechanisms mandated by the land managing agencies such as the BLM and Forest Service, as well as MSHA. For instance, secured gates at mine operations are required.

When a future mine is proposed, site-specific NEPA analysis would be conducted based on the information contained in a mine plan of operations which would also address public health and safety issues. Thus, no impacts to human safety are expected under any alternative.

4.3.13 Cumulative Economic and Social Impacts

The evaluation of cumulative impacts on economic and social conditions considers the direct and indirect impacts of the alternatives, as described in the preceding pages, in the context of past, present and reasonably foreseeable future activities. The geographic scope for the analysis of tangible cumulative social and economic impacts includes each county containing proposed withdrawal areas, and additional counties with strong economic links to counties with withdrawal areas (as discussed in Section 3.3). For the analysis of intangible, cumulative social impacts, the geographic scope was broadened to include nearby areas in proximity to other existing restrictions on the use of federal lands (as described later in this subsection). The temporal scope for the analysis of cumulative economic and social impacts is the proposed 20-year withdrawal period.

In general, the effects of past and present activities in the socioeconomic analysis areas are manifested in the existing economic and social conditions in those areas, which were considered in the preceding evaluation of direct and indirect impacts. The most important reasonably foreseeable future activity for this evaluation is the potential development of future mines within the proposed withdrawal areas, which was incorporated in the evaluation of the No Action Alternative (and the comparisons of the action alternatives to the No Action Alternative).

Given the large amounts of federally managed land within many of the socioeconomic analysis area counties, prior federal land management actions may also contribute to the cumulative impacts of the proposed withdrawal under any of the action alternatives.

Resource Management Plans and Plan Amendments for Sage Grouse Conservation

In September 2015, BLM and the Forest Service issued their RODs and approved LUP amendments for areas managed by the agencies in the six states affected by the proposed withdrawal and other western states. Because most of the NEPA evaluations for the LUPs and LUP amendments did not produce county-specific impacts estimates, and because the methods and economic metrics varied among the EISs conducted for different states and field offices, it is not possible to quantify economic and social impacts from the sage-grouse conservation LUPs and LUP amendments for the counties projected to be most affected by the proposed withdrawal. However, the NEPA evaluations conducted for the RMPs and LUP amendments do provide insight into the projected, tangible economic and social impacts of the changes in land use management for sage-grouse conservation at the field office or statewide levels.

In Idaho and Southwestern Montana, the proposed land use plan amendments were projected to lead to potential increases in operational costs or reduced efficiencies for grazing on federal lands, but economic impacts were not quantified. The proposed plan was, however, anticipated to lead to a 50 percent reduction in employment and earnings from oil and gas production in greater sage-grouse habitat. The EIS also noted that the proposed plan may prevent employment and earnings from wind energy development in greater sage-grouse habitat on BLM and Forest Service lands.

In the HiLine RMP for North Central Montana, the preferred alternative was projected to reduce employment supported by resource uses on federal lands by about 7 percent. Most of that reduction was expected to come from reduced mineral extraction (primarily oil and gas activity). The Lewistown RMP, also in Montana, anticipated that the proposed plan amendment would lead to a reduction in employment generated from wildlife-related recreation and non-wildlife-related recreation, though those impacts were not quantified.

In the Final EIS for the LMP amendment covering Nevada and Northeastern California, the proposed plan was projected to result in a decrease of 493 jobs relative to existing land management. Reduced employment opportunities in wind energy, oil and gas, and geothermal energy accounted for all of these projected employment reductions.

In Oregon, the proposed plan was projected to lead to a decrease of 144 jobs relative to existing land management. As in Nevada, nearly all of these projected reductions in future employment were expected to come from reduced wind energy and geothermal development.

In Wyoming, the proposed land use plan amendments for greater sage-grouse conservation were projected to result in about an 8 percent reduction in oil and gas development (corresponding to over 2,200 jobs), a 4 percent reduction in oil and gas production, and a 90 percent reduction in wind energy development and production on lands managed by BLM and the Forest Service.

Existing Withdrawals in Proximity to the Socioeconomic Analysis Area

As discussed earlier in this evaluation, intangible or perceptual impacts from the proposed withdrawal are likely to be more widespread than the more tangible economic and social impacts. Public and agency comments during scoping highlighted concerns about the cumulative impacts of the proposed withdrawal in the context of other, existing restrictions on the use of federally-managed lands in the socioeconomic analysis area.

To illustrate these concerns, Figure 4-1 depicts a cumulative social impacts analysis area based on geographic areas within 30 miles of the proposed withdrawal area. This area is shown in the black, dashed line. The 30-mile radius was chosen to encompass areas within a relatively short drive of the withdrawal areas for work commuting, recreation, or other purposes.

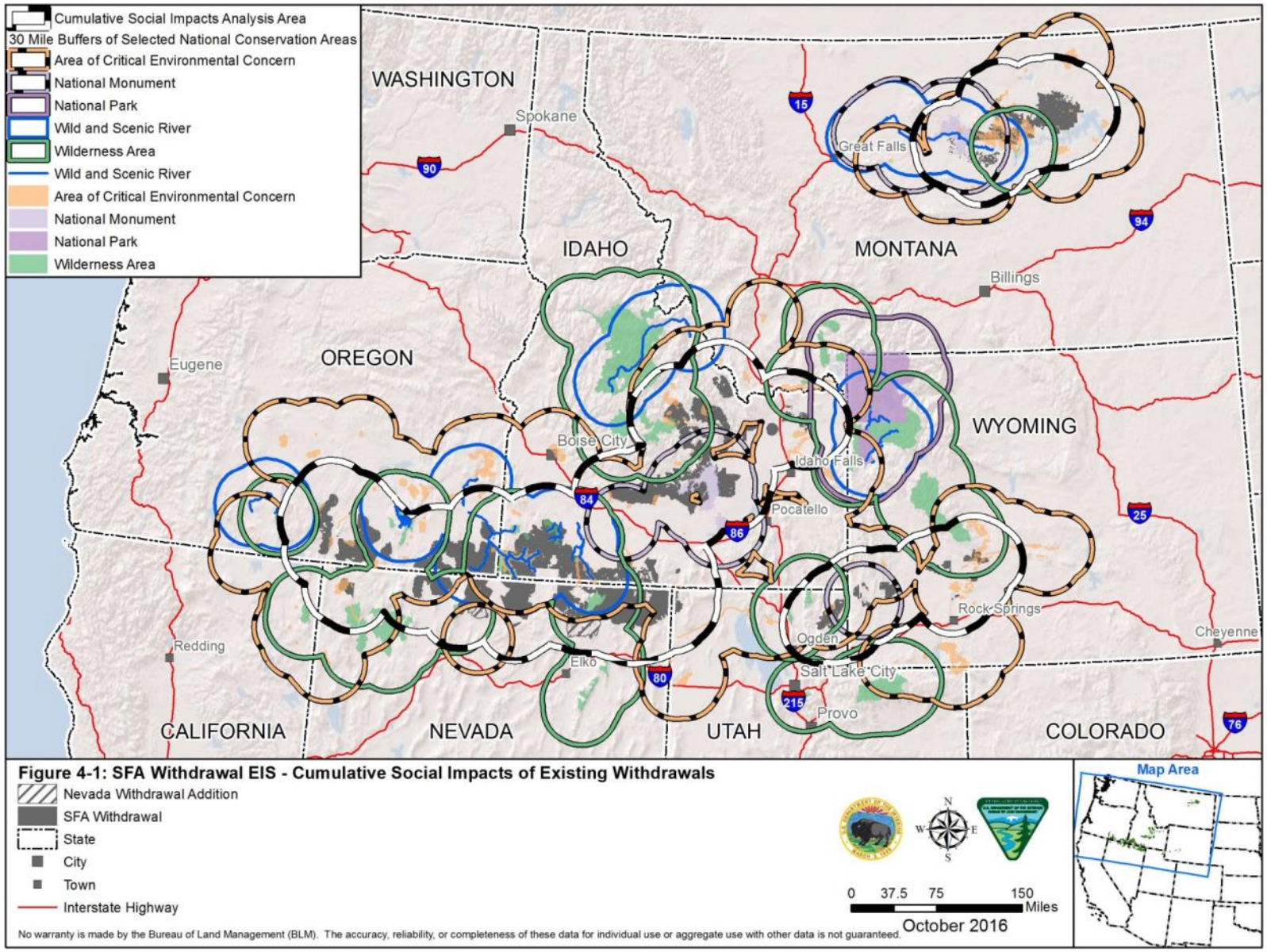

Figure 4-1. Cumulative Social Impacts of Existing Withdrawals

Also shown on Figure 4-1 are existing withdrawals for lands designated as wilderness areas, national wildlife refuges, national monuments, wild and scenic rivers, and ACECs. A 30-mile buffer surrounding each of these areas is also illustrated on Figure 4-1. In total, 43 wilderness areas, 29 wild and scenic river designations, two national parks, four national monuments, and 163 ACECs are located in relative proximity to the proposed withdrawal area. Not shown in Figure 4-1 are some smaller areas receiving special management by BLM, such as special recreation management areas, which may also include restrictions on access or other uses.

Much of the cumulative social impacts analysis area in Idaho, Montana, Nevada, and Oregon overlaps lands in proximity to these existing withdrawals. These overlaps suggest that larger communities outside of the counties containing proposed withdrawal areas, such as Boise, Idaho Falls, Pocatello, and Great Falls, may also experience intangible social impacts from the proposed withdrawal.

Comparison of Cumulative Impacts by State and Alternative

Within the state of Idaho, the action alternatives likely to result in the largest cumulative social and economic impacts are the Proposed Action and the Nevada Alternative, primarily because those alternatives would have the largest direct and indirect impacts (as shown in Tables 4-38 through 4-41). The HMP Alternative would have the next largest cumulative social and economic impacts, while the Idaho Alternative would have the smallest cumulative impact among the action alternatives. Apart from the projected direct and indirect economic impacts of the action alternatives, the primary cumulative impact concerns in Idaho include the trend of declining employment and population in Custer County, the potential for reduced economic activity from oil and gas and wind energy development on federal lands due to the LMP amendments for sage-grouse conservation approved in 2015, and the potential for cumulative, intangible social impacts related to multiple restrictions on the use of federal lands as shown in Figure 4-1.

Within the state of Montana, all of the action alternatives would likely result in similar cumulative impacts to social and economic conditions because those alternatives are projected to have the same direct and indirect impacts (as shown in Tables 4-38 through 4-41). Apart from the projected direct and indirect economic impacts of the action alternatives, the primary cumulative impact concerns in Montana include the trend of declining employment and population in Valley County, the potential for reduced economic activity from oil and gas development and recreation on federal lands due to the LUP amendments for sage-grouse conservation approved in 2015, and the potential for cumulative, intangible social impacts related to multiple restrictions on the use of federal lands as shown in Figure 4-1.

Within the state of Nevada, the action alternatives likely to result in the largest cumulative social and economic impacts are the Proposed Action and the Idaho Alternative, primarily because those alternatives would have the largest direct and indirect impacts (as shown in Tables 4-38 through 4-41). The Nevada Alternative and the HMP Alternative would have less cumulative social and economic impacts because their direct and indirect impacts would be smaller. Apart from the projected direct and indirect economic impacts of the action alternatives, the primary cumulative impact concerns in Nevada are the reduction in future mining employment opportunities for the extensive, existing mining sectors in Elko and Humboldt counties, as well as potential impacts on the future supply chain for lithium battery development. Reduced employment opportunities in wind energy, oil and gas, and geothermal energy, due to the LUP amendments for sage-grouse conservation approved in 2015, and the potential for cumulative, intangible social impacts related to multiple restrictions on the use of federal lands are additional cumulative impact concerns in Nevada.

Within the state of Oregon, all of the action alternatives would result in similar cumulative social and economic impacts except for the HMP Alternative. The HMP Alternative would have smaller direct and indirect economic and social impacts (as shown in Tables 4-38 through 4-41), and correspondingly smaller cumulative impacts. Apart from the projected direct and indirect economic impacts of the action alternatives, the primary cumulative impact concerns in Oregon are the trend of declining employment and population in Malheur County, and reduced employment opportunities in wind energy and geothermal energy due to the LUP amendments for sage-grouse conservation approved in 2015. The potential for cumulative, intangible social impacts related to multiple restrictions on the use of federal lands is an additional cumulative impact concern in Oregon.

Within the state of Utah, none of the action alternatives are expected to result in direct or indirect economic and social impacts (as shown in Tables 4-38 through 4-41). Consequently, no tangible cumulative social or economic impacts are expected in Utah under any of the action alternatives. Some potential may remain for intangible social impacts related to public perceptions concerning multiple restrictions on the use of federal lands in Utah.

Within the state of Wyoming, all of the action alternatives would likely result in similar cumulative impacts to social and economic conditions because those alternatives are projected to have the same direct and indirect impacts (as shown in Tables 4-38 through 4-41). Apart from the projected direct and indirect economic impacts of the action alternatives, the primary cumulative impact concerns in Wyoming include comparatively large reductions in projected future economic activity from oil and gas and wind energy development on federal lands due to the LMP amendments for sage-grouse conservation approved in 2015. In Wyoming, as in the other states, there is also the potential for cumulative, intangible social impacts related to multiple restrictions on the use of federal lands as shown in Figure 4-1.

Overall, relative to the No Action Alternative, each of the action alternatives would have adverse cumulative social and economic impacts ranging from minor to major in the counties where future mines were estimated to be developed in the RFD. In other counties with proposed withdrawal areas where mines were not estimated to be developed in the RFD, the action alternatives would have minor adverse cumulative social and economic effects, or no impact. The Nevada Alternative would have less social and economic impact within the state of Nevada than the Proposed Action, but the same impact in the other states. The Idaho Alternative would have less social and economic impact in Idaho than the Proposed Action, but the same impact in the other states. The HMP Alternative would have less impact in Oregon than the other action alternatives, the same impact in Nevada as the Nevada Alternative, and less impact than the Proposed Action in Idaho (but more impact than the Idaho Alternative), and the same impact as the Proposed Action in Montana, Utah, and Wyoming. At the statewide level, cumulative social and economic impacts would be minor based on the impact thresholds described in Table 4-13.

4.4 Vegetation, including Special Status Plants

Potential effects of the proposed mineral withdrawal to vegetation are discussed in the following section. Primary plant communities and lists of special status plants species likely to occur in the withdrawal area are presented in Chapter 3 and Appendix D. The analysis of effects of the Proposed Action and each alternative to vegetation and special status plant species and their habitat is presented below in the following order: Threatened, Endangered, Proposed, and Candidate Plant Species (i.e., plants that are listed or proposed for listing by the USFWS under the ESA); BLM and Forest Service Sensitive Plant Species; and General Vegetation.

4.4.1 Impact Assessment Methodology and Assumptions

Quantitative and qualitative approaches used to estimate impacts to vegetation include calculations of vegetation impacts relative to the availability of vegetation in the proposed withdrawal area, the disturbance footprint of mines and exploration sites, and the spatial nature of impacts.

Impacts are quantified where possible; however, some potential impacts to vegetation resulting from future mining operations are largely uncertain. In the absence of quantitative data, the best available science and professional judgment were used. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. Table 4-42 provides thresholds and descriptions used during analysis for vegetation resource impacts.

Table 4-42. Magnitude and Degrees of Effects on Vegetation Resources

Threshold	Description Relative to Resource
No Impact	Mining-related activities would not produce impacts to the vegetative character and overall density and diversity of vegetation resources.
Minor	Mining-related impacts would occur to existing vegetation; however, impacts to overall density and diversity of vegetation resources would be less than 1 percent of the total SFA withdrawal area.
Moderate	Mining-related impacts would occur to existing vegetation; impacts to the overall density and diversity of vegetation resources would be greater than 1 percent and less than 3 percent of the SFA withdrawal area.
Major	Mining-related impacts would create a high degree of change within the existing vegetative character; impacts to the overall density and diversity of vegetation resources would be greater than 3 percent of the SFA withdrawal area.

Duration of impacts is quantified where possible; however, some potential impacts to vegetation as a result of future mining operations are largely uncertain. Impacts are described using ranges of the length of time the resource will be affected, as described above in Section 4.1.2.

Vegetation is a fundamental and vitally important component of the biological resources in the proposed withdrawal area. The effects to vegetation resulting from implementing any of the proposed alternatives would also affect other resources. Adverse impacts to the vegetation resource could result in reduced biological productivity, weed invasion, and unwanted changes in the composition and structure of vegetation communities. These changes, in turn, could influence forage availability for wildlife. Where actions result in loss or reduction of vegetative cover and/or soil erosion or compaction, other resources could also be impacted.

The direct and indirect effects of mining-related activities on vegetation may vary widely, depending on a variety of factors such as the location of the mine facilities, type of soils, soil moisture, topography, and plant reproductive characteristics. Direct impacts are generally caused by construction activities; the establishment, use, maintenance, closing, or rehabilitation of roads; and the introduction, spread, and treatment of noxious and invasive species. Indirect impacts are generally caused by dust accumulation immediately adjacent to roads and would include lowered vigor or death of plants and changes in plant abundance and/or species composition resulting from modified nutrient cycling as a result of soil compaction and soil erosion.

Exploration, mining, and the construction of new access roads, power lines, and other infrastructure could result in direct impacts to the following vegetation types: Inter-Mountain Basins Big Sagebrush Shrubland, Inter-Mountain Basins Big Sagebrush Steppe, Inter-Mountain Basins Montane Sagebrush Steppe, Columbia

Plateau Low Sagebrush Steppe, Great Basin Xeric Mixed Sagebrush Shrubland, Wyoming Basins Dwarf Sagebrush Shrubland and Steppe, and other plant communities (Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland). Direct impacts to vegetation could include injury or loss of vegetation from crushing or removal of plants. The exact acres of vegetation lost by type cannot be estimated because no specific exploration or mine locations have been proposed at this time. The RFD provides an estimate of potential disturbance for comparison of effects of the Proposed Action to the other alternatives. Mining-related disturbance would have localized impacts on vegetation community structure and species richness, as well as overall vegetation productivity on an ecosystem level. The magnitude of these impacts cannot be fully understood until specific mine locations are known. The time required for successful reclamation would depend on soil, topography, rainfall, vegetation type, and the reclamation method used.

Indirect effects on the vegetation within the analysis area may also include changes in native species richness, abundance, productivity, and structure as a result of the inadvertent introduction of invasive species during the process of mine operations and the associated disturbance. Invasive species not only displace native species, but have the potential to increase the risk of wildfire, in particular cheatgrass, as this species is dormant during the hotter months when the risk of fire is greatest throughout the year. When cheatgrass enters dormancy it increases dry residual biomass which can carry wildfires that burn hot and fast through an area dominated by cheatgrass. Indirect impacts would also include soil erosion (both wind and water), soil compaction, and watershed impacts from construction and installation of mine facilities, access roads, and power lines as effective ground cover is decreased.

To evaluate potential impacts to vegetation, the following indicators are used:

- Acres of surface disturbance estimated for potential mineral exploration and development activities.
- Potential for the introduction or spread of invasive species.

4.4.2 Incomplete or Unavailable Information

A comprehensive inventory of all vegetation communities and special status plant species within the SFAs is not available and specific locational information for many of these species is not known. Potential impacts to these species are best informed during project-specific NEPA evaluation where the precise location of a proposed action would be known. A list of all federally-protected (i.e., ESA listed) vegetation species was obtained for the SFAs from the USFWS. A review of all state-wide lists and lists of sensitive plant species within BLM Field Offices and National Forests that overlap the SFA boundaries was conducted.

4.4.3 Impacts Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative. For all land withdrawn from appropriation under the Mining Law, a positive benefit to special status plant species and native vegetation could occur because fewer acres would be available for mineral entry compared to not withdrawing the land. On lands that are withdrawn from appropriation under the Mining Law, BLM would not approve a plan of operations or allow notice-level operations to proceed until BLM has prepared a mineral examination report to determine whether the mining claim was valid before the withdrawal, and whether it remains valid. If the mining claim is determined to be valid, BLM may approve the plan of operations or allow notice-level operations to proceed on withdrawn lands. Thus, under the Proposed Action and all action alternatives, some future mineral development projects are still expected to occur, as described in the RFD (Appendix B) and Chapter 2.

Surface and subsurface mining for mineral resources, such as gold, silver, copper, lithium, and bentonite, results in direct loss of vegetation including potential habitat for greater sage-grouse and other sagebrush obligate species. Direct vegetation loss occurs from removing vegetation and soil to access mineral resources and storage of overburden (soil removed by mining or the formation of mine shafts) in undisturbed habitat. If infrastructure is necessary, additional direct loss of vegetation could result from clearing of land for construction of structures and ancillary facilities (e.g., air vents, fans, and shafts), staging areas, roads, railroad tracks, and power lines.

Direct and indirect impacts to threatened and endangered plant species could result from habitat alteration resulting from mining and exploration activities, which could impact overall health of the plant or result in an increase in mortality. Because many species have small home ranges and very narrow habitat requirements, even small modifications to vegetation could lead to pronounced effects on the species by reducing suitable habitat, facilitating weed invasion; increasing erosion, and increasing opportunities for mortality through clearing, crushing, trampling, or reducing cover items. In addition to direct habitat impacts, indirect impacts to threatened and endangered plants could result from dust settling on vegetation adjacent to roads, which could temporarily reduce individual productivity. Both the BLM and Forest Service have regulatory requirements in place to reduce or eliminate potential impacts associated with erosion and the spread of invasive species; these requirements are implemented on all federal actions.

It is important to note that no particular future mineral development projects are being proposed or evaluated here. In any instance where a particular mining operation or exploration activity is proposed, any evaluation required under NEPA, Section 7 of the ESA, or any other applicable authority, would take place as part of that evaluation. If appropriate, a formal effects determination under Section 7, as well as any appropriate consultation with the USFWS, or establishment of required protective measures, would take place as part of the project specific evaluation.

4.4.4 Impacts of No Action Alternative

Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law and all areas of the proposed withdrawal area would be open to potential exploration and mining operations. New mining claims could be filed and exploration projects and mining operations could occur anywhere on the landscape, subject to the terms and conditions of approved plans of operations as well as existing state and federal laws and regulations. The federal surface management regulations and state environmental regulations are summarized in Section 1.7 of Chapter 1. The operating requirements for locatable mineral exploration and development activities under the No Action Alternative as well as the Proposed Action and other alternatives are described in Section 2.5 of Chapter 2.

The estimated number of future mines and future exploration projects is discussed above in Section 4.2 and in the RFD (Appendix B). Twenty-six future mines are estimated under the No Action Alternative within the withdrawal area over the next 20 years, with five of those expected to be large (~1562 acres) and 21 expected to be small (~23 acres). Similarly, 114 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for over 1250 acres of disturbance. Table 2-4 in Chapter 2 estimated that the total amount of mining related disturbance in sagebrush habitat under the No Action Alternative would be 9,554 acres, or approximately one-tenth of 1 percent of the total withdrawal area.

Threatened, Endangered, Proposed, and Candidate Plant Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the two ESA-listed threatened plant species (Ute ladies'-tresses and slickspot peppergrass) and the two candidate plant species (whitebark pine and Fremont County rockcress) located within the SFAs.

Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law. Potential impacts to federally listed plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. It is anticipated that measures would be implemented to avoid and minimize adverse impacts to threatened, endangered, proposed, and candidate plant species from mining and exploration activities. Without the known locations of potential mining and exploration development it is not possible to quantify any effects to these species that might occur under the No Action Alternative. Species determinations would be made on a case by case basis as individual mining and exploration projects are proposed and vetted through the NEPA and ESA processes.

BLM and Forest Service Sensitive Plant Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the 330 BLM and Forest Service sensitive plant species, as well as the Forest Service management indicator species or focal species, that have been identified as potentially occurring within the SFAs (see Tables D-1 and D-3 in Appendix D). The BLM and Forest Service sensitive plant species occur in a wide variety of habitats throughout the analysis area. Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law. Potential impacts to these plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

Without the known locations of potential mining and exploration development it is not possible to quantify any effects to BLM and Forest Service sensitive plant species that might occur under the No Action Alternative. Nevertheless, the RFD has estimated that 9,554 acres could be disturbed during future mineral development projects under the No Action Alternative. Potential impacts to these species could include loss or injury of plants as a result of crushing or removal, burial under piles of extracted material, and increased exposure to dust and other contaminants. Vehicles traveling on roads could deposit dust on individual plants. This could lead to a decrease in plant vigor and a decrease in vegetation productivity adjacent to these roads. Productivity may be reduced as a result of depressed photosynthetic capability over time, after repeated deposition of dust on vegetation during active times of mine operations.

General Vegetation

Under the No Action Alternative none of the acreage within the SFAs would be withdrawn from potential mining and exploration activities. Therefore, all 9,949,448 acres of federally managed lands within the SFAs have the potential to be impacted by disturbances associated with mining. The RFD estimated that up to 9,554 acres of lands could potentially be impacted by the No Action Alternative. The location of these potential disturbances is unknown and could take place anywhere within the SFAs. These disturbances could impact vegetation communities on 0.1 percent of the SFAs with the majority of the impacts estimated to occur in Nevada and Idaho. Over the entire withdrawal area, the impact to vegetation under the No Action Alternative would be minor (see Table 4-42). Wherever future mineral development projects would occur the impact to vegetation would likely be minor to major.

Multiple areas of varying size could be disturbed under this alternative, and the future mineral development projects predicted under the RFD could result in long-term and apparent differences between the disturbed then reclaimed areas and the surrounding undisturbed vegetation. Impacts would be scattered spatially (26 mining projects and 114 exploration projects throughout the withdrawal area), and if all of the potential mines (8,303 acres) and exploration projects (1,251 acres) were to be implemented over the next 20 years there would be 9,554 acres of impacts to vegetation communities within the seven SFAs. The decrease in vegetative cover would vary by activity, from minor to major depending on the specific areas that would be affected by an activity (see Table 4-42). Vegetation productivity would be

expected to trend toward pre-project conditions following the completion of reclamation activities (i.e., recontouring the disturbance, replacement of topsoil, and implementation of erosion control measures). Large open pit mining activities would require a much larger effort to reestablish vegetation productivity within disturbance areas.

The types of impacts which could occur to vegetation communities within the disturbance areas includes loss or injury of plants as a result of crushing or removal of plants, burial under piles of extracted material, and increased exposure to dust and other contaminants. An increase in sedimentation and soil erosion may also occur as a result of development of mines and exploration activities and associated increased vehicular travel. Vegetation in riparian areas may be affected by increased runoff, flooding, and erosion events as an indirect impact from mining operation activities in upland areas. Because erosion control methods are standard practice on exploration and mining activities, in addition to the fact that regular compliance inspections would occur as part of future mineral development projects, off-site impacts from erosion are anticipated to be minor and rare. However, even though they are rare, these impacts could range from minor to moderate depending on the severity of rainstorms and subsequent erosion.

Infestation of invasive species may occur as an indirect effect of vehicular travel along access roads and from surface disturbance activity in the areas where invasive plants already occur as part of mining operations and reclamation. Preventive measures, such as power washing of all construction vehicles prior to their entry onto construction sites and monitoring reclamation sites, would minimize establishment and spread of invasive species as part of reclamation activities. Routine monitoring of exploration and mining operations for the presence of weeds by regulatory agencies and operators would also help to minimize establishment and spread of invasive species.

4.4.5 Impacts of Proposed Action

Under the Proposed Action, approximately 9.95 million acres of land within the SFAs would be withdrawn from location and entry under the Mining Law, subject to valid existing rights. On lands that are withdrawn, future mining exploration and mining may only take place on valid mining claims. Future mineral development projects are expected to occur under all of the action alternatives and under the No Action Alternative, as described in the RFD (Appendix B). However, under the Proposed Action, there would be no mining operations or exploration activities that would occur that would not already be expected to occur under the No Action Alternative. That is, under the Proposed Action, and any of the action alternatives there would only be the potential for less mining and exploration, or mining and exploration on fewer acres, not more, compared to the No Action Alternative. Because the Proposed Action (and, in fact, any of the action alternatives) is, therefore, entirely protective in character, the BLM and Forest Service expect that the Proposed Action or any of the action alternatives may affect listed species and critical habitat in a beneficial way, therefore, they are not likely to adversely affect listed species and critical habitat.

Three future mines are estimated under the Proposed Action within the withdrawal area over the next 20 years, with one of those expected to be large (~1,562 acres) and two expected to be small (~23 acres). Similarly, 38 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 448 acres of disturbance. The total amount of predicted mining-related disturbance in sagebrush habitat under the Proposed Action would be 2,620 acres, representing about 73 percent less disturbance than predicted under the No Action Alternative. Vegetation productivity would be expected to trend toward pre-project conditions following the completion of reclamation activities.

Threatened, Endangered, Proposed, and Candidate Plant Species

The Proposed Action may positively affect the two ESA-listed threatened plant species (Ute ladies'-tresses and slickspot peppergrass) and the two candidate plant species (whitebark pine and Fremont County rockcress) by preventing future mining, and is not likely to adversely affect any of these species. These beneficial impacts are the result of a reduction in the amount of suitable habitats that would likely be subject to disturbances (e.g., clearing, grubbing, vehicle disturbance, and other mining disturbances) associated with mining under the Proposed Action. Any adverse effect would occur because of mining that would occur, in any event, under the No Action Alternative. As discussed with respect to the No Action Alternative, potential impacts to federally listed plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. It is anticipated that measures would be implemented at that time to avoid and minimize adverse impacts to threatened, endangered, proposed, and candidate plant species from mining and exploration activities that might still occur under the Proposed Action.

BLM and Forest Service Sensitive Plant Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the 330 BLM and Forest Service sensitive plant species, as well as the Forest Service management indicator species or focal species, that have been identified as potentially occurring within the SFAs (see Tables D-1 and D-3 in Appendix D). The BLM and Forest Service sensitive plant species occur in a wide variety of habitats throughout the analysis area. Under the Proposed Action, 9.95 million lands would be withdrawn from location and entry under the Mining Law thereby positively affecting BLM and Forest Service sensitive plant species. These beneficial impacts are the result of the Proposed Action's reduction in the amount of suitable habitats that would likely be subject to disturbances (e.g., clearing, grubbing, vehicle disturbance, and other mining disturbances) associated with mining.

Without the known locations of potential mining and exploration development it is not possible to quantify any effects to BLM and Forest Service sensitive plant species that might occur under the Proposed Action. Potential impacts to these plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. Although the Proposed Action, would not prevent all impacts within the 2,620 acres that have been identified as potentially being disturbed during mining or exploration within the analysis areas, the potential adverse impacts to BLM and Forest Service sensitive plant species would be minor and much less than the potential impacts to the identified species under the No Action Alternative simply because less land would be disturbed under the Proposed Action.

Impacts that could still occur under the Proposed Action would be scattered spatially (three mines and 38 exploration projects throughout the area), and if all of the potential mines (2,172 acres) and exploration projects (448 acres) were to be implemented over the next 20 years there would still only be 2,620 acres of impact to vegetation communities within the seven SFAs. The impact to vegetative cover that would result under the Proposed Action would vary by activity, but would represent from minor to major reductions in impacts as compared to the No Action Alternative, depending on the given areas that would be affected by future mining operations.

General Vegetation

Under the Proposed Action, 9,949,448 acres would be withdrawn from the Mining Law, subject to valid existing rights. Over the six states associated with the proposed withdrawal, there are three potential mines and 38 potential exploration areas that are still projected to be developed under the Proposed Action (see Table 2-5). New mining operations on withdrawn lands may only occur on valid mining

claims. This means that the Proposed Action will have a beneficial effect on sagebrush-dominated ecosystems that are not encumbered by mining claims because no mining operations would be allowed on those lands under the Proposed Action.

Sagebrush-dominated ecosystems that are encumbered by mining claims comprise 310,905 acres within the SFAs. Table 4-43 displays the acreage of each vegetation community that may be impacted by development of potential mines or explorations that could still occur under the Proposed Action associated with claims present within the SFAs. It is anticipated that the majority of the future mines and explorations under the Proposed Action would occur in HMP lands. Development of these areas has the potential to impact 2,620 acres of vegetation communities within the SFAs. These impacts represent approximately 0.026 percent of the SFAs associated with the proposed withdrawal. Therefore impacts to vegetation would be minor over the entire withdrawal area. The types of impacts would be similar to those described under No Action Alternative; however, the extent of potential adverse impacts to vegetation resources would be reduced under this alternative.

4.4.6 Impacts of the State of Nevada Alternative

Under the Nevada Alternative, approximately 9.82 million acres of lands within the SFAs would be withdrawn for appropriation under the mining laws. Four future mines are estimated under the Nevada Alternative within the withdrawal area over the next 20 years, with two of those expected to be large (~1,562 acres) and two expected to be small (~23 acres). Similarly, 54 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 631 acres of disturbance. The total amount of mining related disturbance in sagebrush habitat under the Nevada Alternative would be 3,632 acres.

Threatened, Endangered, Proposed, and Candidate Plant Species

Impacts to federally listed and candidate plant species under the Nevada Alternative would not differ from those described under the Proposed Action. The USFWS IPaC System lists whitebark pine as potentially occurring in the Southern Idaho/Northern Nevada SFA although the Reno USFWS office has not identified this species as occurring in the state of Nevada (personal communication). Because of the absence of documented occurrences of whitebark pine in Nevada, any changes in the withdrawal boundaries described for the Nevada Alternative would be inconsequential to this species. Overall, across the withdrawal boundaries across the six states, the Nevada Alternative may affect listed species and critical habitat in a positive way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. As discussed with respect to the No Action Alternative, potential impacts to federally listed plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

BLM and Forest Service Sensitive Plant Species

Potential impacts to BLM and Forest Service sensitive plant species, as well as the Forest Service management indicator species or focal species, from future mineral exploration and development under the Nevada Alternative would be the same as under the Proposed Action. However, nearly 40 percent more disturbance is predicted under the Nevada Alternative compared to the Proposed Action (3,632 acres vs 2,620 acres, respectively), which could have a greater impact to the 54 BLM and Forest Service sensitive plant species that occur in the state of Nevada (see Table D-1 in Appendix D).

Table 4-43. Acres of Ecosystem Type within Mining Claims and Extent within the SFAs

Vegetation Ecosystem	SFA								State						
	North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/South Central Wyoming	Totals Acres	Idaho	Montana	Nevada	Oregon	Wyoming	Utah	Totals Acres
Inter-Mountain Basins Big Sagebrush Shrubland	12,494	15,911	—	24,274	573	—	1,553	54,805	14,246	—	16,636	8,200	—	1,549	40,631
Inter-Mountain Basins Big Sagebrush Steppe	5,487	2,200	22,503	9,281	3,201	—	176	42,848	6,780	22,503	5,879	6,600	353	175	42,290
Inter-Mountain Basins Montane Sagebrush Steppe	28,054	72,952	—	13,983	1,253	—	272	116,514	28,450	—	13,977	1,253	—	272	43,952
Columbia Plateau Low Sagebrush Steppe	1,405	325	—	7,536	374	—	—	9,640	1,730	—	7,027	880	—	—	9,637
Great Basin Xeric Mixed Sagebrush Shrubland	—	14,105	—	4,305	1	—	—	18,411	194	—	4,301	1	—	—	4,496
Wyoming Basin Dwarf Sagebrush Shrubland and Steppe	—	—	—	—	—	—	521	521	—	—	—	—	—	520	520
Other: Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland	5,545	24,821	15,909	18,945	2,798	—	148	68,166	6,691	15,909	141,788	4,795	42	154	169,379
Totals	52,985	130,314	38,412	78,324	8,200	—	2,670	310,905	58,091	38,412	189,608	21,729	395	2,670	310,905

As with all the alternatives, direct impacts from future mining operations would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. Impacts under the Nevada Alternative would be more than the Proposed Action but less than the No Action Alterative, and would be scattered spatially (four mining projects and 54 exploration projects) within the seven SFAs. Within the state of Nevada, the impact of the Nevada Alternative would consist of one additional mine and 15 additional exploration projects, compared to the Proposed Action, and would result in 1,012 additional acres of disturbance to potential sensitive plant habitat. These impacts would be considered minor across the entire SFA withdrawal boundary but may be moderate to major at the individual future mining operation location.

General Vegetation

As a result of withdrawal under the Nevada Alternative, 9,852,971 acres would be withdrawn from the Mining Law. Over the six states associated with the proposed withdrawal there are four potential mines and 54 potential exploration areas with active claims that could be developed under this alternative (see Table 2-9). It is anticipated that the majority of the future mines and explorations under the Nevada Alternative would occur in HMP lands. Development of these areas has the potential to impact 3,632 acres of vegetation communities within the SFAs.

The exclusion from withdrawal of some lands and addition of priority sage-grouse habitat lands to the area withdrawn would result in changes in the acreages of sagebrush-dominated ecosystems within the portions of the Southern Idaho/Northern Nevada SFA and SE Oregon/NC Nevada SFA (see Table 4-44). There is no exclusion or addition in the Sheldon-Heart Mountain NWR Complex Area SFA which is also partially located in the state of Nevada.

Table 4-44. Vegetation types in lands proposed for exclusion from withdrawal or added to the withdrawal by the Nevada Alternative

Vegetation Ecosystem		Southern Idaho/ Northern Nevada	SE Oregon/NC Nevada	Totals Acres
Inter-Mountain Basins Big Sagebrush Shrubland	Excluded	170,270	20,672	190,942
	Added	71,373	50,018	121,391
Inter-Mountain Basins Big Sagebrush Steppe	Excluded	3,388	3,465	6,853
	Added	5,687	5,420	11,107
Inter-Mountain Basins Montane Sagebrush Steppe	Excluded	117,621	10,589	128,210
	Added	132,357	2,429	134,786
Columbia Plateau Low Sagebrush Steppe	Excluded	N/A	580	580
	Added	N/A	1,378	1,378
Great Basin Xeric Mixed Sagebrush Shrubland	Excluded	43,095	3,565	46,660
	Added	48,166	26,148	74,314
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	N/A	N/A	N/A	N/A
Other: Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland	Excluded	100,490	12,641	113,131
	Added	28,520	18,403	46,923
Totals	Excluded	434,864	51,512	486,376
	Added	286,103	103,796	389,899

These impacts represent approximately 0.036 percent of the SFAs associated with the proposed withdrawal and therefore would be minor at that scale. The types of impacts would be similar to those described under the No Action Alternative; however, the extent of potential adverse impacts to vegetation resources would be less under this alternative.

4.4.7 Impacts of the HMP Withdrawal Alternative

Under the HMP Alternative, approximately 9.39 million acres of lands within the SFAs would be withdrawn from the Mining Law. Eight future mines are predicted to occur within the withdrawal area over the next 20 years under the HMP Alternative, with three of those expected to be large (~1,562 acres) and five expected to be small (~23 acres). Similarly, 72 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 836 acres of disturbance. The total amount of mining-related disturbance in sagebrush habitat under the HMP Alternative would be 4,903 acres.

Threatened, Endangered, Proposed, and Candidate Plant Species

Impacts to the federally listed and candidate plant species under the HMP Alternative would not differ substantially from those described under the Proposed Action. That is because of anticipated measures that would be implemented during the site-specific analysis that would occur as part of the approval process for the plan of operations to avoid and minimize adverse impacts to threatened, endangered, proposed, and candidate plant species from mining and exploration activities. Overall, across the withdrawal boundaries across the six states, the HMP Alternative may affect listed species and critical habitat in a positive way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. However, more acres of land would be disturbed and more future mineral development projects would occur under this alternative compared to any of the other action alternatives including the Proposed Action.

BLM and Forest Service Sensitive Plant Species

The withdrawal of 9,390,530 acres of federal managed lands within the SFAs from potential mining and exploration activities under the HMP Alternative would have a beneficial impact on BLM and Forest Service sensitive plant species. These beneficial impacts are associated with protecting suitable habitats from disturbances (e.g., clearing, grubbing, vehicle disturbance and other mining disturbances) associated with mining. Potential adverse impacts to BLM and Forest Service plant species, as well as the Forest Service management indicator species or focal species, associated with mining would include loss or injury of plants as a result of crushing or removal of plants, burial under piles of extracted material, and increased exposure to dust and other contaminants. These impacts would occur within the 4,903 acres which have been identified as potentially being disturbed during mining or exploration within the 558,918 acres of high mineral potential land removed from the original proposed withdrawal. These impacts would be 49 percent less than those with the potential to occur under the No Action Alternative, but 87 percent more than those associated with the Proposed Action. At the SFA withdrawal scale, these impacts would be minor while at the individual future mining operation scale the impacts could be moderate to major.

General Vegetation

Under the HMP Alternative, 558,918 acres would be removed from potential withdrawal compared to the Proposed Action. This would remove potential protection to vegetation communities within these acres making them susceptible to potential impacts associated with mining and exploration activities. This alternative has a predicted estimate of 72 explorations and a predicted estimate of eight mining sites.

These activities would potentially impact vegetation communities on 4,903 acres (836 acres associated with exploration projects and 4,067 acres associated with mining sites).

The exclusion from withdrawal of HMP areas could result in a reduction of sagebrush dominated ecosystems within all of the SFAs (see Table 4-45). Direct impacts from mining operations to specific vegetation communities cannot be calculated at this time because locations of future mines are not known. Vegetation impacts associated with the HMP Alternative are estimated to be minor at the SFA withdrawal scale and moderate to major at specific locations dependent upon type of activity and acres disturbed (Table 4-42). In most cases impacts would be long-term in the area of development or exploration, due to the removal of vegetation and alteration of soils.

Table 4-45. Vegetation types in high mineral potential lands in the SFAs

Vegetation Ecosystem	North-Central Idaho	Southern Idaho/ Northern Nevada	North Central Montana	SE Oregon/NC Nevada	Sheldon-Hart Mountain NWR Complex Area	Bear River Watershed Area	Southwestern/South Central Wyoming	Totals Acres Excluded	Total Acres in the SFAs	Total Acres After Removal of High Mineral Potential Areas
Inter-Mountain Basins Big Sagebrush Shrubland	2,177	26,632	—	80,092	655	—	—	109,556	2,733,181	2,623,625
Inter-Mountain Basins Big Sagebrush Steppe	3,484	2,345	43,243	45,908	6,622	—	339	101,941	2,701,433	2,599,492
Inter-Mountain Basins Montane Sagebrush Steppe	15,396	131,140	—	21,586	265	—	—	168,387	1,722,267	1,553,880
Columbia Plateau Low Sagebrush Steppe	89	417	—	28,405	454	—	—	29,365	760,455	731,090
Great Basin Xeric Mixed Sagebrush Shrubland	3	26,950	—	—	5	—	—	26,958	302,910	275,952
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	—	—	—	—	—	—	734	734	44,812	44,078
Other: Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland	2,248	53,577	14,518	48,519	2,860	—	255	121,977	1,682,590	1,560,613
Totals	23,397	241,061	57,761	224,510	10,861	—	1,328	558,918	9,947,648	9,388,730

4.4.8 Impacts of the State of Idaho Alternative

Under the Idaho Alternative, approximately 9.41 million acres of lands within the SFAs would be withdrawn from the Mining Law. Seven future mines are estimated within the withdrawal area over the next 20 years under the Idaho Alternative, with two of those expected to be large (~1,562 acres) and five expected to be small (~23 acres). Similarly, 48 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 510 acres of disturbance. The total amount of mining related disturbance in sagebrush habitat under the Idaho Alternative would be 3,360 acres.

Threatened, Endangered, Proposed, and Candidate Plant Species

Impacts to the federally listed and candidate plant species under the Idaho Alternative would not differ from those described under the Proposed Action. Future mineral development projects have the potential to impact individuals and habitat for slickspot peppergrass and whitebark pine as well as other federally listed plant species within the withdrawal area. Overall, the Idaho Alternative may affect listed species and critical habitat in a beneficial way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. As discussed with respect to the No Action Alternative, potential impacts to federally listed plant species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

The Idaho Alternative would exclude from the withdrawal approximately 538,639 acres of land in the state of Idaho within the southern Idaho/northern Nevada SFA and the north-central Idaho SFA. Slickspot peppergrass, a listed threatened plant, is endemic to southwestern Idaho and critical habitat for this species can be found in the Southern Idaho/Northern Nevada SFA. Similarly, whitebark pine, a candidate species, is found at higher elevations in the North-Central Idaho SFA. Although neither of these species is expected to be adversely impacted by future mineral development projects, for reasons described above, the potential for impact to these two species is higher under the Idaho Alternative than the Proposed Action.

BLM and Forest Service Sensitive Plant Species

Potential impacts to BLM and Forest Service sensitive plant species from future mineral exploration and development under the Idaho Alternative would be the same as under the Proposed Action. However, nearly 28 percent more disturbance is predicted under the Idaho Alternative compared to the Proposed Action (3,360 acres vs 2,620 acres, respectively), which could have a greater impact to the 184 BLM and Forest Service sensitive plant species that occur in the state of Idaho (see Table D-1 in Appendix D).

As with all the alternatives, direct impacts from future mining operations could be moderate to major and would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. Impacts under the Idaho Alternative would be more than the Proposed Action but less than the No Action Alterative and other action alternatives, and would be scattered spatially (seven mining projects and 48 exploration projects) within the seven SFAs. Within the state of Idaho, the impact of the Idaho Alternative would consist of three additional mines and 10 additional exploration projects, compared to the Proposed Action, and would result in 740 additional acres of disturbance to potential sensitive plant habitat. At the SFA withdrawal scale, these impacts would be minor while at the individual future mining operation scale the impacts could be moderate to major.

General Vegetation

As a result of withdrawal under the Idaho Alternative, the acres of vegetation impacted within the SFAs located in Nevada, Montana, Oregon, Utah and Wyoming would remain the same as described under the Proposed Action. The exclusion from the withdrawal proposed by the state of Idaho would result in changes in the acreages of sagebrush dominated ecosystems within portions of the Southern Idaho/Northern Nevada SFA and North-Central Idaho SFA in Idaho (Table 4-46). Direct impacts associated with mining would be the same as those described above in Section 4.4.1.

Table 4-46. Vegetation types in lands proposed for exclusion from withdrawal by the Idaho Alternative

Vegetation Ecosystem	North-Central Idaho	Southern Idaho/ Northern Nevada	Totals Acres
Inter-Mountain Basins Big Sagebrush Shrubland	15,753	60,758	76,511
Inter-Mountain Basins Big Sagebrush Steppe	67,644	59,480	127,124
Inter-Mountain Basins Montane Sagebrush Steppe	227,026	8,449	235,475
Columbia Plateau Low Sagebrush Steppe	2,889	12,356	15,245
Great Basin Xeric Mixed Sagebrush Shrubland	1	152	153
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	—	—	—
Other: Desert Shrub, Grasslands, Riparian, Wetlands, Forest, Woodland	43,806	40,325	84,131
Totals	357,119	181,520	538,639

Impacts to vegetation communities within the excluded acreage and the 3,360 acres associated with mining and exploration are similar to those presented under the Proposed Action and No Action Alternatives. Direct impacts from mining operations to specific vegetation communities cannot be calculated at this time because locations of future mines are not known. Vegetation impacts associated with the Idaho Alternative are estimated to be minor at the SFA withdrawal scale and moderate to major at specific locations, dependent upon type of activity and acres disturbed (Table 4-42). In most cases impacts would be long-term in the area of development or exploration, due to the removal of vegetation and alteration of soils.

4.4.9 Cumulative Vegetation Impacts

The geographic extent of the cumulative effects analysis area for vegetation is the proposed withdrawal areas in Idaho, Nevada, Montana, Oregon, Utah and Wyoming. For all land withdrawn from appropriation under the Mining Law, a positive benefit to special status plant species and native vegetation could occur because fewer acres would be available for mineral entry compared to not withdrawing the land. Therefore, the Proposed Action and other action alternatives would have a beneficial impact to vegetation. Any cumulative impacts to vegetation under any of the alternatives would occur because of future mineral development activities that would occur, in any event, under the No Action Alternative. Therefore, cumulative impacts to vegetation are largely the same under all alternatives, differing only in the location of or extent of future activity that is described above, as minimized to a greater or lesser degree under the Proposed Action or other alternatives.

Reclamation is required on most disturbances associated with mineral development projects. Plans of operation include performance standards and reclamation measures to minimize or mitigate impacts to vegetation and wildlife resources consistent with applicable laws and regulations. The magnitude of the impact depends on the size and location of the mine, the length of time the mine is operating under an approved plan of operations, and when reclamation occurs. Exploration disturbances are typically 100 percent reclaimed, and mines and mining activities from 75 percent to 90 percent reclaimed. Therefore, the cumulative effects of those activities may diminish over time.

The 2015 LUP amendments developed by the BLM and Forest Service addressing conservation measures for the greater sage-grouse (see Section 1.1 in Chapter 1) identified past, present, and reasonably foreseeable future actions and conditions that affect vegetation and could lead to cumulative effects. These include vegetation and habitat management and improvement projects, noxious weed control, wildfire management, livestock grazing management, lands and realty management, mineral extraction and development, and travel management planning. One of the largest potential contributors to loss of native vegetation in the analysis area is wildfires which can also lead to the introduction and spread of noxious weeds and other undesirable plants absent successful restoration and rehabilitation efforts. Within the proposed withdrawal area, 1.55 million acres of vegetation has burned in the last 15 years (this does not include where different fires may have burned the same area in different years). Thus, nearly 16 percent of the withdrawal area has been affected by past wildfires, potentially resulting in the loss of native vegetation and special status species, and any future mineral development projects would have the potential to add to this cumulative loss. Given the relatively small area of surface impact, it is anticipated that the future exploration and development of mineral resources that might still occur under the action alternatives would not result in significant adverse cumulative impacts to vegetation resources when added to other past, present, and reasonably foreseeable activities in the proposed withdrawal area, with the Proposed Action having the potential for the most reduction in adverse impacts to vegetation.

4.5 Wildlife and Special Status Species, including Greater Sage-Grouse

Potential effects of the proposed mineral withdrawal to wildlife species are discussed in the following section. Lists of the existing wildlife species likely to occur in the withdrawal area are presented in Chapter 3. The analysis of effects of the Proposed Action and each alternative to wildlife species and their habitat is presented below in the following order: Threatened, Endangered, Proposed, and Candidate Animal Species, BLM and Forest Service Sensitive Animal Species, Greater Sage-Grouse, Migratory Birds, Big Game and Other Wildlife Species.

4.5.1 Impact Assessment Methodology and Assumptions

Several overarching assumptions have been made in order to facilitate the analysis of the withdrawal's potential impacts to wildlife species. The direct impacts of withdrawing lands from location and entry under the Mining Law would provide benefits to wildlife and special status animal species, including the greater sage- grouse, because fewer acres would be available for mineral entry compared to the No Action Alternative. That is, more acres of wildlife habitat would remain undisturbed under a withdrawal than absent a withdrawal.

Direct and indirect adverse impacts to relevant wildlife and special status animal species could result from habitat alteration and fragmentation from potential mineral exploration and development activities, which could result in an increase in mortality or displacement. Indirect effects on wildlife include noise, dust, and light impacts resulting from mining and transportation. Table 4-47 provides thresholds and descriptions used during analysis for wildlife resource impacts.

Table 4-47. Magnitude and Degrees of Effects on Wildlife Resources

Threshold	Description Relative to Resource
No impact	Would not produce changes in aquatic, riparian, and/or terrestrial habitat components or impact the behavior or overall health of relevant wildlife and special status species.
Minor	Mining-related impacts would occur to aquatic, riparian, and/or terrestrial habitat components; however, physical and chemical alterations to animals or their behavior and impacts to overall quality and quantity of unfragmented habitat would not be measurable or apparent. Individuals may experience reduced viability or mortality; however, these impacts would not alter the distribution of relevant wildlife and special status species in the analysis area or result in changes to overall species' population viability. For sage-grouse, impacts that would affect less than 1 percent of the leks, habitat, or population numbers within the SFA withdrawal area, within a specific SFA, or within a state would be considered minor.
Moderate	Mining-related impacts would occur to aquatic, riparian, and/or terrestrial habitat components. Physical and chemical alterations to animals or their behavior and/or impacts to overall quality and quantity of unfragmented habitat would be measurable but not apparent. Individuals may experience reduced viability or mortality; these impacts could alter the distributions of relevant wildlife and special status species in the analysis area but would not result in changes to overall species' population viability. For sage-grouse, impacts that would affect more than 1 percent but less than 3 percent of the leks, habitat, or population numbers within the SFA withdrawal area, within a specific SFA, or within a state would be considered minor.
Major	Mining-related impacts would occur to aquatic, riparian, and/or terrestrial habitat components. Physical and chemical alterations to animals or their behavior and/or impacts to overall quality and quantity of unfragmented habitat would be measurable and apparent. These impacts would cause reduced viability or mortality of individuals and could threaten the viability and distribution of one or more relevant wildlife and special status species population in the analysis area. For sage-grouse, impacts that would affect more than 3 percent of the leks, habitat, or population numbers within the SFA withdrawal area, within a specific SFA, or within a state would be considered minor.

As mentioned above in Section 4.4.3 under vegetation, it is important to note that no particular future mineral development projects are being proposed or evaluated here. In any instance where a particular mining or exploration project is proposed, any evaluation required under NEPA, Section 7 of the ESA, or any other applicable authority, would take place as part of that evaluation. If appropriate, an effects determination under Section 7, as well as any appropriate consultation with the USFWS, or establishment of required protective measures, would take place as part of the project specific evaluation.

Because many special status species have small home ranges and very narrow habitat requirements, even small modifications to vegetation and soils could lead to pronounced effects on the species by reducing suitable habitat, facilitating weed invasion, increasing erosion, and increasing opportunities for mortality through clearing, crushing, trampling, or reducing cover items, thereby potentially increasing predation rates by other wildlife.

Connections between aquatic and terrestrial habitats may transport some contaminants across environmental habitats. Mining operations can result in changes to these habitats that may increase exposure of the biological resources to chemical elements. Impacts to riparian habitats and water quality may affect several amphibian species and aquatic-dependent invertebrates.

Birds, and specifically greater sage-grouse, may be vulnerable to adverse direct impacts from habitat loss and fragmentation as well as indirect impact such as noise and dust that could result from potential mineral exploration and development activities.

For all wildlife and special status species, including greater sage-grouse, the indicator that is most relevant and is used in this analysis is habitat loss or degradation. The indicator for habitat loss and degradation will be measured as acres of disturbance from potential mineral exploration and development activities under each alternative. Acres of potential impact by alternative is a general metric for acres of sagebrush, direct habitat loss, and habitat degradation. The metrics provide a basis for a qualitative discussion of habitat loss and fragmentation. Conversely, the acres proposed for withdrawal under the Proposed Action and each of the action alternatives provides a general metric for habitat that is protected from disturbance from mining operations and exploration projects.

The precise location of future mineral exploration or development activities cannot be predicted under any of the alternatives. Absent a withdrawal (i.e., the No Action Alternative), future exploration projects and mining could occur anywhere across the withdrawal area. For the Proposed Action and the other action alternatives, future mining and exploration could only occur on valid mining claims. Therefore the acres of disturbance under the Proposed Action and the other action alternatives will be analyzed with reference to existing mining claims and their proximity to known sage-grouse leks and big game summer and winter habitat will be quantified to determine potential effects of each of the alternatives on wildlife habitat.

Habitat fragmentation of greater sage-grouse and other wildlife habitat is an important consideration. Habitat fragmentation can affect seasonal habitat use (i.e., nesting/brooding and winter) and disrupt the connectedness of populations (i.e., leks and migration patterns) or use areas. Because greater sage-grouse are highly sensitive to habitat fragmentation, development, or changes in habitat conditions and because greater sage-grouse require large, intact habitat to complete their annual life history, alternatives proposing to protect (in this case, through withdrawal) greater sage-grouse habitat from disturbance are considered of greatest beneficial impact.

The interaction and intensity of effects from habitat loss could cumulatively or individually lead to habitat fragmentation in the long term (Connelly et al. 2004; Holloran 2005). Several studies have documented negative effects of fragmentation as a result of oil and gas development and its associated infrastructure on lek persistence, lek attendance, winter habitat use, recruitment, yearling annual survival rate, and female nest site choice (Holloran 2005; Aldridge and Boyce 2007). It is anticipated that mineral developments that include infrastructure similar to that of oil and gas development (e.g., roads, high levels of sound, and clearing soils) would have similar impacts on greater sage-grouse. Infrastructure requirements vary between different mineral developments. Because of the uncertainty in knowing where future mineral exploration or development activities could occur, or what commodities might be mined, the estimated number of future mines and future exploration projects is used to estimate the potential for habitat fragmentation under each alternative.

Sage-grouse numbers at leks usually only include peak male attendance counts. Nevertheless, this serves as a surrogate metric for population information used in this analysis. Leks are strongly correlated with nesting habitat since hens tend to nest within several miles of their lek of capture (Connelly et al. 2000b). This metric provides general insight into the population contribution of specific population areas relative to the subregion overall, providing additional context for comparison. The metric also allows for inferences of risk to population persistence from certain threats or resource allocations (such as areas open to mineral leasing), assuming that population areas with a smaller number of occupied leks are more vulnerable to resource activities and that areas with a greater number of occupied leks imply larger populations and a greater opportunity for long-term persistence, given effective conservation efforts.

Indirect impacts to wildlife are also likely with surface disturbing activities and human presence. For most wildlife species, avoidance or adaptation to noise and visual intrusions can occur. There can also be changes in migratory and/or foraging behavior. Greater sage-grouse management actions have been incorporated into the recently adopted RMP amendments. NSO, seasonal restrictions and buffers are often included in management decisions for impact avoidance and as minimization measures for sage-grouse. It is generally accepted that a 3.1-mile NSO buffer around leks is at the lower range of the interpreted range for potential lek buffer distance relative to surface disturbance activities (Manier et al. 2014). This distance has been accepted and implemented by most federal agencies as an appropriate buffer for active lek locations. Therefore, we defined the potential indirect impacts to wildlife, and specifically to sage-grouse, as the number of leks within 3.1 miles of the potential area for disturbance. For the No Action Alternative, this would be 3.1 miles around the boundaries of the SFAs since future exploration projects and mining could occur anywhere across the withdrawal area. For the Proposed Action and the other action alternatives, future mining and exploration could only occur on valid mining claims, so a 3.1-mile buffer around leks in proximity to the boundary of existing mining claims was used.

To evaluate potential impacts to wildlife, the following indicators are used:

- Acres of disturbance from potential mineral exploration and development activities under each alternative.
- Habitat fragmentation of greater sage-grouse habitat – this could include fragmentation of seasonal habitats (i.e., nesting/brooding and winter) and connected populations (i.e., leks).
- Calculations of vegetation/habitat impacts relative to the availability of these resources within the proposed withdrawal area.

4.5.2 Incomplete or Unavailable Information

A comprehensive inventory of all wildlife and special status species within the SFAs is not available and specific locational information for many of these species is not known, especially considering the mobile nature of most wildlife species. Potential impacts to these species are best informed during project-specific NEPA evaluation where the precise location of a proposed action would be known. A list of all federally-protected (i.e., ESA listed) species was obtained for the SFAs from the USFWS. A review of all state-wide lists and lists of sensitive species within BLM Field Offices and National Forests that overlap the SFA boundaries was conducted.

Sage-grouse lek information and male bird counts are variable by state and dependent on a number of factors including the availability of agency personnel and volunteers to perform the counts, variations in annual, seasonal and daily environmental conditions (e.g., late winter or delayed spring can affect lek use and inclement weather during the lek survey can affect number of birds using the lek), impacts to the lek and surrounding area during the year (such as from wildfire), and other factors. Thus, multi-year data provides the best information to determine status of a lek and estimate greater sage-grouse populations. Although different states use different measures, classification of lek status typically uses the following definitions:

- Occupied: a lek that has been active (see definition below) during at least 1 breeding season within the prior 5 years.
- Undetermined: a lek that has not been documented active in the last 5 years, but survey information is insufficient to designate the lek as unoccupied. If a lek is discovered the first time during an aerial survey, then not confirmed on the ground that year or revisited in subsequent years, the location is given an undetermined status.

- Not Verified: a lek from a historical document that has been recently visited on the ground but no birds were detected.

- Unoccupied: a lek that has not been active during a period of 5 consecutive years. To be designated unoccupied, a lek must be inactive (see definition below) in 5 consecutive breeding seasons.

- Active: a lek that has been attended by >1 male sage-grouse during the breeding season. Acceptable documentation of grouse presence includes observation of birds using the site or recent signs of lek attendance (e.g., fresh droppings, feathers). New leks found during ground counts or surveys are given an annual status of active.

- Inactive: a lek where sufficient data suggests that there was no male attendance throughout a breeding season. Absence of male grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of birds on the lek during at least 2 ground surveys separated by at least 7 days. These surveys must be conducted under acceptable weather conditions (clear to partly cloudy and winds <10 kph) and in the absence of obvious disturbance or, 2) a ground check of the exact known lek site late in the strutting season that fails to find any sign (fresh droppings/feathers) of attendance. Data collected by aerial surveys alone may not be used to designate inactive status.

- Unknown: a lek for which status as active or inactive has not been documented during the course of a breeding season. New leks found during aerial surveys in the current year are given an annual status of unknown unless they are confirmed on the ground or observed >1 time by air.

For our analysis we took all available lek data for the last 10 years that showed at least some level of activity (i.e., individuals present during survey). We also used the most recent male bird counts at each lek. Data was available from Idaho and Utah for the years 2005–2016. Data was available from Montana for 2006–2016 and from Nevada for 2007–2016. Data was available from Oregon for 2012–2016 and for Wyoming only from 2016.

Information on big game is also variable for each state as the wildlife departments in each state have different definitions of what constitutes winter range versus summer range. For instance, big game winter habitat can include the following definitions: winter range, crucial winter range, winter substantial, severe winter relief area, winter/yearlong area, and yearlong. For the depiction of big game winter habitat in this analysis, the broadest definition of winter range was used and included all of the above definitions. Similarly, big game summer habitat can include: summer range, crucial summer range, summer substantial, spring/summer/fall areas, and yearlong. Again, the broadest definition of summer range was used to depict potential big game summer habitat.

Big game information was not available for some species in some states. There was no pronghorn data for either of the Idaho SFAs or for the Oregon portion of the SE Oregon/NC Nevada SFA and Sheldon-Hart Mountain NWR Complex Area, primarily because this species does not occur in large numbers in these areas. There was no elk data for the Idaho portion of the Southern Idaho/Northern Nevada SFA, the SE Oregon/NC Nevada SFA, or the Nevada portions of the Sheldon-Hart Mountain NWR Complex Area, again because this is not prime elk habitat. There was no summer range data for any of the big game animals for Oregon.

4.5.3 Impacts Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative. For all land withdrawn from appropriation under the Mining Law, a beneficial impact to wildlife and to greater sage-grouse would occur because fewer acres would be available for mineral entry compared to not withdrawing the land. On lands that are withdrawn from the

Mining Law, BLM would not approve a plan of operations or allow notice-level operations to proceed until BLM has prepared a mineral examination report to determine whether the mining claim was valid before the withdrawal, and whether it remains valid. If the mining claim is determined to be valid, BLM may approve the plan of operations or allow notice-level operations to proceed on withdrawn lands. Thus, under the Proposed Action and all action alternatives, some future mining and exploration is still expected to occur, as described in the RFD (Appendix B) and Chapter 2.

Surface and subsurface mining for mineral resources results in direct loss of wildlife habitat and, if it occurs in sagebrush habitats, loss of habitat in particular for greater sage-grouse and sagebrush obligate species. Direct habitat loss occurs from removing vegetation and soil to access mineral resources and storage of overburden (soil removed by mining or the formation of mine shafts) in undisturbed habitat. If infrastructure is necessary, additional direct loss of habitat could result from construction of structures and ancillary facilities (e.g., air vents, fans, and shafts), staging areas, roads, railroad tracks, and power lines.

Greater sage-grouse could be directly affected from vehicle collision on access roads, and nests could be trampled by human traffic in the vicinity of roads. Greater sage-grouse could also be impacted indirectly from an increase in human presence, land use practices, ground shock, noise, dust, reduced air quality, degradation of water quality and quantity, and changes in vegetation and topography (Brown and Clayton 2004). The presence of new structures on the landscape would also contribute to indirect effects from potential avoidance behavior by greater sage-grouse (Freese 2009). Greater sage-grouse could be indirectly impacted by increased dust from heavy equipment use on unpaved roads, which could decrease adjacent plant community photosynthesis and insect populations. All of these impacts could disrupt the habitat and life cycle of greater sage-grouse.

The direct and indirect impacts of mining operations would be the same under all alternatives, differing only in the number of mines or exploration projects anticipated to occur under each alternative. All these impacts may be reduced by adherence to state and federal regulations as well as best management practices and terms and conditions of approval that may be issued by the BLM when approving a notice or plan of operations. Sagebrush communities that are lost or modified may not regain shrubland character suitable for greater sage-grouse use for 20 to 30 years or longer following interim or final reclamation. Based on observations of disturbance in oil and gas fields (Braun 1998), greater sage-grouse that reestablish on mined areas once mining has ceased may never reach their previous population levels.

4.5.4 Impacts of No Action Alternative

Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law and all areas of the proposed withdrawal area would be open to potential exploration projects and mining operations. New mining claims could be filed and exploration projects and mining operations could occur anywhere on the landscape, subject to the terms and conditions of approved plans of operations as well as existing state and federal laws and regulations (see Sections 1.7 and 1.8 of Chapter 1). The regulatory requirements for locatable mineral exploration and development under the No Action Alternative as well as the Proposed Action and other alternatives are described in Section 2.5 of Chapter 2.

The estimated number of future mines and future exploration projects is discussed above in Section 4.2 and in the RFD (Appendix B). Twenty-six future mines are estimated under the No Action Alternative within the withdrawal area over the next 20 years, with five of those expected to be large (~1562 acres) and 21 expected to be small (~23 acres). Similarly, 114 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for over 1250 acres of disturbance. The total amount of mining related disturbance in sagebrush habitat under the No Action Alternative would be 9,554 acres (see Section 2.3.1 in Chapter 2), or approximately one-tenth of 1% of the total withdrawal area. This level of disturbance at the SFA withdrawal scale would be minor, although at the individual future mining operation scale could result in moderate to major impacts.

Threatened, Endangered, Proposed, and Candidate Animal Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the ESA-listed and candidate animal species (see Table 3-132 in Chapter 3) located within the SFAs. Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law. Potential impacts to federally listed animal species and their habitat would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. It is anticipated that measures would be implemented to avoid and minimize adverse impacts to threatened, endangered, proposed, and candidate animal species and critical habitat from mining and exploration activities.

Without the known locations of potential mining and exploration development it is not possible to quantify any effects to these species that might occur under the No Action Alternative. Nevertheless, the RFD estimates that up to 9,554 acres could be disturbed during future mineral development projects under the No Action Alternative. At the SFA withdrawal scale, the impacts would be minor while at the individual future project scale the impact could be moderate to major. Species determinations would be made on a case by case basis as individual mining and exploration projects are proposed and vetted through the NEPA and ESA processes.

BLM and Forest Service Sensitive Animal Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the BLM and Forest Service sensitive animal species, as well as the Forest Service management indicator species or focal species, that have been identified as potentially occurring within the SFAs (see Tables D-2 and D-3 in Appendix D). The BLM and Forest Service sensitive animal species occur in a wide variety of habitats throughout the analysis area. Under the No Action Alternative, no lands would be withdrawn for appropriation under the Mining Law. Potential impacts to these species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

Without the known locations of potential mining and exploration development it is not possible to quantify effects to BLM and Forest Service sensitive animal species that might occur under the No Action Alternative. Nevertheless, the RFD estimates that 9,554 acres could be disturbed during future mineral development projects under the No Action Alternative. At the SFA withdrawal scale, the impacts would be minor while at the individual future project scale the impact could be moderate to major. The primary impact to sensitive animal species is loss of habitat (from foraging, nesting, shelter, etc.) that could occur under the No Action Alternative.

Multiple areas of varying size could be disturbed under this alternative, and the future mineral development projects predicted under the RFD could result in long-term loss of wildlife habitat. Impacts would be scattered spatially (26 mining projects and 114 exploration projects throughout the withdrawal area), and if all of the potential mines (8,303 acres) and exploration projects (1,251 acres) were to be implemented over the next 20 years there would be 9,554 acres of wildlife habitat that could be impacted within the seven SFAs, resulting in either direct or indirect impacts to the wildlife communities that depend on that habitat.

Greater Sage-Grouse

Across the analysis area encompassed by the SFAs there are 1,091 active leks. Lek count data provided by the state wildlife agencies reports peak male attendance of 20,331 birds, which provides a good indication of overall greater sage-grouse population estimates within the SFAs (Table 4-48). The distribution of these leks in each of the SFAs is shown in Figures 3-18 through 3-22 in Chapter 3. It is

these leks and bird populations that have the potential to be impacted directly by future mineral development projects that could occur under the No Action Alternative. In addition, there are 386 additional leks representing 8,331 additional male sage-grouse that occur within 3.1 miles of the boundary of the SFAs. These additional leks and bird populations are those that could be impacted indirectly by activities that occur under the No Action Alternative.

Table 4-48. Greater Sage-grouse Leks and Population Estimates Within and Adjacent to the SFAs

State/SFA	Within the SFA		Within 3.1-mile buffer	
	Leks	Population*	Leks	Population*
Idaho	**517**	**8,249**	**242**	**3,515**
North-Central Idaho SFA	277	4,114	166	2520
Southern Idaho / Northern Nevada SFA	240	4,135	76	995
Montana	**63**	**1,862**	**53**	**1,186**
North Central Montana	63	1,862	53	1,186
Nevada	**323**	**4,704**	**45**	**1,133**
Southern Idaho / Northern Nevada	182	2,798	22	563
Sheldon-Hart Mountain NWR Complex Area	9	232	12	247
SE Oregon/NC Nevada	132	1,674	11	323
Oregon	**147**	**3,737**		
SE Oregon/NC Nevada	93	1,754	**—****	**—****
Sheldon-Hart Mountain NWR Complex Area	54	1,983		
Utah	**13**	**256**	**3**	**30**
Southern Idaho / Northern Nevada	3	39	0	0
Bear River Watershed Area	10	217	3	30
Wyoming	**28**	**1,523**	**43**	**2,467**
Southwestern/ South Central Wyoming	12	809	19	1,417
Bear River Watershed Area	16	714	24	1,050
Total	**1,091**	**20,331**	**386**	**8,331**

*Population numbers are based on lek count data provided by the individual state agencies which were collected using standard sampling protocols. Numbers are peak male counts at leks and do not include total population estimates.

**Data on greater sage-grouse outside of the SFAs not available for Oregon.

Using the assumptions described above in Table 4-5, there could be a total of 26 future individual mines under the No Action Alternative disturbing a total of 8,303 acres of sagebrush habitat. These mines would range in size from approximately 23 acres to over 1,500 acres. There also could be 114 future exploration projects under the No Action Alternative disturbing an additional 1,251 acres of sagebrush habitat.

These exploration projects would range in size from less than 6 acres to approximately 23 acres. Therefore, there could be up to 140 distinct habitat fragmentation events over the next 20 years resulting in the loss of 9,554 acres of sagebrush habitat.

There is no way to know exactly where on the landscape future mines or future exploration projects predicted under the No Action Alternative would occur. For locatable minerals, best management practices and terms and conditions of approval would continue to apply to proposed plans of operations, as the law allows, which would reduce the impacts of future activities on greater sage-grouse under all the alternatives. In addition, all six states have implemented a state-level greater sage-grouse conservation plan or strategy. These provide different approaches to addressing potential impacts to greater sage-grouse from potential mining or activities similar to mining and would apply absent the withdrawal. Some state greater sage-grouse conservation plans have been adopted through state legislative actions or EOs and involve regulatory mechanisms to address threats to the species and its habitat. Other state plans identify important conservation objectives and incentivize voluntary conservation measures.

Nevertheless, there could be both direct and indirect impacts to greater sage-grouse leks and population numbers because of predicted future mining-related activities. Table 4-49 provides a comparison of potential impacts to greater sage-grouse leks and populations by alternative within the SFAs and in the 3.1-mile buffers adjacent to potential future mining operations areas. These numbers provide a comparison of potential effects to greater sage-grouse and their populations from each of the alternatives. They should not be regarded as absolute; that is, they are only estimates of what could occur under the No Action Alternative and each of the action alternatives using a consistent set of assumptions.

Table 4-49. Impacts to Greater Sage-grouse Leks and Population Estimates by Alternative

Measure of Impact	No Action Alternative	Proposed Action	Nevada Alternative	HMP Alternative	Idaho Alternative
Acres proposed for withdrawal	0	9,949,448	9,852,971	9,390,530	9,410,809
Acres not withdrawn that would remain open for mining and exploration	9,949,448	0[a]	486,376	558,918	538,639
Acres of anticipated direct impact	9,554	2,620	3,632	4,903	3,360
Potential habitat fragmentation events (number of predicted future mines and exploration projects)	140	41	57	80	55
Number of leks (Direct impact) (within potential direct impact areas)	108[b]	30	52	69	59
Number of leks (Indirect impact) (in 3.1-mile buffer areas)	386	261	369	136	353
Total number of leks (direct/ indirect impact potential)	494	291	421	226	412
Total number of leks[c] (in SFA withdrawal areas)	0	1,061	1,053	1,001	1,032
Number of leks (in additional withdrawal area)	0	0	14	0	0
Greater sage-grouse male population (Direct Impact) (within potential direct impact areas)	961[b]	267	499	991	784
Greater sage-grouse male population (Indirect Impact) (in 3.1-mile buffer areas)	8,331	5,482	7,075	3,128	6,947
Total number of male greater sage-grouse (direct/ indirect impact potential)	9,292	5,749	7,575	4,119	7,731
Greater sage-grouse male population (additional withdrawal area)	0	0	526	0	0
Total number of male greater sage-grouse (in SFA withdrawal areas)[d]	0	20,064	20,358	19,340	19,547

[a]Future mining and exploration for the Proposed Action and the other action alternatives could only occur on valid mining claims, or on lands specifically excluded from the withdrawal, subject to compliance with all applicable laws. For the Proposed Action, there were 310,905 acres that were covered by existing mining claims as of the time of this analysis. All of these lands are included in the withdrawal and mining on these lands after a withdrawal could only occur on valid mining claims.

[b]The total number of leks and birds that may be directly impacted under the No Action Alternative was calculated as 3.6 times that which could occur under the Proposed Action (see discussion prior to Table 4-49).

[c]This number is calculated as the total number of leks in the withdrawal area (1,091 from Table 4-48) minus the number of leks in direct impact areas for each alternative.

[d]This number is calculated by subtracting the number of male greater sage-grouse in direct impact areas for 20,331, which is the total number of male greater sage-grouse in the SFA withdrawal area, and, in the case of the Nevada Alternative, adding in the sage grouse that occur in the additional withdrawal areas.

The 3.1-mile buffers serve as an indicator of potential indirect impacts that could occur, for instance through noise or other mining related activity, within proximity of greater sage-grouse leks. For the No Action Alternative, the buffer is 3.1 miles around the boundary of the SFAs. For the Proposed Action the 3.1-mile buffer is relevant to any leks that are within that distance to existing claims, since that is the only location any future mining could occur during the withdrawal. For the other alternatives, the 3.1-buffer is relevant to any leks that are within that distance to existing claims plus a 3.1-mile buffer around any lands excluded from the withdrawal.

Approximately 10 million acres of the total federal mineral estate would not be withdrawn from the Mining Law under the No Action Alternative. New mineral development projects are anticipated to impact up to 9,554 acres of sagebrush habitat within the SFA boundaries. Within the analysis area there are 1,477 leks and 20,331 greater sage-grouse, some fraction of which could be directly impacted by future mining operations. Compared to the Proposed Action, which represents the greatest level of protection (discussed in the next section), the No Action Alternative would impact approximately 3.6 times more sagebrush habitat. Using this same proportional increase as a proxy, since the exact location of future mineral development projects is unknown, the No Action Alternative could directly impact 3.6 times more leks and greater sage-grouse than the Proposed Action. Thus, an estimated 108 leks and 961 greater sage-grouse males could be impacted directly by the No Action Alternative. An additional 386 leks and 8,331 greater sage-grouse males could be impacted indirectly by the No Action Alternative. Overall, under current management, greater sage-grouse could continue to be threatened by habitat loss, fragmentation, and degradation and disturbance as a result of mining development in habitat areas.

Migratory Birds

Numerous migratory bird species occur within the boundaries of the proposed withdrawal area. Many of the species classified as BLM and Forest Service special status species are also classified as migratory (e.g., black-throated sparrow, Brewer's sparrow, burrowing owl, grasshopper sparrow, juniper titmouse, loggerhead shrike, pinyon jay, sage sparrow, sage thrasher). In addition, bald and golden eagles, which are migratory species, occur within the proposed withdrawal area. Both are afforded added protection under the Bald and Golden Eagle Protection Act (16 USC 668–668c). Many of the smaller passerine and songbird species migrate from winter habitat in the southwest United States, Mexico, and South America to breed, nest, and raise their young in sagebrush and shrub habitats found within the analysis area. These species are afforded protection under the Migratory Bird Treaty Act. Under EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, federal agencies are responsible for implementing the provisions of the Migratory Bird Treaty Act by promoting conservation principles and management practices into agency activities. Federal agencies must ensure that federal actions are evaluated for potential impacts on migratory birds.

Many of the BLM and Forest Service sensitive bird species use sagebrush-steppe habitat within the SFAs for seasonal nesting, rearing, and foraging habitat during the late spring, summer, and early fall periods. Mineral exploration and development that would occur under the No Action Alternative are estimated to potentially impact 9,554 acres of these habitat types. Depending on the season in which the disturbance occurs, the disturbance activities could result in the loss of nesting individuals. If disturbance occurs outside of the nesting season there would be an indirect impact to individuals associated with the loss of nesting and foraging habitat. Vehicle traffic in these mining and exploration areas also has potential to cause vehicle strikes to individuals. The overall impact to migratory bird habitat within the SFAs under the No Action Alternative would be minor because of the small amount of habitat across the SFA withdrawal area that may be potentially impacted. Impacts from the development of future mineral projects could be moderate to major and would be analyzed during site specific analysis.

Big Game and Other Wildlife Species

Direct impacts to big game and other wildlife species could potentially result from any activities related to exploration projects and mining operations that could occur under the No Action Alternative. These impacts could include habitat alteration and fragmentation which could impact migration routes and important parturition areas, wildlife vehicle collisions, temporary displacement during construction, operation, and reclamation activities. Acres of impact to wildlife habitat include direct impacts related to acres disturbed by the mine site, roads, power lines and infrastructure, plus indirect impacts associated with roadway noise, air, and visual disturbances that could adversely affect animal behaviors.

Over the entire analysis area, 9,954 acres of potential habitat could be impacted by the No Action Alternative. The acres of habitat lost by vegetation type cannot be fully estimated at this time because exact locations of exploration and development operations are not known (see Section 4.4 for more discussion on vegetation impacts). Since the location of mines is not known, the exact locations of roads and power lines cannot be determined either. There are 3.7 million acres of mule deer winter habitat and 1.5 million acres of mule deer summer habitat present within the analysis area. There are 756 thousand acres of pronghorn winter habitat and 2.8 million acres of pronghorn summer habitat within the analysis area. There are 2.0 million acres of elk winter habitat and 1.1 million acres of elk summer habitat present within the analysis area (see Tables 3-172 and 3-173 and Figures 3-23 through 3-27). Although the potential for habitat fragmentation exists, these big game animals are highly mobile and the level of disturbance expected under the No Action Alternative represents less than one tenth of 1% of the available winter or summer habitat and is thus is considered to be minor at the SFA withdrawal scale. Nevertheless, these numbers provide the decision-maker and the public with the distinctions between the alternatives with respect to their potential effects on big game habitat.

A large variety of other wildlife species use sagebrush steppe, riparian/wetland habitats, nonnative grasslands and conifer woodland/forests habitats in and next to sagebrush steppe in the analysis area. There is a variety of nongame wildlife species located within the seven SFAs associated with the proposed withdrawal. There is limited information on the distribution or life history requirements of many other species of nongame wildlife. Population counts, distribution, and comprehensive species lists are not generally available and impacts to these species are better addressed at the project level. Disturbance of sagebrush steppe habitat during the development of the estimated 26 mines and 114 exploration projects has the potential to directly and indirectly impact furbearing, upland game, and nongame wildlife species within the SFAs. These impacts may include the direct loss of individuals through vehicle strikes, stress of individuals caused by relocation and displacement, and indirectly through loss of habitat, vegetative cover, and reduction of prey base. The potential disruption of up to 9,554 acres is anticipated to be minor in scale; however, it is difficult to quantitatively determine the impacts on the scale of the withdrawal and therefore impacts would be analyzed under subsequent NEPA when the location of the potential mines and exploration sites are identified.

Disturbance of habitats used by amphibians and reptiles within the SFAs associated with mine and exploration activities has the potential to directly and indirectly impact individuals and populations of these species. Without knowledge of the exact location of potential disturbances within the SFAs it is not possible to determine the extent of impact to individuals or population of amphibian and reptile species which may occur in these areas. Following the identification of potential disturbance areas site-specific surveys should be completed to quantify potential impact to these species.

4.5.5 Impacts of Proposed Action

Under the Proposed Action, approximately 9.95 million acres of lands within the SFAs would be withdrawn from location and entry under the Mining Law, subject to valid existing rights. On lands that are withdrawn, future mining exploration and mining may only take place on valid mining claims. Future

mineral development projects are expected to occur under all of the action alternatives and under the No Action Alternative, as described in the RFD (Appendix B). However, under the Proposed Action, there would be no future mining operations or future exploration projects that would occur that would not already be expected to occur under the No Action Alternative. That is, under the Proposed Action, and any of the action alternatives, there would only be the potential for less mining and exploration, or mining and exploration on fewer acres, not more, compared to the No Action Alternative. Because the Proposed Action (and, in fact, any of the action alternatives) is entirely protective in character, the BLM and Forest Service expect that the Proposed Action or any of the action alternatives may affect listed species and critical habitat in a beneficial way, therefore, they are not likely to adversely affect listed species and critical habitat.

Three future mines are estimated under the Proposed Action within the withdrawal area over the next 20 years, with one of those expected to be large (~1,562 acres) and two expected to be small (~23 acres). Similarly, 38 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 448 acres of disturbance. These potential future actions are used for comparative purposes and impacts from these actions are not being analyzed in this EIS. Any future mineral development projects would be evaluated under subsequent site-specific analysis. The total amount of predicted mining-related disturbance in sagebrush habitat under the Proposed Action would be 2,620 acres, representing about 73 percent less disturbance than predicted under the No Action Alternative.

Threatened, Endangered, Proposed, and Candidate Animal Species

The Proposed Action may affect ESA-listed and candidate animal species and their habitat by reducing the potential for future mining, and is not likely to adversely affect any of these species, but is anticipated to have a beneficial impact to them. These beneficial impacts are the result of the Proposed Action's reduction in the amount of suitable habitat that would likely be subject to disturbances (e.g., clearing, grubbing, vehicle disturbance, and other disturbances) associated with mining. Any adverse effects would occur because of reasonably foreseeable mineral development projects that would occur, in any event, under the No Action Alternative, and the effects of those projects would be similar to those discussed under the No Action Alternative. As discussed with respect to the No Action Alternative, potential impacts to federally listed animal species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. It is anticipated that measures would be implemented at that time to avoid and minimize adverse impacts to threatened, endangered, proposed, and candidate animal species from mining and exploration activities that might still occur under the Proposed Action.

BLM and Forest Service Special Status Animal Species

Future mineral exploration and development estimated under the RFD (Appendix B) has the potential to impact the BLM and Forest Service sensitive animal species, as well as the Forest Service management indicator species or focal species, which have been identified as potentially occurring within the SFAs. The BLM and Forest Service sensitive animal species occur in a wide variety of habitats throughout the analysis area. Under the Proposed Action, 9.95 million lands would be withdrawn from location and entry under the Mining Law thereby positively affecting BLM and Forest Service sensitive animal species. These beneficial impacts are the result of the Proposed Action's reduction in the amount of suitable habitats that would likely be subject to disturbances (e.g., clearing, grubbing, vehicle disturbance, and other mining disturbances) associated with mining.

Without the known locations of potential mining and exploration development it is not possible to quantify any effects to BLM and Forest Service sensitive animal species that might occur under the Proposed Action. Potential impacts to these animal species and their habitat would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the

plan of operations. Although the Proposed Action, would not prevent all impacts within the 2,620 acres that have been identified as potentially being disturbed during mining or exploration within the analysis areas, the potential adverse impacts to BLM and Forest Service sensitive animal species would be much less than the potential impacts to the identified species under the No Action Alternative simply because less land, and thus wildlife habitat, would be disturbed under the Proposed Action. Therefore the impact to BLM and Forest Service special status animal species would be minor at the SFA withdrawal scale.

Impacts that would still occur under the Proposed Action would be scattered spatially (three mining projects and 38 exploration projects throughout the area), and if all of the potential mines (2,172 acres) and exploration projects (448 acres) were to be implemented over the next 20 years there would still be 2,620 acres of impact to wildlife habitat within the seven SFAs, resulting in either direct or indirect impacts to the wildlife communities that depend on that habitat. The decrease in wildlife habitat (i.e., vegetation described in Section 4.4 above) that would result under the Proposed Action would vary by activity, but would represent from minor to major reductions in impacts as compared to No Action Alternative, depending on the given area that would be affected by future mining operations (Table 4-47).

Greater Sage-Grouse

Under the Proposed Action, future mineral exploration or development activities could only occur on valid mining claims. Therefore the potential for impacts of future mining operations to greater sage-grouse leks and populations can be analyzed with reference to existing mining claims and their proximity to known sage-grouse leks.

Across all the mining claims that occur within the lands proposed for withdrawal under the Proposed Action, there are 30 leks that account for a greater sage-grouse male population estimate of 267 birds (see Table 4-50). It is these leks and bird populations that have the potential to be impacted directly by future mineral development projects that could occur under the Proposed Action. In addition, there are 261 additional leks representing 5,482 additional greater sage-grouse that occur within 3.1 miles of the boundary of existing mining claims that could be indirectly impacted by future mineral development projects that might occur under the Proposed Action.

Using the assumptions described above in Table 4-5, there could be a total of three future individual mines under the Proposed Action disturbing a total of 2,172 acres of sagebrush habitat. These mines would range in size from approximately 23 acres to over 1,500 acres. There also could be 38 future exploration projects under the Proposed Action disturbing an additional 448 acres of sagebrush habitat. These exploration projects would range in size from less than 6 acres to approximately 23 acres. Therefore there could be up to 41 distinct habitat fragmentation events over the next 20 years resulting in the loss of 2,620 acres of sagebrush habitat (see Table 4-49).

Table 4-49 provides a comparison of potential impacts to greater sage-grouse leks and populations by alternative within the SFAs and in the 3.1-mile buffers adjacent to potential future mining operations areas. Compared to the No Action Alternative, the Proposed Action would impact 3.6 times less sagebrush habitat, and the direct impact to greater sage-grouse would be 72 percent less (961 vs 267; see Table 4-49). Compared to the other action alternatives, the Proposed Action would have the greatest level of protection for greater sage-grouse, impacting the fewest acres of sagebrush (2,620 acres), creating the fewest number of potential fragmentation events (41), and having the lowest number of leks (30) and greater sage-grouse (267) within potential direct impact areas.

Table 4-50. Greater Sage-grouse Leks and Population Estimates that may be Impacted by Future Activities Under the Proposed Action

State/SFA	Within the SFA		Within 3.1-mile buffer	
	Leks	Population*	Leks	Population*
Idaho	**5**	**27**	**83**	**1,136**
North-Central Idaho SFA	1	2	70	916
Southern Idaho / Northern Nevada SFA	4	25	13	220
Montana	**1**	**49**	**17**	**546**
North Central Montana	1	49	17	546
Nevada	**24**	**191**	**130**	**2,278**
Southern Idaho / Northern Nevada	6	47	88	1,575
Sheldon-Hart Mountain NWR Complex Area	0	0	0	0
SE Oregon/NC Nevada	18	144	42	703
Oregon**			**22**	**572**
SE Oregon/NC Nevada	**0**	**0**	22	572
Sheldon-Hart Mountain NWR Complex Area			0	0
Utah**				
Southern Idaho / Northern Nevada	**0**	**0**	**0**	**0**
Bear River Watershed Area				
Wyoming**			**9**	**950**
Southwestern/ South Central Wyoming	**0**	**0**	9	950
Bear River Watershed Area			0	0
Total	**30**	**267**	**261**	**5,482**

*Population numbers are based on lek count data provided by the individual state agencies which were collected using standard sampling protocols. Numbers are peak male counts at leks and do not include total population estimates.

**There are no greater sage-grouse leks within existing mining claims in Oregon, Utah, or Wyoming or within 3.1-miles of mining claims in Utah.

Across the SFA withdrawal area, these impacts would be minor to moderate although direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Proposed Action represent approximately 2.7 percent of all the leks, the number of sage-grouse that could be impacted represent approximately 1.3 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat.

Migratory Birds

There would be the potential for fewer mineral development projects, or fewer acres disturbed by mining and exploration, under the Proposed Action compared to the No Action Alternative. Because the withdrawal is entirely protective in character, the Proposed Action may affect migratory birds in a positive way by reducing the potential for future disturbance causing activities. Mineral exploration and development that would occur under the Proposed Action would only occur on valid mining claims and are estimated to potentially impact 2,620 acres of these habitat types. The types of impacts to migratory birds that could occur from future mineral exploration projects under the Proposed Action would be the same as under the No Action Alternative. However the predicted amount of habitat disturbance under the Proposed Action would be about 73 percent less than that predicted under the No Action Alternative, resulting in a major reduction in potential impacts to migratory bird species.

There would be positive impacts to migratory bird species in Montana, Utah and Wyoming because no future mining operations are predicted to occur in the SFAs within these states under the Proposed Action. Furthermore, impacts in Idaho, Nevada, and Oregon would be greatly reduced compared to the No Action Alternative, because of the reduction in the number of predicted future mineral development projects compared to the No Action Alternative.

Big Game and Other Wildlife Species

The Proposed Action would withdraw approximately 10 million acres of lands from the Mining Law, subject to valid existing rights. Therefore there would be a beneficial impact to big game winter and summer habitat as these lands would generally not be disturbed. Under the Proposed Action, the only place that future mineral exploration or development activities could occur would be within mining claims that existed at the time of the withdrawal that are found to be valid. Over the entire analysis area, only 2,620 acres of potential habitat could be impacted by the Proposed Action. Within existing mining claims, there is some overlap with winter and summer big game habitat for mule deer, pronghorn, and elk. However, the abundance of winter and summer big game habitat in the surrounding areas makes this impact minor in terms of acreage, especially since it would be spread out over three potential future mines and 38 potential future exploration projects.

A large variety of other wildlife species use sagebrush steppe, riparian/wetland habitats, nonnative grasslands and conifer woodland/forests habitats in and next to sagebrush steppe in the analysis area. There is a variety of nongame wildlife species located within the seven SFAs associated with the proposed project. There is limited information on the distribution or life history requirements of many other species of nongame wildlife. Population counts, distribution, and comprehensive species lists are not generally available and impacts to these species are better addressed at the project level. Disturbance of sagebrush steppe habitat during the development of the estimated three mines and 38 exploration projects has the potential to directly and indirectly impact furbearing, upland game, and nongame wildlife species within the SFAs. The potential disruption of up to 2,620 acres is anticipated to be minor in scale; however, it is difficult to quantitatively determine the impacts on the scale of this withdrawal project and would be better analyzed on a project basis when the location of the potential mines and exploration sites are identified.

Disturbance of habitats used by amphibians and reptiles within the SFAs associated with mine and exploration activities has the potential to directly and indirectly impact individuals and populations of these species. Without knowledge of the exact location of potential disturbances within the SFAs it is not possible to determine the extent of impacts to individuals or populations of amphibian and reptile species which may occur in these areas. Following the identification of potential disturbance areas site specific surveys should be completed to quantify potential impact to these species by a qualified specialist during a separate NEPA analysis for each potential future mineral development project.

4.5.6 Impacts of the State of Nevada Alternative

Under the Nevada Alternative, approximately 9.85 million acres of lands within the SFAs would be withdrawn from the Mining Law. Four future mines are estimated under the Nevada Alternative within the withdrawal area over the next 20 years, with two of those expected to be large (~1,562 acres) and two expected to be small (~23 acres). Similarly, 54 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 631 acres of disturbance. The total amount of mining-related disturbance in sagebrush habitat under the Nevada Alternative would be 3,632 acres.

Threatened, Endangered, Proposed, and Candidate Animal Species

Impacts to the federally listed and candidate animal species under the Nevada Alternative would be the same as those described under the Proposed Action. Beyond those species occurring within the analysis area in the other states, the only federally listed wildlife species that occur within the state of Nevada is the wolverine, which is proposed threatened, and two fish species, neither of which are expected to be adversely impacted by the Nevada Alternative. Overall, across the withdrawal boundaries across the six states, the Nevada Alternative may affect listed species and critical habitat in a positive way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. At the SFA withdrawal scale, the potential impacts to listed species would be minor while at the individual future project scale the impact could be moderate to major. As discussed with respect to the No Action Alternative, potential impacts to federally listed animal species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

BLM and Forest Service Special Status Animal Species

Potential impacts to BLM and Forest Service sensitive animal species, as well as the Forest Service management indicator species or focal species, from future mineral exploration and development under the Nevada Alternative would essentially be the same as under the Proposed Action. However, nearly 40 percent more disturbance is predicted under the Nevada Alternative compared to the Proposed Action (3,632 acres vs 2,620 acres, respectively), which could have a greater impact to the 56 BLM and Forest Service sensitive animal species that occur in the state of Nevada (see Table D-2 in Appendix D).

As with all the alternatives, direct impacts from future mining operations would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. Impacts under the Nevada Alternative would be more than the Proposed Action but less than the No Action Alterative, and would be scattered spatially (four mining projects and 54 exploration projects) within the seven SFAs. Within the state of Nevada, the impact of the Nevada Alternative would consist of one additional mine and 15 additional exploration projects, compared to the Proposed Action, and would result in 1,012 additional acres of disturbance to potential habitat for sensitive animal species. At the SFA withdrawal scale, the impacts would be minor while at the individual future project scale the impact could be moderate to major.

Greater Sage-Grouse

Under the Nevada Alternative, future mineral exploration or development activities could only occur within existing mining claims at the time of the withdrawal that are found to be valid in the six states, and within the 486,376 acres of lands in Nevada proposed for exclusion from the withdrawal. The lands proposed for exclusion from the withdrawal under the Nevada Alternative would result in an additional 22 leks and 232 greater sage-grouse potentially being directly impacted by future mining operations in Nevada compared to the Proposed Action (Table 4-51). As compensation for this impact, the state of Nevada has proposed including additional priority greater sage-grouse habitat located contiguous to but outside of the SFAs to the withdrawal. Within this additional withdrawal area there are 14 leks representing 526 greater sage-grouse. In sum, there would be a net loss of eight leks but a net gain of 294 greater sage-grouse as a result.

Table 4-51. Greater Sage-grouse Leks and Population Subtractions and Additions in Nevada under the Nevada Alternative

State/SFA	Exclusions		Additional Withdrawal	
	Leks	Population*	Leks	Population*
Nevada				
Southern Idaho / Northern Nevada	18	149	5	202
Sheldon-Hart Mountain NWR Complex Area	0	0	0	0
SE Oregon/NC Nevada	4	83	9	324
Total	**22**	**232**	**14**	**526**

*Population numbers are based on lek count data provided by the individual state agencies which were collected using standard sampling protocols. Numbers are peak male counts at leks and do not include total population estimates.

Across all potential future activity areas in all states under the Nevada Alternative, there are 52 leks that account for a male greater sage-grouse population estimate of 499 birds (Table 4-49). It is these leks and bird populations that have the potential to be impacted directly by future mineral development projects that could occur under the Nevada Alternative. In addition, there are 369 additional leks, representing 7,075 greater sage-grouse, which occur within 3.1 miles of the boundary of existing claims and excluded areas. These additional leks and bird populations are those that could be impacted indirectly by activities that occur under the Nevada Alternative. The Nevada Alternative would result in the largest number of greater sage-grouse being located within withdrawn areas (20,358 compared to 20,064 in the Proposed Action), but would have the potential to impact 421 leks directly and indirectly, compared to only 291 under the Proposed Action (Table 4-49). Across the SFA withdrawal area, these impacts would be moderate to major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Nevada Alternative represent approximately 4.7 percent of all the leks, the number of sage-grouse that could be impacted represent approximately 2.4 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat. The proposed compensation for these losses by including additional withdrawal areas would protect an additional 14 leks and 526 male greater sage-grouse, but there would still be the potential for moderate impacts to greater sage-grouse across the withdrawal area.

Using the assumptions described above in Table 4-5, there could be a total of 57 future mineral development projects under the Nevada Alternative disturbing a total of 3,632 acres of sagebrush habitat. Therefore there could be up to 57 distinct habitat fragmentation events over the next 20 years resulting in the loss of 3,632 acres of sagebrush habitat (see Table 4-49).

Migratory Birds

There would be the potential for fewer mineral development projects, or fewer acres disturbed by mining and exploration, under the Nevada Alternative compared to the No Action Alternative, but more than under the Proposed Action. Potential impacts from future mineral exploration and development to migratory bird species, including the 17 sensitive bird species located in the state of Nevada, would essentially be the same as under the Proposed Action differing only in the number of acres that could be impacted. The Nevada Alternative would withdraw 96,477 fewer acres in Nevada compared to the Proposed Action, some percentage of which might be impacted by future mineral development projects.

The predicted amount of habitat disturbance under the Nevada Alternative would be about 62 percent less than that predicted under the No Action Alternative, resulting in a major reduction in potential adverse impacts to migratory bird species, but a 39 percent increase in habitat disturbance compared to the Proposed Action. Overall the withdrawal under the Nevada Alternative would have a beneficial impact on migratory birds by protecting habitats from disturbances associated with mining and would represent a minor to major reduction in impacts to migratory birds compared to the No Action Alternative (Table 4-47).

Big Game and Other Wildlife

The Nevada Alternative would withdraw approximately 9.8 million acres compared to no withdrawal under the No Action Alternative, representing a beneficial impact to big game winter and summer habitat. Potential types of impacts to big game and other wildlife species from future mineral exploration and development under the Nevada Alternative would be the same as under the Proposed Action, differing only in extent and location. Under the Nevada Alternative, nearly 40 percent more disturbance is predicted compared to the Proposed Action, which could have a greater impact on wildlife species.

Under the Nevada Alternative, some 96 thousand fewer acres would be withdrawn compared to the Proposed Action. Some percentage of these lands may be impacted by future mineral development projects, and thus could adversely impact big game summer and winter habitat in the Southern Idaho/Northern Nevada SFA and the SE Oregon/NC Nevada SFA. The amount of big game summer and winter habitat that would be excluded from the proposed withdrawal or added to the withdrawal by the Nevada Alternative is shown in Table 4-52. Future disturbances associated with mining under the Nevada Alternative would represent a major reduction in adverse impacts to big game and other wildlife compared to the No Action Alternative, and a minor to moderate increase in adverse impacts compared to the Proposed Action.

Table 4-52. Acres of Big Game Summer and Winter Subtractions and Additions in Nevada under the Nevada Alternative

Species/SFA	Exclusions		Additions	
	Winter	Summer	Winter	Summer
Mule Deer				
Southern Idaho / Northern Nevada	100,848	91,308	12,361	259,816
SE Oregon/NC Nevada	36,689	49,567	100,561	—
Pronghorn				
Southern Idaho / Northern Nevada	957	261,583	—	260,496
SE Oregon/NC Nevada	19,238	47,394	874	103,540
Elk				
Southern Idaho / Northern Nevada	213,111	261,959	99,351	121,574
SE Oregon/NC Nevada	—	—	—	—

4.5.7 Impacts of the HMP Alternative

Under the HMP Alternative, approximately 9.39 million acres of lands within the SFAs would be withdrawn from the Mining Law. Eight future mines are estimated under the HMP Alternative within the withdrawal area over the next 20 years, with three of those expected to be large (~1,562 acres) and five expected to be small (~23 acres). Similarly, 72 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 836 acres of disturbance. The total amount of mining related disturbance in sagebrush habitat under the HMP Alternative would be 4,903 acres.

Threatened, Endangered, Proposed, and Candidate Animal Species

Impacts to the federally listed and candidate animal species under the HMP Alternative would be similar to those described under the Proposed Action. Overall, across the withdrawal boundaries across the six states, the HMP Alternative may affect listed species and critical habitat in a beneficial way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. However, more acres of land would be disturbed and more future mineral

development projects would occur under this alternative compared to any of the other action alternatives including the Proposed Action. As discussed with respect to the No Action Alternative, potential impacts to federally listed animal species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

BLM and Forest Service Sensitive Animal Species

The withdrawal of federal managed lands within the SFAs from potential mining and exploration activities under the HMP Alternative would have a beneficial impact on BLM and Forest Service sensitive animal species. These beneficial impacts are associated with protecting suitable habitats from disturbances associated with mining. Potential adverse impacts to BLM and Forest Service sensitive animal species, as well as the Forest Service management indicator species or focal species, associated with mining would be directly through a loss of habitat and indirectly through increased activity (e.g., noise, vehicles, etc.). These impacts would occur within the 4,903 acres which have been identified as potentially being disturbed during mining or exploration within the 558,918 acres of high mineral potential land removed from the original proposed withdrawal. These impacts would be 49 percent less than those with the potential to occur under the No Action Alternative, but 87 percent more than those associated with the Proposed Action. Overall the impact to BLM and Forest Service special status animal species would be minor at the SFA withdrawal scale.

Greater Sage-Grouse

Under the HMP Alternative, all high mineral potential lands would be excluded from the withdrawal and could be impacted by future mineral exploration or development activities. This would result in 558,918 acres of high mineral potential lands not being withdrawn across the six states (see Section 2.3.4). Within high mineral potential lands, there are 69 leks and 991 greater sage-grouse males that could be directly impacted by future mining operations (Table 4-53). An additional 136 leks and 3,128 greater sage-grouse occur within 3.1 miles of the boundary of high mineral potential lands and could be indirectly impacted by future mining operations (Table 4-53).

There could be a total of eight future individual mines under the HMP Alternative disturbing a total of 4,067 acres of sagebrush habitat. There also could be 72 future exploration projects under the HMP Alternative disturbing an additional 836 acres of sagebrush habitat. The number of estimated future exploration projects would be greater than those identified for the Proposed Action, Nevada Alternative, and Idaho Alternative. These exploration projects would range in size from less than 6 acres to approximately 23 acres. Therefore there could be up to 80 distinct habitat fragmentation events over the next 20 years resulting in the loss of 3,632 acres of sagebrush habitat (see Table 4-49).

Table 4-49 provides a comparison of potential impacts to greater sage-grouse leks and populations by alternative within the SFAs and in the 3.1-mile buffers adjacent to potential future mining operations areas. These impacts are based on lek data (counts and locations) provided by state wildlife agencies which has been collected using approved sampling protocols. Compared to the Proposed Action, the HMP Alternative would impact 1.9 times more sagebrush habitat, and impact directly 48 percent more male greater sage-grouse (30 vs 69; see Table 4-49) and indirectly 3.7 times more male greater sage-grouse (267 vs 991; see Table 4-49). Across the SFA withdrawal area, these impacts would be major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the HMP Alternative represent approximately 6.3 percent of all the leks, the number of sage-grouse that could be impacted represent approximately 4.9 percent of all male sage-grouse populations across the withdrawal area, although the amount of habitat that could be impacted would be minor at less than 1 percent of the available habitat.

Table 4-53. Greater Sage-grouse Leks and Population Estimates within High Mineral Potential Lands

State/SFA	Within the the SFA		Within 3.1-mile buffer	
	Leks	Population*	Leks	Population*
Idaho			**38**	**588**
North-Central Idaho SFA	**0**	**0**	27	300
Southern Idaho / Northern Nevada SFA			4	156
Outside the SFA**			7	132
Montana			**43**	**1,374**
North Central Montana	**3**	**83**	27	961
Outside the SFA**	3	83	16	413
Nevada			**49**	**958**
Southern Idaho / Northern Nevada	**66**	**908**	35	571
Sheldon-Hart Mountain NWR Complex Area	12	239	0	0
SE Oregon/NC Nevada	0	0	5	62
Outside the SFA**	54	669	9	325
Oregon* **			**5**	**197**
SE Oregon/NC Nevada	**0**	**0**	2	2
Sheldon-Hart Mountain NWR Complex Area			3	195
Utah **				
Southern Idaho / Northern Nevada	**0**	**0**	**0**	**0**
Bear River Watershed Area				
Wyoming **			**1**	**11**
Southwestern/ South Central Wyoming	**0**	**0**	1	11
Bear River Watershed Area			0	0
Total	**69**	**991**	**136**	**3,128**

*Population numbers are based on lek count data provided by the individual state agencies which were collected using standard sampling protocols. Numbers are peak male counts at leks and do not include total population estimates.

**Some leks are within 3.1 miles of HMP lands but outside the SFA boundaries.

***There are no greater sage-grouse leks within HMP lands in Oregon, Utah, or Wyoming or within 3.1-miles of mining claims in Utah.

Migratory Birds

The predicted amount of habitat disturbance under the HMP Alternative would be about 49 percent less than that predicted under the No Action Alternative, resulting in a major reduction in potential adverse impacts to migratory bird species, but an 87 percent increase in habitat disturbance compared to the Proposed Action. Overall the withdrawal under the HMP Alternative would have a beneficial impact on migratory birds by protecting habitats from disturbances associated with mining and would represent a minor to major reduction in impacts to migratory birds compared to the No Action Alternative (Table 4-47).

Big Game and Other Wildlife

The HMP Alternative would withdraw approximately 9.4 million acres compared to no withdrawal under the No Action Alternative, representing a beneficial impact to big game winter and summer habitat. Potential types of impacts to big game and other wildlife species from future mineral exploration and development under the HMP Alternative would be the same as under the Proposed Action, differing only in extent and location. Under the HMP Alternative, nearly 87 percent more disturbance is predicted compared to the Proposed Action, which could have a greater impact on wildlife species. Under the HMP Alternative, 558,918 fewer acres would be withdrawn compared to the Proposed Action. Some percentage of these lands may be impacted by future mineral development projects, and thus could adversely impact big game summer and winter habitat. However, future disturbances associated with mining would represent a major reduction in adverse impacts to big game and other wildlife compared to the No Action

Alternative, and a minor to moderate increase in adverse impacts compared to the Proposed Action. Overall these impacts are expected to be minor given the extent of summer and winter habitat that exists in the withdrawal areas (see Tables 3-133 and 3-134 and Figures 3-23 through 3-32 in Chapter 3) compared to that existing in high mineral potential lands only (Table 4-54).

4.5.8 Impacts of the State of Idaho Alternative

Under the Idaho Alternative, approximately 9.38 million acres of lands within the SFAs would be withdrawn from the Mining law. Seven future mines are estimated under the Idaho Alternative within the withdrawal area over the next 20 years, with two of those expected to be large (~1,562 acres) and five expected to be small (~23 acres). Similarly, 48 future exploration projects are estimated over the next 20 years within the withdrawal area accounting for 510 acres of disturbance. The total amount of mining related disturbance in sagebrush habitat under the Idaho Alternative would be 3,360 acres.

Threatened, Endangered, Proposed, and Candidate Animal Species

Impacts to federally listed and candidate animal species under the Idaho Alternative would be the same as those described under the Proposed Action. Beyond those species occurring within the withdrawal area in the other states, the only federally listed wildlife species that occur within the state of Idaho are the Canada lynx (threatened), wolverine (proposed threatened), yellow-billed cuckoo (threatened) and its critical habitat, and bull trout (threatened) and its critical habitat. None of these species are expected to be adversely impacted by the Idaho Alternative. Overall, across the withdrawal boundaries across the six states, the Idaho Alternative may affect listed species and critical habitat in a beneficial way, compared to the No Action Alternative, because of the potential for less mining and exploration, or mining and exploration on fewer acres. As discussed with respect to the No Action Alternative, potential impacts to federally listed animal species would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations.

BLM and Forest Service Sensitive Animal Species

Potential impacts to BLM and Forest Service sensitive animal species, as well as the Forest Service management indicator species or focal species, from future mineral exploration and development under the Idaho Alternative would essentially be the same as under the Proposed Action. However, nearly 28 percent more disturbance is predicted under the Idaho Alternative compared to the Proposed Action (3,360 acres vs 2,620 acres, respectively), which could have a greater impact to the BLM and Forest Service sensitive animal species that occur in the state of Idaho (see Table D-2 in Appendix D).

As with all the alternatives, direct impacts from future mining operations would be considered during a site-specific analysis of potential mining or exploration locations through the approval process for the plan of operations. Impacts under the Idaho Alternative would be more than the Proposed Action but less than the No Action Alterative, and would be scattered spatially (seven mining projects and 48 exploration projects) within the seven SFAs. Overall the impact to BLM and Forest Service special status animal species would be minor at the SFA withdrawal scale.

Greater Sage-Grouse

Under the Idaho Alternative, future mineral exploration or development activities could only occur within existing mining claims at the time of the withdrawal that are found to be valid in the six states, and within the lands in Idaho proposed for exclusion from the withdrawal. The lands proposed for exclusion from the withdrawal under the Idaho Alternative would result in an additional 29 leks and 517 male greater sage-grouse potentially being directly impacted by future mining operations in Idaho compared to the Proposed Action (Table 4-55). There would also be an additional 92 leks and 1,465 male greater sage-grouse within 3.1 miles of these potential activity areas compared to the Proposed Action.

Table 4-54. Big Game Winter and Summer Habitat (acres) in High Mineral Potential Lands

Species	SFA						
	North-Central Idaho	**Southern Idaho/ Northern Nevada**	**North Central Montana**	**SE Oregon/ NC Nevada**	**Sheldon-Hart Mountain NWR Complex Area**	**Bear River Watershed Area**	**Southwestern/ South Central Wyoming**
Winter Habitat							
Mule deer	13,212	75,759	37,834	176,634	3,292	0	0
Elk	20,866	75,954	0	0	0	0	942
Pronghorn	N/A	2,768	46,707	52,849	0	0	0
Summer Habitat							
Mule deer	1,917	138,087	19,926	166,462	0	0	1,166
Elk	4,287	192,993	2	0	0	0	135
Pronghorn	0	101,944	11,046	157,963	0	0	1,328

Table 4-55. Greater Sage-grouse Leks and Population Subtractions in Idaho under the Idaho Alternative

State/SFA	Exclusions		Within 3.1-mile buffer	
	Leks	Population	Leks	Population
Idaho				
North-Central Idaho	24	338	27	324
Sheldon-Hart Mountain NWR Complex Area	5	179	18	312
Outside the SFA	0	0	45	788
Nevada				
Outside the SFA	0	0	2	41
Total	**29**	**517**	**92**	**1,465**

Across all potential future activity areas in all states under the Idaho Alternative, there are 59 leks that account for a male greater sage-grouse population estimate of 784 birds (Table 4-49). In addition, there are 353 additional leks, representing 6,974 male greater sage-grouse, which occur within 3.1 miles of the boundary of existing claims and excluded areas. The Idaho Alternative would result in the third largest number of leks being located in withdrawn areas (1,032 compared to 1,061 in the Proposed Action), and would have the potential to impact (when combining direct and indirect) the third greatest number of leks (412 vs 421 and 494 in the Nevada Alternative and No Action Alternative, respectively).

Across the SFA withdrawal area, these impacts would be moderate to major and the direct impacts at future mineral development sites could be major. The total number of leks that could be directly impacted by the Idaho Alternative represent approximately 3.8 percent of all the leks, the number of sage-grouse that could be impacted represent approximately 3.9 percent of all male sage-grouse populations across the withdrawal area, and the amount of habitat that could be impacted would be less than 1 percent of the available habitat.

There could be a total of seven future individual mines under the Idaho Alternative disturbing a total of 2,850 acres of sagebrush habitat. These mines would range in size from approximately 23 acres to over 1,500 acres. There also could be 48 future exploration projects under the Idaho Alternative disturbing an additional 510 acres of sagebrush habitat. These exploration projects would range in size from less than 6 acres to approximately 23 acres. Therefore there could be up to 55 distinct habitat fragmentation events associated with development of access roads, powerlines, security fences, and exploration activities over the next 20 years resulting in the loss of 3,360 acres of sagebrush habitat (see Table 4-49).

Migratory Birds

There would be the potential for fewer mineral development projects, or fewer acres disturbed by mining and exploration, under the Idaho Alternative compared to the No Action Alternative, but more than under the Proposed Action. Potential impacts from future mineral exploration and development to migratory bird species would essentially be the same as under the Proposed Action differing only in the number of acres that could be impacted. The Idaho Alternative would withdraw 538,742 fewer acres in Idaho compared to the Proposed Action, some percentage of which might be impacted by future mineral development projects.

The predicted amount of habitat disturbance under the Idaho Alternative would be about 65 percent less than that predicted under the No Action Alternative, resulting in a major reduction in potential adverse impacts to migratory bird species, but a 28 percent increase in habitat disturbance compared to the Proposed Action. Overall the withdrawal under the Idaho Alternative would have a beneficial impact on migratory birds by protecting habitats from disturbances associated with mining and would represent a minor to major reduction in impacts to migratory birds compared to the No Action Alternative (Table 4-47).

Big Game and Other Species

The Idaho Alternative would withdraw approximately 9.4 million acres compared to no withdrawal under the No Action Alternative, representing a beneficial impact to big game winter and summer habitat. Potential types of impacts to big game and other wildlife species from future mineral exploration and development under the Idaho Alternative would be the same as under the Proposed Action, differing only in extent and location. Under the Idaho Alternative, nearly 28 percent more disturbance is predicted compared to the Proposed Action, which could have a greater impact on wildlife species.

Under the Idaho Alternative, more than a half million fewer acres would be withdrawn compared to the Proposed Action. Some percentage of these lands may be impacted by future mineral development projects, and thus could adversely impact big game summer and winter habitat in the Southern Idaho/Northern Nevada SFA and the North-Central Idaho SFA. The amount of big game summer and winter habitat that would be excluded from the proposed withdrawal by the Idaho Alternative is shown in Table 4-56.

Table 4-56. Acres of Big Game Summer and Winter Subtractions in Idaho under the Idaho Alternative

Species/SFA	Exclusions	
	Winter	Summer
Mule Deer		
North-Central Idaho	185,728	59,518
Southern Idaho / Northern Nevada	92,379	4,475
Pronghorn		
North-Central Idaho	0	0
Southern Idaho / Northern Nevada	0	0
Elk		
North-Central Idaho	270,942	33
Southern Idaho / Northern Nevada	55,376	0

Future disturbances associated with mining under the Idaho Alternative would represent a major reduction in adverse impacts to big game and other wildlife compared to the No Action Alternative, and a minor to moderate increase in adverse impacts compared to the Proposed Action.

4.5.9 Cumulative Wildlife Impacts

The geographic extent of the cumulative effects analysis area for wildlife is the proposed withdrawal areas in Idaho, Nevada, Montana, Oregon, Utah and Wyoming. For all land withdrawn from appropriation under the Mining Law, a positive benefit to special status animal species and wildlife could occur because fewer acres would be available for mineral entry compared to not withdrawing the land. Therefore, the Proposed Action and other actions alternatives can only have a positive impact to wildlife by reducing potential disturbance to wildlife habitat. Any cumulative impacts to wildlife habitat under any of the alternatives would occur because of future mineral development activities that would occur, in any event, under the No Action Alternative. Therefore, cumulative impacts to wildlife are largely the same under all alternatives, differing only in the location of or extent of future activity that is described above, and in fact are closely tied to cumulative impacts to vegetation since vegetation and wildlife habitat are inextricably related. The cumulative impact of the Proposed Action, or any of the action alternatives, then, would be beneficial to a greater or less degree, depending on the number of acres withdrawn.

The 2015 LUP amendments developed by the BLM and Forest Service addressing conservation measures for the greater sage-grouse (see Section 1.1 in Chapter 1) identified past, present, and reasonably foreseeable future actions and conditions that affect vegetation, and hence wildlife habitat, and could lead to cumulative effects. These include vegetation and habitat management and improvement projects, noxious weed control, wildfire management, livestock grazing management, lands and realty management, mineral extraction and development, and travel management planning. As described above in Section 4.4.9, one of the largest potential contributors to loss of native vegetation and hence wildlife habitat is wildfire. Within the proposed withdrawal area, 1.55 million acres of vegetation has burned in the last 15 years. Thus, nearly 16 percent of the withdrawal area has been affected by past wildfires, potentially resulting in the loss of native vegetation and wildlife habitat, and any future mineral development projects would have the potential to add to this cumulative loss by less than one-tenth of one percent. Given the relatively small area of surface impact, it is anticipated that the future exploration and development of mineral resources that might still occur under the action alternatives would not result in significant adverse cumulative impacts to wildlife habitat when added to other past, present, and reasonably foreseeable activities in the proposed withdrawal area, with the Proposed Action having the potential for the most reduction in adverse impacts to wildlife.

Reclamation is required on all or most disturbances associated with exploration and mining. Plans of operation include performance standards and reclamation measures to minimize or mitigate impacts to fish and wildlife resources consistent with applicable laws and regulations. The magnitude of the impact depends on the size and location of the mine, the length of time the mine is operating under an approved plan of operations, and when reclamation occurs. Exploration disturbances are typically 100% reclaimed, and mines and mining activities are from 75% to 90% reclaimed. Therefore, the cumulative effects of those activities would diminish over time. For those wildlife species particularly dependent on shrubs that time-frame would be longer, and could last two to five decades. However, grasses and forbs are typically well-established with five years after revegetation.

Of some interest is the potential cumulative impact of past fires and future mineral development in the Nevada Alternative and the Idaho Alternative. Both of these alternatives proposed to exclude some lands from the withdrawal while the Nevada Alternative also proposes to add some lands to the withdrawal. Some of the lands that are being proposed for exclusion or addition have been impacted by past fires, and the percentage of that land gives some indication of the quality of wildlife habitat that is being excluded from or added to the withdrawal. Table 4-57 shows the amount of land that has been impacted by past wildfires in the proposed withdrawal boundaries of those two states, and the amount of land that has burned in the areas being proposed for exclusion or addition under the Nevada and Idaho Alternatives.

Table 4-57. Acres of Land Impacted by Past Fire in the Nevada and Idaho Alternatives Compared to the Proposed Action

Species/SFA	Acres Burned		
	Proposed Action	**Exclusions**	**Additions**
Nevada			
Southern Idaho/Northern Nevada	427,113	128,448	116,414
Sheldon-Hart Mountain NWR Complex Area	437	0	0
SE Oregon/NC Nevada	142,757	13,372	15,988
Total	**570,307**	**141,820**	**132,402**
Idaho			
North-Central Idaho	177,626	847	N/A
Southern Idaho/Northern Nevada	319,388	16,434	N/A
Total	**497,014**	**17,281**	**—**

In Nevada, 570,307 acres of the total 2,767,409 acres proposed for withdrawal has been impacted by past wildfires, or roughly 21 percent. Of the 487, 756 acres of land that the Nevada Alternative would exclude from the withdrawal, 141,820 acres of them have burned, or roughly 30 percent. Of the 387, 981 acres of land that the Nevada Alternative would add to the withdrawal, 132,402 acres of them have burned, or roughly 34 percent. The Nevada Alternative would result in 99, 774 fewer acres being withdrawn in Nevada compared to the Proposed Action, but there would be approximately 9,418 fewer acres of burned land included in the withdrawal compared to the Proposed Action.

In Idaho, 497,014 acres of the total 3,960,651 acres proposed for withdrawal has been impacted by past wildfires, or roughly 13 percent. Of the 538,742 acres of land that the Idaho Alternative would exclude from the withdrawal, 17,281 acres of them have burned, or roughly 3 percent. Therefore, much of the land that would be excluded from the withdrawal under this alternative has not burned.

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5. CONSULTATION AND COORDINATION

This EIS has been prepared with input from and coordination with interested agencies, tribal governments, organizations, and individuals. This chapter provides a summary of the opportunities that have been made available for consultation and coordination, including those that have taken place with the public as well as government and non-governmental agencies or organizations on the proposal.

5.1 Public Involvement

Public involvement is a vital component of NEPA for vesting the public in the decision-making process and allowing for full environmental disclosure. Efforts to involve the public throughout the EIS development process are described in this chapter.

5.1.1 Scoping

CEQ regulations (40 CFR 1500-1508) require an early scoping process to determine the issues related to the Proposed Action and alternatives that the EIS should address. The purpose of the scoping process is to identify important issues, concerns, and potential impacts that require analysis in the EIS and to eliminate from detailed analysis issues that are not significant. The public scoping process as it relates to identification of issues is described in Chapter 1; the information is summarized here.

The scoping process for the EIS included a comment period and a series of eight open house meetings (Table 5-1) designed to provide background information as well as an opportunity for members of the public to discuss the EIS process with project representatives and to identify issues and alternatives. Notices announcing the public comment period and/or the scoping meetings are described in Section 1.10.1 of Chapter 1.

Table 5-1. Locations and Dates for Scoping Meetings

Meeting Locations	Meeting Dates and Times
BLM Lakeview District Office, 1301 S G Street, Lakeview, OR	December 14, 2015, 5-7 p.m.
BLM West Desert District Office, 2370 S. Decker Lake Blvd., West Valley City, UT	December 14, 2015, 5-7 p.m.
Best Western Vista Inn, 2645 W Airport Way, Boise, ID	December 15, 2015, 4-6 p.m.
BLM Rock Springs Field Office, 280 Highway 191 North, Rock Springs, WY	December 15, 2015, 5-7 p.m.
Nugget Casino Resort, 1100 Nugget Ave., Sparks, NV	December 15, 2015, 5-7 p.m.
Great Northern Hotel, 2 S 1st Street E, Malta, MT	December 16, 2015, 2-4 p.m.
Shilo Suites, 780 Lindsay Blvd., Idaho Falls, ID	December 16, 2015, 4-6 p.m.
Elko Convention Center, 700 Moren Way, Elko, NV	December 16, 2015, 5-7 p.m.

A total of 5,078 letters or other submittals were received during the scoping period. Each letter was reviewed and specific comments were identified and sorted by topic. The *Sagebrush Focal Area Withdrawal Environmental Impact Statement: Idaho, Montana, Nevada, Oregon, Utah, and Wyoming, Scoping Report* was developed to summarize the major comments and the issues identified (BLM 2016). This report was used to identify the predominant issues to be analyzed in the EIS, as summarized in Section 1.10.2 of Chapter 1.

5.1.2 Fact Sheets and Frequently Asked Questions

The BLM website https://www.blm.gov/node/3282 has published informational documents, including factsheets and Frequently Asked Questions (FAQs) on the project at important milestones during the preparation of this EIS. These were posted during the scoping period and throughout the project duration to provide the public with information about the project.

5.1.3 Mailing List

The project mailing list includes cooperating agencies; federal agencies; local, city, county, and state agencies and elected officials in each of the six states that the withdrawal covers; tribes; industry and mining claimants with an interest in withdrawal area; non-government organizations and interest groups; and other individuals who have expressed interest in the project. The mailing list was used to provide information about the availability of the Draft EIS and will continue to be periodically revised, updated, and expanded throughout the NEPA process. The mailing list is made up of physical addresses as well as email addresses.

The first direct mailing related to the Draft EIS process will occur on December 30, 2016 and will include approximately 6,000 recipients (130 federal, state, and local government entities; 26 non-government organizations; 262 businesses; 53 tribal entities; and over 5,500 individuals). The mailing will provide information about the Draft EIS, along with information about the comment period, how to review the EIS and how to comment, and the dates, times, and locations of all public review meetings. A future mailing will announce availability of the Final EIS.

5.1.4 Draft EIS Public Comment Period

The Draft EIS was published by the BLM on December 30, 2016 and made available to the public for review and comment at that time. The BLM invited public and agency comment on the Draft EIS for a period of 90 days. The Draft EIS was distributed in electronic format and was available for downloading from the BLM project website. Hardcopies and/or electronic copies were also made available at BLM and Forest Service offices and at regional public libraries within the withdrawal area (Table 5-2).

Table 5-2. Locations with Hardcopies and/or Electronic Copies of the Draft EIS

LOCATIONS WITH HARCOPIES AND/OR ELECTRONIC COPIES OF EIS
IDAHO
BLM Offices
• Idaho State Office, 1387 S. Vinnell Way Boise, ID 83709 • Boise District Office, 3948 Development Ave., Boise, ID 83705 • Owyhee Field Office, 20 First Avenue West, Marsing, ID 83639 • Idaho Falls District Office, 1405 Hollipark Dr., Idaho Falls, ID 83401 • Pocatello Field Office, 4350 South Cliffs Drive, Pocatello, ID 83204 • Twin Falls District Office, 2878 Addison Ave. E, Twin Falls, ID 83301 • Shoshone Field Office, 400 West "F" Street, Shoshone, ID 83352 • Salmon Field Office, 1206 South Challis Street, Salmon, ID 83467 • Burley Field Office, 15 East 200 South, Burley, ID 83318 • Challis Field Office, 1151 Blue Mountain Road, Challis, ID 83226
Forest Service Offices
• Caribou-Targhee National Forest Headquarters, 1405 Hollipark Drive, Idaho Falls, ID 83401 • Salmon-Challis National Forest Headquarters Office, 1206 S. Challis Street, Salmon, ID 83467 • Sawtooth National Forest Headquarters, 2647 Kimberly Road East, Twin Falls, ID 83301

Table 5-2. (continued)

LOCATIONS WITH HARCOPIES AND/OR ELECTRONIC COPIES OF EIS
Libraries
• Mountain Home Public Library, 790 N 10th E Street, Mountain Home, ID 83647 • Boise Public Library, 715 S Capitol Boulevard, Boise, ID 83702 • Twin Falls Public Library, 201 Fourth Avenue East Twin Falls, ID 83301 • Idaho Falls Public Library, 457 W Broadway Street, Idaho Falls, ID 83402
MONTANA
BLM Offices
• North Central District Office, 1101 15th Street North, Great Falls, MT 59401 • Glasgow Field Office, 5 Lasar Drive, Glasgow, MT 59230 • Malta Field Office, 501 S. 2nd Street East, Malta, MT 59538 • Lewistown District Office, 920 Northeast Main, Lewistown, MT 59457
Libraries
• Lewistown Public Library, 701 West Main Street, Lewistown, MT 59547 • Phillips County Library, P.O. Box 840, Malta, MT 59538 • Glasgow City-County Library, 408 3rd Avenue South, Glasgow, MT 59230
NEVADA
BLM Offices
• BLM Nevada State Office, 1340 Financial Blvd., Reno NV 89502 • Elko District Office, 3900 Idaho St., Elko, NV 89801 • Winnemucca District Office, 5100 E. Winnemucca Blvd., Winnemucca, NV 89445 • BLM Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV 89820
Forest Service Offices
• Humboldt-Toiyabee National Forest Headquarters, 1200 Franklin Way, Sparks, NV 89431
Libraries
• Elko County Library, 720 Court Street, Elko, NV 89801 • Battle Mountain Branch Library, P.O. Box 141, Battle Mountain, NV 89820 • Humboldt County Library, 85 East 5th Street, Winnemucca, NV 89445 • Jackpot Branch Library, 2301 Progressive Road, Jackpot, NV 89825 • Washoe County Library, P.O. Box 2151, Reno, NV 89520 • Humboldt County Library, U.S. Highway 95, McDermitt, NV 89421
OREGON
BLM Offices
• Burns District Office, 28910 Hwy 20 West, Hines, OR 97738 • Lakeview Field Office, 1301 South G. Street, Lakeview, OR 97630 • Vale District Office, 100 Oregon St, Vale, OR 97918
Forest Service Offices
• Fremont-Winema National Forest Headquarters, 1301 South G Street, Lakeview, OR 97630
Libraries
• Harney County Library, 80 West D Street, Burns OR 97720 • Malheur County Library, 388 SW 2nd Avenue, Ontario, OR 97914 • Lake County Library, County Courthouse, Lakeview, OR 97630
UTAH
BLM Offices
• West Desert District Office, Salt Lake Field Office, 2370 S. Decker Lake Blvd., West Valley City, UT 84119

Table 5-2. (continued)

LOCATIONS WITH HARCOPIES AND/OR ELECTRONIC COPIES OF EIS
• BLM Utah State Office, 440 West 200 South, Suite 500, Salt Lake City, Utah 84101
Forest Service Offices
• Uinta-Wasatch-Cache National Forest Headquarters, 857 West South Jordan Parkway, South Jordan, UT 84095
Libraries
• Box Elder County Bookmobile Library, 80 W 50 S, Willard, UT 84340-0595 • Cache County Library at Providence, 15 North Main, Providence, UT 84332 • Rich County Library and Bookmobile, 20 N Main, Randolph, UT 84064 • Salt Lake City Public Library, 210 E 400 S, Salt Lake City, UT 84111
WYOMING
BLM Offices
• High Desert District Office, 280 Highway 191 North, Rock Springs, WY 82901 • Kemmerer Field Office, 430 North Highway 189, Kemmerer, WY 83101 • Wind River / Bighorn Basin District Office, 101 South 23rd, Worland, WY 82401 • Lander Field Office, 1335 Main Street, Lander, WY 82520 • Pinedale Field Office, 1625 West Pine Street, Pinedale, WY 82941
Libraries
• Fremont County Library, 244 Amoretti Street, Lander, WY 82520 • Rock Springs Library, 400 C Street, Rock Springs, WY 82901 • Lincoln County Library, 519 Emerald Street, Kemmerer, WY 83101 • Sublette County Public Library, 155 S. Tyler Avenue, Pinedale, WY 82941

Because of the extent of the boundaries of the proposed withdrawal, covering approximately 10 million acres across six states, the list of individuals who received notice of availability of the Draft EIS is extensive. Therefore this list is included in the administrative record rather than being included here.

The mailing provided information about how to obtain and review the EIS and how to comment. Comments will be collected via the project email (sagebrush_withdrawals@blm.gov) set up by the BLM, by email to the BLM project manager, and by comment forms received from the public meetings or directly mailed to the BLM.

Public meetings have been scheduled to occur during the public comment period for the Draft EIS. The planned dates and locations for the public meetings to receive comments on the Draft EIS are listed in Table 5-3. The purpose of the public meetings is to present the Draft EIS to the public, answer questions about the document, and solicit substantive comments.

Table 5-3. Planned Locations and Dates for Public Meetings on the Draft EIS

Meeting Locations	Meeting Dates and Times
Great Northern Hotel, 2 S 1st Street E, Malta, MT	February 13, 2017, 2-4 p.m.
BLM West Desert District Office, 2370 S. Decker Lake Blvd., West Valley City, UT	February 14, 2017, 5-7 p.m.
BLM Rock Springs Field Office, 280 Highway 191 North, Rock Springs, WY	February 15, 2017, 5-7 p.m.
Shilo Suites, 780 Lindsay Blvd., Idaho Falls, ID	February 16, 2017, 5-7 p.m.
Nugget Casino Resort, 1100 Nugget Ave., Sparks, NV	February 21, 2017, 5-7 p.m.
BLM Lakeview District Office, 1301 S G Street, Lakeview, OR	February 22, 2017, 5-7 p.m.
Elko Convention Center, 700 Moren Way, Elko, NV	February 23, 2017, 5-7 p.m.
Best Western Vista Inn, 2645 W Airport Way, Boise, ID	February 24, 2017, 5-7 p.m.

These public meetings for the Draft EIS will consist of an open house format, similar to what was done during the scoping period. Agency representatives and contractors will staff a welcome/sign-in table and record all attendees. The open houses will include stations that provide more information about the proposal, the Proposed Action, impact analyses, the decision-making process, and how to provide comments.

All meeting materials, including posters, presentations, and handouts, will be posted to the BLM project website. Agency staff that will be present at the public meetings will include representatives from the Washington Office NEPA Team, local BLM management staff, and technical specialists.

5.1.5 Public Comment Report

All comments received by BLM will be read, categorized, and coded for substantive comments. A summary of substantive comments, as well as response to those comments, will be included in the Final EIS. The Dear Reader letter in the Draft EIS defines substantive comments, noting they do one or more of the following:

- Question, with reasonable basis, the accuracy of information in the Draft EIS;
- Question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis;
- Present valid new information relevant to the analysis;
- Present reasonable alternatives other than those analyzed in the Draft EIS; and
- Cause changes or revisions in one or more of the alternatives.

The BLM will produce a public comment report that will be posted on the project website and will be included as an appendix to the Final EIS. The public comment report will include the following:

- Federal Register Notice;
- A summary of public and agency meetings;
- Public meeting materials;
- Notification materials and opportunities for comment;
- Summary of public scoping comment analysis;
- Summary of Draft EIS comments, including responses; and
- Public comments (as an appendix).

5.2 Coordination of BLM State and Field Offices

The BLM Washington Office has worked extensively with the BLM State Offices as well as multiple field offices during the development of the EIS to ensure adequate coordination. BLM State Office and Field Office representatives have worked directly with the Washington Office to share relevant information about the existing conditions in the withdrawal area. Primary project participants, including the affected State, District and Field Offices, are indicated on the following Organizational Chart (Figure 5-1).

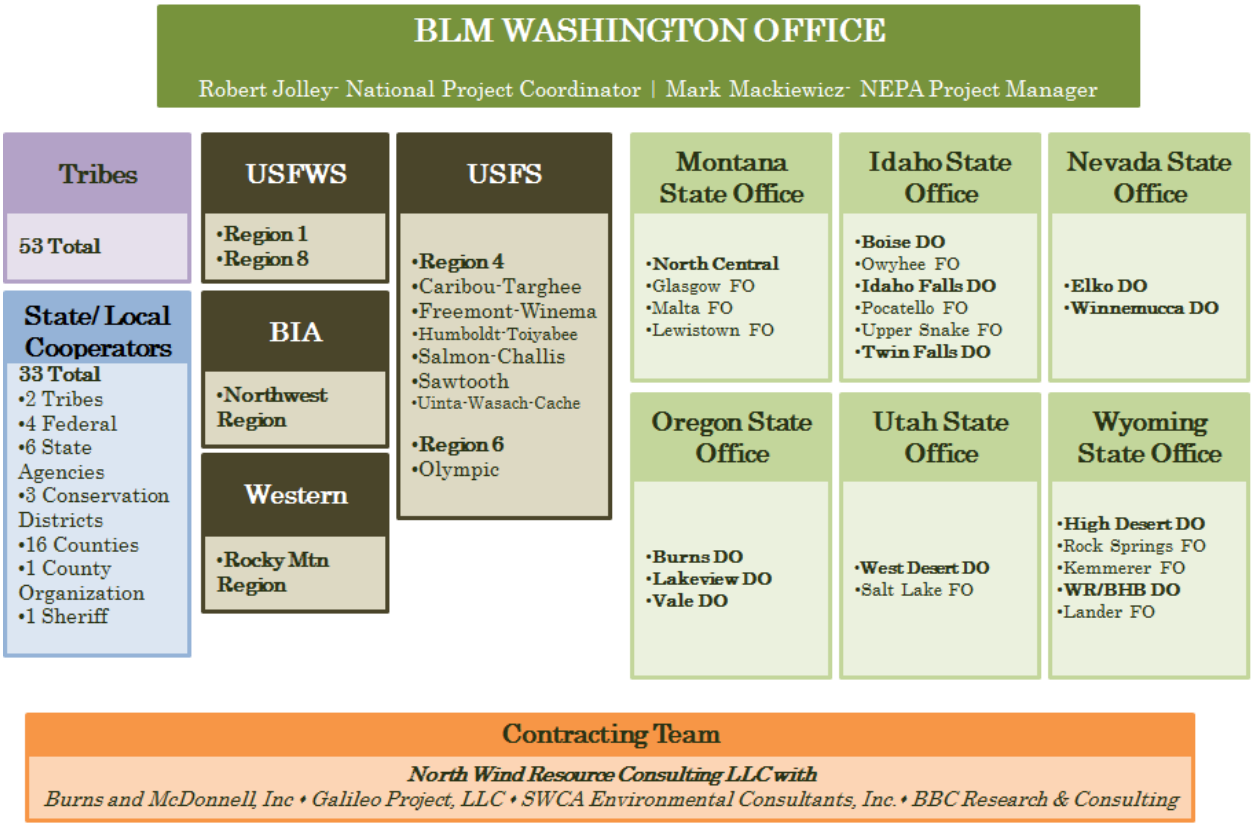

Figure 5-1. Project Organization Chart

5.3 Cooperating Agency Consultation

CEQ regulations (40 CFR 1508.5) provide that state agencies, local governments, tribal governments, and other federal agencies may serve as cooperating agencies during the EIS process if they have either jurisdiction by law or special expertise. The regulations also emphasize the use of such arrangements as a means of ensuring timely coordination with local, state, tribal, and Federal agencies in the preparation of NEPA analysis and documentation. The CEQ regulations define a cooperating agency as any federal agency (other than the lead agency) and any state or local agency or Indian tribe with jurisdictional authority or special expertise with respect to any environmental impact involved in a proposal. According to 40 CFR 1501.6, cooperating agencies have a four-part role in the EIS process: 1) participate in the NEPA process at the earliest available time period; 2) participate in scoping; 3) at the lead agency's request, assume responsibility for developing information and preparing environmental analyses for areas in which the cooperating agency has special expertise, and 4) at the lead agency's request, make staff available to support the EIS process.

It is important to note that although cooperating agency participation does not necessarily imply that an agency supports the proposed withdrawal, the BLM places great importance on working with its governmental partners through cooperating agency relationships and believes that Cooperating Agency status enhances the BLM's analysis efforts. In the early stages of the project, the BLM sent out 150 letters inviting the participation of federal and state agencies, local governments, and other organizations as official cooperating agencies. Because of the size of the proposed withdrawal area and the resources potentially affected by the proposed withdrawal or alternatives, 33 cooperators (federal, state, tribal, and county) with jurisdictional authority and/or applicable special expertise cooperated in the development of

this EIS. A MOU was created to establish guidelines for the parties that desired to become formal cooperating agencies. Thirty-three agencies, governments, and other organizations have formalized their participation as a cooperating agency by signing MOUs. Working together with the BLM, cooperating agencies had the opportunity to provide input and information to be considered in the identification of issues and in the development and analysis of the project alternatives. Cooperating agencies were also invited to review the Administrative Draft EIS and other key documents, as appropriate.

The cooperating agencies – listed in Table 1-7 in Section 1.5.2 of Chapter 1 – assisted with EIS preparation in a number of ways, including identifying issues and other pertinent information that could be useful in preparation of the EIS, assisting with the formulation of alternatives, and reviewing Administrative Draft EIS text and other EIS materials. Not all of the cooperating agencies participated in all aspects of the EIS preparation. As lead agency, BLM is responsible for the content of the EIS.

In addition to numerous coordination calls, the BLM held a number of meetings with the cooperating agencies. The primary meeting dates, locations, and general purpose of the meetings held to date and other outreach efforts are listed in Table 5-4.

5.4 National Historic Preservation Act Compliance

Section 106 of the NHPA of 1966 (54 USC 300101 *et seq.*) creates a process under which federal agencies must consider the effect of an undertaking on historic properties—that is, cultural resources that are listed or eligible for listing in the NRHP—before it authorizes or funds any undertaking. The intent of the process is to identify such properties, assess effects, and seek ways to avoid, minimize, or mitigate any adverse effects. The NHPA stresses the importance of active consultations with the public, Indian tribes, State Historic Preservation Offices, and other parties and provides the Advisory Council on Historic Preservation with the opportunity to comment on a project's potential to affect historic resources.

In accordance with 36 CFR 800.3(a)(1), the BLM determined that the SFA withdrawal is an undertaking that has no potential to affect historic properties, assuming such historic properties were present, and therefore the agency official has no further obligation under the NHPA. The BLM informed 51 American Indian governments in writing on March 14 and 21, 2016 and two American Indian governments through face-to-face meetings on May 6, 2016 and June 15, 2016 of this determination. The BLM has also informed the Nevada, Utah, Oregon, Idaho, and Wyoming State Historic Preservation Offices on March 24, 2016, and the Advisory Council on Historic Preservation on April 18, 2016 regarding this determination of effect.

5.5 Coordination with Tribal Governments

As lead agency, the BLM is responsible for complying with legal mandates that establish government-to-government relationships with federally recognized American Indian Tribes. Pursuant to EO 13175, Consultation and Coordination with Indian Tribal Governments, executive departments and agencies are charged with engaging in regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications and are responsible for strengthening the government-to-government relationship between the United States and Indian tribes.

In March and April of 2016 (letters sent March 14, March 21, or April 6), the BLM initiated tribal consultation with the tribes listed in Table 5-5 (except the Shoshone Bannock Indians of Fort Hall Indian Reservation [Shoshone Bannock] and the Shoshone-Paiute Tribes of Duck Valley [Shoshone-Paiute]) via letter.

Table 5-4. Cooperating Agency Outreach

Date	Outreach Effort / Location	General Purpose
March 29, 2016	Web meeting	Cooperating Agency introductory calls provide orientation of the process and discuss roles and responsibilities of various agencies.
April 21, 2016	Utah BLM State Office, 440 West 200 South, Salt Lake City, UT 84101	Review and discuss preliminary and draft alternatives
April 29, 2016	Rock Springs Field Office, 280 Hwy 191 North, Rock Springs, WY 82901	
	Pocatello Field Office, 4350 Cliffs Drive, Pocatello, ID 83204	
May 3, 2016	Lewistown Field Office, 920 Northeast Main, Lewistown, MT 59457 Glasgow Field Office, 5 Lasar Drive, Glasgow, MT 59230	
May 6, 2016	BLM State Office, 1220 SW 3rd Avenue, Portland, OR 97204 Burns District Office, 28910 Hwy 20 West, Hines, OR 97738 Lakeview Field Office, 1301 South G. Street, Lakeview, OR 97630	
May 9, 2016	Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV 898207	
July 22, 2016	Cooperating Agency Calls	Project update including information on permittees, alternatives, mineral potential report, and upcoming milestones
August 31, 2016	Emailed Reasonably Foreseeable Development (RFD) Report	Provided draft RFD Report for comment
September 1, 2016	Cooperating Agency Calls	Introduce the RFD Report
October 21, 2016	Emailed Information Sheet	Project update
November 3 and 7, 2016	Cooperating Agency Calls	Information to help prepare Cooperating Agencies for the upcoming review of the Administrative Draft EIS
December 16, 2016	Email update	Project update and notification of upcoming Draft EIS and Cooperating Agency meetings
December 30, 2016	Letter	Letter transmitting the Draft EIS and inviting additional comment

Table 5-5. Consulting Tribes

California	
Fort Bidwell Indian Community	Susanville Indian Rancheria
Colorado	
Ute Mountain Ute Tribe	
Idaho	
Coeur d'Alene Tribe Kootenai Tribe of Idaho Nez Perce Tribe	Shoshone Bannock Indians of Fort Hall Indian Reservation Shoshone-Paiute Tribes of Duck Valley
Montana	
Blackfeet Tribe Business Council Chippewa Cree Tribe Crow Tribal Council	Fort Belknap Indian Community (Assiniboine, Gros Ventre) Fort Peck Tribes Northern Cheyenne Tribe
Nevada	
Battle Mountain Band Council Duckwater Shoshone Tribe Elko Band of Shoshone Ely Shoshone Tribe Fort McDermitt Paiute-Shoshone Tribe Lovelock Paiute Tribe Pyramid Lake Paiute South Fork Band Council Summit Lake Paiute Tribe Te-Moak Tribal Council	Te-Moak Tribe of Western Shoshone Washoe Tribe Wells Band Indian Colony Western Shoshone Committee of Duck Valley Western Shoshone Cultural Advisory Group/Barrick Western Shoshone Defense Council Western Shoshone Defense Project Western Shoshone Descendants of Big Smoky Yomba Shoshone Tribe
North Dakota	
Standing Rock Sioux Tribe	
Oregon	
Klamath Tribes The Burns Paiute Tribe	Confederated Tribes of the Umatilla Indian Reservation Confederated Tribes of the Warm Springs Reservation
South Dakota	
Cheyenne River Sioux Tribal Council Lower Brule Sioux Tribe Oglala Sioux Tribal Council Rosebud Sioux Tribe	Crow Creek Sioux Tribe of the Crow Creek Reservation Sisselton-Wahpeton Oyate Tribes Yankton Sioux Tribe
Utah	
Ute Indian Tribe Ute Tribe of the Uintah and Ouray Reservation	Confederated Tribes of the Goshute Indian Reservation Paiute Indian Tribe of Utah (Cedar, Kanosh, Koosharem, Indian Peaks, and Shivwits Bands of Paiutes)
Washington	
Confederated Tribes of the Colville Reservation	Confederated Tribes and Bands of the Yakama Nation
Wyoming	
Northern Arapaho Tribe	Eastern Shoshone Tribe of the Wind River Reservation

Per previously established consultation protocol, consultation with the Shoshone Bannock was initiated during a face-to-face meeting on May 6, 2016, and consultation with the Shoshone-Paiute was initiated during a face-to-face meeting on June 14, 2016. In these initial consultation letters and meetings, BLM briefly described the proposed action and invited tribes to participate in the NEPA planning process as cooperating agencies. These letters also served to communicate the BLM's determination under the NHPA (36 CFR 800.3(a)(1)) that this withdrawal is the type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, as defined under 36 CFR Part 800.16(1)(1).

As a result of the initial consultation, continuing consultation was requested by the Duckwater Shoshone, the Elko Band of Te-Moak Tribe of Western Shoshone, the Northern Arapaho, the Shoshone Bannock, the Shoshone-Paiute, and the Summit Lake Paiute.

Two tribes, the Duckwater Shoshone and the Summit Lake Paiute, requested and were provided cooperating agency status. As part of this relationship, memorialized in a MOU, these tribes have been invited to participate in all cooperating agency meetings and document reviews. All tribes except the Shoshone Bannock and Shoshone-Paiute were sent continuing consultation letters on August 23, 2016 or August 25, 2016. Continuing consultation with the Shoshone Bannock was initiated during a face-to-face meeting on August 22, 2016. This continuing consultation effort provided tribes with an update on the identification of alternatives and provided a draft Tribal Consultation Plan for comment.

Tribes were also sent a letter in November 2016, notifying them of the upcoming release of the Draft EIS. Tribes were sent a compact disk of the Draft EIS, along with a letter providing information about the public comment period for the Draft EIS. The letter also expressed BLM's commitment to continued consultation throughout the life of the project. Tribes will be provided with a copy of the Final EIS and ROD, when available. Consultation and partnering will continue throughout implementation of the decision-making process.

A summary of additional Tribal-specific consultation is provided in Table 5-6. Concerns, questions, or issues that were raised by tribes as part of the consultation process include the following:

- What is the status of existing mining claims?
- Will tribes that do not sign a MOU still be included in tribal consultation?
- Sage-grouse was an important food source and is very deeply embedded in many of the tribes' cultures.
- Within the SFA, mowing projects disturb rock features and ceremonial fasting places with religious connotations.
- Tribes would like to review documents before they are finalized.
- Traditional Tribal Ecological Knowledge areas were recently accepted by the USFWS for protection, this aspect of landscapes should be included in the SFA.
- Will the cumulative impacts of mining be looked at?
- How will environmental justice be addressed?
- What is the possibility of developing valid/existing mining rights?

Table 5-6. Consultation Action with Tribes

Tribe	BLM Office	Date	Summary of Consultation
All Tribes except Shoshone Bannock and Shoshone-Paiute	Montana, Idaho, Nevada, Oregon, Utah, Wyoming	3/14/2016– 4/6/2016	Initial consultation letters from BLM.
Summit Lake Paiute	Washington Office (WO)	3/27/2016	Email from Summit Lake Paiute, who provided tribal project contact info and indicated that they would like to be a cooperating agency.
Elko Band of the Te-Moak Tribe of Western Shoshone	WO	3/29/2016	Email from Elko Band indicating they would like to continue to receive information.
Duckwater Shoshone Tribe	Nevada	4/7/2016	Letter from Duckwater requesting meeting and continuing dialogue with BLM.
Summit Lake Paiute	Nevada	5/4/2016	Email from Summit Lake Paiute transmitting signed MOU to BLM.
Shoshone Bannock	Idaho	5/6/2016	Initial meeting with BLM to introduce project.
Shoshone Bannock	Idaho	5/26/2016	Letter from Shoshone Bannock regarding participation as a cooperating agency.
Shoshone-Paiute Tribe	Idaho	6/14/2016	Meeting with Shoshone-Paiute Tribe.
Duckwater Shoshone Tribe	Nevada	7/25/2016	Meeting with Duckwater Shoshone Tribal Council and BLM Jon Sherve and Juan Martinez.
Duckwater Shoshone Tribe	Nevada	8/3/2016	Email from Duckwater Shoshone Tribe transmitting signed MOU to BLM.
Northern Arapaho	WO	8/20/2016	Email from Northern Arapaho Tribal Historic Preservation Officer expressing concurrence with protection efforts and requesting continuing consultation on another project. BLM responded by providing contact information.
Shoshone Bannock	Idaho	8/22/2016	Meeting with Shoshone Bannock Tribe.
All Tribes except Shoshone Bannock and Shoshone-Paiute	Montana, Idaho, Nevada, Oregon, Utah, Wyoming	8/23/2016, 8/25/2016	Continuing consultation letters from BLM providing identification of alternatives and Tribal Consultation Plan.
All Tribes except Shoshone Bannock and Shoshone-Paiute	Montana, Idaho, Nevada, Oregon, Utah, Wyoming	11/23/2016	Letter from BLM indicating Draft EIS is on schedule and to expect it in December.
Shoshone-Paiute Tribe	Idaho	12/8/2016	Project update meeting with Shoshone-Paiute Tribe.
All Tribes except Shoshone Bannock and Shoshone-Paiute	Montana, Idaho, Nevada, Oregon, Utah, Wyoming	12/28/2016	Letter transmitting the Draft EIS and inviting additional consultation.

5.6 Endangered Species Act Compliance

Section 7 of the ESA requires federal agencies to ensure that their actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction of their designated critical habitat; consultation with the USFWS may be required in making this determination. Requests were made to the USFWS IPaC System to obtain lists of all federally protected plant and animal species that might occur within the seven SFAs. These lists are located in the project record and are referenced in Table 5-7.

Table 5-7. ESA Lists Generated from the IPaC System

SFA	Consultation Tracking Number	Date List Produced	States within SFA
North-Central Idaho	01EIFW00-2016-SLI-0749 (East) 01EIFW00-2016-SLI-0750 (West)	6/9/2016	Idaho
	01EIFW00-2017-SLI-0118	11/3/2016	
Southern Idaho / Northern Nevada	01EIFW00-2016-SLI-0773 (Idaho) 08ENVD00-2016-SLI-0367 (Nevada) 06E23000-2016-SLI-0262 (Utah)	6/15/2016	Idaho, Nevada, and Utah
	01EIFW00-2017-SLI-0117 (Idaho) 08ENVD00-2017-SLI-0047 (Nevada) 06E23000-2017-SLI-0030 (Utah)	11/3/2016	
North Central Montana	06E11000-2016-SLI-0338	6/9/2016	Montana
	06E11000-2017-SLI-0020	11/3/2016	
SE Oregon/NC Nevada	08ENVD00-2016-SLI-0360 (Nevada) 01EOFW00-2016-SLI-0335 (Oregon)	6/9/2016	Nevada and Oregon
	08ENVD00-2017-SLI-0048 (Nevada) 01EOFW00-2017-SLI-0041 (Oregon)	11/3/2016	
Sheldon-Hart Mountain NWR Complex Area	01EOFW00-2016-SLI-0336 (Oregon)	6/9/2016	Nevada and Oregon
	08ENVD00-2017-SLI-0046 (Nevada) 01EOFW00-2017-SLI-0039 (Oregon)	11/3/2016	
Bear River Watershed Area	06E23000-2016-SLI-0257 (Utah) 06E13000-2016-SLI-0223 (Wyoming)	6/9/2016	Utah and Wyoming
	06E23000-2017-SLI-0031 (Utah) 06E13000-2017-SLI-0024 (Wyoming)	11/3/2016	
Southwestern / South Central Wyoming	06E13000-2016-SLI-0224	6/9/2016	Wyoming
	06E13000-2017-SLI-0023	11/3/2016	

Biologists from the BLM, Forest Service, and USFWS discussed the proposed withdrawal (along with technical representatives from the contracting team and the DOI's Office of the Solicitor) on October 25, 2016. Biological aspects of the project with respect to ESA listed and candidate species were discussed.

The Draft EIS will be provided to USFWS to review the BLM's effects determination for the ESA listed species that may occur in the analysis area. The BLM will request informal consultation with the USFWS under Section 7(a) (2) of the ESA. Information in the EIS will serve to inform a reasonable determination of effect for species likely to occur in the analysis area for all of the alternatives. Concurrence on the BLM's determination that the Proposed Action "*may affect, but is not likely to adversely affect*" species protected by the ESA (threatened, endangered, proposed, and candidate species) will be requested of the USFWS (see Table 3-131 for a list of species).

5.7 List of Preparers

This EIS was prepared and reviewed by a team from the BLM. A contracting team comprised of five companies assisted the BLM in conducting research, gathering data, and preparing the EIS and supporting documents. Table 5-8 identifies the primary team members and their roles.

Table 5-8. List of Preparers

Organization	Name	Role/Responsibility
BLM Primary Leads		
BLM Washington Office	Lucas Lucero	Acting Manager Renewable Energy Division/Withdrawal Coordinator
BLM Washington Office	Michael Stiewig	Deputy Withdrawal Coordinator
BLM Washington Office	Mark Mackiewicz	Project Manager
BLM Washington Office	Scott Whitesides	NEPA Lead
BLM Washington Office	Jane Childress	Cultural/Tribal Consultation Lead
BLM Washington Office	Christine Fletcher	Biology Team Lead
BLM Washington Office	Michelle Barret	Public Information Officer
BLM Washington Office	Mitch Leverette	Mineral Lead
BLM Washington Office	Adam Merrill	Mineral POC
BLM Washington Office	Mary Hartel	Cadastral Lead
BLM Washington Office	Mike Barnes	Withdrawal Administrator
BLM Washington Office	Julie Suhr Pierce	Socioeconomics
Contracting Team		
North Wind Resource Consulting, LLC	Jace Fahnestock	Program Manager
North Wind Resource Consulting, LLC	Kelly Green	NEPA Team Lead
North Wind Resource Consulting, LLC	Erin Davis	Cultural / Tribal Coordination
North Wind Resource Consulting, LLC	Kathryn Leonard	Cultural / Tribal Coordination
North Wind Resource Consulting, LLC	Scott Webster	Biology Lead

Table 5-8. (continued)

Organization	Name	Role/Responsibility
North Wind Resource Consulting, LLC	Travis Moedl	Technical Editor
North Wind Resource Consulting, LLC	Tim Funderburg	GIS Support
North Wind Resource Consulting, LLC	Robert Beazer	GIS Support
North Wind Resource Consulting, LLC	Scott Bergendorf	GIS Support
Galileo Project, LLC	J. Grace Ellis	Coordination Lead
Galileo Project, LLC	Peter Rocco	Coordination Co-lead
Galileo Project, LLC	Lauren Johnston	Administrative Support
Burns & McDonnell, Inc.	Paul Callahan	Project Manager
Burns & McDonnell, Inc.	Andrea Reither	RFD, Geology, GIS Lead
SWCA Environmental Consultants, Inc.	Ken Houser	Technical Lead
SWCA Environmental Consultants, Inc.	Coleman Burnett	Technical Co-Lead
BBC Research & Consulting	Doug Jeavons	Social and Economics Lead
BBC Research & Consulting	Michael Verdone	Social and Economics Co-Lead

In addition to the specialists identified in Table 5-8, who actively participated in developing the EIS, specialists from various federal agencies also contributed their expertise by participating throughout the process by reviewing and submitting comments on the EIS as it evolved. These agencies and individuals are identified in Table 5-9. In addition, a number of other specialists from BLM State and Field Offices and Forest Service District Offices assisted the primary specialists identified in Tables 5-8 and 5-9 in forming an Interdisciplinary Team to help with data collection, document reviews, and local consultation efforts as well as to identify and resolve local issues.

Table 5-9. Federal Cooperators and State Leads

U.S. Forest Service	BLM State Leads
Belle Craig Susan Elliot Randy Miller	Idaho - Jeff Cartwright Montana - Renee Johnson Nevada - Gene Seidlitz Oregon - Timothy Barnes Utah - Walter Phelps Wyoming - Janelle Wrigley
U.S. Fish and Wildlife Service	
Genevieve Skora Angela Burgess	
Bureau of Indian Affairs	
B.J. Howerton	

6. REFERENCES

Abeyta, O. 2015. Written communication with Utah BLM via UGS 2015.

Aldridge, C.L. and M.S. Boyce. 2007. "Linking occurrence and fitness to persistence: a habitat-based approach for endangered greater sage-grouse." *Ecological Applications.* 17:508-526.

American Exploration and Mining Association. 2016. "AEMA Files Legal Challenge to Sage Grouse Federal Land Grab." Spokane, Washington. Internet website: https://www.miningamerica.org/aema-files-legal-challenge-to-sage-grouse-federal-land-grab/; (accessed August 28, 2016).

Arrington, L.J. 1994. *History of Idaho*. Moscow, Idaho. University of Idaho Press.

Baker, W.L. 2011. "Pre-Euro-American and recent fire in sagebrush ecosystems," Pp. 185-202 in S.T. Knick and J.W. Connelly, editors. Greater Sage-Grouse: ecology of a landscape species and its habitats. Cooper Ornithological Union, University of California Press, Berkeley, California.

Balch, J.K., B.A. Bradley, C.M. D'Antonio, and J. Gomez-Dans. 2012. "Introduced annual grass increases regional fire activity across the arid western USA (1980–2009)." *Global Change Biology.* Vol. 19 (1) p. 173-183.

Barnett, J.K., and J.A. Crawford. 1994. "Pre-laying nutrition of sage grouse hens in Oregon." *Journal of Range Management.* 47:114-118.

BEA. 2014a. Local Area Personal Income & Employment - Table CA4 Personal Income and Employment by Major Component. Available at: http://www.bea.gov/regional/index.htm/.

BEA. 2014b. Local Area Personal Income & Employment - Table CA6N Compensation of Employees by NAICS Industry. Available at: http://www.bea.gov/regional/index.htm/.

BEA. 2014c. Local Area Personal Income & Employment - Table CA25N Total full-time and part-time employment by NAICS industry. Available at: http://www.bea.gov/regional/index.htm/.

Beck, J.L., and D.L. Mitchell. 1997. "Brief guidelines for maintaining and enhancing sage-grouse habitat on private lands in Utah." Utah technical notes: UT190-7-3. US Natural Resources Conservation Service, Salt Lake City, Utah.

Beever, E.A., and C.L. Aldridge. 2011. "Influences of free-roaming equids on sagebrush ecosystems, with focus on greater sage-grouse." Pp. 272-291 in S.T. Knick and J.W. Connelly, editors. Greater Sage-Grouse: ecology of a landscape species and its habitats. Cooper Ornithological Union, University of California Press, Berkeley, California.

Bengston, D., G. Xu, and D. Fan. 2001. "Attitudes toward ecosystem management in the United States, 1992- 1998." *Society and Natural Resources.* 14, 471-487.

Blaine County. 1994. "Comprehensive Plan." Available at: http://sterlingcodifiers.com/codebook/index.php?book_id=450&chapter_id=19590.

BLM. 2000. *Surface Management Regulations for Locatable Mineral Operations (43 CFR 3809)*. Final Environmental Impact Statement, Volume 1. U.S. Bureau of Land Management. Washington, D.C. October 2000.

BLM. 2001a. *The Federal Land Policy and Management Act of 1976, As Amended*. U.S. Bureau of Land Management. Washington, D.C. October 2001.

BLM. 2001b. "Proposed Southeastern Oregon Resource Management Plan and Final Environmental Statement." U.S. Bureau of Land Management.

BLM. 2004a. "Andrews Management Unit/Steens Mountain Cooperative Management and Protection Area Proposed Resource Management Plan and Final Environmental Impact Statement." U.S. Bureau of Land Management.

BLM. 2004b. "Proposed Upper Deschutes Resource Management Plan and Final Environmental Impact Statement." U.S. Bureau of Land Management.

BLM. 2006. "Dillon Resource Management Plan." BLM Dillon Field Office, Dillon, Montana.

BLM. 2008a. BLM National Environmental Policy Act Handbook. H-1790-1. BLM Washington Office. January 2008.

BLM. 2008b. "Jarbidge Draft Resource Management Plan and Environmental Impact Statement." BLM Idaho State Office, Boise, Idaho.

BLM. 2010. "Instruction Memorandum 2011-060—Solar and Wind Applications—Due Diligence." U.S. Bureau of Land Management. Washington, D.C.

BLM. 2011a. *Mining Claims and Sites on Federal Lands*. Denver, Colorado: BLM National Science and Technology Center. U.S. Bureau of Land Management.

BLM. 2011b. Recreation Information Management System (RMIS). Available at: http://www.ntc.blm.gov/krc/viewresource.php?courseID=313.

BLM. 2012a. "FY2011 BLM Expenditures: FY2011 BLM Labor Summary and FY2011 BLM Non-Labor Summary." U.S. Bureau of Land Management.

BLM. 2012b. "National Greater Sage-Grouse Planning Strategy: Land Use Plan Amendments and Environmental Impact Statements, Scoping Summary Report." U.S. Bureau of Land Management. Washington, D.C. Office.

BLM. 2012c. BLM Manual 6320—Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process. Rel. 6-130. U.S. Bureau of Land Management, Washington, D.C. March 15, 2012.

BLM. 2012d. "Socioeconomic Baseline Report for the Wyoming Sage-Grouse LRMP Amendments." Internet website: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=18704.

BLM. 2015a. "Idaho and Southwestern Montana Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement." BLM Idaho State Office, Boise, Idaho.

BLM. 2015b. "Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment." Available at: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=31103.

BLM. 2015c. "HiLine Proposed Resource Management Plan and Final Environmental Impact Statement." U.S. Bureau of Land Management. Montana/Dakotas State Office, Billings, Montana.

BLM. 2015d. "Oregon Sub-regional Greater Sage-Grouse (GRSG) Approved Resource Management Plan Amendment (Approved RMPA) and Final Environmental Impact Statement (FEIS)." Available at: http://www.blm.gov/or/energy/opportunity/finaleis.php.

BLM. 2015e. "Utah Greater Sage-Grouse LUPA/EIS." BLM Utah State Office.

BLM and Forest Service. 2012. "National Greater Sage-Grouse Planning Strategy: Land Use Plan Amendments and Environmental Impact Statements, Scoping Summary Report."

Bowker, J.M., and J.R. Stoll. 1988. "Use of Dichotomous Choice Nonmarket Methods to Value the Whooping Crane Resource." *American Journal of Agricultural Economics.* 70, 372– 381.

Box Elder County, Utah. 2014. "Box Eder County, Utah Financial Report." Available at: http://siterepository.s3.amazonaws.com/65/2014_fs.pdf.

Boyko, A.R., R.M. Gibson, and J.R. Lucas. 2004. "How Predation Risk Affects the Temporal Dynamic of Avian Leks: Greater Sage-Grouse Versus Golden Eagles." *The American Naturalist*. Vol. 163, No.1. January 2004.

Braun, C.E., T. Britt, and R.O. Wallestad. 1977. "Guidelines for maintenance of sage-grouse habitats." *Wildlife Society Bulletin.* 5:99-106.

Braun, C.E. 1998. "Sage-grouse declines in western North America: What are the problems?" Proceedings of Western Association of Fish and Wildlife Agencies (WAFWA). Pp. 139-156.

Cache County, Utah. 2015. "Cache County, Utah Financial Statements for the Year Ended December 31, 2014." Available at: https://www.cachecounty.org/finance.

Caribou County. 2006. "2006 Comprehensive Plan."

CEQ. 1997. "Environmental Justice Guidance Under the National Environmental Policy Act." Available at: http://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-EJGuidance.pdf.

Coburn, M.S. 2008. "Community Satisfaction and Quality of Life Survey of Long-Term Residents of Sublette County." Available at: www.sublettewyo.com/DocumentView.aspx?DID=285.

Congressional Research Service. 2014. "Federal Land Ownership: Overview and Data." R42346. Available at: https://www.fas.org/sgp/crs/misc/R42346.pdf.

Connelly, J.W., H.W. Browers, and R.J. Gates. 1988. "Seasonal movements of sage grouse in southeastern Idaho." *The Journal of Wildlife Management.* 52(1):1988.

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. "Guidelines to manage sage-grouse populations and their habitats." *Wildlife Society Bulletin.* 28(4): 967-985.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. "Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats." Western Association of Fish and Wildlife Agencies (WAFWA). Unpublished Report. Cheyenne, Wyoming.

Connelly, J.W., C.A. Hagen, and M.A. Schroeder. 2011. "Characteristics and dynamics of greater sage-grouse populations," Pp. 53–67 in S.T. Knick and J.W. Connelly, editors. Greater Sage-grouse: ecology and conservation on a landscape species and its habitats. *Studies in Avian Biology*. Vol. 38, University of California Press, Berkeley.

Connelly, J.W., E.T. Rinkes, and C.E. Braun. 2011. "Characteristics of Greater Sage-Grouse Habitats: A landscape species at micro- and macroscales." Pp. 69- 83 in S.T. Knick and J. W. Connelly, editors. Greater Sage-Grouse: ecology of a landscape species and its habitats. Cooper Ornithological Union, University of California Press, Berkeley.

CREG. 2016. "Mineral Price and Production Estimates." Consensus Revenue Estimating Group. Available at: http://eadiv.state.wy.us/creg/GreenCREG_Jan16.pdf.

Dahlgren, D.K., R.T. Larsen, R. Danvir, G. Wilson, E.T. Thacker, T.A. Black, D.E. Naugle, J.W. Connelly, and T.A. Messmer. 2015. Greater Sage-Grouse and Range Management: Insights from a 25-Year Case Study in Utah and Wyoming. Rangeland Ecology & Management 68 (2015) 375–382.

Day, W.C., J.M. Hammarstrom, M.L. Zientek, and T.P. Frost, eds. 2016. "Overview with methods and procedures of the U.S. Geological Survey mineral-resource assessment of the Sagebrush Focal Areas of Idaho, Montana, Nevada, Oregon, Utah, and Wyoming: U.S. Geological Survey Scientific Investigations Report 2016–5089–A," 211 p., http://dx.doi.org/10.3133/sir20165089A.

Defense Logistics Agency. 2016. *Strategic Materials.* Accessed on March 18, 2016 at http://www.dla.mil/HQ/Acquisition/StrategicMaterials.aspx.

Department of the Interior. 2015. "U.S. Department of the Interior Economic Report FY2015." Available at: https://www.doi.gov/sites/doi.gov/files/uploads/fy2015_doi_econ_report_2016-06-17.pdf.

Dickerson, B.R., and G.L. Vinyard. 1999. "Effects of high chronic temperatures and diel temperature cycles on the survival and growth of Lahontan cutthroat trout." *Transactions of the American Fisheries Society* 128(3), 516–521.

Dinkins, J.B., M.R. Conover, C.P. Kirol, and J.L Beck. 2012. "Greater-Sage Grouse (*Centrocercus urophasinaus*) Select Nest Sites and Brood Sites Away from Avian Predators." *The Auk*. 129(4):600-610, 2012.

DOGAMI. 2016. "Metallic and Industrial Mineral Resource Potential of Southern and Eastern Oregon: Report to the Oregon Legislature." Available at: http://www.oregongeology.org/pubs/ofr/p-O-16-06.htm.

Doherty, K.E., J.S. Evans, P.S. Coates, L.M. Juliusson, and B.C. Fedy. 2016. Importance of regional variation in conservation planning: a rangewide example of the Greater Sage-Grouse. Ecosphere 7(10):e01462. 10.1002/ecs2.1462.

Drut, M.S., W.H. Pyle, and J.A. Crawford. 1994. "Diets and food selection of sage grouse chicks in Oregon." *Journal of Range Management.* 47:90-93.

Elko County, Nevada. 2010. "Elko County Public Land Use and Natural Resources Management Plan." Elko, Nevada.

Elko County, Nevada. 2015. "FY2015/2016 Tentative Budget for the County of Elko." Available at: www.elkocountynv.net/departments/fiscal_affairs/Final_Budget_FY_15_16.pdf.

Forest Service. 2003. "Final Environmental Impact Statement for the Boise, Payette, and Sawtooth National Forest Plans," FEIS Vols. 1-3 and Appendices Vols. 1-3.

Forest Service Agreement #08-MU-1113-2400-264. "Memorandum of Understanding between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds."

Forest Service Publication #R1-00-53, Missoula, MT. 142 pp Sage-Grouse Conservation Partnership. 2015. "The Oregon Sage-Grouse Action Plan." Governor's Natural Resources Office. Salem, Oregon. http://oregonexplorer.info/content/oregon-sage-grouse-action-plan?topic=203&ptopic=179. Accessed on August 4, 2016.

Freese, M.T. 2009. "Linking greater sage-grouse habitat use and suitability across spatiotemporal scales in central Oregon." Unpublished Master's thesis. Oregon State University, Corvallis.

Gregg, M.A., J.A. Crawford, M.S. Drut, and A.K. DeLong. 1994. "Vegetational cover and predation of sage grouse nests in Oregon." *Journal of Wildlife Management.* 58:162-166.

Hanus, A. 2011. "Socio-Economic Profile and Analysis of Seven Oregon Counties Included in the Greater Sage-Grouse Conservation Strategy for Oregon." Association of Oregon Counties.

Harney County. 2014. Harney County Zoning Ordinance. Available: http://www.co.harney.or.us/PDF_Files/Planning/Harney%20County%20Zoning%20Ord%20-%20Current%20-%20FINAL%20VERSION%20-2014.pdf. Accessed on: August 4, 2016.

Headwaters Economics. 2014. "High Divide Region – Summary of Recreation Economy." Available at: http://headwaterseconomics.org/wphw/wp-content/uploads/High_Divide_Outdoor_Rec_Economy.pdf.

Headwaters Economics. 2016. "Economic Profile System-Human Dimensions Toolkit (EPS-HDT)." Internet website: http://headwaterseconomics.org/tools/eps-hdt (accessed September 5, 2016).

Holloran M.J., B.J. Heath, A.G. Lyon, S.J. Slater, J.L. Kuipers, and S.H. Anderson. 2005. "Greater sage-grouse nesting habitat and selection and success in Wyoming." *Journal of Wildlife Management.* 69: 638-649.

Humboldt County, Nevada. 2002. "Humboldt County Master Plan." Humboldt County, Nevada.

Humboldt County, Nevada. 2014. "Humboldt County Fiscal Year 2014-2015 Final Budget."

Idaho Association of Counties. 2011. "County Financing and Budgeting. CEO Handbook." Available at: http://idcounties.org/DocumentCenter/Home/.

Idaho Commerce & Labor. 2005. "Profile of Rural Idaho. A look at economic and social trends affecting rural Idaho."

Idaho Department of Fish and Game. 2003. "Idaho Sport Fishing Economic Report." Available at: https://idfg.idaho.gov/press/2003-idaho-fishing-economic-report-available.

Idaho Department of Labor. 2011. "Labor Market Information."

Idaho Division of Tourism Development. 2016. "Tourism Resources." Internet website: http://commerce.idaho.gov/tourism-resources/; (accessed September 5, 2016).

Idaho Forest, Wildlife and Range Policy Analysis Group. 1998. "History and Analysis of Federally Administered Lands in Idaho."

Idaho Geological Survey. 2015. "Annual Report of the Idaho Geological Survey." Available at: http://www.idahogeology.org/uploads/Annual_report/IGS_AnnualReport_FY2015_web.pdf.

Idaho Park and Recreation Board. 2005. "Idaho's 2006-2010 Statewide Comprehensive Outdoor Recreation Plan." Available at: http://www.irpa-idaho.org/media/board/SCORTP%202006-2010%20Revised.pdf.

Idaho Sage-grouse Committee. 2006. "Conservation Plan for Greater Sage-grouse in Idaho." Available at: https://idfg.idaho.gov/old-web/docs/wildlife/sageGrouse/conservPlan.pdf. Accessed: July 20, 2016.

Idaho State Historical Society. 2016. Reference Series. Available at: https://history.idaho.gov/reference-series#mining.

Idaho State Tax Commission. 2014. "Idaho State Tax Commission 2014 Annual Report."

Klebenow, D.A., and G.M. Gray. 1968. "Food habits of juvenile sage grouse." *Journal of Range Management.* 21:80-83.

Knick, S.T., and J.W. Connelly, editors. 2011. "Greater Sage-Grouse: ecology of a landscape species and its habitats." Cooper Ornithological Union, University of California Press, Berkeley, California.

Kotchen, M., and S. Reiling. 2000. "Environmental attitudes, motivations, and contingent valuation of nonuse values: a case study involving endangered species." *Ecological Economics.* 32, 93–107.

Leaming, G.F. 2010. "The Impact of Federal Land Policies on the Economy of Elko County, Nevada." Nevada Bureau of Mines and Geology and the Nevada Division of Minerals.

Leu, M., and S.E. Hanser. 2011." "Influences of the human footprint on sagebrush landscape patterns." Pp. 252-271 in Knick, S.T., and J.W. Connelly, editors. Greater Sage-Grouse: Ecology of a landscape species and in habitats, Berkeley, California, University of California Press, Cooper Ornithological Union.

Loomis, J., and E. Ekstrand. 1997. "Economic Benefits of Critical Habitat for the Mexican Spotted Owl: A Scope Test Using a Multiple Bounded Contingent Valuation Survey." *Journal of Agricultural and Resource Economics.* 22(2), 356-366.

Lund, K., L. Zürcher, A.H. Hofstra, B.S. Van Gosen, et al. 2016. "Geology and mineral resources of the North-Central Idaho Sagebrush Focal Area: U.S. Geological Survey Scientific Investigations Report 2016–5089 –C," 147 p., http://dx.doi.org/10.3133/sir20165089C.

Manier, D.J., D.J.A. Wood, Z.H. Bowen, et al. 2013. "Summary of Science, Activities, Programs, and Policies that Influence the Rangewide Conservation of Greater Sage-Grouse *(Centrocercus urophasianus)*." U.S. Geological Survey Open-File Report 2013-1098, Fort Collins, Colorado.

Mauk, J.L., M.L. Zientek, B.C. Hearn, Jr., et al. 2016. "Geology and mineral resources of the North-Central Montana Sagebrush Focal Area: U.S. Geological Survey Scientific Investigations Report 2016–5089–D," 104 p., http://dx.doi.org/10.3133/sir20165089D.

McGrath C.L., A.J. Woods, J.M. Omernik, et al. 2002. "Ecoregions of Idaho." (Color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,350,000).

Meinke, C.W., S.T. Knick, and D.A. Pyke. 2009. "A spatial model to prioritize sagebrush landscapes in the intermountain west (U.S.A.) for restoration." *Restoration Ecology.* 17:652-659.

Miller, R.F., and L.L. Eddleman. 2001. "Spatial and Temporal Changes of Sage Grouse Habitat in the Sagebrush Biome." Oregon State University Agricultural Experiment Station Technical Bulletin 151.

Miller, R.F., S.T. Knick, D.A. Pyke, C.W. Meinke, S.E. Hanser, M.J. Wisdom, and A.L. Hild. 2011. "Characteristics of sagebrush habitats and limitations to long-term conservation." Pp. 145-184 in S.T. Knick and J.W. Connelly, editors. Greater sage-grouse: ecology and conservation of a landscape species and its habitats. *Studies in Avian Biology 38*. University of California Press, Berkeley, CA.

Minnesota IMPLAN Group Inc. 2013. County Data Files.

Montana Environmental Quality Council. 2014. "Evaluating Federal Land Management in Montana." Available at: http://leg.mt.gov/content/Publications/Environmental/2014-federal-land-report.pdf.

Montana Governor's Office. 2015. Executive Order 12-2015, Executive Order Amending and Providing for Implementation of the Montana Sage Grouse Conservation Strategy. Available at: https://governor.mt.gov/Portals/16/docs/2015EOs/EO_12_2015_Sage_Grouse.pdf. Accessed: July 27, 2016.

Moore, R., and T. Mills. 1977. "An environmental guide to western surface mining. Part two: impacts, mitigation and monitoring." FWS/OBS-78/04, US Fish and Wildlife Service, Fort Collins, Colorado.

NatureServe 2015 Species information in NatureServe Explorer at http://explorer.natureserve.org.

Nevada Business Magazine. 2016. "Rural Nevada: All Boom No Bust." Internet website: http://www.nevadabusiness.com/2016/06/rural-nevada/; accessed August 27, 2016.

Nevada Commission on Tourism. 2014. "Nevada Travel Impacts 2003 – 2013." Available at: www.deanrunyan.com/doc_library/NVImp.pdf.

Nevada Department of Agriculture. 2013. "2013 Nevada Agriculture: Analysis and Opportunities."

Nevada Department of Taxation. 2015. "Annual Report Fiscal Year 2015." Available at: http://tax.nv.gov/uploadedFiles/taxnvgov/Content/TaxLibrary/Annual%20Report%20(Fiscal%20Year%202015)%20(1.0)%20[2016-01-15].pdf.

Nevada Department of Taxation. 2016. "2015-2016 Net Proceeds of Minerals Bulletin." Available at: http://tax.nv.gov/LocalGovt/PolicyPub/ArchiveFiles/Net_Proceeds_of_Minerals/.

Nevada Division of Environmental Protection (2015, June 11). "More About BMRR." Retrieved 15 June 2016 from http://ndep.nv.gov/bmrr/more.htm.

Nevada Division of Minerals. 2015. "Mineral Production in Nevada." Internet website: http://minerals.state.nv.us; (accessed August 27, 2016).

Nevada Legislative Counsel Bureau. 2016. "Policy and Program Report: Public Lands and General Natural Resource Issues." Available at: https://www.leg.state.nv.us/Division/Research/Publications/PandPReport/35-PLGNR.pdf.

Nevada Mining Association. 2014. "Overview of Nevada Mining Industry." Internet website: http://www.nvmineraleducation.org/faq/analysis.php (accessed August 27, 2016).

Nevada Sagebrush Ecosystem Council. 2014. "Nevada Greater Sage-grouse Conservation Plan." Available: http://sagebrusheco.nv.gov/. Accessed on: July 26, 2016.

New York Times. 2016. "Trial to Begin in Standoff at Oregon Wildlife Refuge." Internet website: http://www.nytimes.com/2016/09/13/us/oregon-malheur-wildlife-refuge-bundy.html?_r=0; (accessed September 20th, 2016).

Oregon Department of Administrative Services. 2015. "Oregon Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2015."

Oregon Public Broadcasting. 2015. "Militia Occupying Federal Land: 'We Are Not Hurting Anybody.'" Internet website: http://www.opb.org/news/article/militia-oregon-wildlife-refuge-burns-bundy-hammond/; (accessed September 5, 2016).

Oregon State University. 2012. "Oregon Resident Outdoor Recreation Demand Analysis – Malheur County Summary." Available at: https://www.oregon.gov/oprd/PLANS/docs/scorp/2013-2018_SCORP/Malheur.pdf.

Pedersen, E.K., J.W. Connelly, J.R. Hendrickson, and W.E. Grant. 2003. "Effect of sheep grazing and fire on sage grouse populations in southeastern Idaho." *Ecological Modelling.* 165:23–47.

Peterson, J.G. 1970. "The food habits and summer distribution of juvenile Sage-Grouse in central Montana." *Journal of Wildlife Management.* 34:147-155.

Power County. 2009. "Power County Comprehensive Plan." Available at: http://www.co.power.id.us/commissioners/power-county-comprehensive-plan/.

Pyrah, D.B. 1987. "American Pronghorn Antelope in the Yellow Water Triangle, Montana." Montana Department of Fish, Wildlife and Parks and Bureau of Land Management.

Reaves, D.W., R. Kramer, and T. Holmes. 1999. "Does Question Format Matter? "Valuing an Endangered Species. *Environmental and Resource Economics.* 14, 365-383.

Rich County, Utah. 2015. "Rich County, Utah Financial Statements with Auditors Report."

Richardson, L., and J. Loomis. 2009. "The Total Economic Value of Threatened, Endangered and Rare Species: An Updated Meta- Analysis." *Ecological Economics.* 68, 1535-1548.

Rowland, M.M., L.H. Suring, and M.J. Wisdom. 2010. "Assessment of habitat threats to shrublands in the Great Basin: A case study." In: *Environmental Threat Assessment and Application to Forest and Rangeland Management* (J. M. Pye, H. M. Rauscher, Y. Sands, D. C. Lee, and J. S. Beatty, editors). U.S. Forest Service, General Technical Report, PNW, Bozeman, Montana. Pp. 673-685.

Ruediger, B., J. Claar, S. Gniadek, et al. 2000. "Canada lynx conservation assessment and strategy." USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service.

Schroeder, M.A., and R.K. Baydack. 2001. "Predation and the management of prairie grouse." *Wildlife Society Bulletin.* 29:24-32.

Schroeder, M.A., C.L. Aldridge, A.D. Apa, J.R. Bohne, C.E. Braun, S.D. Bunnell, J.W. Connelly, and S.J. Stiver. 2004. "Distribution of sage-grouse in North America." *The Condor.* 106: 363-376.

Schroeder, M.A., J.R. Young, and C.E. Braun. 1999. "Sage grouse *(Centrocercus urophasianus)*," in Poole A. W., and F. Gill, eds., *The Birds of North America*. No. 425: Ithaca, New York.

Seilstad, C. 2016. "Fergus County Representative providing information about county permitting for mining operations in Fergus County, Montana." Email communication with Mark Mackiewicz, BLM Senior Project Manager on July 28, 2016.

Shenk, T.M. 2009. "Wildlife Research Report Post Release Monitoring of Lynx (*Lynx 6-9anadensis*) Reintroduced to Colorado." Colorado Division of Wildlife.

Squires, J.R. and R. Oakleaf. 2005. "Movements of a male Canada lynx crossing the Greater Yellowstone Area, including highways." *Northwest Science.* 79(2–3):196–201.

State of Montana. 2015. "Brief History of Montana." Available at: http://mt.gov/discover/brief_history.mcpx.

State of Nevada Office of the Governor. 2016. Letter from the Governor's Office to Neil Kornze, Director of Bureau of Land Management, U.S. Department of the Interior, Regarding the Federal Register Notice from September 24th, 2015 on the BLM and U.S Forest Service Proposed Withdrawal and Segregation of 2.7 million acres within Sagebrush Focal Areas in Nevada from Location and Entry Under 1872 Mining Law.

State of Wyoming. 2016. Wyoming Information. Internet website: http://www.wyo.gov/about-wyoming/wyoming-information; (accessed September 20th, 2016).

Stevens, T., J. Echeverria, R. Glass, T. Hager, and T. Moore. 1991. "Measuring the Existence Value of Wildlife." *Land Economics.* 67(4), 390-400.

Sweetwater County Board of County Commissioners. 2016. Letter from Wally Johnson, Board Chairman, to Mark Mackiewicz, BLM Senior Project Manager, providing Sweetwater County comments regarding county permitting requirements for mining. Dated July 27, 2016. Sweetwater County, Wyoming.

Thompson, K.M., M.J. Holloran, S.J. Slater, J.L. Kuipers, and S.H. Anderson. 2006. "Early broodrearing habitat use and productivity of greater sage-grouse in Wyoming." *Western North American Naturalist.* 66:332–342.

U.S. Bureau of Economic Analysis. 2015. Gross domestic product by state. Available at: http://www.bea.gov/regional/index.htm, accessed (21 August 2016).

U.S. Census Bureau. "Table 1. County to County Commuting Flows for the United States and Puerto Rico: 2009 – 2013." Available at: http://www.census.gov/hhes/commuting/data/commutingflows.html.

U.S. Census Bureau. 2015a. "Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015." Available at: https://www.census.gov/popest/data/state/totals/2015/index.html.

U.S. Census Bureau. 2015b. "Small Area Income and Poverty Estimates Database." Available at: https://www.census.gov/did/www/saipe/data/statecounty/.

U.S. Census Bureau. "American Community Survey, 2010-2014." Detailed tables generated using American FactFinder. Available at: http://factfinder2.census.gov; (accessed August 28, 2016).

U.S. Census Bureau; Census 1990, Generated using American FactFinder; http://factfinder2.census.gov; (20 August 2016).

U.S. Census Bureau; Census 2000, Generated using American FactFinder; http://factfinder2.census.gov; (20 August 2016).

U.S. Census Bureau; Census 2010, Generated using American FactFinder; http://factfinder2.census.gov; (20 August 2016).

U.S. Census Bureau. American Community Survey, 2010-2014. Detailed tables generated using American FactFinder. Available at: http://factfinder2.census.gov; (accessed August 28, 2016).

U.S. Census Journey to Work. 2015. Table 1. County to County Commuting Flows for the United States and Puerto Rico: 2009 – 2013." Available at: http://www.census.gov/hhes/commuting/data/commutingflows.html.

U.S. Fish and Wildlife Service. 2015. "12-month Finding on a Petition to List Greater Sage-Grouse (*Centrocercus urophasianus*) as an Endangered or Threatened Species." Available: https://www.federalregister.gov/articles/2015/10/02/2015-24292/endangered-and-threatened-wildlife-and-plants-12-month-finding-on-a-petition-to-list-greater#h-26. Accessed: July 27, 2016.

UGS. 2014. *Utah's Extractive Resource Industries 2014*. Utah Geological Survey. Available at: https://energy.utah.gov/wp-content/uploads/c-120.pdf.

Ulev, E. 2007. "*Lynx Canadensis*." In: *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer).

University of Montana. 2015. "2015 Nonresident Visitation, Expenditures and Economic Impact Estimates: Estimates by full year, quarters, trip purposes, and international visitors." Available at: https://scholarworks.umt.edu/cgi/viewcontent.cgi?article=1331&context=itrr_pubs.

USFWS. 1994. Lahontan cutthroat trout, *Oncorhynchus Clarki Henshawi*, recovery plan. U.S. Fish and Wildlife Service. Portland, Oregon. 147 pp

USFWS. 2010. "Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to List the Greater Sage- Grouse (*Centrocercus urophasianus*) as Threatened or Endangered." Federal Register, Vol. 75, No. 55, U.S. Fish and Wildlife Service, March 23, 2010.

USFWS. 2011. "2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation." Available at: https://www.census.gov/prod/2012pubs/fhw11-nat.pdf. U.S. Fish and Wildlife Service.

USFWS. 2013. "Greater Sage-grouse *(Centrocercus urophasianus)* Conservation Objectives: Final Report." U.S. Fish and Wildlife Service, Denver, Colorado. February 2013.

USFWS ECOS. 2016. "Species Profile for Ute ladies'-tresses (*Spiranthes diluvialis*)." USFWS Environmental Conservation Online System http://ecos.fws.gov/ecp0/profile/speciesProfile.action?spcode=Q2WA. U.S. Fish and Wildlife Service.

USGS. 2011. "2011 Minerals Handbook: Soda Ash." Available at: http://minerals.usgs.gov/minerals/pubs/commodity/soda_ash/myb1-2011-sodaa.pdf. United States Geological Survey.

USGS. 2012. "2010-2011 Minerals Yearbook: Oregon." Internet website: http://minerals.usgs.gov/minerals/pubs/state/or.html; (accessed September 6, 2016). United States Geological Survey.

USGS. 2015a. "Mineral Commodity Report: Gold." Available at: .http://minerals.usgs.gov/minerals/pubs/commodity/. United States Geological Survey.

USGS. 2015b. "Mineral Commodity Report: Silver." Available at: http://minerals.usgs.gov/minerals/pubs/commodity/. United States Geological Survey.

USGS. 2015c. "Minerals Commodity Summaries 2015." Available at: http://dx.doi.org/10.3133/70140094. United States Geological Survey.

USGS. 2016. "Minerals Commodity Summaries 2016." Available at: https://minerals.usgs.gov/minerals/pubs/mcs/2016/mcs2016.pdf.

Utah Department of Natural Resources. *Utah Minerals Program*. Retrieved 16 June 2016 from http://linux3.ogm.utah.gov/WebStuff/wwwroot/minerals/default.html.

Utah Division of Wildlife Resources. 2013. "Conservation Plan for Greater Sage-grouse in Utah." Available at: http://wildlife.utah.gov/learn-more/greater-sage-grouse.html. Accessed: August 4, 2016.

Utah State Parks. 2013. "2014 Utah State Comprehensive Outdoor Recreation Plan." Available at: http://static.stateparks.utah.gov/docs/SCORP2014.pdf.

Utah State Tax Commission. 2015. Revenue Summary Reports. Internet website: http://tax.utah.gov/econstats/revenue; (accessed September 20, 2016).

Vikre, P.G., M.E. Benson, D.I. Bleiwas, et al. 2016. "Geology and mineral resources of the Sheldon-Hart Mountain National Wildlife Refuge Complex (Oregon and Nevada), the Southeastern Oregon and North-Central Nevada, and the Southern Idaho and Northern Nevada (and Utah) Sagebrush Focal Areas: U.S. Geological Survey Scientific Investigations Report 2016–5089–B," 220 p., http://dx.doi.org/10.3133/sir20165089B.

Vore, J. 2012. "Big game winter range recommendations for subdivision development in Montana: Justification and rationale." A Professional Paper, January 9, 2012. Montana Fish, Wildlife & Parks, Helena, MT. Paper available from the author (FWP wildlife biologist) or from the FWP land use planning specialist.

Wallestad, R.O. 1975. "Life history and habitat requirements of sage-grouse in central Montana." Montana Fish and Game Department, Technical Bulletin, Helena.

Washoe County, Nevada. 2005. "Comprehensive Plan." Reno, Nevada.

Washoe County, Nevada. 2015. "Washoe County Annual Budget FY20015-16." Available at: https://www.washoecounty.us/budget/budget_development.php.

Western Rural Development Center. 2010a. Montana Population Data. Internet website: https://wrdc.usu.edu/htm/publications.

Western Rural Development Center. 2010b. Nevada Population Data. Internet website: https://wrdc.usu.edu/htm/publications.

Western Rural Development Center. 2010c. Oregon Population Data. Internet website: https://wrdc.usu.edu/htm/publications.

Western Rural Development Center. 2010d. Wyoming Population Data. Internet website: https://wrdc.usu.edu/htm/publications.

Wilson, A.B., T.S. Hayes, M.E. Benson, et al. 2016, "Geology and mineral resources of the Southwestern and South-Central Wyoming Sagebrush Focal Area, Wyoming, and the Bear River Watershed Sagebrush Focal Area, Wyoming and Utah: U.S. Geological Survey Scientific Investigations Report 2016–5089–E," 128 p., http://dx.doi.org/10.3133/sir20165089E.

WyoFile. 2014. "Minority leader wants open debate on Wyoming's savings policy." Available at: http://www.wyofile.com/blog/minority-leader-wants-open-debate-on-wyomings-savings-policy/; (accessed September 20th, 2016).

Wyoming Governor's Office. 2015. Executive Order 2015-4. "Wyoming's Greater Sage Grouse Core Area Protection Strategy." Available online: https://wgfd.wyo.gov/Habitat/Sage-Grouse-Management. Accessed: July 28, 2016.

Wyoming Office of Tourism. 2015. "Wyoming Travel Generated Impacts." Internet website: http://www.travelwyoming.com/industry (accessed September 20th, 2016).

Wyoming Rural Development Council. 2007. "Seven-Year Community Assessment Synopsis." Internet website: http://www.wyomingrural.org/community.asp; (accessed September 20th, 2016).

Yoakum, J.D. 2004. "Habitat characteristics and requirements." In: *Pronghorn Ecology and Management* (O'Gara, B.W., and J.D. Yoakum, editors). Wildlife Management Institute. University Press of Colorado. Boulder. Pp. 409-445.

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