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ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE BI-STATE DISTINCT POPULATION SEGMENT OF THE GREATER SAGE-GROUSE

DRAFT | May 28, 2014

prepared for:

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TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

Act	Endangered Species Act
AIP	Airport Improvement Program
AML	Appropriate Management Levels
APLIC	Avian Power Line Interaction Committee
ATP	Active Transportation Program
AUM	Animal unit month
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers
CTVA	Capital Trail Vehicle Association
CWA	Clean Water Act
DOI	U.S. Department of the Interior
DPS	Distinct Population Segment
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ES	Executive Summary
ESR	emergency stabilization and rehabilitation
FERC	Federal Energy Regulatory Commission
FSA	Farm Service Agency
GAP	Gap Analysis Program

GRP	Grassland Reserve Program
HCP	Habitat Conservation Plan
IEc	Industrial Economics, Incorporated
INRMP	Integrated Natural Resources Management Plan
LRMP	Land and Resource Management Plan
MRDS	Mineral Resource Data System
MW	megawatt
MWh	megawatt hours
NAICS	North American Industry Classification System
NBMG	Nevada Bureau of Mines and Geology
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Federation
NPIAS	National Plan of Integrated Airport Systems
NRCS	Natural Resources Conservation Service
NSRE	National Survey on Recreation and the Environment
OHV	off-highway vehicle
OMB	U.S. Office of Management and Budget
PADUS	Protected Areas Database of the United States
PEA	Preliminary Economic Assessment
PMU	Population Management Unit
PPH	Preliminary Priority Habitat
RFA	Regulatory Flexibility Act
RMP	Resource Management Plan
ROW	Rights-of-way

RPS	Renewables Portfolio Standard
Sage-grouse	Greater sage-grouse
SBA	Small Business Administration
SBREFA	Small Business Regulatory Enforcement Fairness Act
Service	U.S. Fish and Wildlife Service
SGI	Sage-grouse Initiative
SHOPP	State Highway Operations and Protection Program
STIP	State Transportation Improvement Program
TAC	Technical Advisory Committee
UMRA	Unfunded Mandates Reform Act
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
WHA	Wildlife Hazard Assessment
WHIP	Wildlife Habitat Incentive Program

EXECUTIVE SUMMARY

1. The purpose of this report is to evaluate the potential economic costs associated with the designation of critical habitat for the Bi-State distinct population segment (DPS) of the greater sage-grouse (*Centrocercus urophasianus*) (hereafter, Bi-State DPS). Specifically, the information presented in this report is intended to assist the Secretary of the U.S. Department of the Interior (DOI) in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.[1] This report was prepared by Industrial Economics, Incorporated (IEc), under contract to the U.S. Fish and Wildlife Service (Service).

OVERVIEW OF PROPOSED CRITICAL HABITAT

2. The Service published the Proposed Rule for the designation of critical habitat for the Bi-State DPS on October 28, 2013.[2] The proposed critical habitat designation spans four units, totaling approximately 1.87 million acres. Of the proposed acreage, 1,394,937 acres are considered currently suitable for occupation by the DPS, and the remaining 472,784 acres are considered currently unsuitable for occupation by the DPS.[3]

3. Review of the proposed listing rule identified the following economic activities as potential threats to the DPS and its habitat. We therefore focus the analysis of potential impacts of Bi-State DPS conservation on these activities:

- Livestock grazing on Federal lands
- Grazing and agricultural operations on privately-owned lands;
- Transportation and utility infrastructure;
- Recreation and management activities on Federal lands;
- Mining operations;
- Residential development; and
- Renewable energy development.

[1] 16 U.S.C. §1533(b)(2).

[2] 2013 Proposed Critical Habitat Rule. 78 FR 64328.

[3] Acreage estimates based on GIS data provided by the Service on January 7, 2014. Acreage numbers throughout this report may differ from those provided in the Proposed Rule due to minor boundary adjustments included within the GIS data used to inform the Economic Analysis.

OVERVIEW OF THE STUDY AREA

4. The proposed critical habitat designation spans eight counties, including portions of Alpine, Inyo and Mono Counties in California; and Carson City, Douglas, Esmeralda, Lyon and Mineral Counties in Nevada. The areas proposed as critical habitat are predominantly rural. Exhibit Executive Summary (ES)-1 presents select economic characteristics for the seven affected counties.

5. For land within the proposed designation, approximately 86 percent occurs on federally-managed lands. However, because the majority of land in the eight affected counties is also federally-managed -- more than 80 percent in some of the affected counties[4] -- county representatives emphasize that changes to the management of and allowable uses on Federal lands can result in significant and material impacts on counties' residents, businesses and their overall economy. County representatives stress that many businesses rely on access to and resources on Federal lands. According to discussions with these representatives, key economic sectors that are "tied" to Federal lands include recreation and tourism, livestock grazing, agriculture, mining, and renewable energy development.[5]

EXHIBIT ES-1. SELECT ECONOMIC CHARACTERISTICS FOR COUNTIES AND STATES IN PROPOSED CRITICAL HABITAT

COUNTY	2012 POPULATION ESTIMATE	2010 PERSONS PER SQUARE MILE	MEDIAN HOUSEHOLD INCOME	MEDIAN HOME VALUE	DECEMBER 2013 UNEMPLOYMENT RATE	ACRES IN PROPOSED DESIGNATION
Alpine, CA	1,129	1.6	$59,931	$371,300	14.0%	45,533
Inyo , CA	18,495	1.8	$45,000	$246,200	9.0%	28,937
Mono, CA	14,348	4.7	$61,868	$355,600	8.8%	1,044,648
California State	*37,999,878*	*239.1*	*$61,400*	*$383,900*	*8.3%*	*1,119,118*
Carson City, NV	54,838	382.1	$53,987	$221,900	9.7%	2,918
Douglas, NV	46,996	66.2	$61,099	$303,800	10.9%	179,296
Esmeralda, NV	775	0.2	$27,500	$64,200	4.2%	104,888
Lyon, NV	51,327	26.0	$46,088	$144,000	13.9%	207,177
Mineral, NV	4,653	1.3	$33,547	$92,400	11.3%	255,766
Nevada State	*2,754,354*	*24.6*	*$54,083*	*$190,900*	*9.0%*	*750,044*

Sources: U.S. Census Bureau. State & County Quick Facts. Data extracted from: http://quickfacts.census.gov/qfd/index.html on February 27, 2014; County unemployment estimates obtained from: U.S. Bureau of Labor Statistics (BLS). Labor force data by county, not seasonally adjusted, November 2012-December 2013. Data extracted from: http://www.bls.gov/lau/laucntycur14.txt on February 27, 2014; State unemployment estimates obtained from: BLS. Data extracted from: http://www.bls.gov/lau/ on February 27, 2014.

[4] Federal land ownership exceeds 80 percent in Alpine, Inyo, and Mono Counties, California and in Esmeralda and Mineral Counties, Nevada. Federal land ownership is estimated at 68.2 percent and 64.5 percent in Lyon and Douglas Counties, Nevada, respectively.

[5] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014; Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 24, 2014; Hartmann, Shelley. Mineral County Economic Development Authority. Personal communication on February 18, 2014.

FRAMEWORK FOR THE ANALYSIS

6. This analysis estimates the *incremental* costs resulting from the designation of critical habitat for the Bi-State DPS. Specifically, the U.S. Office of Management and Budget's (OMB) guidelines for best practices concerning the conduct of economic analysis of Federal regulations direct agencies to measure the costs of a regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."[6]

7. The baseline for this analysis is the existing state of regulation, prior to the designation of critical habitat, which includes protection provided to the DPS under the Endangered Species Act ("Act"), as well as under other Federal, State, and local laws and guidelines. To characterize the "world without critical habitat," our baseline for this analysis, we also attempt to forecast these conditions into the future over the 20-year time frame of our analysis, recognizing that such projections are subject to uncertainty.[7]

8. If the Bi-State DPS is listed as a threatened species under the Act, it will be subject to a variety of protections throughout most of its range, regardless of the designation of critical habitat. These protections are included in the requirements of sections 7, 9, and 10 of the Act. In addition, the Bi-State DPS and its habitat receive a significant level of recognition within the proposed designation from the multi-agency (Federal, California and Nevada) Bi-State Action Plan and the Sage-Grouse Initiative (SGI). Both programs identify and prioritize conservation actions across the range of the Bi-State DPS. In particular, the program participants seek opportunities to permanently conserve sage-grouse habitat through conservation easements and actively support habitat restoration to improve habitat suitability and connectivity.

9. The most challenging part of this analysis involves isolating the new requirements imposed on regulated entities as a result of the designation of critical habitat given the baseline protection that will be provided to this DPS if listed in the future. When critical habitat is designated, section 7 of the Act requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat. Agencies engage in consultation with the Service whenever activities they undertake, authorize, permit, or fund may affect designated critical habitat. The administrative costs of this process, and the additional costs of implementing project modifications necessary to avoid adverse modification, are the primary compliance costs of the designation.

10. The Service is the best source of information concerning potential incremental impacts resulting from consultations conducted under section 7 of the Act. To inform the analysis, the Service describes likely and possible outcomes from the proposed rule in a memorandum, titled "Incremental Effects Memorandum for the Economic Analysis of the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population

[6] OMB, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[7] This analysis estimates economic costs from 2014 (expected year of final critical habitat designation) to 2033 (a 20-year period of analysis). This 20-year analysis period reflects the maximum amount of time under which future activities and economic costs associated with the proposed rule can be reliably projected, given available data and information. The analytic time frame is discussed further in Chapter 2.

Segment for the Greater Sage-Grouse."[8] A copy of this memorandum is provided in Appendix C of this report. Based on the information provided by the Service (and discussed in more detail in Chapter 2), this analysis uses the geographic location of the anticipated economic activity as the basis for assigning costs to the baseline or incremental scenario. In proposed areas identified by the Service as suitable habitat, costs are considered to be part of the baseline (they would occur regardless of the designation of critical habitat).

11. In the remaining areas identified by the Service as currently unsuitable habitat, the designation of critical habitat provides new information to project proponents regarding the need to consult under section 7 of the Act. Therefore, this analysis considers the conservation efforts undertaken in these areas as attributable to the designation of critical habitat. As illustrated in Exhibit ES-2, the total area that may be subject to incremental changes accounts for approximately 31 percent (577,743 acres) of the proposed critical habitat designation.

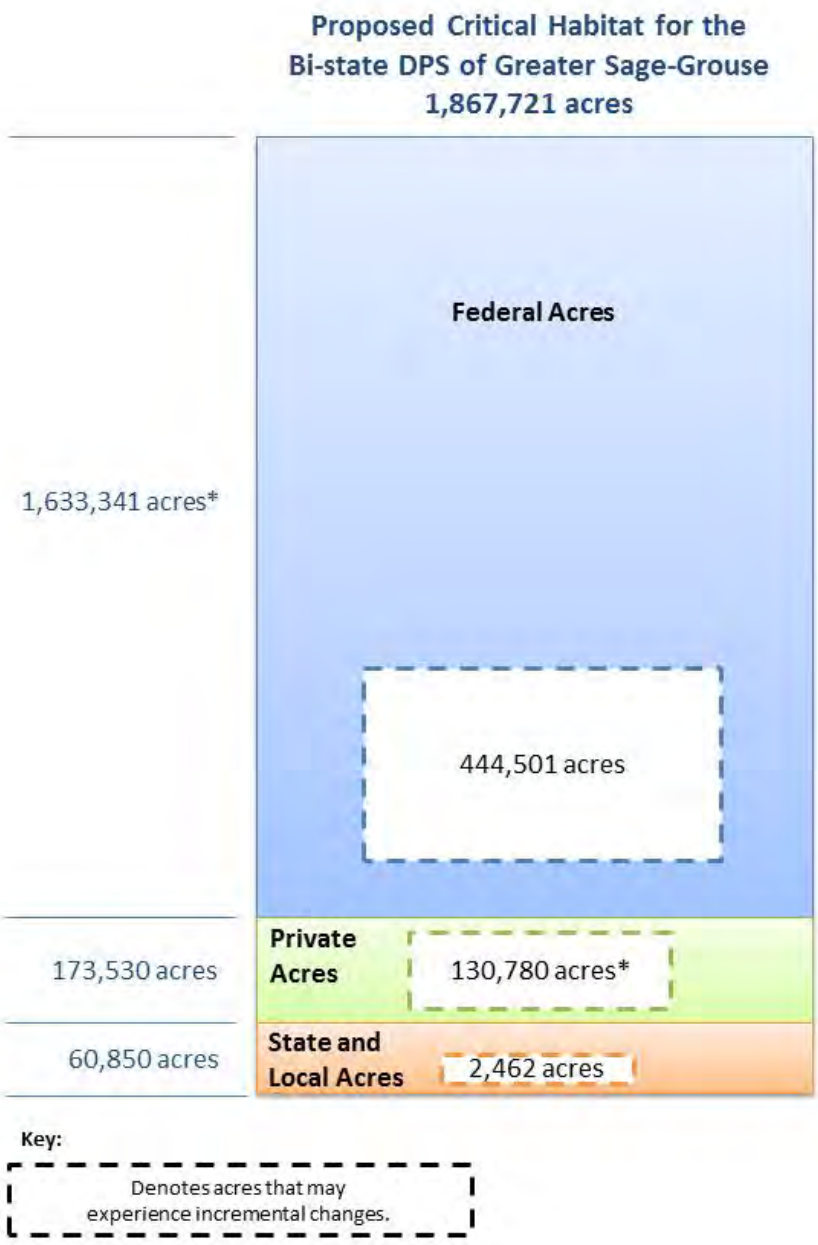
12. In addition, the informational nature of critical habitat designation may also influence the behavior and decisions of State and local regulators or private entities. For example, local agencies responsible for the management of residential development may choose to impose greater restrictions on those lands overlapping critical habitat, or State permitting agencies may request additional protective measures prior to the issuance of permits for mining or renewable energy development activities on private lands. Private landowners and businesses may also be concerned about additional restrictions resulting from Federal or State oversight or third-party lawsuits. Regardless of whether such restrictions are ultimately realized, the regulatory uncertainty created by the rule may incentivize private landowners and businesses to change their behaviors.

13. Such outcomes are unintended consequences of the regulation; however, these outcomes may result in real costs or benefits. To better understand the potential for such effects, we conducted interviews with local officials, county planners, and private businesses. These conversations and the information provided are documented throughout this report.

14. Once we establish the potential changes in economic behavior that may result from the proposed rule, we use available data to quantify, and monetize where possible, incremental effects. Where data are insufficient to quantify costs, we provide a qualitative discussion of possible effects. Finally, we qualitatively discuss the potential benefits of the regulation.

[8] U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment for the Greater Sage-Grouse. February 25, 2013.

EXHIBIT ES-2. PROPOSED ACRES WHERE INCREMENTAL CHANGES ARE POSSIBLE



* Federal acres include both Federal lands and Tribal lands.

* The number of privately owned acres reflects the total amount of privately owned, developable land, including 14,352 acres in unsuitable habitat and 116,427 acres in suitable habitat. In unsuitable habitat, this analysis considers incremental changes that may result from public perception that critical habitat will generate restrictions on private land.

KEY FINDINGS

15. Given that the presence of the Bi-State DPS is well known across the majority of areas proposed as critical habitat, this analysis anticipates that the majority (66 percent) of forecast incremental costs are administrative in nature. These costs result from projects forecast in areas of proposed critical habitat considered to be currently suitable for use by the DPS. In these areas, any conservation measures recommended by the Service are expected to occur regardless of the designation of critical habitat, in response to listing the DPS under the Act.

16. Exhibit ES-3 summarizes the total forecast incremental costs assuming a seven percent discount rate. Specifically, this analysis forecasts the incremental costs of the proposed critical habitat designation to be approximately $8.8 million (present value over 20 years), assuming a seven percent discount rate. If we assume the social rate of time preference is three percent, incremental costs are approximately $12 million in present value terms.[9] Annualized incremental costs are forecast to be no greater than $780,000 applying either a seven or three percent discount rate.

17. Of the total forecast incremental costs, this analysis anticipates that approximately $4.9 million are associated with the additional administrative effort required to consider adverse modification for future section 7 consultations occurring in areas considered to currently suitable DPS habitat. The largest share of these incremental administrative costs is associated with transportation and utility activities, which are predicted to occur in suitable habitat at a rate of approximately 25 projects per year.

EXHIBIT ES-3. FORECAST INCREMENTAL COSTS BY UNIT, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT NO.	UNIT NAME	PRESENT VALUE	ANNUALIZED
1	Pine Nut	$780,000	$69,000
2	North Mono Lake	$4,100,000	$360,000
3	South Mono Lake	$3,000,000	$260,000
4	White Mountains	$990,000	$87,000
	Total	**$8,800,000**	**$780,000**

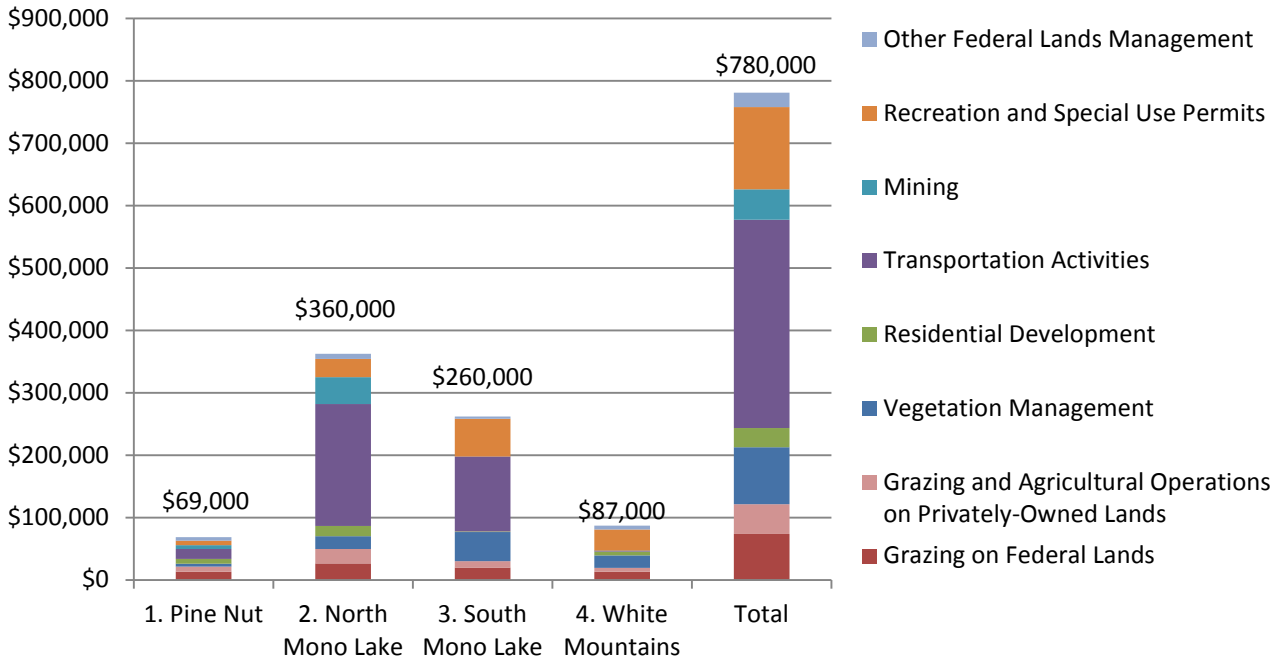
Note: Totals may not sum due to rounding.

[9] A seven percent discount rate is assumed to approximate the opportunity cost of capital, the appropriate discount rate whenever the main effect of a regulation is to "displace or alter" the use of capital in the private sector. In contrast, a three percent rate is meant to approximate the "social rate of time preference," which represents the rate at which "society" discounts future consumption flows to their present value. This latter, lower discount rate is appropriate when the primary effects of a regulation is on private consumption (e.g., through higher consumer prices for goods and services). OMB requires Federal agencies to report results using both discount rates (For more detail: U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, accessed at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf).

18. In the remaining areas considered to be currently unsuitable for use by the Bi-State DPS, where conservation measures are likely attributable solely to the proposed critical habitat designation, this analysis forecasts incremental costs of approximately $4.0 million. Of these costs, approximately 75 percent are due to Bi-State DPS conservation measures that may be recommended for grazing, transportation, residential development, and mining operations in unsuitable habitat. Conservation measures recommended for transportation activities comprise the largest share of these costs.

19. Exhibits ES-4 shows the distribution of these results across proposed units. Proposed Units 2 and 3 are anticipated to experience the greatest incremental costs, accounting for approximately 46 percent and 34 percent of total incremental costs, respectively. In the remainder of the Executive Summary, as well as the report, costs are presented assuming a seven percent discount rate. Appendix B presents values assuming a three percent discount rate for comparison.

EXHIBIT ES-4. ANNUALIZED INCREMENTAL COSTS BY UNIT AND ACTIVITY (2014-2033, 2014$, 7% DISCOUNT RATE)



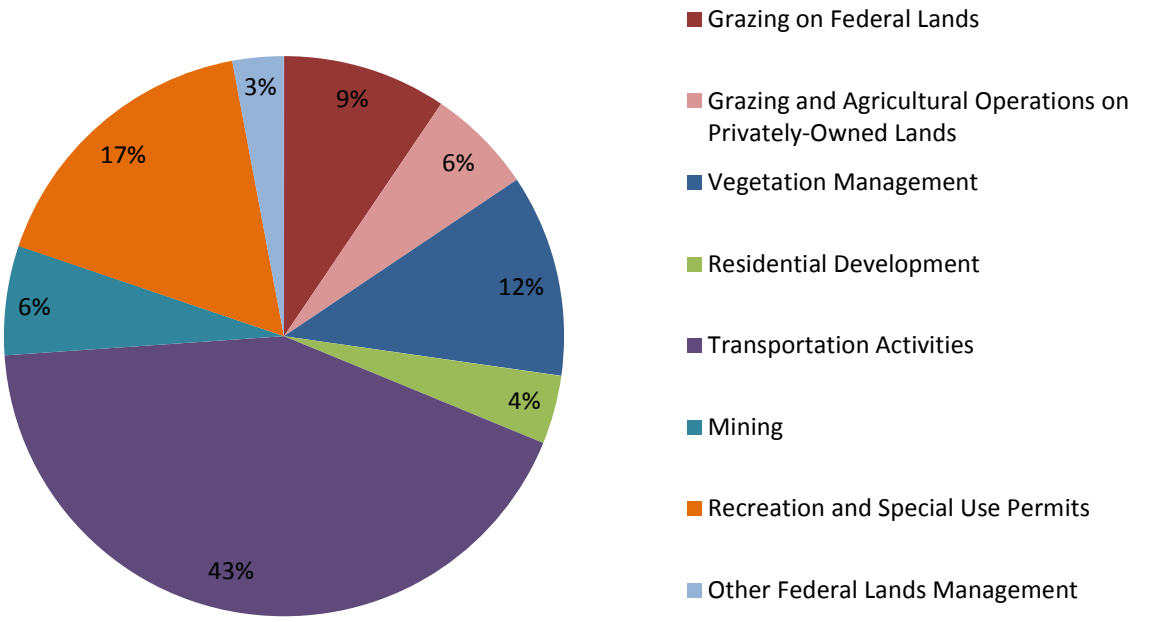
DISCUSSION OF COSTS TO SPECIFIC ECONOMIC ACTIVITIES

20. Exhibits ES-5 present the breakdown of total incremental costs by activity. As previously discussed, transportation activities account for the majority of incremental costs (approximately 43 percent). The next largest share of incremental costs is associated with recreation and special use permits on Federal lands, followed by vegetation management on Federal lands, livestock grazing, mining, private agriculture and ranching, residential development, and other management activities on Federal lands.

21. While mining and renewable energy development do not currently occur at significant levels in the proposed designation, county representatives indicate that significant opportunities exist for future development of such resources across the proposed designation. However, information is unavailable to predict the future location, timing, or extent of these activities. As such, this analysis does not forecast incremental costs associated with the future development or extraction of these local natural resources. In addition, information is not available to forecast incremental costs that may be incurred by Tribes within the proposed critical habitat designation.

22. We discuss each category of economic costs in greater detail in the following sections.

EXHIBIT ES-5. PRESENT VALUE INCREMENTAL COSTS BY ACTIVITY (2014-2033, 2014$, 7% DISCOUNT RATE)



Livestock Grazing on Federal Lands

23. Nearly 85 percent (1.58 million acres) of the proposed critical habitat designation is located on 158 Federal livestock grazing allotments. Approximately 48 percent of these grazing lands are located within Unit 2, and 21 percent are located within Unit 3. Approximately 350,000 acres of Federal grazing lands overlap unsuitable habitat; 49 percent of these acres occur in Unit 2.

24. To forecast costs, we estimate reductions to livestock stocking rates (measured in Animal Unit Months, or AUMs) on 24 active cattle allotments located in unsuitable habitat and not currently managed for the DPS. Across these 24 allotments, we forecast AUM reductions of approximately 13 percent, on average. We also forecast administrative costs of section 7 consultations associated with permit renewals on 157 open allotments.[10]

25. We forecast incremental costs of $840,000 (present value over 20 years) as a result of the proposed Bi-State DPS critical habitat designation, assuming a seven percent discount rate. This forecast includes both the lost value associated with AUM reductions and administrative effort associated with section 7 consultations in both suitable and unsuitable habitat. Approximately 36 percent of the total incremental costs forecast occur in Unit 2, followed by 27 percent of costs in Unit 3 and approximately 18 percent of costs in each Unit 1 and Unit 4.

Livetock Grazing and Agricultural Operations on Privately-Owned Lands

26. Approximately 10,000 acres of the proposed critical habitat designation are located on privately owned cropland or hay/pastureland. Of these acres, 86 percent occur in Unit 2, and 13 percent occur in Unit 1. Unit 3 and Unit 4 each have less than 200 acres of privately owned agricultural land (i.e., cropland or hay/pastureland). Only 205 acres of privately owned hay/pastureland overlap unsuitable habitat; no cultivated cropland overlaps unsuitable habitat.

27. In this analysis, we consider the potential for voluntary conservation measures to be implemented by private farmers and ranchers with funding from the Natural Resources Conservation Service (NRCS) or the Service, as part of its Partners for Fish and Wildlife Program. Participation in these federally-funded programs would trigger section 7 consultation with the Service. In addition, we consider costs associated with programmatic section 7 consultations for the ongoing Walker Basin Restoration Program. Because these programs are voluntary in nature, we do not estimate costs associated with implementation of incremental conservation measures.

28. Our estimate represents an upper bound on likely costs for two key reasons. First, because information on participation rates in NRCS programs is not readily available, we conservatively assume that every farmer and rancher (including both those who lease Federal allotments and those with privately owned farms) will participate. This assumption likely overstates incremental costs because many farmers and ranchers will not be eligible for, apply or receive NRCS funding, and some may choose to participate

[10] One allotment managed by the Inyo National Forest is known to have been closed. We do not estimate costs associated with this allotment.

in either, but not both, NRCS programs or the Service's Partners for Fish and Wildlife Program. In addition, both NRCS and the Service have expressed interest in pursuing programmatic consultations for NRCS programs to minimize the administrative burden.

29. We forecast incremental costs of $540,000 (present value over 20 years), assuming a seven percent discount rate. These costs are entirely administrative in nature. Approximately 48 percent of the total incremental costs forecast for grazing and agricultural operations on privately-owned lands occur in Unit 2.

Transportation and Utility Infrastructure

30. The proposed critical habitat designation surrounds just over 300 miles of state and Federal highways, and an extensive array of existing electric transmission and distribution lines. Additionally, there is at one commercial airport in Mono County within areas of the proposed designation identified as suitable habitat. Based on information provided by state transportation agencies and county and local planners, we forecast approximately 25 consultations per year in suitable habitat for transportation and utility projects (that have a Federal nexus) managed by Caltrans, Nevada Department of Transportation (NDOT), electric utility companies and Mono County. This analysis anticipates incremental costs will be limited to the portion of administrative effort required to address adverse modification.

31. In unsuitable habitat, we forecast approximately three projects per year. We anticipate that section 7 consultations conducted for these projects are attributed solely to the critical habitat designation, and thus incremental costs include all associated administrative costs and any requested conservation measures. Total incremental costs for transportation and utility projects are forecast to be $3.8 million (present value over 20 years) assuming a discount rate of seven percent. Approximately $1.8 million of the total incremental costs are associated with conservation measures that may be requested for transportation projects located in unsuitable habitat.

Recreation Activities and Special Use Permits on Federal Lands

32. As previously discussed, the majority of acres (86 percent) in the proposed critical habitat designation are Federal lands managed by the U.S. Forest Service (USFS) and Bureau of Land Management (BLM). County representatives emphasize the importance of Federal lands as a driver of local recreation and tourism industries.[11] Of particular concern to those representatives is the potential for a final critical habitat designation to result in restrictions on the access to and expansion of the extensive network of roads and trails used by recreators throughout the proposed critical habitat. Based on a review of public comments and discussions with county representatives, off-highway vehicle (OHV) use, in particular, is a popular activity across the proposed designation.[12] In addition,

[11] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Mono County. Personal communication on February 12, 2014.

[12] Nevada Four Wheel Drive Association. Public comment submitted on November 22, 2013; Capital Trail Vehicle Association (CTVA). Public comment submitted on November 7, 2013; Amador, Don. Western Representative, BlueRibbon Coalition, Inc. Public comment submitted on December 17, 2013.

commercial filming on Federal lands contributes important revenue to local governments.[13]

33. Discussions with BLM and USFS indicate that they do not anticipate any additional restrictions or changes in the management of recreational activities or resources as a result of a critical habitat designation.[14] Accordingly, incremental costs are limited to costs associated with formal section 7 consultations on special use permits issued by USFS and BLM for various recreational events or activities that occur on Federal lands. In addition, we forecast administrative costs associated with future section 7 consultations expected for general recreation management activities in the Humboldt-Toiyabe National Forest and BLM Bishop Field Office.

34. Of the estimated 510 formal section 7 consultations forecast for recreational activities and special use permits, all except four are assumed to occur in the baseline due to the listing of the Bi-State DPS. As a result, we expect incremental costs to be primarily associated with the additional effort to consider adverse modification in these consultations. We forecast $1.5 million (present value over 20 years) in administrative costs, assuming a seven percent discount rate. The largest share of incremental costs for recreational activities (approximately 46 percent) is associated with consultations for BLM and the Inyo National Forest in Unit 3.

Vegetation Management on Federal Lands

35. Federal land managers currently undertake vegetation management and habitat restoration projects, such as conifer removal, to maintain and improve sagebrush habitat. Communication with Federal land managers indicates that these activities are likely to continue into the future at a rate similar to the current rate, except in the Inyo National Forest, where vegetation management may expand into unsuitable habitat following the designation of critical habitat for the Bi-State DPS.[15] Incremental costs therefore include administrative costs associated with section 7 consultations and the additional cost of new vegetation management projects in the Inyo National Forest. We forecast approximately 170 formal consultations, one programmatic consultation, and one re-initiated consultation over the 20-year analysis period. We assign these consultations to either the baseline or incremental scenario based on the activity location. Incremental costs are forecast to be approximately $1.0 million (present value over 20 years), assuming a seven percent discount rate. The largest share of these incremental costs (approximately 53 percent) is associated with consultations for BLM and the Inyo National Forest in Unit 3.

[13] Sugimura, Wendy. Mono County Community Development Department. Personal communication on March 18, 2014.

[14] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014; Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[15] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; Lovato, Bernadette. District Manager, BLM Carson City District Office. Personal communication on February 25, 2014; BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013; and Inyo National Forest, Inyo NF economic review of the proposed listing of bi-state DPS of greater sage-grouse, September 27, 2013.

Other Management on Federal Lands

36. Several other activities occur on Federal lands, including training operations associated with the U.S. Marine Corps' Mountain Warfare Training Center, wild horse and burro management, fire management, travel management, land disposal, and resource management planning. Information from the Service and the Federal land managers indicates that incremental conservation measures are not anticipated for these activities.[16] Incremental costs are therefore limited to costs associated with section 7 consultations. We forecast approximately 65 formal consultations, one informal consultation, and five programmatic consultations over the 20-year analysis period. We assign these consultations to either the baseline or incremental scenario based on the activity location. Incremental administrative costs are forecast to be $260,000 (present value over 20 years) assuming a seven percent discount rate. The largest share of these incremental costs (approximately 35 percent) is associated with consultations for BLM, the Humboldt-Toiyabe National Forest, and the Inyo National Forest in Unit 2.

Mining Operations

37. Because extraction operations on privately owned lands are unlikely to have a Federal nexus for section 7 consultation except where Federal mineral ownership occurs, we limit our analysis to operations occurring on Federal lands. Currently, there are no active large-scale mining operations on Federal lands within the proposed critical habitat designation. However, we identified two projects currently in pre-production for which production is likely to occur within the timeframe of this analysis. We forecast two formal section 7 consultations for the two planned gold mining operations. One project is located in unsuitable habitat in the Inyo National Forest and the second project is found in suitable habitat in the Humboldt-Toiyabe National Forest; both projects occur in Unit 2. We also forecast six consultations for future exploratory mining operations and four consultations for active mining operations on BLM lands in Units 1, 2 and 4. We forecast total incremental costs of $560,000 (present value over 20 years), assuming a seven percent discount rate. Incremental costs for mining operations in unsuitable habitat include the costs associated with off-site habitat conservation.

Residential Development

38. The proposed critical habitat designation includes privately owned, potentially developable land in all units. However, due to the remoteness of these areas and relatively low rates of future population growth, extensive future development is not expected. Specifically, this analysis forecasts approximately 31 development projects over the next 20 years within the areas proposed for designation, of which three projects overlap unsuitable habitat. As discussed in more detail in Chapter 4, we forecast incremental costs of approximately $350,000 (present value over 20 years assuming a seven percent discount rate) associated with the purchase of land set-asides. We do not anticipate that any development will be precluded as a result of the designation.

[16] U.S. Fish and Wildlife Service. "Potential recommendation modifications in suitable versus unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse." January 21, 2014.

39. This analysis also provides a qualitative discussion of the potential for economic costs resulting from regulatory uncertainty or the perception that additional regulatory burdens will result from the designation of critical habitat. County representatives repeatedly raised concerns that public attitudes about the potential limits and costs that the proposed critical habitat designation may impose can cause real economic effects.[17] If businesses choose not to develop within the areas proposed to be designated due to regulatory uncertainty, economic costs may include a decrease in current land values, as well as distributional impacts such as fewer employment opportunities and decreases in associated regional spending. Such economic effects can be especially burdensome for the counties in the proposed designation where opportunities for economic development are limited and some counties are still recovering from the wider economic events beginning in 2008.

40. In addition, representatives of Alpine, Inyo, and Mono Counties express concern regarding the potential cumulative impacts that may result from concurrent rulemakings under the Act in these counties for the listing and critical habitat designation for the Sierra Nevada yellow-legged frog (*Rana sierrae*), the Northern DPS of the mountain yellow-legged frog (*Rana muscosa*), and the Yosemite toad (*Anaxyrus canorus*) (collectively referred to as "three Sierra amphibians").[18] The degree of overlap is the highest in Mono County. Based on GIS analysis of the proposed boundaries, approximately 58 percent (1.04 million acres) of Mono County's total land area (1.95 million acres) is proposed as critical habitat for either the Bi-State DPS or the three Sierra amphibians; approximately 0.4 percent (809 acres) of Mono County is included in the proposed critical habitat designation for both the Bi-State DPS and three Sierra amphibians.

Renewable Energy Development

41. One geothermal plant is located in the proposed critical habitat designation. The Casa Diablo IV Geothermal Development Project occurs on suitable habitat in the South Mono Lake Unit 3. The BLM and USFS developed a joint, final Programmatic Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) in 2013. The Final EIS/EIR considered the potential of over 40 special-status species to occur in the general area of the geothermal project, including the Bi-State DPS. The Final EIS/EIR concluded that the likelihood of the DPS occurring in the project area was relatively low.[19]

[17] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014; Douglas County Economic Development and Vitality Department, Personal communication on February 25, 2014.

[18] 2013 Proposed Listing Rule. 78 FR 24471; 2013 Proposed Critical Habitat Rule. 78 FR 24515.

[19] BLM and USFS. 2013. Casa Diablo IV Geothermal Development Project: Final Joint Environmental Impact Statement/Environmental Impact Report. DOI Control #: DES 12-21. Publication Index #: BLM/CA/ES-2013/021+3200+1793. State Clearinghouse No. 2011041008. Bishop, California. June. pp. 3.4-14-15; U.S. Fish and Wildlife Service. 2013. Appendix 4. USFWS Concurrence Letter. Ventura Field Office. August 2. Accessed on February 20, 2014 at: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/bishop/casa_diablo_40.Par.3398.File.dat/CD-IV_ROD_APPX4_FWS.pdf.

According to discussions with the Inyo National Forest, reinitiating consultation for the Bi-State DPS is not expected.[20]

42. Based on discussions with the Service, USFS, BLM, and county representatives, future opportunities for renewable energy development, especially geothermal, occurs throughout the proposed critical habitat designation. Significant uncertainty exists, however, regarding the timing, location, and potential scope and scale of future renewable energy development. Due to this uncertainty, we do not forecast any incremental costs for future development of renewable energy; instead, we provide a qualitative discussion of renewable energy resources and development potential in Chapter 9. To the extent that additional renewable energy facilities are sited in unsuitable critical habitat, this analysis underestimates incremental costs.

Tribal Activities

43. Approximately 27,400 acres of Tribal land are included within the proposed critical habitat designation. Potentially affected Tribes include Washoe Tribe of Nevada and California, the Bridgeport Indian Colony, the Utu Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation, and the Death Valley Timba-sha Shoshone Tribe. The majority of Tribal land in the proposed designation is located in suitable habitat; however, approximately 4,400 acres in the Pine Nut Unit occurs in unsuitable habitat. At this time, information on specific projects that may result in section 7 consultations is not available.[21] To the extent that activities occurring on Tribal lands require section 7 consultation with the Service and conservation measures are recommended, this analysis may underestimate costs.

POTENTIAL BENEFITS

44. The primary purpose of this critical habitat rulemaking is to enhance conservation of the Bi-State DPS of greater sage-grouse. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance to Federal agencies on best practices for preparing economic analyses of proposed rulemakings, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research. Rather than rely on economic measures, the Service believes that the direct benefits of the proposed critical habitat designation are best expressed in biological terms that can be weighed against the expected costs of the rulemaking.

45. In this report, we include a qualitative description of the categories of benefits potentially resulting from the critical habitat designation and indicate the areas where such benefits may occur. Because of limitations in the literature, and because information is not

[20] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[21] To the extent that new information and/or comments are received on activities occurring on Tribal lands, such information will be integrated into the final version of this report.

available to characterize the expected change in conservation probability for the DPS following critical habitat designation, we are not able to quantify or monetize the benefits of the proposed rule.

IMPACTS TO SMALL ENTITIES AND THE ENERGY INDUSTRY

46. Appendix A of this report addresses the distributional impacts of the proposed critical habitat designation on small entities and the energy industry to support the Service's determination regarding whether the proposed rule will have a significant economic cost on a substantial number of small entities, as required by the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA). Only Federal agencies are directly regulated (i.e., section 7 requirement to avoid adverse modification) as a result of the proposed rule, and Federal agencies are not small entities. However, we acknowledge that, in some cases, small entities may participate as third parties in section 7 consultations with the Service.

47. Appendix A also concludes that, in accordance with Executive Orders 13211 and 13132, as well as Title II of the Unfunded Mandates Reform Act (UMRA), the proposed critical habitat designation is unlikely to have any effect on energy production in the United States (U.S.); is unlikely to have direct or substantial indirect federalism implications; and does not place an enforceable duty upon state, local, or Tribal governments, or the private sector.

KEY SOURCES OF UNCERTAINTY

48. In each activity-specific chapter, we include a discussion of the key sources of uncertainty and major assumptions affecting the estimation of costs. These uncertainties vary depending on the specific-activity in question. One issue that affects all activities is the question of whether conservation efforts undertaken in suitable habitat will occur regardless of whether or not critical habitat is designated in the future. In particular, this analysis assumes that the public is already aware of the need to consider the effects of future projects on the DPS in areas identified by the Service as suitable habitat. It is possible that in some areas of suitable habitat, project proponents undertaking an assessment of the Bi-State DPS presence may determine that sage-grouse are not present. In such cases, this analysis may understate the incremental costs of the proposed rule.[22]

49. In addition, critical habitat is primarily protected through section 7 of the Act, which requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or adversely modify critical habitat. For each activity, we discuss the potential for a Federal nexus to exist, compelling section 7 consultation with the Service. We assume a Federal nexus is likely based on conversations with land managers and other stakeholders. For some activities, such as residential development,

[22] Conversely, it is possible that some projects and activities occurring in areas of unsuitable habitat could affect adjacent "suitable habitat." In such cases, any conservation measures recommended would be in response to the presence of the species, rather than the designation of critical habitat.

where we are uncertain if a Federal nexus exists, we err on the side of assuming a nexus is likely to exist, thus potentially overstating the degree to which consultations will occur.

50. Finally, in each section, we make assumptions about the typical conservation efforts likely to be undertaken for each activity, and their costs, based on information gathered through conversations with the Service and interviews with stakeholders. The Service advises that it is unlikely additional types of conservation efforts will be requested for activities occurring in suitable habitat beyond those requested in the baseline. For activities occurring in unsuitable habitat, to the extent that the suite of conservation efforts undertaken in the future varies from stated assumptions, costs may be under- or over-stated.

CHAPTER 1 | BACKGROUND

51. This chapter provides an overview of the proposed critical habitat for the Bi-State DPS of greater sage-grouse. We include a brief description of the species, the DPS, its habitat, a summary of the relevant regulatory history, a description of the current proposed designation, and an overview of the economic activities that may affect the proposed designation. The chapter concludes by summarizing the organization of the following chapters in this report.

1.1 SPECIES DESCRIPTION

52. The greater sage-grouse is a large, long-lived bird found throughout western North America. The greater sage-grouse is closely related to another species, the Gunnison sage-grouse (*Centrocercus minimus*), but the two were recognized as a separate species in 2000.[23] Based primarily on genetic information, the Service determined in 2010 that the Bi-State population of the greater sage-grouse represented a DPS, exhibiting characteristics "markedly separated and significant from the remainder of the sage-grouse taxon."[24] The Bi-State DPS defines the southwestern limit of the species' range along the border of eastern California and western Nevada. Sage-grouse habitat (for the species and the DPS) consists primarily of expansive, interconnected sagebrush allowing for extensive seasonal movement of the birds. Sage-grouse exhibit strong site fidelity and rely on numerous habitat types in the sagebrush ecosystem across the species' life cycle.[25]

1.2 RELEVANT FEDERAL ACTIONS

53. Key milestones in the Federal regulatory history for the Bi-State DPS of greater sage-grouse include:

- **Listing**: Proposed for listing as threatened under the Act on October 28, 2013.[26]
- **Proposed critical habitat:** In a separate rule published on the same date, the Service proposed to designate 1,867,721 acres as critical habitat for the Bi-State DPS.[27]

[23] 2010 12-Month Determination. 75 FR 59805.

[24] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. 202 pp.

[25] 2013 Proposed Listing Rule. 78 FR 64358.

[26] 2013 Proposed Listing Rule. 78 FR 64358.

[27] 2013 Proposed Critical Habitat Rule. 78 FR 64328.

1.3 PROPOSED CRITICAL HABITAT DESIGNATION

54. Of the approximately 1.87 million acres proposed for designation, 1,394,937 acres consists of suitable sage-grouse habitat that are considered currently used by the DPS. The remaining 472,784 acres consists of unsuitable habitat considered currently unused by the DPS.[28] The proposed critical habitat designation spans four units, each of which includes both suitable and unsuitable habitat. The proposed designation is located in portions of Alpine, Inyo, and Mono Counties in California; and Carson City, Douglas, Esmeralda, Lyon, and Mineral Counties in Nevada. Exhibit 1-1 presents an overview of land ownership in the proposed units. Exhibit 1-2 presents a summary map of the proposed designation.

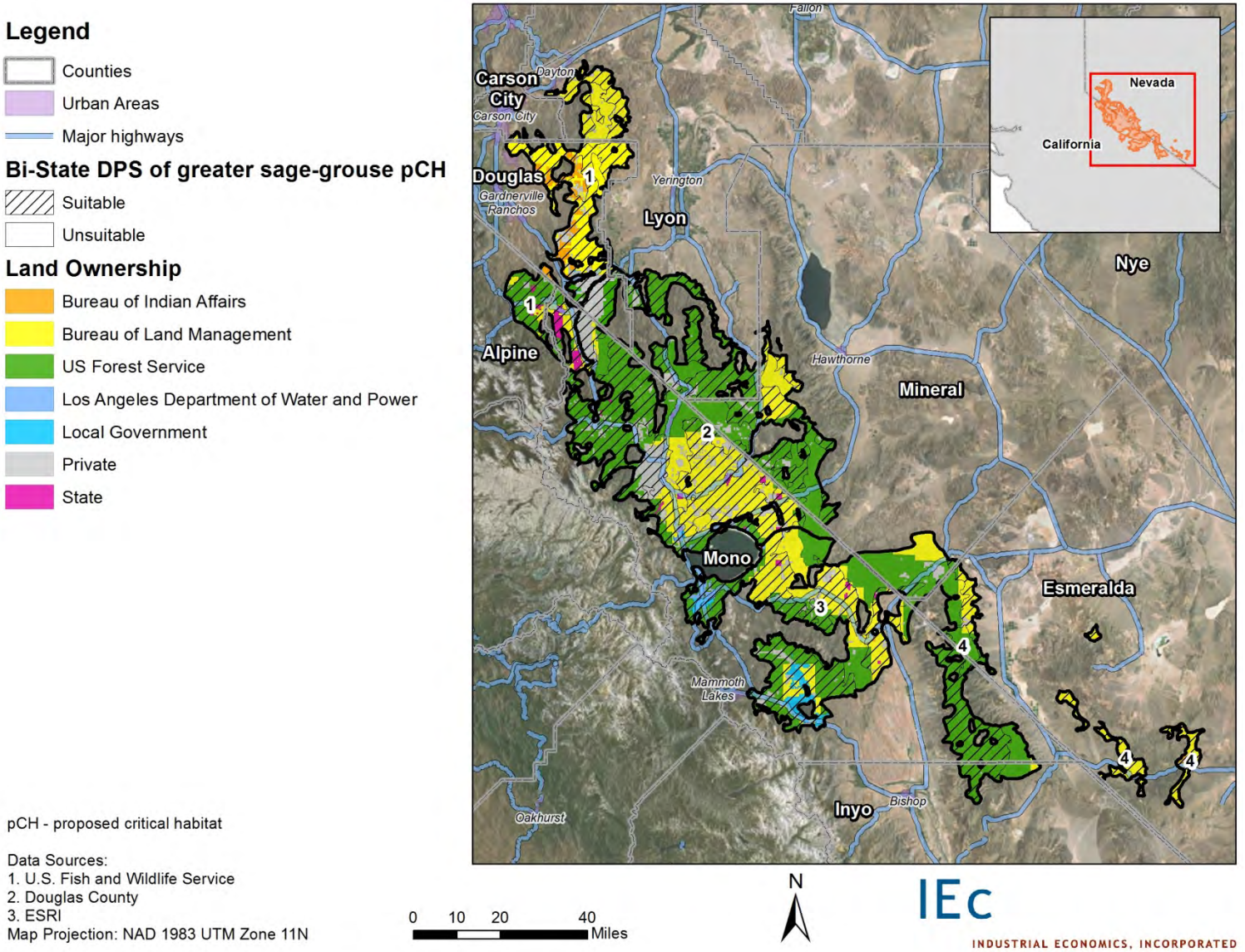
EXHIBIT 1-1. LAND OWNERSHIP IN PROPOSED CRITICAL HABITAT

UNIT	SUITABLE HABITAT	UNSUITABLE HABITAT	TOTAL ACRES	FEDERAL	TRIBAL	STATE AND LOCAL	PRIVATE
Unit 1. Pine Nut	263,966	36,808	300,774	228,350	25,843	13,096	33,485
Unit 2. North Mono Lake	653,712	199,894	853,606	728,296	40	11,542	113,728
Unit 3. South Mono Lake	297,837	101,122	398,959	343,200	398	36,211	19,150
Unit 4. White Mountains	179,422	134,960	314,382	305,929	1,285	0	7,167
Total	**1,394,937**	**472,784**	**1,867,721**	**1,605,775**	**27,566**	**60,850**	**173,530**
Percent of Total	**75%**	**25%**	**--**	**86%**	**1%**	**3%**	**9%**

Source: GIS Analysis of U.S. Fish and Wildlife Service GIS Data provided on January 7 and 17, 2014; and GIS data provided by Douglas County on February 25, 2014.

[28] U.S. Fish and Wildlife Service. GIS data provided on January 7, 2014. Acreage numbers throughout this report may differ from those provided in the proposed rule due to minor boundary adjustments included within the GIS data used to inform the Economic Analysis.

EXHIBIT 1-2. OVERVIEW OF THE PROPOSED CRITICAL HABITAT DESIGNATION



1.4 ECONOMIC ACTIVITIES CONSIDERED IN THIS ANALYSIS

55. Review of the proposed rule and supporting documentation identified the following potential threats to the Bi-State DPS and its habitat within the boundaries of proposed critical habitat: [29]

(1) **Livestock grazing.** Some grazing management techniques may affect vegetation structure and habitat suitability.

(2) **Agriculture.** Agricultural activities may result in the habitat degradation, fragmentation, and permanent habitat loss.

(3) **Residential development.** Development activities may result in degradation, fragmentation, and permanent habitat loss through the construction of residential and commercial developments.

(4) **Mining operations.** Mining operations may result in degradation, fragmentation, or loss of habitat.

(5) **Renewable energy development.** The construction and use of geothermal energy and wind infrastructure may result in degradation, fragmentation, or loss of habitat.

(6) **Transportation and utility infrastructure.** Construction and maintenance of roads, power and utility lines, and other linear-type infrastructure may result in increased habitat fragmentation and habitat loss. Such infrastructure may further impact habitat suitability by increasing the presence of predators and facilitating the introduction of invasive plants that may replace native sagebrush communities.

(7) **Recreation.** Recreational activities may degrade wildlife resources such as water and land through the distribution of refuse and disrupting native plant communities.

(8) **Wildfire**. Wildfire is a key disturbance mechanism affecting sagebrush communities. Sagebrush can take decades to re-establish following wildfire and even longer to return to pre-burn conditions. As a result, wildfire can result in large-scale habitat losses that lead to fragmentation and isolation of sage-grouse populations.

(9) **Nonnative Invasive Plants.** Nonnative, invasive plants negatively impact sagebrush ecosystems by altering community structure, plant composition, productivity, nutrient cycling, and hydrology. Such changes can indirectly lead to declines in native plant populations through competition exclusion and niche displacement.

1.5 ORGANIZATION OF THE REPORT

56. The remainder of this report is organized into nine chapters and three appendices. Chapter 2 discusses the framework employed in the analysis, while Chapters 3 through 9 describe baseline protections afforded the Bi-State DPS and its habitat, and the potential economic costs associated with Bi-State DPS conservation, for each potentially affected activity. Chapter 10 describes potential economic benefits of Bi-State DPS conservation.

- Chapter 2 – Framework for the Analysis

[29] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. 202 pp.

- Chapter 3 – Potential Economic Costs to Livestock Grazing on Federal Lands
- Chapter 4 – Potential Economic Costs to Livestock Grazing and Agricultural Operations on Privately-Owned Lands
- Chapter 5 – Potential Economic Costs to Transportation and Utility Infrastructure
- Chapter 6 –Potential Economic Costs to Recreation and Other Federal lands Management Activities
- Chapter 7 - Potential Economic Costs to Mining Operations
- Chapter 8 – Potential Economic Costs to Residential Development
- Chapter 9 – Potential Economic Costs to Renewable Energy Development
- Chapter 10 – Potential Economic Costs to Tribal Activities
- Chapter 11 – Potential Economic Benefits
- Appendix A – Additional Statutory Requirements
- Appendix B – Sensitivity of Results to Discount Rate
- Appendix C – Incremental Effects Memorandum

CHAPTER 2 | FRAMEWORK FOR THE ANALYSIS

57. The purpose of this report is to estimate the economic cost of designating critical habitat that result in actions taken to protect the Bi-State DPS habitat. This analysis examines the economic costs of restricting or modifying specific land uses or other activities for the benefit of the DPS's habitat within the proposed critical habitat designation. This analysis employs "without critical habitat" and "with critical habitat" scenarios. The "without critical habitat" scenario represents the baseline for the analysis, considering protections otherwise accorded the Bi-State DPS--for example, under the Federal listing and other Federal, State, and local laws and conservation plans. The "with critical habitat" scenario describes the incremental costs associated with the designation of critical habitat for the DPS. The incremental conservation efforts and associated costs are those not expected to occur absent the designation of critical habitat for the DPS. This document uses the term "conservation efforts" to describe a variety of measures that may be suggested or required by the Service to address impacts to critical habitat during informal or formal consultations under section 7 of the Act.

58. According to section 4(b)(2) of the ESA, the Service must consider the economic costs, impacts to national security, and other relevant impacts of designating any particular area as critical habitat. An area may be excluded from designation as critical habitat if the benefits of exclusion (i.e., the costs that would be avoided if an area were excluded from the designation) outweigh the benefits of designation so long as exclusion of the area will not result in extinction of the species or DPS. Such an exclusion is made at the discretion of the Secretary of the U.S. DOI. **The purpose of the economic analysis is to provide information to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.**[30] In addition, this information allows the Service to address the requirements of Executive Orders 12866, 13132, 13211, and 13563; the UMRA; and the RFA, as amended by SBREFA.[31]

59. This chapter describes the framework for this analysis. First, we describe case law that led to the selection of the framework applied in this report. Next, we describe in economic terms the general categories of economic effects that are the focus of this analysis, including a discussion of both efficiency and distributional effects. This chapter

[30] 16 U.S.C. §1533(b)(2).

[31] Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993; Executive Order 13563, *Improving Regulation and Regulatory Review*, January 18, 2011; Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights, March 15, 1988; Executive Order 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, May 18, 2001; 5 U.S.C. §§ 601 et seq; Pub Law No. 104-121; and 2 U.S.C. §§ 1501 et seq.

then defines the analytic framework used to measure these costs in the context of critical habitat regulation. We conclude with a discussion of the consideration of economic benefits, information sources relied upon in the analysis, and presentation of results.

2.1 BACKGROUND

60. The OMB produces guidelines for conducting economic analysis of regulations, directing Federal agencies to measure the costs of a regulatory action against a baseline (i.e., costs that are "incremental" to the baseline). OMB defines the baseline as the "best assessment of the way the world would look absent the proposed action."[32] In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat. Costs that are incremental to that baseline (i.e., occurring over and above existing constraints) are attributable to the proposed regulation. Significant debate has occurred regarding whether assessing the costs of the Service's proposed regulations using this baseline approach is appropriate in the context of critical habitat designation.

61. In 2001, the U.S. Tenth Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic costs of proposed critical habitat, regardless of whether those costs are attributable co-extensively to other causes.[33] Specifically, the court stated,

> "The statutory language is plain in requiring some kind of consideration of economic impact in the CHD [critical habitat designation] phase. Although 50 C.F.R. 402.02 is not at issue here, the regulation's definition of the jeopardy standard as fully encompassing the adverse modification standard renders any purported economic analysis done utilizing the baseline approach virtually meaningless. We are compelled by the canons of statutory interpretation to give some effect to the congressional directive that economic impacts be considered at the time of critical habitat designation…. Because economic analysis done using the FWS's [Fish and Wildlife Service's] baseline model is rendered essentially without meaning by 50 C.F.R. § 402.02, we conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes. Thus, we hold the baseline approach to economic analysis is not in accord with the language or intent of the ESA [Endangered Species Act]."[34]

62. Since that decision, however, courts in other cases have held that an incremental analysis of costs stemming solely from the critical habitat rulemaking is proper.[35] For example, in

[32] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, accessed at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[33] *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001).

[34] *Ibid.*

[35] In explanation of their differing conclusion, later decisions note that in *New Mexico Cattle Growers*, the U.S. Tenth Circuit Court of Appeals relied on a Service regulation that defined "destruction and adverse modification" in the context of section 7 consultation as effectively identical to the standard for "jeopardy." Courts had since found that this definition of

a March 2006 ruling on a challenge to the August 2004 critical habitat rule for *Astragalus magdalenae var. peirsonii* (Peirson's milk-vetch) the U.S. District Court for the Northern District of California stated,

> "The Court is not persuaded by the reasoning of *New Mexico Cattle Growers*, and instead agrees with the reasoning and holding of *Cape Hatteras Access Preservation Alliance v. U.S. Dep't of the Interior*, 344 F. Supp 2d 108 (D.D.C. 2004). That case also involved a challenge to the Service's baseline approach and the court held that the baseline approach was both consistent with the language and purpose of the ESA and that it was a reasonable method for assessing the actual costs of a particular critical habitat designation *Id* at 130. 'To find the true cost of a designation, the world with the designation must be compared to the world without it.'"[36]

63. More recently, in 2010, the U.S. Ninth Circuit Court of Appeals came to similar conclusions during its review of critical habitat designations for the Mexican spotted owl (*Strix occidentalis*) and 15 vernal pool species.[37] Plaintiffs in both cases requested review by the Supreme Court, which declined to hear the cases in 2011.

64. Several Courts of Appeal, including the Ninth Circuit and the Fifth Circuit, have invalidated the Service's regulation defining destruction or adverse modification of critical habitat.[38] At this time the Service is analyzing whether destruction or adverse modification would occur based on the statutory language of the Act itself, which requires the Service to consider whether the agency's action is likely "to result in the destruction or adverse modification of habitat which is determined by the Service to be critical" to the conservation of the species. To perform this analysis, the Service considers how the proposed action is likely to impact the function of the critical habitat unit in question. To assist us in evaluating these likely costs, the Service provided information regarding what potential consultations could occur in the critical habitat units for the Bi-State DPS and what project modifications may be imposed as a result of critical habitat designation. The Service also provided a memorandum characterizing the effects of critical habitat designation over and above those associated with the listing (see Appendix C). A detailed description of the methodology used to define baseline and incremental costs is provided later in this section.

"adverse modification" was too narrow. For more details, see the discussion of *Gifford Pinchot Task Force v. United States Fish and Wildlife Service* provided later in this section.

[36] *Center for Biological Diversity et al., Plaintiffs, v. United States Bureau of Land Management et al., Defendants and American Sand Association, et al., Defendant Intervenors*. Order re: Cross Motions for Summary Judgment, Case 3:03-cv-02509 Document 174 Filed 03/14/2006. (44-45)

[37] Home Builders Association of Northern California v. United States Fish and Wildlife Service, 616 F.3d 983 (9th Cir. 2010), cert. denied, 179 L. Ed 2d 301, 2011 U.S. Lexis 1392, 79 U.S.L.W. 3475 (2011); Arizona Cattle Growers v. Salazar, 606 F. 3d 1160 (9th Cir. 2010), cert. denied, 179 L. Ed. 2d 300, 2011 U.S. LEXIS 1362, 79 U.S.L.W. 3475 (2011).

[38] *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004); *Sierra Club v. U. S. Fish and Wildlife Service*, 245 F.3d 434 (5th Cir. 2001).

2.2 CATEGORIES OF POTENTIAL ECONOMIC EFFECTS OF SPECIES CONSERVATION

65. This economic analysis considers both the economic efficiency and distributional effects that may result from efforts to protect the Bi-State DPS and its habitat (hereafter referred to collectively as "Bi-State DPS conservation efforts"). Economic efficiency effects generally reflect "opportunity costs" associated with the commitment of resources required to accomplish species and habitat conservation. For example, if the set of activities that may take place on a parcel of land is limited as a result of the designation or the presence of the species, and thus the market value of the land is reduced, this reduction in value represents one measure of opportunity cost or change in economic efficiency. Similarly, the costs incurred by a Federal action agency to consult with the Service on critical habitat under section 7 represent opportunity costs of Bi-State DPS conservation efforts.

66. This analysis also addresses the distribution of costs associated with the critical habitat designation, including an assessment of any local or regional costs of Bi-State DPS conservation and the potential effects of conservation efforts on small entities and the energy industry. This information may be used by decision-makers to assess whether the effects of Bi-State DPS conservation efforts unduly burden a particular group or economic sector. For example, while conservation efforts may have a small cost relative to the national economy, individuals employed in a particular sector of the regional economy may experience relatively greater costs. The differences between economic efficiency effects and distributional effects, as well as their application in this analysis, are discussed in greater detail below.

2.2.1 EFFICIENCY EFFECTS

67. At the guidance of OMB and in compliance with Executive Order 12866 "Regulatory Planning and Review," Federal agencies measure changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action. In the context of regulations that protect the Bi-State DPS and its habitat, these efficiency effects represent the opportunity cost of resources used or benefits foregone by society as a result of the regulations. Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.[39]

68. In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a Federal land manager may enter into a section 7 consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation is an economic opportunity cost because the landowner or manager's time and effort would have been spent in an alternative activity had the parcel not been included in the designation. When compliance activity is not expected to significantly affect markets -- that is, not result in a shift in the quantity of a good or service provided

[39] For additional information on the definition of "surplus" and an explanation of consumer and producer surplus in the context of regulatory analysis, see: Gramlich, Edward M., A Guide to Benefit-Cost Analysis (2nd Ed.), Prospect Heights, Illinois: Waveland Press, Inc., 1990; and U.S. Environmental Protection Agency, Guidelines for Preparing Economic Analyses, EPA 240-R-00-003, September 2000, accessed at http://yosemite.epa.gov/ee/epa/eed.nsf/ webpages/Guidelines.html.

at a given price, or in the quantity of a good or service demanded given a change in price -- the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

69. Where habitat protection measures are expected to significantly impact a market, it may be necessary to estimate changes in producer and consumer surpluses. For example, protection measures that reduce or preclude the development of large areas of land may shift the price and quantity of housing supplied in a region. In this case, changes in economic efficiency (i.e., social welfare) can be measured by considering changes in producer and consumer surplus in the market. These types of market impacts are generally not anticipated to result from sage-grouse conservation efforts. This analysis therefore focuses on compliance costs.

2.2.2 DISTRIBUTIONAL AND REGIONAL ECONOMIC EFFECTS

70. Measurements of changes in economic efficiency focus on the net cost of conservation efforts, without consideration of how certain economic sectors or groups of people are affected. Thus, a discussion of efficiency effects alone may miss important distributional considerations. OMB encourages Federal agencies to consider distributional effects separately from efficiency effects.[40] This analysis considers several types of distributional effects, including impacts on small entities; impacts on energy supply, distribution, and use; and regional economic impacts. It is important to note that these are fundamentally different measures of economic cost than efficiency effects, and thus cannot be added to or compared with estimates of changes in economic efficiency.

Impacts on Small Entities, Governments, and Energy Supply, Distribution, and Use

71. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the RFA, might be affected by future species critical habitat conservation efforts.[41] It also assesses the potential for impacts to state, local and Tribal governments and the private sector as required by Title II of UMRA.[42] In addition, in response to Executive Order 13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," this analysis considers the future impacts of conservation efforts on the energy industry and its customers.[43]

Regional Economic Effects

72. Regional economic impact analysis can provide an assessment of the potential localized effects of conservation efforts. Specifically, regional economic impact analysis produces a quantitative estimate of the potential magnitude of the initial change in the regional economy resulting from a regulatory action. Regional economic impacts are commonly

[40] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, accessed at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[41] 5 U.S.C. §§ 601 et seq.

[42] 2 U.S.C. §§ 1531 et seq.

[43] Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, May 18, 2001.

measured using regional input/output models. These models rely on multipliers that represent the relationship between a change in one sector of the economy (e.g., expenditures by mining companies) and the effect of that change on economic output, income, or employment in other local industries (e.g., suppliers of goods and services to mining companies). These economic data provide a quantitative estimate of the magnitude of shifts of jobs and revenues in the local economy.

73. The use of regional input-output models in an analysis of the impacts of species and habitat conservation efforts can overstate the long-term impacts of a regulatory change. These models provide a static view of the economy of a region. That is, they measure the initial impact of a regulatory change on an economy but do not consider long-term adjustments that the economy will make in response to this change. For example, these models provide estimates of the number of jobs lost as a result of a regulatory change, but do not consider re-employment of these individuals over time or other adaptive responses by affected businesses. In addition, the flow of goods and services across the regional boundaries defined in the model may change as a result of the regulation, compensating for a potential decrease in economic activity within the region.

74. Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than efficiency losses (that is, regional impacts may occur even if there is no net change in economic activity at the national level). Thus, these types of distributional effects are reported separately from efficiency effects (i.e., not summed). In addition, measures of regional economic impact cannot be compared with estimates of efficiency effects, but should be considered as distinct measures of impact. Because the majority of forecast costs in this analysis are administrative in nature, and the types of activities occurring within the proposed critical habitat designation are likely to continue, we do not employ regional economic analysis.

2.3 ANALYTIC FRAMEWORK AND SCOPE OF THE ANALYSIS

75. This analysis: 1) identifies those economic activities most likely to threaten the Bi-State DPS and its habitat; 2) describes the baseline regulatory protection for the DPS; and 3) monetizes the incremental economic costs to avoid adverse modification within the proposed critical habitat designation. This section provides a description of the methodology used to separately identify baseline protections from the incremental costs stemming from the proposed designation of critical habitat for the Bi-State DPS. This evaluation of costs in a "with critical habitat designation" versus a "without critical habitat designation" framework effectively measures the net change in economic activity associated with the proposed rulemaking. The section concludes by addressing the consideration of benefits and the geographic scope and time frame for the analysis.

2.3.1 IDENTIFYING BASELINE COSTS

76. The baseline for this analysis is the existing and future state of regulation, not including the designation of critical habitat, providing protection to the Bi-State DPS under Act.[44] This "without critical habitat designation" scenario also considers a wide range of additional factors beyond the Act that provide protection to the listed entity. As recommended by OMB, the baseline incorporates, as appropriate, trends in market conditions, implementation of other regulations and policies by the Service and other government entities, and trends in other factors that have the potential to affect economic costs and benefits, such as the rate of regional economic growth in potentially affected industries.

77. Baseline protections include sections 7, 9, and 10 of the Act, and economic costs resulting from these protections to the extent that they are expected to occur absent the designation of critical habitat for the Bi-State DPS. This analysis describes and monetizes these baseline protections.

- Section 7 of Act, absent critical habitat designation, requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species. Consultations under the jeopardy standard result in administrative costs, as well as costs associated with conservation efforts resulting from consideration of this standard.
- Section 9 defines the actions that are prohibited by the Act. In particular, it prohibits the "take" of endangered wildlife, where "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[45] The economic costs associated with this section manifest themselves in sections 7 and 10.
- Under section 10(a)(1)(B) of the Act, an entity (e.g., a landowner or local government) may develop a habitat conservation plan (HCP) for a listed animal species in order to meet the conditions for issuance of an incidental take permit in connection with a land or water use activity or project.[46] The requirements posed by the HCP may have economic costs associated with the goal of ensuring that the effects of incidental take are minimized and mitigated to the maximum extent practicable. The development and implementation of HCPs is considered a baseline protection for the species and habitat unless the HCP is determined to be precipitated by the designation of critical habitat, or the designation influences stipulated conservation efforts under HCPs.

[44] The Service cannot designate critical habitat for a species that is not listed under the Act. Therefore, for purposes of this analysis, we assume that the Bi-State DPS is listed as threatened. As a result, we assume that protections due to listing of the DPS occur in the baseline.

[45] 16 U.S.C. § 1532.

[46] U.S. Fish and Wildlife Service. 2002. "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at http://endangered.fws.gov/hcp/.

Enforcement actions taken in response to violations of the Act are not included in this analysis.

78. The protection of listed species and habitat is not limited to the Act. Other Federal agencies, as well as State and local governments, may also seek to protect the natural resources under their jurisdiction. If compliance with the Clean Water Act (CWA) or state environmental quality laws, for example, protects habitat for the Bi-State DPS, such protective efforts are considered to be baseline protections and costs associated with these efforts are categorized accordingly. Of note, however, is that such efforts may not be considered baseline in the case that they would not have been triggered absent the designation of critical habitat. In these cases, they are considered incremental costs and are discussed below.

2.3.2 IDENTIFYING INCREMENTAL COSTS

79. This analysis quantifies the potential incremental costs of the proposed critical habitat designation. The focus of the incremental analysis is to determine the costs on land uses and activities from the designation of critical habitat that are above and beyond those costs resulting from existing required efforts as a result of the DPS's listing or voluntary conservation efforts undertaken by other Federal, state, and local regulations or guidelines.

80. When critical habitat is designated, section 7 requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat (in addition to considering whether the actions are likely to jeopardize the continued existence of the species). The added administrative costs of including consideration of critical habitat in section 7 consultations, and the additional costs of implementing conservation efforts (e.g., reasonable and prudent alternatives) resulting from the protection of critical habitat are the compliance costs of designating critical habitat. These costs are not in the baseline and are considered incremental costs of the rulemaking.

81. Incremental costs may be the compliance costs associated with additional effort for consultations, reinitiated consultations, new consultations occurring specifically because of the designation, and additional conservation efforts that would not have been requested under the jeopardy standard. Additionally, incremental costs may include other, non-section 7 costs resulting from designation of critical habitat, such as triggering of additional requirements under state or local laws intended to protect sensitive habitat, and uncertainty and perceptional effects on markets.

Section 7 Costs

82. The section 7-related incremental costs of critical habitat designation stem from the consideration of the potential for destruction or adverse modification of critical habitat during section 7 consultations. The two categories of incremental, section 7-related costs of critical habitat designation are: 1) the administrative costs of conducting section 7 consultation; and 2) implementation of any conservation efforts requested by the Service

through section 7 consultation to avoid potential destruction or adverse modification of critical habitat.[47]

83. Section 7(a)(2) of the Act requires Federal agencies to consult with the Service whenever activities that they undertake, authorize, permit, or fund may affect a listed species or designated critical habitat. Parties involved in section 7 consultations include the Service, a Federal "action agency," such as the U.S. Army Corps of Engineers (Corps), and in some cases, a private entity involved in the project or land use activity ("applicant"), such as the recipient of a CWA section 404 permit. If there is an applicant, the action agency (i.e., the agency with the Federal nexus necessitating the consultation) consults with the Service and also serves as the liaison between the applicant and the Service.

84. During consultation, the Service, the action agency, and the entity applying for Federal funding or permitting (if applicable) communicate in an effort to minimize potential adverse effects to the species and to the proposed critical habitat. Communication between these parties may occur via written letters, phone calls, in-person meetings, or any combination of these interactions. The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, and the potential effects to the species and designated critical habitat associated with the proposed activity, the Federal agency, and whether there is a private applicant involved.

85. Section 7 consultations with the Service may be either informal or formal. *Informal consultation*s consist of discussions between the Service, the action agency, and the applicant concerning an action that may affect a listed species or its designated critical habitat, and are designed to identify and resolve potential concerns at an early stage in the planning process. Informal consultations are generally concluded via a concurrence letter from the Service to the action agency. By contrast, a *formal consultation* is required if the action agency determines that its proposed action may or will adversely affect the listed species or designated critical habitat in ways that cannot be resolved through informal consultation. Formal consultation typically includes the preparation of a biological assessment by the action agency. The formal consultation process results in the Service's written determination in its Biological Opinion of whether or not the action is likely to jeopardize a species or destroy or adversely modify critical habitat. Regardless of the type of consultation or proposed project, section 7 consultations can require administrative effort on the part of all participants.

Administrative Section 7 Consultation Costs

86. In suitable habitat, consultations are required for activities that involve a Federal nexus and may affect the DPS regardless of whether or not critical habitat is designated. However, the designation may increase the effort for these consultations if the project or activity in question may affect critical habitat. The designation may also result in an increase in the number of consultations in unsuitable habitat. Federal agencies conducting activities located in unsuitable

[47] The term conservation efforts is intended to broadly capture efforts that stakeholders may undertake for the species, regardless of whether these efforts are explicitly called for in a section 7 consultation.

habitat would, in most cases, not have been required to consult under the jeopardy standard. Thus, administrative efforts for consultation could result in baseline and/or incremental costs, depending on the location of the consultation.

87. In general, three different scenarios associated with the designation of critical habitat for the Bi-State DPS may trigger incremental administrative consultation costs:

1) **Additional effort to address adverse modification in a new consultation -** New consultations taking place after critical habitat designation may require additional effort to address critical habitat issues above and beyond the listing issues. In this case, only the additional administrative effort required to consider critical habitat is considered an incremental cost of the designation.

2) **Re-initiation of consultation to address adverse modification -** Consultations that have already been completed on a project or activity (but for which the project or activity is not yet completed) may require re-initiation to address critical habitat. In this case, the costs of re-initiating the consultation, including all associated administrative and project modification costs are considered incremental costs of the designation. Re-initiations of consultation for the Bi-State DPS are not anticipated due to the concurrent listing and critical habitat designation rulemakings.

3) **Incremental consultation resulting entirely from critical habitat designation -** Critical habitat designation may trigger additional consultations that may not occur absent the designation (e.g., for an activity for which adverse modification may be an issue, while jeopardy is not). Such consultations may, for example, be triggered in critical habitat areas that are currently less suitable or unsuitable for use by the Bi-State DPS. All associated administrative and project modification costs of these consultations are considered incremental costs of the designation.

88. The administrative costs of these consultations vary depending on the specifics of the project. One way to address this variability is to show a range of possible costs of consultation, as it may not be possible to predict the precise level of effort of each future consultation. Review of consultation records and discussions with multiple Service field offices resulted in a range of estimated administrative costs of consultation. For simplicity, the average of the range of costs in each category is applied in this analysis (see Exhibit 2-1).

EXHIBIT 2-1. RANGE OF ADMINISTRATIVE CONSULTATIONS COSTS (2014$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
BASELINE ADMINISTRATIVE COSTS OF CONSULTATION					
CONSULTATION CONSIDERING JEOPARDY (DOES NOT INCLUDE CONSIDERATION OF ADVERSE MODIFICATION)					
Technical Assistance	$430	N/A	$790	N/A	$1,200
Informal	$1,900	$2,400	$1,500	$1,500	$7,300
Formal	$4,200	$4,700	$2,600	$3,600	$15,100
Programmatic	$12,600	$10,500	N/A	$4,200	$27,300
INCREMENTAL ADMINISTRATIVE COSTS OF CONSULTATION					
NEW CONSULTATION RESULTING ENTIRELY FROM CRITICAL HABITAT DESIGNATION (TOTAL COST OF A CONSULTATION CONSIDERING BOTH JEOPARDY AND ADVERSE MODIFICATION)					
Technical Assistance	$600	N/A	$1,100	N/A	$1,600
Informal	$2,500	$3,200	$2,100	$2,000	$9,700
Formal	$5,600	$6,300	$3,500	$4,800	$20,200
Programmatic	$16,800	$14,000	N/A	$5,600	$36,400
NEW CONSULTATION CONSIDERING ONLY ADVERSE MODIFICATION (UNSUITABLE HABITAT)					
Technical Assistance	$430	N/A	$790	N/A	$1,200
Informal	$1,900	$2,400	$1,500	$1,500	$7,300
Formal	$4,200	$4,700	$2,600	$3,600	$15,100
Programmatic	$12,600	$10,500	N/A	$4,200	$27,300
RE-INITIATION OF CONSULTATION TO ADDRESS ADVERSE MODIFICATION					
Technical Assistance	$290	N/A	$530	N/A	$810
Informal	$1,200	$1,600	$1,000	$1,000	$4,800
Formal	$2,800	$3,100	$1,800	$2,400	$10,100
Programmatic	$8,400	$7,000	N/A	$2,800	$18,200
ADDITIONAL EFFORT TO ADDRESS ADVERSE MODIFICATION IN A NEW CONSULTATION (ADDITIVE WITH BASELINE COSTS ABOVE OF CONSIDERING JEOPARDY)					
Technical Assistance	$140	N/A	$260	N/A	$410
Informal	$620	$790	$510	$500	$2,400
Formal	$1,400	$1,600	$900	$1,200	$5,000
Programmatic	$4,200	$3,500	N/A	$1,400	$9,100

Source: IEc analysis of full administrative costs is based on data from: Office of Personnel Management. 2014. Federal Government Schedule Rates; and a review of consultation records from several Service field offices across the country conducted in 2002.

Notes:

1. Estimates are rounded to two significant digits and may not sum due to rounding.
2. Estimates reflect average hourly time required by staff.

Section 7 Conservation Effort Costs

89. Section 7 consultations considering critical habitat may also result in additional conservation effort recommendations specifically addressing potential destruction or adverse modification of critical habitat. For future consultations considering jeopardy and adverse modification, and for re-initiations of past consultations to consider critical habitat, the economic costs of conservation efforts undertaken to avoid adverse modification are considered incremental costs of critical habitat designation. For consultations that are forecast to occur specifically because of the designation, costs of all associated conservation efforts are assumed to be incremental costs of the designation. This is summarized below.

1. **Additional effort to address adverse modification in a new consultation -** Only project modifications above and beyond what would be requested to avoid or minimize jeopardy are considered incremental.
2. **Re-initiation of consultation to address adverse modification -** Only project modifications above and beyond what was requested to avoid or minimize jeopardy are considered incremental. As noted above, due to the concurrent listing and critical habitat designation rulemakings for the Bi-State DPS, re-initiations of consultation due solely to the Bi-State DPS are not expected.
3. **New consultation resulting entirely from critical habitat designation-** Costs of all project modifications are considered incremental.

Other Costs

90. The designation of critical habitat may, under certain circumstances, affect actions that do not have a Federal nexus and thus are not subject to the provisions of section 7 under the Act. These other (i.e., non-section 7) costs are those unintended changes in economic behavior that may occur outside of the Act, through other Federal, state, or local actions, and that are caused by the Bi-State DPS listing or designation of critical habitat. This section identifies common types of non-section 7 impacts that may be associated with the designation of critical habitat. Importantly, these types of impacts are not always considered incremental. In the case that these types of conservation efforts and economic effects are expected to occur regardless of critical habitat designation, they are appropriately considered baseline costs.

91. These types of other impacts may include:

- **Habitat Conservation Plans and Other Management Plans.** Under section 10 of the Act, private landowners seeking an incidental take permit must develop an HCP to counterbalance the potential harmful effects that an otherwise lawful activity may have on a species (or in the case of this analysis, the DPS). As such, the purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately avoided or minimized. Application for an incidental take permit and completion of an HCP are not required or necessarily recommended for a critical habitat designation. However, in certain situations the new information provided by the proposed critical habitat rule may prompt a

landowner to apply for an incidental take permit or otherwise develop a management plan. For example, a landowner may have been previously unaware of the potential presence of the DPS on his or her property, and expeditious completion of an HCP or management plan may offer the landowner regulatory relief in the form of exclusion from the final critical habitat designation. In this case, the effort involved in creating the plan and undertaking associated conservation efforts is considered an incremental effect of designation

- **Triggering Other State and Local Laws**. Under certain circumstances, species listing or critical habitat designation may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic costs under other state or local laws.
- **Time Delays.** Both public and private entities may experience time delays for projects and other activities due to requirements associated with the need to reinitiate the section 7 consultation process or achieve compliance with other laws triggered by the listing or critical habitat designation.
- **Regulatory Uncertainty or Stigma.** Government agencies and affiliated private parties who consult with the Service under section 7 may face uncertainty concerning whether project modifications will be recommended by the Service and what the nature of these alternatives will be. This uncertainty may diminish as consultations are completed and additional information becomes available on the effects of the listing or critical habitat designation on specific activities. Where information suggests that this type of regulatory uncertainty stemming from the designation may affect a project or economic behavior, associated costs are considered non-section 7 costs of the designation. In some cases, the public may perceive that the regulation will result in limitations on private property uses above and beyond those conservation efforts actually recommended by the Service. Public attitudes about potential limits or restrictions can cause real economic effects to property owners, regardless of whether such limits are imposed. As the public becomes aware of the true regulatory burden imposed by listing or critical habitat designation, the cost of the regulations on property markets may decrease. Data allowing for the quantification of such effects are generally unavailable.

92. The potential for these types of impacts is addressed in more detail in the following activity-specific chapters. We also discuss the potential for impacts associated with regulatory uncertainty and stigma, particularly in the context of development activities on privately owned lands, and agricultural and grazing activities on both public and private lands.

Approach to Identifying Incremental Costs

93. To inform the economic analysis for the proposed Bi-State DPS critical habitat, the Service provided a memorandum describing its expected approach to conservation for the Bi-State DPS following critical habitat designation. We rely on this memorandum to provide information on how the Service intends to address projects that might lead to

adverse modification of critical habitat as distinct from projects that may jeopardize the DPS. The Service's memorandum is provided in Appendix C.

94. The nature and extent of potential costs generated by critical habitat on a particular area or planned activity will vary depending on two key variables: (1) whether a Federal nexus exists for a potentially affected activity and (2) whether the affected area is considered suitable or currently unsuitable for the Bi-State DPS. In the following sections we discuss each variable in more detail. Exhibit 2-2 provides a visual illustration of the employed decision framework.

Variable 1: Does a Federal nexus exist for activities expected to occur within the proposed designation?

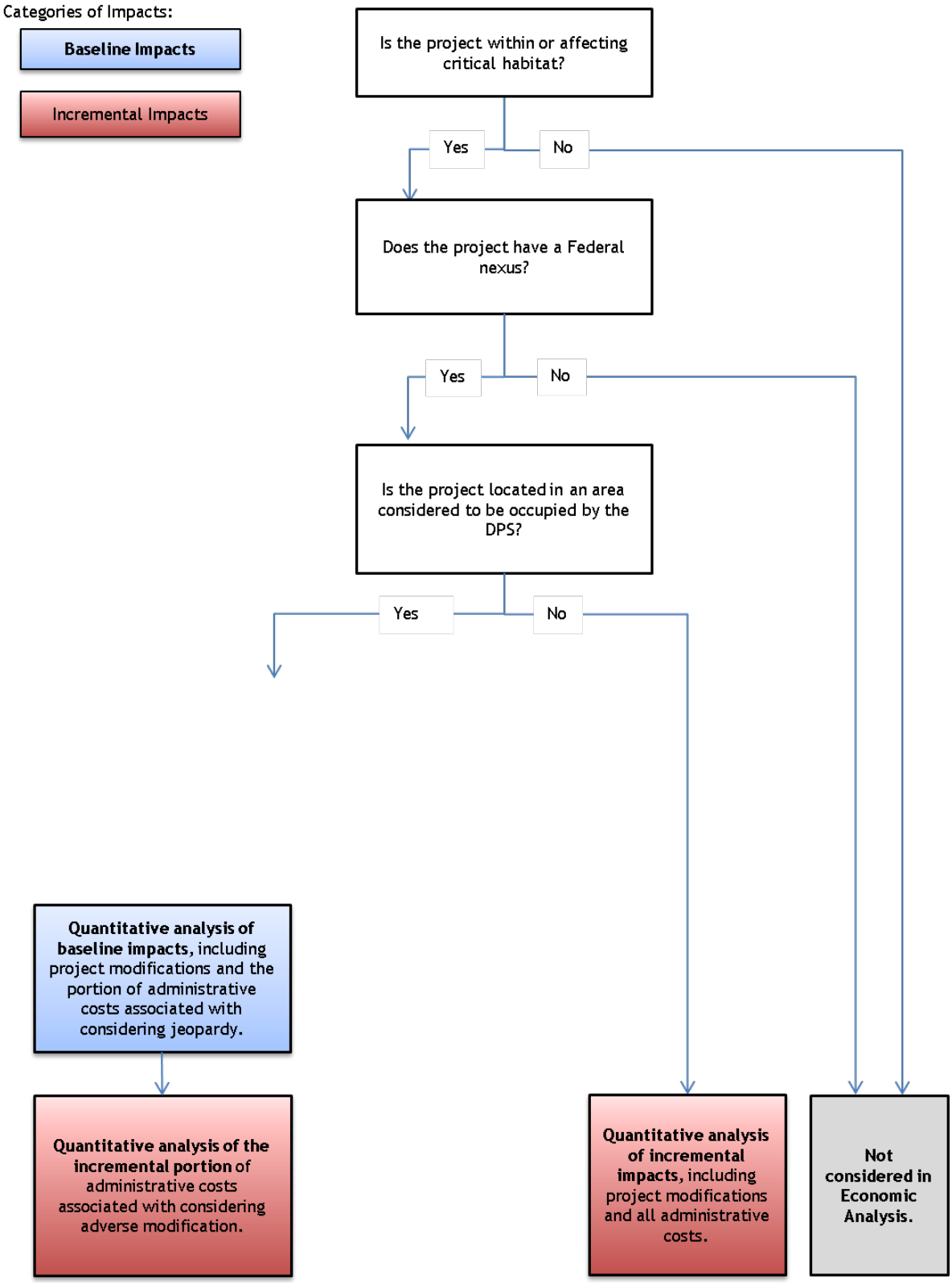
95. If a Federal nexus exists for a planned activity in proposed critical habitat, we assume that a section 7 consultation will occur, unless an action agency informs us that consultation is unlikely. Possible sources of a Federal nexus include the location of activities on federally-managed lands; Federal funding (e.g., Federal Highway Administration funding for transportation projects, or agricultural operations participating in programs of the NRCS or Farm Service Agency (FSA)); and Federal permits (e.g., issuance of CWA section 404 permits by the Corps). If no Federal nexus exists, we assume that no consultation on that activity will occur. The analysis separately considers whether or not non-section 7 costs to activities without a Federal nexus may occur as a result of the critical habitat designation.

Variable 2: Is the affected area considered suitable or currently unsuitable by the Bi-State DPS?

96. All proposed critical habitat units include a mix of suitable and unsuitable habitat. According to the proposed rule, the Service relied on two data sources to identify suitable habitat:

- 2012 Bi-State Preliminary Priority Habitat (PPH) map developed by the Bi-State Technical Advisory Committee (TAC). The Bi-State TAC consists of biologists representing a number of state and Federal resource management agencies, including the California Department of Fish and Wildlife (CDFW), Nevada Department of Wildlife (NDOW), BLM, USFS, NRCS, U.S. Geological Survey (USGS), and the Service. According to the proposed rule, this cooperative mapping effort relied primarily on a series of habitat suitability rankings, supplemented by a significant amount of population and habitat use data specific to the Bi-State area. Ground-truthing of a number of the areas delineated in the 2012 PPH map provide further confirmation of the accuracy of the mapping effort to identify areas used by the Bi-State DPS.
- 2008 map produced by the BLM in collaboration with the USFS.

EXHIBIT 2-2. FRAMEWORK FOR DETERMINING BASELINE AND INCREMENTAL COSTS



97. According to the proposed rule, the 2012 PPH map and the 2008 BLM map "largely correlate with one another."[48] The combination of the areas delineated in these two maps consists of 1,458,381 acres, equal to 78 percent of the total area proposed as critical habitat. According to the proposed rule, these areas represent the best available data on currently suitable Bi-State DPS habitat.[49]

98. Based on this information, we assume that consultations for projects that occur in suitable habitat are attributable to the baseline and would occur regardless of the designation of critical habitat. Specifically, we assume areas included in the 2008 BLM map and the 2012 map represent areas where agencies and the public are already aware of the need to consider the effects of future projects on the Bi-State DPS. Therefore, designation of these areas as critical habitat is unlikely to provide new information about the need to consult with the Service under section 7 of the Act. In other words, we assume that landowners and project developers undertaking an assessment of Bi-State DPS presence in those critical habitat areas identified as suitable habitat will conclude that the project location is being used by the DPS. Therefore, such projects are likely to undergo consultation with the Service as a result of the listing of the DPS.

99. Because the survival of the Bi-State DPS is closely tied to the quality of habitat, the Service anticipates that in areas of critical habitat considered currently suitable "section 7 consultation analyses will result in no differences between recommendations to avoid jeopardy or adverse modification."[50] Accordingly, we assume the incremental costs of the proposed designation in suitable habitat are limited to the additional administrative effort required to address adverse modification during section 7 consultation.

100. The remaining areas proposed as critical habitat (409,636 acres, or 22 percent of the proposed critical habitat designation) are considered currently unsuitable habitat that consists of unused corridors and sites interspersed within suitable habitat. According to the proposed rule, these corridors and sites provide "essential connectivity" necessary for the conservation and recovery of the Bi-State DPS.[51] Because unsuitable habitat consists of areas "unused" by the DPS or "currently unsuitable for use," our analysis assumes that future section 7 consultations in these areas would not have occurred absent critical habitat designation. Thus, any future consultations on the Bi-State DPS in areas of critical habitat considered currently unsuitable, as well as any associated project modifications, are incremental costs of the proposed critical habitat designation.

101. As previously discussed, while the Service does not anticipate any differences in the types of project modifications requested to avoid jeopardy and those to avoid adverse modification in suitable habitat, the Service notes that it will likely afford "greater

[48] 2013 Proposed Critical Habitat Rule. 78 FR 64337.

[49] 2013 Proposed Critical Habitat Rule. 78 FR 64337-64338.

[50] U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment for the Greater Sage-Grouse. February 25, 2013.

[51] 2013 Proposed Critical Habitat Rule. 78 FR 64337.

latitude" regarding activities in unsuitable habitat.[52] Specifically, the Service anticipates that conservation efforts recommended in unsuitable habitat "will generally be less restrictive." In particular, such latitude is likely for activities that generate short-term impacts or that do not result in permanent unavailability of habitat. Additionally, in considering appropriate recommendations for new infrastructure development proposed in unsuitable habitat, the Service will likely focus on recommendations that minimize impacts, rather than complete habitat avoidance.[53]

2.3.3 BENEFITS

102. Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.[54] OMB's Circular A-4 distinguishes two types of economic benefits: *direct benefits* and *ancillary benefits.* Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking.[55]

103. The primary intended benefit of critical habitat (i.e., the direct benefit) is to support the conservation of endangered and threatened species, such as the Bi-State DPS. Thus, attempts to develop monetary estimates of the primary benefits of this proposed critical habitat designation would focus on the public's willingness to pay to achieve the conservation benefits to the DPS resulting from this designation. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research.[56] Rather than rely on economic measures, the Service believes that the direct benefits of the proposed critical habitat designation are best expressed in biological terms that can be weighed against the expected cost of the rulemaking.

104. However, the published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species, including the greater sage-grouse and other avian species. Chapter 11 of this analysis considers the applicability of this literature to the Bi-State DPS.

105. Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species, including the Bi-State DPS, specifically by protecting the physical or biological features essential to the conservation of the DPS. To this end, critical habitat designation can result in maintenance of particular environmental

[52] U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment for the Greater Sage-Grouse. February 25, 2013.

[53] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

[54] Executive Order 12866, Regulatory Planning and Review, September 30, 1993.

[55] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, accessed at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[56] *Ibid.*

conditions that may generate other social benefits aside from the preservation of the species. That is, management actions undertaken to conserve a species or its habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in a region or improved water quality. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the negative costs to a region's economy resulting from actions to conserve a species or its habitat.

2.3.4 GEOGRAPHIC SCOPE OF THE ANALYSIS

106. Economic costs of Bi-State DPS conservation are considered across the entire area proposed for critical habitat designation, as defined in Chapter 1. Results are presented by proposed critical habitat unit.

2.3.5 ANALYTIC TIME FRAME

107. Ideally, the time frame of this analysis would be based on the expected time period over which the critical habitat regulation is expected to be in place. Specifically, the analysis would forecast costs of implementing this rule through recovery efforts (i.e., when the rule is no longer required). Recent guidance from OMB indicates that "if a regulation has no predetermined sunset provision, the agency will need to choose the endpoint of its analysis on the basis of a judgment about the foreseeable future."[57] The "foreseeable future" for this analysis includes, but is not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. Forecast costs will be based on the planning periods for potentially affected projects and will look out over a 20-year time horizon (2014 through 2033). OMB supports this time frame stating that "for most agencies, a standard time period of analysis is ten to 20 years, and rarely exceeds 50 years."[58]

2.4 INFORMATION SOURCES

108. The primary sources of information for this report are communications with, and data provided by, personnel from the Service, local governments, and other stakeholders. In particular, this analysis relies upon the Incremental Effects Memorandum provided by the Service (see Appendix C). In addition, this analysis relies upon existing habitat management and conservation plans that consider the Bi-State DPS. A complete list of references is provided at the end of this document.

2.5 PRESENTATION OF RESULTS

109. Throughout the body of the report, costs are described by proposed critical habitat unit in present value and annualized terms applying a discount rate of seven percent. Additionally, Appendix B provides present and annualized values applying a three percent discount rate for comparison.[59] Appendix B also presents undiscounted annual

[57] U.S. Office of Management and Budget. February 7, 2011. "Regulatory Impact Analysis: Frequently Asked Questions (FAQs)." Accessed on May 3, 2011, at: http://www.whitehouse.gov/sites/default/files/omb/circulars/a004/a-4_FAQ.pdf.

[58] *Ibid*.

[59] The U.S. Office of Management and Budget (OMB) requires Federal agencies to report results using discount rates of three and seven percent (see: U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, accessed at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf).

cost values by activity and unit. Present value and annualized costs are calculated according to the methods described in Exhibit 2-3.

EXHIBIT 2-3. CALCULATING PRESENT VALUE AND ANNUALIZED COSTS

This analysis compares economic costs incurred in different time periods in present value terms. The present value represents the value of a payment or stream of payments in common dollar terms. That is, it is the sum of a series of past or future cash flows expressed in today's dollars. Translation of economic costs of past or future costs to present value terms requires the following: a) past or projected future costs of critical habitat designation; and b) the specific years in which these costs have been or are expected to be incurred. With these data, the present value of the past or future stream of costs (PV_c) from year t to T is measured in 2014 dollars according to the following standard formula:

$$PV_c = \sum_{t}^{T} \frac{C_t}{(1+r)^{t-2014}}$$

C_t = cost of sage-grouse conservation efforts in year t

r = discount rate[a]

Costs for each activity in each unit are also expressed as annualized values. Annualized values are calculated to provide comparison of costs across activities with varying forecast periods (T). For this analysis, activities employ a forecast period of 20 years. Annualized future costs (APV_c) are calculated by the following standard formula:

$$APV_c = PV_c \left[\frac{r}{1-(1+r)^{-(N)}} \right]$$

N = number of years in the forecast period (in this analysis, 20 years)

[a] To discount and annualize costs, guidance provided by the OMB specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, "Circular A-4," September 17, 2003; and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 *Federal Register* 5492, February 3, 2003.)

CHAPTER 3 | POTENTIAL ECONOMIC COSTS TO LIVESTOCK GRAZING ON FEDERAL LANDS

110. This chapter considers costs to livestock grazing operations on Federal lands. According to the proposed rule, some livestock grazing management techniques may threaten the Bi-State DPS and its habitat by degrading or reducing sagebrush habitat.[60] In particular, extreme overgrazing may lead to the permanent loss of sagebrush habitat; moderate grazing may reduce the vegetation used by the DPS for nesting cover.[61] However, we note that the extent to which grazing threatens the DPS and its habitat remains uncertain. For purposes of this analysis, we conservatively rely on the Service's assertion that the most significant concern with livestock grazing in unsuitable habitat is the threat of permanent habitat loss from extreme overgrazing.

111. This chapter proceeds as follows: Section 3.1 provides background on the scope and scale of livestock grazing operations across the proposed critical habitat designation. Section 3.2 summarizes key baseline conservation measures undertaken for these activities. Section 3.3 describes the methodology and approach used to forecast economic costs generated by possible conservation measures recommended for grazing operations. Section 3.4 summarizes the results of this analysis, and section 3.5 discusses key sources of uncertainty in the analysis.

3.1 SCOPE AND SCALE OF LIVESTOCK GRAZING OPERATIONS

112. As shown in Exhibit 3-1, approximately 85 percent (1.6 million acres) of the proposed critical habitat designation is located on Federal livestock grazing allotments. These acres overlap 158 Federal grazing allotments, including 510,000 acres (61 allotments) within the Humboldt-Toiyabe National Forest; 340,000 acres (34 allotments) within the Inyo National Forest; and 730,000 acres (63 allotments) on lands managed by BLM. Exhibit 3-1 shows the distribution of these grazing lands across the proposed critical habitat designation. Exhibit 3-2 provides an overview map of the areas used for livestock grazing.

[60] 2013 Proposed Critical Habitat Rule. 78 FR 64336

[61] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

EXHIBIT 3-1. FEDERAL GRAZING LANDS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT

UNIT	ACRES IN SUITABLE HABITAT	ACRES IN UNSUITABLE HABITAT	TOTAL ACRES
Unit 1. Pine Nut	240,000	37,000	270,000
Unit 2. North Mono Lake	580,000	170,000	760,000
Unit 3. South Mono Lake	270,000	60,000	330,000
Unit 4. White Mountains	140,000	82,000	230,000
Total	**1,200,000**	**350,000**	**1,600,000**
		Percent of Proposed Critical Habitat	**85%**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

113. Federal livestock grazing allotments routinely undergo section 7 consultation as a result of their location on Federal lands. In contrast, privately owned farms and ranches typically lack a Federal nexus for consultation. Consultation is only anticipated for private farms and ranches that participate in Federal programs, such as the Environmental Quality Incentives Program (EQIP) or the Wildlife Habitat Incentive Program (WHIP) that are funded through NRCS, or the Service's Partners for Fish and Wildlife program. However, according to discussions with county representatives, ranchers throughout the proposed critical habitat designation often operate grazing activities on both private and Federal lands. As a result, costs on federally managed grazing land may also affect operations occurring on private lands.[62] This chapter considers costs associated with the use of Federal grazing allotments; Chapter 4 of this report considers additional costs to private farmers and ranchers that may result from participation in voluntary Federal programs.

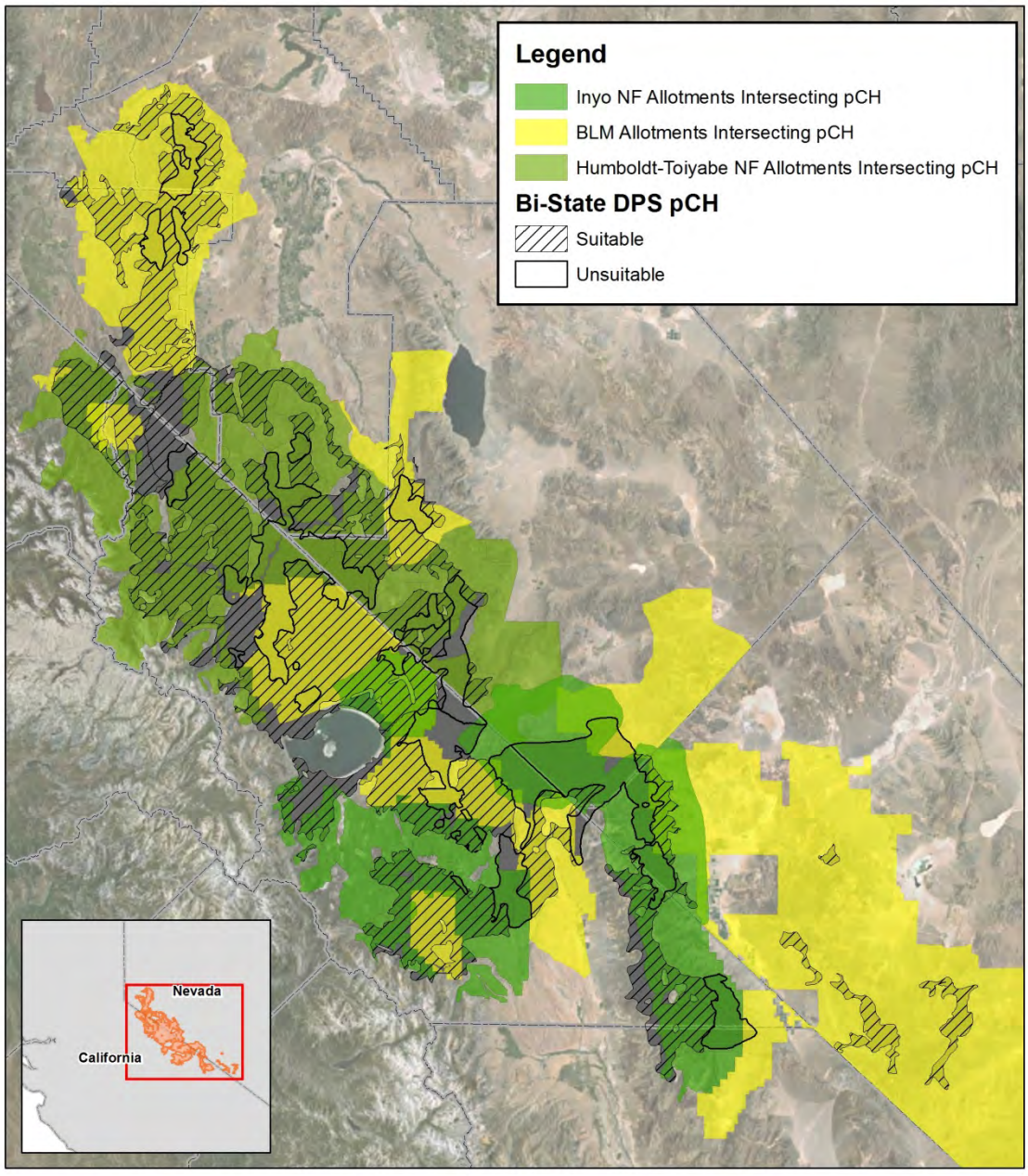
3.2 BASELINE CONSERVATION

114. Federal land managers already implement many conservation measures for the benefit of the Bi-State DPS and its habitat. Of particular significance is the action plan developed in 2012 for the conservation of the Bi-State DPS and its habitat. This document, known as the Bi-State Action Plan, represents a collaborative effort by Federal and State agencies, including the Service, BLM, USFS, and NRCS, to prioritize future conservation measures for the DPS.[63] The Bi-State Action Plan identifies grazing as a low-level threat across the proposed critical habitat designation in part because of existing conservation efforts ongoing in many areas. For example, as of May 2012, the Bi-State Action Plan has implemented permit modifications for 35 livestock grazing allotments covering over one million acres to benefit the Bi-State DPS and its habitat. Examples of conservation measures covered by permit modifications include, but are not limited to:

[62] Reade, Nathan. Inyo and Mono County Agricultural Commissioner. Personal communication on February 17, 2014.

[63] The 2012 Bi-State Action Plan updates and builds on the 2004 Local Area Working Group Action Plan.

EXHIBIT 3-2. OVERVIEW OF FEDERAL GRAZING ALLOTMENTS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT



- Limitations on the number of permitted animals (i.e., reducing stocking rates);
- Limitations on the allowable vegetation use level; and
- Seasonal restrictions.[64]

The stringency with which these conservation measures are implemented across participating allotments varies substantially. For example, of the one million acres participating in this program, exclusion of livestock grazing has been implemented on only 54 acres (less than one-tenth of one percent of all acres considered), all of which are located in riparian meadows.[65]

115. Although implementation of the Bi-State Action Plan provides existing protection to the Bi-State DPS and its habitat, additional conservation efforts may be requested in unsuitable habitat, which is not prioritized in the Bi-State Action Plan. On Federal lands, management of grazing allotments is left to the discretion of the Federal agencies responsible for permitting grazing. When considering changes in grazing practices to protect the Bi-State DPS and its habitat, Federal agencies work with ranchers to minimize economic impacts to grazing activities, for example by implementing seasonal restrictions before reducing stocking rates.[66] When more stringent restrictions are necessary, reductions in available grazing area or stocking rates are typically realized by reducing the number of permitted AUMs, which are a measure of the amount of forage consumed by one cow and calf during one month. Below we describe several existing management strategies that consider the effects of livestock grazing on the Bi-State DPS and its habitat on Federal lands proposed as critical habitat.

3.2.1 BLM BISHOP FIELD OFFICE RESOURCE MANAGEMENT PLAN

116. Approximately 400,000 acres of public grazing lands managed by the BLM Bishop Field Office in California overlap the proposed critical habitat designation in all four proposed units (Exhibit 3-2). These acres are managed in accordance with the Bishop BLM field office's Resource Management Plan (Bishop RMP), which includes several management practices designed specifically to protect the Bi-State DPS and its habitat, for example:

- In 1999, the Bishop RMP was amended by the Central California Standards for Rangeland Health and Guidelines for Livestock Grazing Management, which provide protection to the Bi-State DPS and its habitat through the establishment of environmental quality standards and metrics.
- In 2005, the Bishop RMP was amended by the Bishop Fire Management Plan. Within sagebrush habitat, this plan seeks to limit habitat loss and degradation and minimize disturbance. In addition, this plan may benefit the Bi-State DPS by increasing awareness among wildfire responders to the presence of the Bi-State

[64] Nevada and California Bi-State Technical Advisory Committee. Bi-State Action Plan: Past, Present, and Future Actions for Conservation of the Greater Sage-Grouse Bi-State Distinct Population Segment. March 15, 2012.

[65] Nevada and California Bi-State Technical Advisory Committee. Bi-State Action Plan: Past, Present, and Future Actions for Conservation of the Greater Sage-Grouse Bi-State Distinct Population Segment. March 15, 2012. (5)

[66] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

DPS and its habitat, and limiting disturbances that encourage conifer encroachment.

- In 2012, the Bi-State DPS was designated as a California BLM Sensitive Species, and, as such, receives yearlong protection as is afforded all "endangered, threatened, candidate, and sensitive plants and animal habitats." In practice, this means that adverse effects to the Bi-State DPS from discretionary actions are not allowed, and existing uses are managed to prevent disturbance.[67]

As a result of these baseline conservation efforts, the Service does not anticipate requesting any additional project modifications for the Bi-State DPS or its habitat on BLM lands managed by the Bishop Field Office following the designation of critical habitat.[68]

3.2.2 HUMBOLDT-TOIYABE NATIONAL FOREST LAND AND RESOURCES MANAGEMENT PLAN

117. Within the Humboldt-Toiyabe National Forest, the greater sage-grouse is designated as a Management Indicator Species and a Sensitive Species, both of which afford some protection to the DPS and its habitat. In addition, the Humboldt-Toiyabe National Forest (Land and Resource Management Plan) LRMP includes several conservation guidelines specific to the DPS, such as the protection of priority habitat areas and guidelines for habitat restoration. The Humboldt-Toiyabe National Forest is currently in the process of amending its LRMP to provide more specific conservation strategies for the Bi-State DPS and its habitat.[69] The LRMP amendment is scheduled to be complete in January 2015.[70]

3.2.3 INYO NATIONAL FOREST LAND AND RESOURCES MANAGEMENT PLAN

118. As in the Humboldt-Toiyabe National Forest, the Inyo National Forest also designated the greater sage-grouse as a Management Indicator Species and a Sensitive Species. The Inyo National Forest LRMP identifies several conservation measures for protecting the Bi-State DPS and its habitat. These include seasonal and spatial restrictions to avoid disturbance and habitat loss, and restrictions on vegetation treatments to avoid disturbance to the DPS and its habitat. In addition, the Inyo National Forest developed guidance for proposed activities that is designed to consider and minimize impacts to the Bi-State DPS and its habitat, specifically for projects related to livestock grazing and vegetation treatment. For grazing operations, this guidance applies to both suitable and

[67] U.S. Fish and Wildlife Service. Draft Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment of Greater Sage-Grouse (*Centrocercus urophasianus*). January 23, 2014.

[68] U.S. Fish and Wildlife Service. Personal communication on January 29, 2014.

[69] U.S. Forest Service. August 2013. Greater Sage-grouse Bi-State Distinct Population Segment Forest Plan Amendment, Draft Environmental Impact Statement. Accessed on May 19, 2014, at: http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3hvXxMjMz8Dc0P_kFALA09zLzNDowAXYwMLE6B8pFm8kQEEOFoY-Ht4hPmF-UAFDIjRbYADOIJ1G_ibGHgahjk6WRq4GnkHm5oamMDMhujGLY_f7nCQX_G7HWw_btf5eeTnpuoX5IaGRhhkmQAAoYKgoA!!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfS000MjZOMDcxT1RVODBJN0o2MTJQRDMwODQ!/?project=40683&exp=overview.

[70] Winfrey, James. Land Management Planner, Humboldt-Toiyabe National Forest. Personal communication on April 10, 2014.

unsuitable habitat, and includes conservation measures such as allowable use levels, seasonal restrictions to avoid the DPS breeding season, and modifications to livestock watering practices to avoid direct effects to the DPS.[71] The Inyo National Forest is currently revising its LRMP, which is scheduled to be completed in 2016.[72]

3.2.4 BLM CARSON CITY DISTRICT OFFICE AND TONOPAH FIELD OFFICE RESOURCE MANAGEMENT PLANS

119. The proposed Bi-State DPS critical habitat designation overlaps three Nevada BLM field offices: Stillwater, Sierra Front, and Tonopah. These areas are managed separately according to the Carson City District Office RMP (Stillwater and Sierra Front field offices) and the Tonopah Field Office RMP. The greater sage-grouse is recognized as a BLM Sensitive Species throughout Nevada.[73]

120. Activities occurring within the Stillwater and Sierra Front BLM field offices are managed according to the Carson City District Office Consolidated RMP. This plan includes conservation guidelines that may benefit the Bi-State DPS and its habitat, including: seasonal restrictions on activities, wildlife-friendly fence requirements; habitat restoration guidelines; and limitations on vehicle traffic.[74] The Carson City District Office is currently in the process of updating its RMP to consider effects to the DPS and its habitat. This update is expected to be complete in 2016.[75] Similarly, the Tonopah Field Office RMP includes some conservation practices that may benefit the DPS and its habitat. These include seasonal restrictions, restrictions on land disposals, and restrictions on sagebrush vegetation treatments. The Battle Mountain District Office, of which the Tonopah Field Office is a part, is currently revising its RMP, which will supersede the existing Tonopah Field Office RMP. This revision is expected to be complete in 2014.[76]

3.3 METHODOLOGY AND PROJECT MODIFICATION COST ESTIMATES

121. As described in Chapter 2, the Service is most likely to request incremental conservation measures in unsuitable habitat for the Bi-State DPS. Of the 1.6 million acres of Federal grazing land overlapping the proposed critical habitat designation, approximately 350,000 acres are located within unsuitable habitat. This analysis considers the following categories of costs:

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[71] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[72] U.S. Fish and Wildlife Service. Draft Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment of Greater Sage-Grouse (*Centrocercus urophasianus*). January 23, 2014.

[73] *Ibid*.

[74] *Ibid*.

[75] Lovato, Bernadette. District Manager, BLM Carson City District Office. Response to data request provided via personal communication on March 6, 2014.

[76] U.S. Fish and Wildlife Service. Draft Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment of Greater Sage-Grouse (*Centrocercus urophasianus*). January 23, 2014.

- **Costs of changes to grazing management:** Communication with Federal land managers suggests that some portions of unsuitable habitat have experienced substantial conifer encroachment and are heavily wooded.[77] Livestock are unlikely to graze these areas, making future restrictions on stocking rates or allowable use levels unlikely. However, Federal land managers also indicated that levels of conifer encroachment vary widely among sites.[78] We conservatively assume that grazing occurs in all portions of allotments overlapping unsuitable habitat. We therefore consider the likelihood of future restrictions on stocking rates using the number of permitted AUMs. For allotments where stocking rate restrictions may be recommended, we assume that the loss of forage associated with permitted AUMs represents the highest cost a rancher could face. That is, if required changes to grazing patterns are more costly than the value of grazed AUMs, a rancher will choose to reduce herd size instead.[79]
- **Administrative costs:** We also estimate the administrative costs of formal section 7 consultations required under the Act to address potential impacts of grazing activities on the Bi-State DPS and its habitat. Costs associated with jeopardy analyses in Bi-State DPS suitable habitat are considered baseline costs; additional costs associated with adverse modification analyses in suitable habitat, as well as all consultation costs in unsuitable habitat, are considered incremental costs.

In the following sections, we discuss the value derived from grazing on public lands and then provide an overview of the analytic approach used to estimate incremental costs of the proposed critical habitat designation associated with grazing operations on Federal allotments.

3.3.1 AUMS AND PERMIT VALUE ON FEDERAL LANDS

122. Both BLM and USFS issue grazing permits to private ranchers for the use of public lands. These permits typically cover a period of approximately ten years. Each year, each grazing allotment is assigned a specific number of AUMs based on site-specific conditions on that allotment. Numerous published studies have found that a rancher obtains value for holding a Federal grazing permit beyond the annual fee charged for that permit.[80] Thus, permit value can be used as a measure of rancher wealth, and required

[77] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014; and Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[78] *Ibid*.

[79] We also note that, in some cases, vegetation management in moderately wooded areas may lead to long-term increases in grasses used both by the Bi-State DPS and livestock. In these cases, ranchers could benefit from the implementation of vegetation management. However, data are unavailable to predict when and where such instances may occur.

[80] "The general observation is that public land grazing permits do have market value," Torell et al. 2001. "The Lack of Profit motive for ranching: Implications for policy analysis." Current issues in Rangeland Economics, Western Coordinating Committee 55 (WCC-55); Torell, L. Allen and S.A. Bailey. 1991. "Public land policy and the value of grazing permits." Western Journal of Agricultural Economics, Volume 16 (174-184). Also see: Rowan, R. C., and J.P. Workman. 1992. "Factors affecting Utah ranch prices." Journal of Range Management. Volume 45 (263-266); Sunderman, M. A. and R. Spahr. 1992. "Valuation of government grazing leases." Journal of Real Estate Research, Volume 9 (179-196); Spahr, R. and M.A. Sunderman. 1995. "Additional evidence on the homogeneity of the value of government grazing leases and changing attributes for ranch value." Journal of Real Estate Research, Volume 10 (601-616); Torell, L. Allen and M.E. Kincaid. 1996.

reductions in permitted AUMs can be represented by a loss in permit value. Exhibit 3-3 presents the results of nine studies that attempt to measure the per-AUM permit value, in perpetuity, associated with grazing on BLM and USFS lands.[81] This analysis assumes the average of the permit values below, or $105 per BLM AUM and $95 per USFS AUM.

EXHIBIT 3-3. PERMIT VALUES FOR BLM AND USFS PERMITS

STUDY	YEARS	LOCATION	VALUE PER BLM AUM (2014$)*	VALUE PER USFS AUM (2014$)*
Rowen & Workman	1975-1987	Utah	$38	$38
Torell & Doll	1979-1988	New Mexico	$115	$115
Rowen & Workman	1980-1988	Utah	$71	$71
Torell & Kincaid	1988	New Mexico	$127	$119
Torell et al.	1992	New Mexico	$131	$106
Kincaid	1987-1994	New Mexico	$120	$117
Torell & Kincaid	1994	New Mexico	$122	$84
Torell et al.	2002	Idaho, Nevada, Oregon	$113	$113
		Average	**$105**	**$95**

* Numbers represent the permit value per AUM in perpetuity. Values adjusted to 2014$ using the National Income and Product Accounts Table, Table 1.1.9 Implicit Price Deflators for Gross Domestic Product. U.S. Department of Commerce Bureau of Economic Analysis.

Sources: Stern, Bill S. "Permit Value: A Hidden Key to the Public Lands Grazing Dispute," University of Montana, Master of Science thesis, 1998; Torell et al., "Ranch level impacts of changing grazing policies on BLM land to protect the Greater Sage-Grouse: Evidence from Idaho, Nevada, and Oregon." Policy Analysis Center for Western Public Lands, Policy Paper SGB01B02, 2002.

123. Importantly, numerous factors affect the number of permitted AUMs approved for any given allotment. These factors are site-specific and include vegetation characteristics, drought or other climatic conditions, the current grazing system, and the presence of other sensitive species or ecosystems. AUM reductions due to Bi-State DPS conservation efforts often cannot be separated from other causes. This analysis conservatively attributes the full value of lost AUMs to Bi-State DPS conservation. In addition, this analysis cannot determine whether AUM reductions will be required for a given allotment without site-specific data. Therefore, forecast AUM reductions represent a conservative estimate of potential costs.

124. Furthermore, in some cases, ranchers can avoid AUM reductions by implementing other changes in grazing management practices.[82] For example, if a small number of acres are

"Public land policy and the market value of New Mexico ranches, 1979-1994." Journal of Range Management, Volume 49 (270-276); and Bartlett, E. Tom, et al. 2002. "Valuing grazing use on public land." Journal of Range Management. Volume 55 (426-438).

[81] There has not been a significant volume of research performed on permit values in recent years; however, one 2012 study presents results of a hedonic model consistent with the estimates used here. See Torell et al. 2012. "The Market Value of Ranches and Grazing Permits in New Mexico, 1996 to 2010." New Mexico State University. Research Report 779.

[82] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

affected relative to the entire allotment, range managers may be able to alter grazing patterns to avoid those areas during biologically critical time periods for the Bi-State DPS. This is particularly true for allotments used to graze sheep, which are regularly herded by the rancher into a relatively small portion of the allotment.[83] Alternative approaches to cattle grazing management may result in other costs to ranchers resulting from a loss of management flexibility. However, data allowing for quantification of such costs are not available. As a result, we assume that allotments with minimal overlap (i.e., allotments where proposed critical habitat, both suitable and unsuitable habitat, accounts for less than five percent of total allotment acreage) will not require any restrictions. In addition, we do not forecast restrictions on allotments used to graze sheep, assuming that operations on these allotments can be altered with minimal cost to the rancher.

3.3.2 ANALYTIC APPROACH

125. To estimate future costs to grazing operations within the proposed critical habitat designation, we begin by forecasting the number of allotments that may undergo section 7 consultation following the designation of critical habitat for the Bi-State DPS. For allotments that overlap suitable habitat, we assume that section 7 consultations would have occurred in the baseline, and will address both jeopardy to the species and adverse modification of critical habitat. The administrative costs of addressing adverse modification are considered incremental costs of the proposed critical habitat designation.

126. All costs associated with section 7 consultations for allotments overlapping only unsuitable habitat are considered incremental. Based on information provided by Federal land managers, we assume one formal consultation for each allotment, except in the Humboldt-Toiyabe National Forest, where the agency typically addresses two to four allotments in a single section 7 consultation.[84] As a result, we assume that, on average, the Humboldt-Toiyabe National Forest considers three allotments in a single section 7 consultation. These consultations will occur in conjunction with grazing permit renewals, which are typically issued for a ten-year period. Because information is not readily available identifying the year in which the rancher for each allotment will renew the existing grazing permit, we assume that each allotment will require two permit renewals during the 20-year analysis period, and we distribute the associated consultations evenly over those 20 years.[85] The Service also notes that, where possible, programmatic section 7 consultations may be used to minimize costs and administrative effort.[86] To the extent that programmatic consultations are undertaken in the future, this analysis may overstate economic impacts.

127. Next, we consider the potential for incremental project modifications to be recommended for allotments overlapping unsuitable habitat for the Bi-State DPS. We do not forecast

[83] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[84] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[85] We do not forecast consultations for the one allotment known to be closed.

[86] U.S. Fish and Wildlife Service. Personal communication on March 24, 2014.

grazing restrictions on allotments that have minimal (less than five percent) overlap with the proposed critical habitat designation; allotments that are used to graze sheep; or allotments known to be vacant or in non-use. We also do not forecast grazing restrictions for allotments within the jurisdiction of the Bishop BLM field office and the Inyo National Forest. As previously discussed, both land managers already manage grazing in unsuitable habitat for the Bi-State DPS; additional changes to grazing operations due to the designation of critical habitat are unlikely.[87]

128. Exhibit 3-4 summarizes the steps involved in identifying grazing allotments where AUM reductions may occur following designation of critical habitat for the Bi-State DPS. As shown under Step 4, AUM reductions are anticipated on 24 allotments, or approximately 15 percent of the 158 allotments within the proposed critical habitat designation. For these 24 allotments, we assume AUMs will be reduced proportional to the percentage of the allotment area overlapping unsuitable habitat. This assumption is likely to overstate the incremental costs of critical habitat designation because the Service indicated that absolute preclusion of grazing is unlikely within unsuitable habitat. Instead, the Service anticipates focusing on modifications designed to avoid long-term degradation of habitat from extreme overgrazing.[88] Such modifications may include temporary grazing restrictions following vegetation management projects to ensure the success of vegetation treatments.[89] Conservation measures requested solely to avoid the yearly reduction of grasses due to livestock consumption are unlikely.[90]

EXHIBIT 3-4. GRAZING ALLOTMENTS POSSIBLY SUBJECT TO INCREMENTAL AUM REDUCTIONS

FEDERAL LANDS	STEP 1. ALLOTMENTS WITHIN PROPOSED CRITICAL HABITAT	STEP 2. ALLOTMENTS WITHIN UNSUITABLE HABITAT	STEP 3. ALLOTMENTS WITHIN UNSUITABLE HABITAT WITH >5% OVERLAP	STEP 4. ALLOTMENTS WITH FORECAST AUM REDUCTIONS
Humboldt-Toiyabe National Forest	61	21	20	16
Inyo National Forest	34	17	16	0
Nevada BLM	27	15	14	8
California BLM	36	25	24	0
Total	**158**	**78**	**74**	**24**

Note: Allotments counted in Step 4 exclude those known to be closed, vacant or in nonuse, or used for grazing sheep.

Sources:
1. Humboldt-Toiyabe National Forest, Geospatial Data, accessed at: http://www.fs.usda.gov/main/htnf/landmanagement/gis.
2. Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.
3. BLM Nevada, Download Geospatial Data, accessed at: http://www.blm.gov/nv/st/en/prog/more_programs/geographic_sciences/gis/geospatial_data.html.
4. BLM California, GeoSpatial Data Downloads, accessed at: http://www.blm.gov/ca/gis/.

[87] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[88] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

[89] U.S. Fish and Wildlife Service. Personal communication on March 24, 2014.

[90] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

129. Where permitted AUMs for a given allotment were not provided by the land management agency, we assume the average number of AUMs per acre, as calculated using data for the other allotments administered by that agency.[91] On average, we estimate AUM reductions of approximately 13 percent across these 24 allotments. To forecast economic costs, we then apply the values per-AUM reduced presented in Exhibit 3-3. AUM reductions will likely occur at the time of consultation; however, because we do not know when specific allotments will undergo consultation, we approximate the timing of AUM reductions by evenly dividing costs over the ten years between 2014 and 2023, the same period in which we assume permit renewals will occur.

130. Within unsuitable habitat, our analysis estimates that AUMs may be reduced by up to 1,278 AUMs on BLM allotments in Nevada and 638 AUMs on Humboldt-Toiyabe National Forest allotments.

3.4 INCREMENTAL COSTS TO LIVESTOCK GRAZING

131. Exhibit 3-5 presents the results of the incremental analysis for livestock grazing within the proposed Bi-State DPS critical habitat designation. The results include both administrative and project modification costs. We estimate incremental costs of approximately $840,000 (present value over 20 years) assuming a seven percent discount rate. Approximately 17 percent of these costs are associated with AUM reductions. The percentage of total costs (i.e., adminstrative plus project modification costs) attributed to the designation of unsuitable habitat is 22 percent.

EXHIBIT 3-5. FORECAST INCREMENTAL COSTS TO LIVESTOCK GRAZING, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$150,000	$13,000
Unit 2. North Mono Lake	$300,000	$27,000
Unit 3. South Mono Lake	$230,000	$20,000
Unit 4. White Mountains	$150,000	$14,000
Total	**$840,000**	**$74,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

3.5 KEY UNCERTAINTIES

132. Exhibit 3-6 summarizes the key assumptions of the analysis of economic costs to livestock grazing operations. This exhibit also describes the potential direction and relative scale of bias introduced by these assumptions.

[91] AUMs had to be estimated for four allotments managed by the Humboldt-Toiyabe National Forest and one allotment managed by BLM.

EXHIBIT 3-6. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO LIVESTOCK GRAZING

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS TO LIVESTOCK GRAZING
Allotments overlapping unsuitable habitat may require AUM reductions.	May **overestimate** costs.	**Possibly major.** Livestock are unlikely to use areas that are heavily wooded, and in such cases, grazing restrictions would not occur. This analysis conservatively estimates grazing restrictions for all allotments in unsuitable habitat that do not currently manage for the Bi-State DPS. However, the total value of AUM reductions relative to other costs estimated in this report is small, so the effect of this assumption on overall cost estimates is probably minor.
AUM reductions will only occur on allotments overlapping proposed critical habitat by greater than five percent.	May **underestimate** costs.	**Probably minor.** Land managers typically rely on alternative strategies for DPS conservation on allotments with minor overlap with the proposed designation. These alternative strategies may result in costs to ranchers, such as a loss of management flexibility.
AUM reductions will not occur on allotments that are currently vacant or in non-use.	May **underestimate** costs.	**Probably minor.** Seven allotments out of the 158 overlapping the proposed critical habitat designation are known to be vacant or in non-use. Vacant or non-use allotments may be reopened at any time, which could result in future AUM reductions on these allotments. Data are not available to suggest that reopening of these allotments is likely. These allotments are included in the forecast consultation rate but not in the forecast of AUM reductions.
The percentage of AUMs reduced on a given allotment is assumed to be equal to the percentage of the allotment overlapping proposed critical habitat.	May **overestimate** costs.	**Possibly major.** Although the Service does not anticipate precluding grazing within the proposed critical habitat designation, some allotments may face reductions in AUMs or other restrictions that affect a rancher's ability to graze cattle. Such restrictions are determined based on site-specific allotment conditions. Assuming reductions proportional to allotment acreage in critical habitat may overestimate costs on some allotments, and may underestimate costs on other allotments. Overall, costs are likely overestimated, since the Service does not expect the designation of critical habitat to result in the preclusion of grazing activities.
The livestock grazing permit value, in perpetuity, is $105 per AUM on BLM lands and $95 per AUM on USFS lands.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** This analysis applies an average value from existing economic literature estimating permit values. To the extent that this estimated value has changed in real terms over time, this analysis may overestimate or underestimate costs.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS TO LIVESTOCK GRAZING
For allotments where the number of permitted AUMs is unknown, a reasonable estimate of permitted AUMs is the average number of AUMs per acre for other allotments under the same agency's jurisdiction.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Permitted AUMs were unavailable for four allotments managed by the Humboldt-Toiyabe National Forest and one allotment managed by BLM. To the extent that permitted AUMs on these four allotments vary from the average AUMs permitted across all affected allotments, this analysis may overestimate or underestimate AUM reductions.
BLM and the Inyo National Forest will participate in one section 7 consultation for each grazing allotment.	May **overestimate** costs.	**Probably minor.** Federal agencies may consult on small groups of allotments under a single consultation. Therefore, assuming one consultation per allotment may overstate the forecast consultation rate.
The Humboldt-Toiyabe National Forest will address, on average, three allotments in a single formal section 7 consultation.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Information from the Humboldt-Toiyabe National Forest indicates that the agency typically addresses two to four allotments in a single consultation. To the extent that the future rate of section 7 consultations for grazing allotments differs from this average, this analysis could overstate or understate administrative costs.

CHAPTER 4 | POTENTIAL ECONOMIC COSTS TO LIVESTOCK GRAZING AND AGRICULTURAL OPERATIONS ON PRIVATELY-OWNED LANDS

133. This chapter considers costs to livestock grazing and agricultural operations on privately owned lands. The costs estimated in this chapter are additive to the costs associated with changes to management of Federal grazing allotments estimated in Chapter 3. As described in Chapter 3, some livestock grazing management techniques may threaten the Bi-State DPS and its habitat by degrading or reducing sagebrush habitat.[92] In addition, agricultural activities may affect the Bi-State DPS and its habitat through the conversion of sagebrush habitat.[93]

134. This chapter proceeds as follows: Section 4.1 provides background on the scope and scale of private livestock grazing and agricultural activities across the proposed critical habitat designation. Section 4.2 describes the methodology and approach used to forecast economic costs associated with these activities. Section 4.3 summarizes the results of this analysis, and section 4.4 discusses key sources of uncertainty in the analysis.

4.1 SCOPE AND SCALE OF PRIVATE GRAZING AND AGRICULTURAL OPERATIONS

135. Across the proposed critical habitat designation, approximately 1.6 million acres are located on 158 Federal livestock grazing allotments, which may be leased to private ranchers. The largest share of these acres (approximately 750,000 acres) is located in Unit 2. In addition, approximately 10,000 acres of privately owned cropland or pastureland overlap the proposed critical habitat designation. The majority of these lands (8,700 acres) are located in Unit 2, and approximately 1,300 acres are located in Unit 1. Unit 3 has fewer than 200 acres of privately owned cropland or pastureland proposed as critical habitat; only one acre of privately owned pastureland is proposed as critical habitat within Unit 4. Exhibit 4-1 summarizes the distribution of Federal and private grazing and agricultural lands within the proposed critical habitat designation. Exhibit 4-2 presents an overview map of private cropland and pastureland within the proposed critical habitat designation.

136. As described in Chapter 3, privately owned farms and ranches typically lack a Federal nexus for consultation. Consultation is only anticipated for private farms and ranches that participate in Federal programs, such as the EQIP or WHIP that are funded through NRCS. These programs may provide funding to farmers and ranchers using either private or Federal lands for grazing and agricultural operations.

[92] 2013 Proposed Critical Habitat Rule. 78 FR 64336.

[93] 2013 Proposed Listing Rule. 78 FR 64368.

137. NRCS already implements many conservation measures for the benefit of the Bi-State DPS and its habitat. Of particular significance, NRCS established the SGI in the spring of 2010. As part of the SGI, NRCS is "help[ing] landowners on both private lands and public allotments […] remove encroaching conifer, restore meadows, develop grazing management plans, and […] secure conservation easements that protect critical sage-grouse habitat on private land."[94] Practices supported through these programs include brush management to remove encroaching conifers, fencing marking to prevent sage-grouse fence collisions, installation of wildlife escape ramps, improvements to livestock watering facilities, and restoration of brood rearing habitat.[95] Through EQIP and WHIP programs, the SGI has provided nearly $1.3 million in NRCS funding for Bi-State DPS conservation. The SGI further supports Bi-State DPS conservation by facilitating and financing conservation easements on private lands. NRCS has protected 1,429 acres of private lands through SGI easements and is in the process of closing easements on an additional 11,993 acres. NRCS estimates that, to date, it has invested $26.6 million for projects related to Bi-State DPS conservation, including conservation measures funded through EQIP and WHIP and the purchase of easements, among other projects.[96]

EXHIBIT 4-1. GRAZING AND AGRICULTURAL LANDS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT

UNIT	ACRES IN FEDERAL GRAZING ALLOTMENTS		ACRES ON PRIVATELY OWNED AGRICULTURAL OR PASTURE LANDS		TOTAL ACRES OF GRAZING OR AGRICULTURAL LAND		
	SUITABLE HABITAT	UNSUITABLE HABITAT	SUITABLE HABITAT	UNSUITABLE HABITAT	SUITABLE HABITAT	UNSUITABLE HABITAT	TOTAL
Unit 1. Pine Nut	240,000	37,000	1,300	0	240,000	37,000	280,000
Unit 2. North Mono Lake	580,000	170,000	8,500	200	590,000	170,000	770,000
Unit 3. South Mono Lake	270,000	60,000	150	5	270,000	60,000	330,000
Unit 4. White Mountains	140,000	82,000	1	0	140,000	82,000	230,000
Total	**1,200,000**	**350,000**	**9,900**	**200**	**1,200,000**	**350,000**	**1,600,000**
Percent of Proposed Critical Habitat					**89%**	**74%**	**86%**

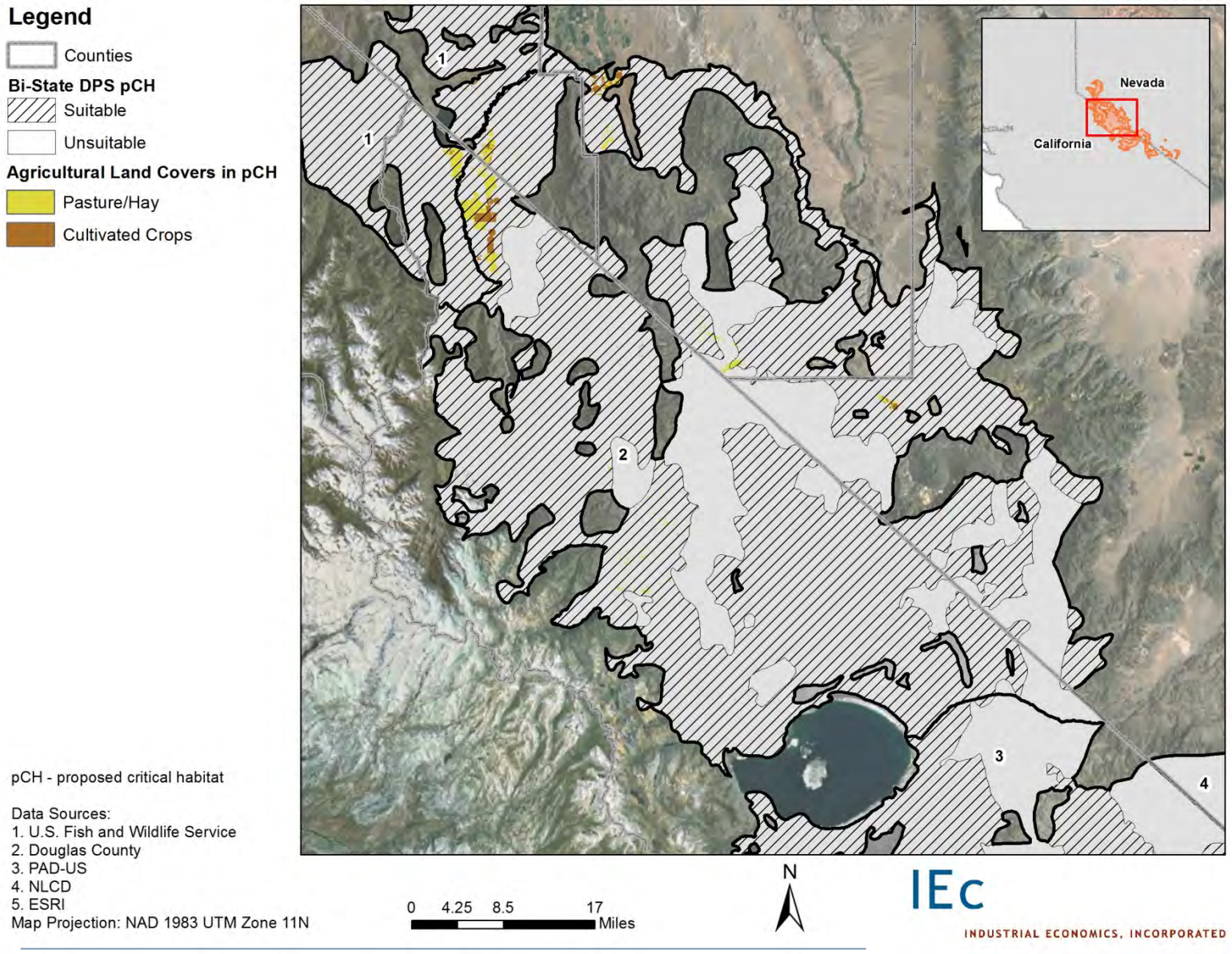
Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

[94] Natural Resources Conservation Service, Additional Responses to the Information Memorandum to the Secretary and DOI Proposed Designation of Critical Habitat (8-30-2013), September 26, 2013.

[95] *Ibid*.

[96] Natural Resources Conservation Service, Additional Responses to the Information Memorandum to the Secretary and DOI Proposed Designation of Critical Habitat (8-30-2013), September 26, 2013.

EXHIBIT 4-2. OVERVIEW OF PRIVATE GRAZING AND AGRICULTURAL LANDS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT



138. Private land owners may also participate in the Service's Partners for Fish and Wildlife program. This program provides technical and financial assistance to landowners for voluntary conservation efforts undertaken on private lands. Among its goals, the program seeks to: improve habitat for federally protected species, including threatened and endangered species such as the Bi-State DPS; address conservation priorities identified by the Service and state fish and wildlife agencies; and reduce habitat fragmentation.[97] Within the proposed critical habitat designation, landowners have initiated five agreements under the Partners for Fish and Wildlife program over the past ten years. Agreements have a minimum duration of ten years.[98] All five agreements were conducted in suitable habitat for the DPS, and all were on private agricultural or ranch land.[99] One of these agreements was conducted jointly with the NRCS.

139. In addition, private grazing and agricultural lands may participate in other federally funded programs, such as the ongoing Walker Basin Restoration Program, a program funded through BLM's Desert Terminals Lakes Program and managed by the National Fish and Wildlife Federation (NFWF).[100] Walker Lake is a natural desert lake located at the terminus of the Walker River stream system in Nevada and California and is home to the threatened Lahontan cutthroat trout. As a result of decades of depleted freshwater inflows, Walker Lake's ecosystem health is suffering due to low lake levels and high salinity.[101] The purpose of the Walker Basin Restoration Program is to increase stream flows into Walker Lake. One component of this effort is the leasing and purchase of water rights through voluntary contracts with private farmers using irrigated agricultural operations.[102] Currently the water rights program is only operating in Nevada, with the majority of activity occurring in the Lyon County area, near the city of Yerington. According to NFWF, 11 water rights transactions have been completed in Nevada to date. NFWF is now the largest water rights holder in the Walker Basin, with approximately 50 cubic feet per second decree water rights.[103] Interest in the water rights programs continues to build. For example, Mono County, California, is currently conducting an analysis to see whether it should allow farmers in its county to also participate in the program.[104]

[97] U.S. Fish and Wildlife Service. Partners for Fish and Wildlife Program. About Us. Accessed on May 26, 2014, at: http://www.fws.gov/partners/aboutus.html.

[98] U.S. Fish and Wildlife Service. Partners for Fish and Wildlife Program. About Us. Accessed on May 26, 2014, at: http://www.fws.gov/partners/aboutus.html.

[99] U.S. Fish and Wildlife Service. Personal communication on April 1, 2014.

[100] National Fish Wildlife Foundation. Walker Basin Restoration Program. Accessed on May 19, 2014 at: http://www.nfwf.org/walkerbasin/Pages/home.aspx

[101] *Ibid*.

[102] Peterson, Shannon. Consultant to Mono County. Personal communication on March 10, 2014.

[103] Morris, Joy, Walker Basin Restoration Program Manager, NFWF. Personal communication on March 24, 2014.

[104] Peterson, Shannon. Consultant to Mono County. Personal communication on March 10, 2014.

4.2 METHODOLOGY

140. As described in Chapter 2, the Service is most likely to request incremental conservation measures in unsuitable habitat for the Bi-State DPS. Of the approximately 10,000 acres of private cropland and pastureland overlapping the proposed critical habitat designation, 200 acres are located within unsuitable habitat. To estimate future costs to private grazing and agricultural operations, we consider the potential for incremental conservation efforts, as well as administrative costs of section 7 consultation throughout the proposed critical habitat designation.

141. First, we estimate the economic costs associated with voluntary conservation measures implemented by private farmers and ranchers with NRCS or Service cost-share funding. Because these conservation measures are implemented voluntarily by private landowners, incremental costs are limited to the administrative effort associated with formal section 7 consultations. We also consider administrative costs associated with other agricultural programs implemented with Federal funding or oversight, such as the Walker Basin Restoration Program. Costs associated with jeopardy analyses in Bi-State DPS suitable habitat are considered baseline costs; additional costs associated with adverse modification analyses in suitable habitat, as well as all consultation costs in unsuitable habitat, are considered incremental costs. Finally, we consider possible perceptional effects on participation in voluntary Federal conservation programs.

4.2.1 SECTION 7 COSTS

142. To estimate future costs to private grazing and agricultural operations within the proposed critical habitat designation, we consider three potential pathways under which these operations may be affected: (1) NRCS funding for voluntary conservation efforts on both public and private agricultural or grazing lands, (2) Service funding for voluntary conservation efforts on private agricultural or grazing lands, and (3) participation in other Federal programs, such as the Walker Basin Restoration Program. We discuss each of these three pathways in more detail below.

NRCS-Funded Projects on Private and Public Lands

143. Potential future conservation activities for the Bi-State DPS may be implemented on Federal allotments if ranchers choose to apply to NRCS for funding. Although NRCS funds conifer removal projects, ranchers could also receive funding for projects unrelated to conifer removal or sage-grouse conservation; these projects would still have a nexus for section 7 consultation.

144. According to NRCS, site-specific information on NRCS-funded projects is confidential under the Privacy Act and Section 1619 of the 2008 Farm Bill.[105] In the absence of more refined data that would allow us to more precisely estimate the number of projects that receive funding each year, we assume that, at most, NRCS could fund one project per allotment. Although NRCS has indicated that it would prefer to address its projects through a single programmatic consultation for the Bi-State DPS, NRCS noted that some

[105] Heater, Thad. NRCS State Wildlife Biologist. Personal communication on February 20, 2014.

uncertainty remains regarding the approach that the Service will take for the DPS.[106] In particular, in 2010, NRCS and the Service completed a conference report for SGI activities and the effects of those activities on the Bi-State DPS. This conference report may undergo programmatic section 7 consultation. According to the Service, such a programmatic consultation would likely eliminate most future site-specific consultations on individual projects, or decrease the level of effort required for site-specific consultations. However, identifying the appropriate level of permissible incidental take in a programmatic consultation can be difficult because of the lack of project specificity; the Service and NRCS therefore remain uncertain about the best approach to consultation for the DPS.[107] As a result of this uncertainty, we conservatively assume that each NRCS project will require formal consultation, and we assign consultations to the baseline or incremental scenario based on the location of allotments in suitable or unsuitable habitat. We divide forecast consultations evenly over the 20-year analysis period. If NRCS and the Service are able to negotiate an approach that relies on a single, programmatic consultation instead, this analysis will overstate incremental costs.

145. Whether such projects are addressed programmatically or through individual formal consultation, however, is largely dependent on the approaches undertaken by the land management agencies and the cooperative section 7 processes between NRCS and the Service. Because these types of projects would be undertaken voluntarily by the rancher, we do not consider the cost of conifer removal to be an incremental cost.

146. Similarly, NRCS may fund projects on privately owned agricultural land. As described above, we conservatively assume that each project will require formal consultation. In order to forecast the number of projects on private lands, we divide the number of private agricultural acres by the average acreage of a farm across the counties in the Bi-State DPS study area, using data obtained from the 2007 U.S. Department of Agriculture's Census of Agriculture.[108] This approach results in an estimate of approximately ten farms across the 10,000 acres of private agricultural land within the proposed critical habitat designation. The majority of these farms are located in suitable habitat in Unit 2. In addition, this calculation assumes that each farmer in the study area is eligible for, applies for, and receives NRCS funding. Although we recognize that this assumption is likely to overstate costs, we are unable to further refine the estimated number of projects and consider this estimate as an upper bound on the potential costs. As with potential NRCS projects on Federal allotments, we assign consultations to the baseline or incremental scenario based on the location of the farm in suitable or unsuitable habitat, and we divide forecast consultations evenly over the 20-year analysis period.

Voluntary Agreements through the Service's Partners for Fish and Wildlife Program

147. Within the proposed critical habitat designation, landowners have initiated five Partners for Fish and Wildlife program agreements over the past ten years, all in suitable habitat.

[106] *Ibid*.

[107] U.S. Fish and Wildlife Service. Personal communication on March 27, 2014.

[108] U.S. Department of Agriculture. 2009. 2007 Census of Agriculture Table 8.

To forecast costs associated with consultations for future agreements, we assume that this rate of participation continues over the 20-year analysis period, resulting in a total of ten formal consultations. We distribute these consultations evenly among privately-owned agricultural and ranch lands in suitable habitat. Because the location of all agreements is expected to occur within suitable habitat, all consultations will occur regardless of the designation of critical habitat. As such, we assume that Partners for Fish and Wildlife agreements will not incur incremental costs associated with the implementation of additional conservation measures due to their voluntary nature.

Walker Basin Restoration Program

148. The impact of the proposed designation of critical habitat for the Bi-State DPS on the Walker Basin Restoration Program is uncertain. According to discussions with the Service, there have been no direct interactions between this program and the Bi-State DPS or it habitat to date. However, potential effects may result based on the location of participating agricultural lands, the amount of water at stake, and the nature of the water rights agreement negotiated.[109] Because irrigated agricultural lands only fall within suitable habitat, any restrictions on this program or conservation measures recommended would occur regardless of the designation of critical habitat. As such, incremental costs are likely limited to the additional administrative effort required to address adverse modification during section 7 consultation; we include two programmatic consultations for the Walker Basin Restoration Program in 2014, one each in California and Nevada.

4.2.2 POSSIBLE PERCEPTIONAL EFFECTS

149. In addition to the costs associated with section 7 consultations, we consider the potential for non-section 7 costs associated with perceptional effects. NRCS has expressed concern that landowners within the proposed critical habitat designation for the Bi-State DPS may decide not to participate in NRCS programs in order to avoid a Federal nexus for activities on privately owned lands.[110] Local publications have documented landowners' concerns about the potential effect that AUM reductions or seasonal restrictions could have on the viability of grazing operations.[111] As a result of these concerns, some private landowners may choose not to participate in voluntary Bi-State DPS conservation programs. The Service recognizes that ESA activity (including proposed critical habitat of an endangered or threatened species) may cause private landowners to be concerned and thus potentially impact participation in Bi-State DPS conservation Programs. Because of this we are working closely with NRCS to understand the concerns and find ways to keep landowners engaged in conservation programs.[112] NRCS

[109] U.S. Fish and Wildlife Service. Personal communication on March 12, 2014.

[110] Natural Resources Conservation Service. Letter to Edward D. Koch, State Supervisor, Nevada Fish and Wildlife Office, U.S. Fish and Wildlife Service. February 10, 2014.

[111] Dufurrena, Carolyn. King Solomon's Choice. Range Magazine. Spring 2014.

[112] U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office. Personal communication on May 29, 2014.

believes that the costs of including agricultural and grazing lands in the proposed critical habitat designation likely "far outweigh" the benefits.[113]

150. Decreased participation in NRCS programs could result in reduced income for those farmers that would otherwise have chosen to participate. Depending on the extent of perceptional effects, however, NRCS funds could be reallocated to projects elsewhere within the range of the Bi-State DPS. In that case, any costs associated with reductions in participation rates for NRCS programs would represent a distributive cost rather than a reduction in economic efficiency. At this time we are unable to predict the likelihood that applications will be withdrawn or that funding will be reallocated. As a result, we do not quantify costs associated with reduced participation in voluntary conservation programs.

4.3 INCREMENTAL COSTS TO PRIVATE GRAZING AND AGRICULTURAL OPERATIONS

151. Exhibit 4-3 presents the results of the incremental analysis for private grazing and agricultural operations of the proposed Bi-State DPS critical habitat designation. The forecast costs are entirely administrative in nature. We estimate incremental costs of approximately $540,000 (present value over 20 years) assuming a seven percent discount rate. Approximately five percent of these costs are attributed to the designation of unsuitable habitat.

EXHIBIT 4-3. FORECAST INCREMENTAL COSTS TO PRIVATE GRAZING AND AGRICULTURAL OPERATIONS, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$94,000	$8,300
Unit 2. North Mono Lake	$260,000	$23,000
Unit 3. South Mono Lake	$120,000	$10,000
Unit 4. White Mountains	$70,000	$6,100
Total	$540,000	$48,000

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

4.4 KEY UNCERTAINTIES

152. Exhibit 4-4 summarizes the key assumptions of the analysis of economic costs to private grazing and agricultural operations. This exhibit also describes the potential direction and relative scale of bias introduced by these assumptions.

[113] Natural Resources Conservation Service, Additional Responses to the Information Memorandum to the Secretary and DOI Proposed Designation of Critical Habitat (8-30-2013), September 26, 2013.

EXHIBIT 4-4. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO COSTS TO PRIVATE GRAZING AND AGRICULTURAL OPERATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS TO PRIVATE GRAZING AND AGRICULTURAL OPERATIONS
Each privately owned farm and ranch within the proposed designation will receive NRCS funding for conservation projects.	May **overestimate** costs.	**Possibly major.** It is unlikely that every farm will be eligible for, apply for, and receive NRCS funding. In addition, based on information from the Service regarding private agreements for the Service's Partners for Fish and Wildlife Program, only one of five agreements implemented over the past ten years was conducted jointly with NRCS. This suggests that most private farms are not receiving NRCS funding. This assumption therefore likely overstates the forecast consultation rate.
NRCS will conduct a separate formal consultation for each project funded.	May **overestimate** costs.	**Possibly major.** NRCS has indicated that they would prefer to pursue programmatic consultation but that uncertainty remains regarding the approach that the Service will apply following the designation of critical habitat.
The historical participation rate in the Service's Partners for Fish and Wildlife Program (five agreements over ten years, all in suitable habitat) will continue into the future.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** To the extent that the future rate of participation differs from historical participation past rates, this analysis may either overestimate or underestimate costs. Because costs associated with these agreements are limited to additional administrative costs of section 7 consultation, the overall effect of this assumption is relatively minor.
The average acreage of a privately owned farm or ranch in the counties affected is a reasonable proxy for the acreage of a farm or ranch in unsuitable habitat.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** This analysis uses data on farm size from the most recent NASS Census. This assumption affects only the forecast consultation rate.
Mono County will choose to participate in the Walker Basin Restoration Program.	May **overestimate** costs.	**Probably minor.** To the extent that Mono County chooses not to participate in the Walker Basin Restoration Program, this analysis may overstate costs. However, because this cost is limited to the additional administrative effort during section 7 consultation, the overall effect of this assumption is minor.

CHAPTER 5 | POTENTIAL ECONOMIC COSTS TO TRANSPORTATION AND UTILITY INFRASTRUCTURE

153. As described in the proposed listing rule for the Bi-State DPS, existing roads and power lines may threaten the DPS through direct mortality from collisions and indirectly by degrading and fragmenting sagebrush habitat. Furthermore, the presence of roads and power lines may deter use of habitat in surrounding areas.[114] In particular, construction of new infrastructure can result in permanent habitat loss and fragmentation.

154. This chapter considers costs to transportation activities and utility infrastructure potentially affected by the proposed Bi-State DPS critical habitat designation. The chapter proceeds as follows: Section 5.1 provides a brief overview of the transportation and utility infrastructure within the proposed critical habitat designation. Section 5.2 describes the approach used to forecast the future rate of consultation related to the transportation and utility infrastructure in the proposed critical habitat designation. Section 5.3 presents the estimated economic costs due to the proposed critical habitat designation. Section 5.4 discusses key uncertainties of the analysis.

5.1 SCOPE AND SCALE OF TRANSPORTATION AND UTILITY INFRASTRUCTURE IN PROPOSED CRITICAL HABITAT

155. The proposed Bi-State DPS critical habitat designation is predominantly rural encompassing just over 300 miles of state and Federal highways. The majority of these highways, approximately 240 miles (or 80 percent), are surrounded by suitable habitat. The remaining 60 miles are surrounded by unsuitable habitat. Significant roads in the area include US-395, which follows the eastern side of the Sierra Nevada Range and crosses through Units 1, 2, and 3. Exhibit 5-1 provides an overview of major highways in the proposed critical habitat designation.

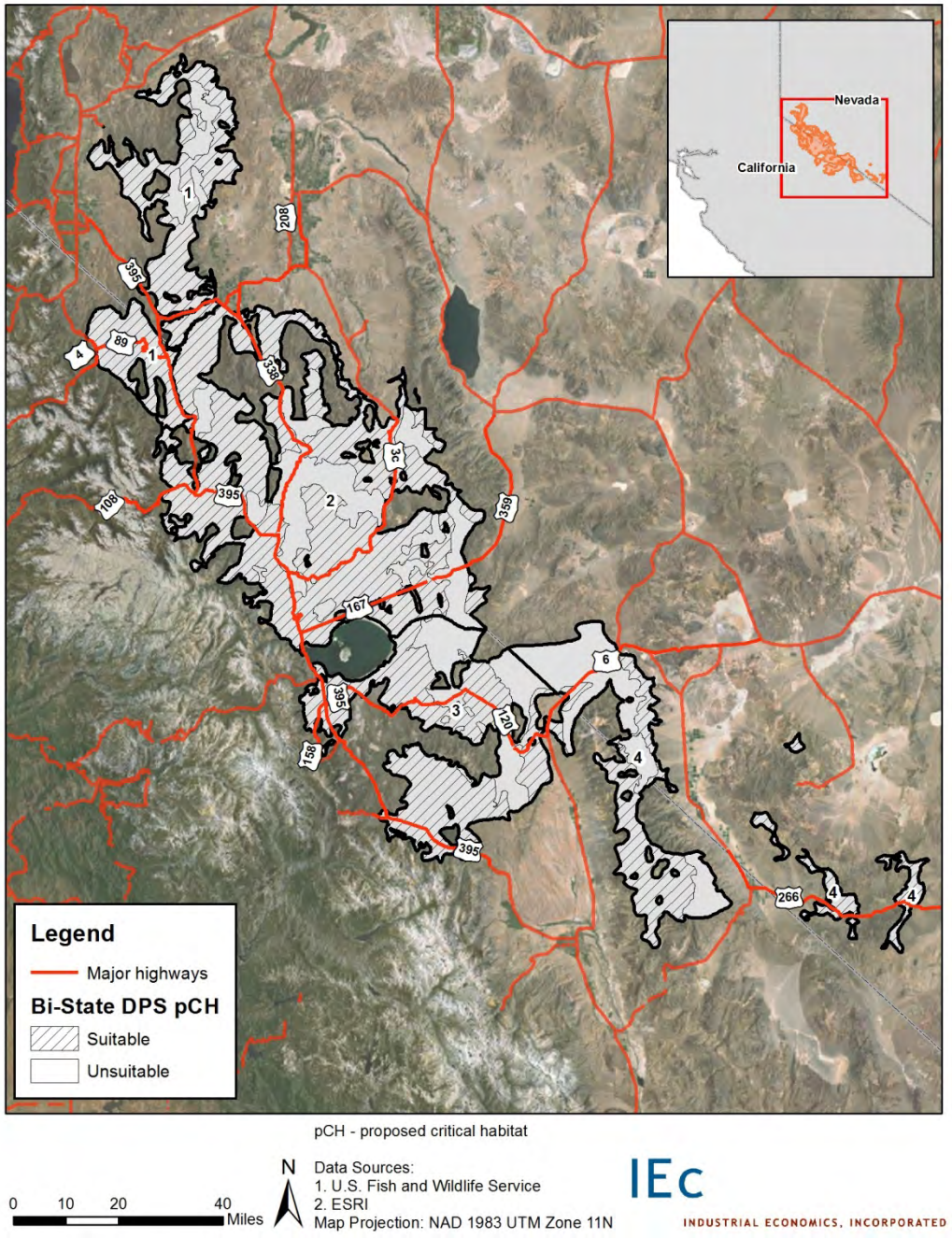
156. According to discussions with county representatives and review of public comments, the proposed Bi-State DPS critical habitat designation also encompasses existing transmission and distribution lines maintained by electric utilities.[115] Geographic data on such infrastructure, however, are not readily available. To identify infrastructure within the proposed designation, this analysis relies on information provided by county

[114] 2013 Proposed Listing Rule. 78 FR 64358-64384.

[115] MidAmerican Energy Holdings Company. Public comment submitted on February 10, 2014; Avian Power Line Interaction Committee. Public comment submitted on February 7, 2014; Southern California Edison Company. Public comment submitted on December 27, 2013.

representatives, local electric utilities, and publically available maps of power line infrastructure.[116]

EXHIBIT 5-1. MAJOR TRANSPORTATION INFRASTRUCTURE IN PROPOSED CRITICAL HABITAT



[116] Map of Transmission Lines for Liberty Utilities, Gee, Todd and Wittman, Ken. Personal communication on February 21, 2014; Map of Mono County Power and Transmission Corridors, Sugimura, Wendy. Mono County Community Development Department. Personal communication on February 12, 2014; NDOW. 2010. Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-Grouse Populations and their Habitats. Prepared by the Governor's Sage-grouse Conservation Team. April. (57-58).

157. The proposed Bi-State DPS critical habitat designation also includes three airports located within suitable habitat in Mono County. We provide an overview of these three airports below.

5.1.1 COMMERCIAL AIRPORTS

158. The Mammoth Yosemite Airport is the only commercial airport in Mono County, serving communities throughout the eastern Sierra Nevada region. The airport occupies approximately 263 acres, including 196 acres of land owned by the Town of Mammoth Lakes, 50 acres leased from the Los Angeles Department of Water and Power, and 17 acres leased through a USFS land available through a special use permit. The airport is especially important to recreation and tourism in the area, including the Mammoth Mountain Ski Area.[117]

159. The Mammoth Yosemite Airport is listed under the FAA's National Plan of Integrated Airport Systems (NPIAS), which includes nearly 3,400 existing and proposed airports considered to be "significant to national air transportation." NPIAS airports are eligible to receive Federal assistance under the FAA's Airport Improvement Program (AIP).[118] The airport is also identified as a "Federally obligated" airport, which includes airports that have accepted Federal assistance either in the form of grants or property conveyances.

160. Potential impacts to wildlife are managed at the Mammoth Yosemite Airport through an inter-agency process governed by the "Memorandum of Agreement Between the Federal Aviation Administration, the U.S. Air Force, the Service and the U.S. Department of Agriculture to Address Aircraft-Wildlife Strikes." Additionally, the airport is in the process of preparing a Wildlife Hazard Assessment (WHA) under FAA Advisory Circular 150/5200-33B.

161. According to information provided by the Town of Mammoth Lakes, a number of operation and maintenance activities occur each year to ensure safety and comply with FAA airport design and operation standards. Airport maintenance activities include mowing, fencing, Foreign Object Debris prevention, bird strike mitigation, and mitigation of terrestrial wildlife hazards.[119] Annual maintenance activities are also expected for the airport.[120] In addition, the airport undertakes various projects as part of its 2013-2026 capital improvement program, including improvements to the airline terminal, reconstruction of the apron,[121] and improvements to access roads and parking lots.[122]

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[117] The nearest alternative airport is the Reno Tahoe International Airport, located approximately 200 miles north.

[118] FAA. "National Plan of Integrated Airport Systems (NPIAS) Airports." Accessed on February 27, 2014 online at: http://www.faa.gov/airports/planning_capacity/npias/.

[119] Bernasconi, Paul, and Holler, D. Public comment on behalf of the Town of Mammoth Lakes. February 10, 2014.

[120] Bernasconi, Paul. Town of Mammoth Lakes Acting Public Works Director. Personal communication on February 18, 2014.

[121] The "apron" is the area of an airport where aircraft are parked, loaded, unloaded, refueled, and boarded.

[122] Mono County. Regional Transportation Plan: 2013 Update.

5.1.2 PUBLIC USE AIRPORTS

162. The proposed Bi-State DPS critical habitat designation also encompasses two public use airports located within suitable habitat in Mono County – the Lee Vining Airport and the Bryant Airfield. These two smaller airports do not support commercial air traffic; these airports support essential public services to Mono County residents and communities, such as law enforcement and emergency response. For example, both airports serve as a permanent base for a USFS Helitack crew to assist in fire suppression and response activities.[123] According to discussions with the Service, paved areas and other areas surrounding these two airports where vegetation is managed for airport safety or other reasons are not considered critical habitat for the Bi-State DPS. As such, section 7 consultation under the Act is unlikely for any vegetation management or other such operation and maintenance activities associated with both of these public use airports.[124,125]

5.2 INCREMENTAL COSTS TO ACTIVITY

163. As the majority of the proposed Bi-State DPS critical habitat designation occurs on federally-managed lands, the most likely source of a Federal nexus for transportation and utility projects occurs for infrastructure that cross Federal lands through rights-of-way (ROW) granted by USFS and/or BLM. Section 7 consultation with the Service may also be required for transportation and utility projects that receive funding from Federal agencies, such as the U.S. Federal Highways Administration, or participate in Federal programs like the FAA NAIPS.

164. To estimate economic costs for activities associated with transportation and utility infrastructure in the proposed critical habitat designation, we rely on information provided by the Service (see Chapter 2). In proposed areas identified by the Service as suitable Bi-State DPS habitat and currently used by the Bi-State DPS, this analysis anticipates that incremental costs will be limited to the additional administrative effort required to consider adverse modification during section 7 consultation.

165. This analysis anticipates that consultations conducted for projects occurring in unsuitable habitat are attributed solely to the critical habitat designation, and thus incremental costs include all associated administrative costs and any requested conservation measures. According to information provided by the Service, conservation measures recommended for activities associated with existing infrastructure are expected to be less restrictive for projects occurring in unsuitable habitat, relative to suitable habitat. In its guidance on

[123] Mono County Board of Supervisors. Public comment submitted on February 4, 2014.

[124] U.S. Fish and Wildlife Service. Personal communication on April 1, 2014.

[125] According to the proposed rule, because of the scale of the maps, the proposed critical habitat designation may include "developed areas such as lands covered by buildings, pavement, and other structures" that lack the physical and biological features to serve as sage-grouse habitat. While such developed areas appear within the maps of the proposed designation, "[a]ny such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat." The proposed rule continues by stating that projects occurring on such developed lands "would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat. (2013 Proposed Critical Habitat Rule. 78 FR 64338-9.)

potential recommendations for project modifications in suitable and unsuitable habitat, the Service states: "[T]he Service will generally be less restrictive in [its] recommendations concerning actions conducted in these areas [unsuitable habitat]." In particular, the Service emphasizes that it may afford greater latitude to short-term actions that do no result in permanent unavailability of habitat. For activities associated with existing infrastructure located in unsuitable habitat, the Service will focus on minimizing the potential long-term effects of such activities.[126]

166. Conservation measures that may be requested for activities associated with existing infrastructure may include pre-construction habitat surveys, habitat restoration of disturbed areas, and adherence to best management practices to minimize the potential for the introduction of invasive species.[127] To estimate the cost of potential Bi-State DPS conservation measures that may be recommended, we contacted NDOT and Caltrans. However, neither agency had any historical experience with the DPS and expressed uncertainty with respect to the magnitude of costs for Bi-State DPS-related conservation measures.

167. Due to uncertainty regarding the types of project modifications requested for transportation projects in unsuitable habitat for the Bi-State DPS, we conservatively assume that recommendations may entail the purchase of land set-asides to compensate for surface areas disturbed during transportation activities. Specifically, we assume that transportation projects will disturb an average surface area of approximately 25 acres.[128] For such compensation, we assume an off-setting ratio of 1:1 based on existing guidelines established by the NDOW for sage-grouse habitat similar to unsuitable habitat.[129] To quantify the costs of purchasing off-site habitat to compensate for unavoidable impacts,

[126] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

[127] According to the Avian Power Line Interaction Committee (APLIC), past conservation measures to protect wildlife include the installation of new power lines underground or conversion of existing line from overhead to underground configurations. Installation of underground transmission lines in rural areas can range from $1.4 million to $27 million per mile; compare this to the cost of overhead transmission lines which range from $174,000 to $6.5 million per mile in rural areas. The APLIC also notes that underground transmission cost significantly more to maintain and repair, requiring repeated excavation to access underground infrastructure. Subsequent excavation activities can also result in repeated disturbance events that may indirectly affect the suitability and use of adjacent habitat by wildlife. As an alternative, ALPIC supports the use of off-site habitat restoration and mitigation to offset and/or compensate for potential impacts to Bi-State DPS habitat. (Avian Power Line Interaction Committee. Public comment submitted on February 7, 2014)

[128] Caltrans identified two past projects on US 395 in suitable Bi-State DPS habitat. One project disturbed a surface area of approximately ten acres and the other project 40 acres. We use the average surface area disturbance from these two projects, or 25 acres. (D. Gonzalez, Caltrans. Personal communication on March 12, 2014.)

[129] An off-setting ratio of 1:1 is consistent with mitigation ratios recommended by NDOW for energy and resource extraction projects located in sage-grouse habitat classified as Category 4 in Nevada. NDOW defines Category 4 habitat as sage-grouse "habitat with moderate potential to become essential [Category 1] or important [Categories 2 and 3]" and serve as "transitional range from one seasonal habitat to another or minimal foraging use." The recommended mitigation ratios for projects occurring in the highest habitat value Categories 1 and 2 is 3 to 1; a ratio of 2 to 1 is recommended for projects occurring in habitat Category 3 identified as "important, medium quality habitat." No mitigation is required for projects occurring in Category 5, which includes poor habitat or areas that would require substantial restoration effort and expense. (NDOW. 2010. Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-Grouse Populations and their Habitats. Prepared by the Governor's Sage-grouse Conservation Team. April. 58 pp.)

our analysis relies on the value that NRCS is currently paying for Bi-State DPS habitat through its Grassland Reserve Program, which ranges from $650 to $2,000 in Mono County for rangeland and irrigated pasture, respectively.[130] Because site-specific data on the type of habitat affected by future transportation activities are not readily available, we conservatively apply the higher value estimates available for irrigated pastureland. Based on this approach, this analysis estimates an average cost of approximately $50,000 per project for project modifications requested for transportation projects in unsuitable Bi-State DPS habitat.[131]

168. In the following sections we summarize the estimated future rate of section 7 consultation for activities associated with exiting transportation and utility infrastructure in suitable and unsuitable habitat within the proposed Bi-State DPS critical habitat designation.

5.2.1 TRANSPORTATION INFRASTRUCTURE

169. To estimate the number of future section 7 consultations associated with transportation projects, we contacted county planners and state transportation agencies, and reviewed state and county transportation planning documents, including the California State Transportation Improvement Program (STIP) information, the Nevada Department of Transportation Fiscal Year (FY) 2014-2023 Work Program report, and Mono County's Regional Transportation Plan.

170. Projects receiving Federal funding are considered to have a Federal nexus. California transportation projects rely on several funding sources, including the State Highway Operations and Protection Program (SHOPP), the STIP, and the Active Transportation Program (ATP). We assume that projects funded through SHOPP solely receive state funding and therefore do not have a Federal nexus. Information on specific funding for STIP projects is not available; California's STIP receives both state and Federal funding. Therefore, we conservatively assume that all projects receiving funding through the STIP have a Federal nexus.[132] California's ATP combines several state and Federal programs into a single program intended to promote active non-motorized transportation modes, therefore projects receiving funding through ATP are considered to have a Federal nexus. For projects occurring in Nevada, unless it is explicitly stated that a project receives only state funding, we assume a Federal nexus exists.

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[130] CA NRCS. Grassland Reserve Program (GRP): Perpetual Easements. Accessed on February 20, 2014 at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/programs/easements/.

[131] Conservation measures for transportation activities will vary based on site-specific detail. While Caltrans does not have historical experience in unsuitable Bi-State DPS habitat, Caltrans provided information on the cost of past projects associated with other species listed under the Act in the Central Valley, California. Specifically, Caltrans indicated that in its past experience, Caltrans was required to follow an offsetting ratio of 3:1, with an average off-site compensation cost of $10,000 per acre. Assuming an average surface disturbance area of 25 acres, this represents a per project cost of approximately $750,000. (D. Gonzalez, Caltrans. Personal communication on March 12, 2014.) NDOT also provided information on its experience with other federally listed species in California. Specifically, NDOT works with the Service to provide protection for the threatened desert tortoise in southern Nevada. NDOT estimates the cost of conservation measures for the desert tortoise at approximately $30,000 per project, which includes the cost of habitat loss fees, pre-construction surveys, clearance of the project area of affected species and monitoring throughout construction activities. (Young, C. NEPA Coordinator/Environmental Services Supervisor, NDOT. Personal communication on February 26, 2014.)

[132] Mono County. Regional Transportation Plan 2013 Update.

171. We identified a total of ten specific transportation projects occurring in proposed Bi-State DPS critical habitat. Absent information on specific start times for these projects, we assume that consultations for each of these projects will occur in 2014. Caltrans estimates approximately 20 projects per year on roads and highways in areas proposed as critical habitat in Inyo and Mono Counties. These projects include intensive routine maintenance projects, such as clearing of vegetation, pavement overlays, and culvert replacement; and capital projects, such as adding passing, turning, and bike lanes, as well as widening of shoulders.[133] All of these projects are expected to have a Federal nexus in some capacity.[134] To attribute consultations to Bi-State DPS proposed critical habitat units and habitat types (i.e., suitable and unsuitable habitat), we rely on the proportion of miles of highways and major roads located in each unit and habitat type. Based on this approach results, this analysis forecasts approximately 16 consultations per year in suitable habitat and 3.2 consultations per year in unsuitable critical habitat, for a total of 400 consultations for Caltrans activities over the next 20 years.

172. Short term projects identified by NDOT include shoulder widening on Route 6 in Mineral County near the California border. As part of its long range planning, the NDOT is also considering extending I-580 south from Carson City into Douglas County.[135] This project would cross through suitable proposed critical habitat in Unit 1. This is the only project identified involving new construction in the proposed critical habitat designation.

5.2.2 UTILITY INFRASTRUCTURE

173. Maps of existing power transmission and distribution lines demonstrate that several lines cross through both suitable and unsuitable habitat in the proposed Bi-State DPS critical habitat designation.[136] According to utility representatives, section 7 consultation is not typically undertaken for routine maintenance and inspection activities on existing transmission lines.[137] Depending on state inspection and safety regulations and codes, utilities are required to undertake periodic inspections of transmission line infrastructure once every five, seven, or ten years. These activities typically involve visual inspection of utility poles and transmission lines and do not result in any ground disturbance.[138] Accordingly, section 7 consultation is only anticipated for the construction of new transmission lines

[133] According to Catrans staff, this estimate does not include simple maintenance projects, such as: pavement striping, sign maintenance, shoulder sweeping, crack sealing, etc. (Downard, Ben. California Department of Transportation District 9, Environmental Unit. Personal communication on February 28, 2014.)

[134] Downard, Ben. California Department of Transportation District 9, Environmental Unit. Personal communication on February 28, 2014.

[135] This project may also overlap areas occupied or used by the federally-listed Carson wandering skipper. (U.S. Fish and Wildlife Service. Personal communication on March 24, 2014.)

[136] Mono County Power and Transmission Corridors (Map), Sugimura, Wendy. Mono County Community Development Department. Personal communication on February 12, 2014.

[137] Ligouri, Sherry. Avian Program Manager, Rocky Mountain Power/Pacific Power. Personal communication on March 20, 2014; Donohue, Kara. Senior Biologist, Southern California Edison. Personal communication on March 24, 2014; Benson, Jason. Senior Environmental Scientist, NV Energy. Personal communication on April 4, 2014.

[138] Ligouri, Sherry. Avian Program Manager, Rocky Mountain Power/Pacific Power. Personal communication on March 20, 2014

174. There are no planned projects involving the construction of new transmission lines within the proposed Bi-State DPS critical habitat designation.[139] One utility representative, however, noted that increased interest in renewable energy development, especially geothermal, could result in the construction of new transmission lines in Nevada.[140] County representatives also expressed concern that the proposed designation may impede the construction of new transmission lines or expansion of existing infrastructure that may be required to support future development of renewable energy or mining resources (see also Chapters 6 and 7, respectively). For example, according to discussions with a representative of Lyon County, as the county's population and level of economic activity increases, future upgrades or expansions of the county's existing power generation may be required.[141] Mineral County representatives expressed similar concerns. In particular, Mineral County representatives indicated that future expansion of an existing transmission line that runs through Mineral County and delivers power to California is possible. The transmission line crosses through Federal lands before crossing into California in the southern part of Mineral County.[142] To the extent that new transmission lines or expansions of existing infrastructure is necessary to support county growth, such infrastructure is likely to cross BLM lands proposed as critical habitat.[143]

5.2.3 AIRPORT OPERATIONS

175. The Town of Mammoth Lakes anticipates undertaking two projects per year at the Mammoth Yosemite Airport, including one project per year for regular vegetation maintenance activities around airport runaways[144] and one project per year under the airport's capital improvement program.[145]

5.3 SUMMARY OF RESULTS

176. As shown in Exhibit 5-2, this analysis forecasts incremental costs associated with transportation and utility infrastructure of $3.8 million (present value over 20 years),

[139] Ligouri, Sherry. Avian Program Manager, Rocky Mountain Power/Pacific Power. Personal communication on March 20, 2014; Donohue, Kara. Senior Biologist, Southern California Edison. Personal communication on March 24, 2014; Benson, Jason. Senior Environmental Scientist, NV Energy. Personal communication on April 4, 2014.

[140] Benson, Jason. Senior Environmental Scientist, NV Energy. Personal communication on April 4, 2014.

[141] Page, Jeffrey. Lyon County Manager. Personal communication on February 19, 2014.

[142] Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 25, 2014.

[143] Project modifications for new utility infrastructure are uncertain in unsuitable habitat. However, a representative of Rocky Mountain Power/Pacific Power shared information on its experience with the sage-grouse in areas outside the proposed critical habitat designation in Southern Utah. As part of construction of new utility infrastructure in the Bald Hill areas, Rocky Mountain/Pacific Power disturbed an area 11.7 miles long and a right-of-way 500 feet wide. To offset for temporary and permanent disturbance of habitat, the company incurred costs of $757,000 to restore the Jack Robert fire area. (Ligouri, Sherry. Avian Program Manager, Rocky Mountain Power/Pacific Power. Email communication on April 16, 2014.

[144] Large sections of land on each side of the runway and taxiway are set aside as Runway Safety Areas or Object Free Areas or Taxi Safety Areas or Object Free areas. These areas require regular maintenance, including, grading, mowing, or other treatments to remove objects that could adversely affect safety aircraft during the runway use. (Mono County Board of Supervisors. Public comment submitted on February 4, 2014.)

[145] Bernasconi, Paul. Town of Mammoth Lakes Acting Public Works Director. Personal communication on February 18, 2014.

assuming a discount rate of seven percent. These costs are associated with approximately 492 projects in suitable habitat and approximately 64 projects in unsuitable habitat. Approximately $1.1 million (present value over 20 years), assuming the same discount rate, is associated with Bi-State DPS conservation measures that may be requested for transportation projects located in unsuitable habitat.

EXHIBIT 5-2. FORECAST INCREMENTAL COSTS TO TRANSPORTATION AND UTILITY ACTIVITIES, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$180,000	$16,000
Unit 2. North Mono Lake	$2,200,000	$200,000
Unit 3. South Mono Lake	$1,400,000	$120,000
Unit 4. White Mountains	$16,000	$1,400
Total	$3,800,000	$330,000

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

5.4 KEY UNCERTAINTIES

177. Exhibit 5-3 summarizes the key assumptions of the analysis of economic costs to transportation activities and utilities, as well as the potential direction and relative scale of bias introduced by these assumptions.

EXHIBIT 5-3. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO TRANSPORTATION ACTIVITIES AND UTILITIES

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS ON TRANSPORTATION ACTIVITIES AND UTILITIES
The cost of project modifications for transportation projects in unsuitable habitat is approximately $50,000 per project.	**Unknown**. May overestimate or underestimate costs.	**Possibly major.** The estimated cost of project modifications is based on the cost of permanently conserving Bi-State DPS habitat at a 1:1 ratio. To the extent that actual Bi-State DPS conservation measures for transportation projects in unsuitable habitat differ, this analysis may under- or overestimate costs.
BLM will not combine consultations for ROWs.	May **overestimate** costs.	**Probably minor.** If BLM were to consider multiple ROWs in a single consultation, estimated incremental administrative costs would fall slightly.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS ON TRANSPORTATION ACTIVITIES AND UTILITIES
The siting of new transmission lines or infrastructure within proposed critical habitat cannot be predicted.	May **underestimate** costs**.**	**Possibly major.** The location, timing, and possible conservation measures to protect Bi-State DPS habitat from future projects to expand or site new transmission lines in the proposed critical habitat designation is highly uncertain. To the extent that new transmission lines or infrastructure are sited only in unsuitable habitat, this analysis underestimates costs.

CHAPTER 6 | POTENTIAL ECONOMIC COSTS TO RECREATION AND OTHER FEDERAL LANDS MANAGEMENT ACTIVITIES

178. This chapter considers costs to activities on Federal lands that were not addressed in previous chapters.[146] Specifically, this chapter considers possible costs to recreation and special use permits, vegetation management, military activities, wild horse and burro management, travel management, and fire management. Each of these activities has the potential to threaten the Bi-State DPS and its habitat by degrading or reducing sagebrush habitat. The chapter proceeds as follows: Section 6.1 provides background on the scope and scale of these activities. Section 6.2 describes potential economic costs. Section 6.3 discusses key sources of uncertainty in the analysis.

6.1 SCOPE AND SCALE OF OTHER ACTIVITIES ON FEDERAL LANDS

179. As described in Chapter 3, approximately 75 percent of Federal lands included in the proposed Bi-State DPS critical habitat designation are located within grazing allotments. The remaining lands support a number of other activities, including dispersed recreation; recreational activities occurring under a special use permit; vegetation management; military activities; wild horse and burro management; travel management; and fire management. Because of the location of these activities on Federal lands, section 7 consultation may be required, and could result in incremental conservation measures. The following sections provide an overview of each of these activities.

6.1.1 OVERVIEW OF RECREATION AND OTHER ACTIVITIES OCCURRING THROUGH SPECIAL USE PERMITS IN COUNTIES WITH BI-STATE DPS PROPOSED CRITICAL HABITAT

180. Recreational activities occurring throughout the proposed Bi-State DPS critical habitat designation include but are not limited to: hiking, camping, horseback riding, wildlife viewing, OHV riding, fishing, hunting, rock climbing, rocking hounding, and bicycling. County representatives have expressed concern regarding access to, and expansion of existing trail and road systems that support such recreational opportunities throughout the proposed designation on Federal lands.[147] Approximately 86 percent of the DPS's proposed critical habitat includes Federal land managed by the USFS and BLM for multiple uses, including outdoor recreational activities. In particular, counties consider the existing network of road and trail systems on Federal lands an important economic

[146] See Chapter 3 for costs to Federal grazing lands; Chapter 5 for costs to rights-of-way crossing Federal lands; Chapter 7 for costs to mining operations on Federal lands; and Chapter 9 for costs to renewable energy development on Federal lands.

[147] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; and Mono County. Personal communication on February 12, 2014.

asset that substantially contributes to and supports the area's local recreation and tourism sectors.[148]

181. Based on a review of public comments and discussions with county representatives, recreators expressed particular concern for the impact of the proposed Bi-State DPS critical habitat designation on OHV activity.[149] In the western U.S., between 1999 and 2004, greater than 27 percent of the population over 18-years of age participated in OHV-based recreational activities.[150] In California and Nevada, the proportion of residents participating in OHV activities is estimated to be approximately 17.6 percent and 23.9 percent, respectively, for years between 1999 and 2007.[151] OHV use occurs throughout private and Federal lands included in the proposed critical habitat designation. Representatives in Douglas County indicate that OHV activity occurs frequently in the Pine Nut Mountains, facilitated by a vast network of roads across both private and Federal lands and enjoyed by both residents and out-of-town visitors.[152] Additionally, there are a number of multi-day OHV events that cross through Federal lands and apply for special use permits each year from the USFS and BLM.[153]

182. Recreation and tourism is an important economic industry throughout the counties containing Bi-State DPS habitat. Exhibit 6-1 summarizes information on the employment and total wages provided by the leisure and hospitality industry for the counties containing DPS proposed critical habitat.

[148] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Mono County. Personal communication on February 12, 2014.

[149] Nevada Four Wheel Drive Association. Public comment submitted on November 22, 2013; Capital Trail Vehicle Association, Public comment submitted on November 7, 2013; Amador, Don. Western Representative, BlueRibbon Coalition, Inc. Public comment submitted on December 17, 2013.

[150] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (33).

[151] Cordell, H.K., Betz, C.J., Green, G.T. and Stephens, B. 2008. Off-highway Vehicle Recreation in the United States and its Regions and States: A National Report from the National Survey on Recreation and the Environment (NSRE). February. (20-21) Accessed February 26, 2014 online at: http://www.fs.fed.us/recreation/programs/ohv/IrisRec1rpt.pdf.

[152] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014.

[153] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013; and Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the bi-state DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

EXHIBIT 6-1. 2012 EMPLOYMENT AND WAGES IN LEISURE AND HOSPITALITY INDUSTRY BY COUNTY

COUNTY	EMPLOYMENT (PERSONS)	TOTAL WAGES
Alpine, CA	222	$5,470,000
Inyo, CA	1,421	$27,493,000
Mono, CA	2,872	$63,857,000
Douglas, NV	5,904	$164,260,000
Esmeralda, NV	--	--
Lyon, NV	1,350	$23,891,000
Mineral, NV	173	$2,757,000
Total	**11,942**	**$287,728,000**

Note: The leisure and hospitality sector includes many industries, including amusement parks, arcades, gambling industries, and other recreational industries.

Source: U.S. Bureau of Labor Statistics (BLS). Quarterly Census of Employment and Wages. Data extracted on February 26, 2014, at: http://www.bls.gov/cew/#databases.

183. Mono County, in particular, relies heavily on recreation and tourism. In 2012, recreation and tourism provided approximately 2,900 jobs, accounting for 45 percent of total wages and salary employment countywide. Leisure services are also expected to provide the majority (57 percent) of the county's future job growth through 2018, creating an average of 70 new jobs per year.[154] In 2008, the Mono County Economic Development Department commissioned a study on the impact of tourism in the county, which included intercept surveys at 1,214 sites.[155] Based on this study, Mono County attracted an estimated 1.5 million visitors in 2008, of which 69.7 percent participated in outdoor recreation activities. [156] The most popular outdoor recreation activities identified by visitors were hiking, followed by fishing, photography and camping.[157] Popular destinations include the town of Mammoth Lakes, Lee Vining, June Lake, Mono Lake and Bodie, all which fall within or proximate to the proposed critical habitat designation.[158] Visitors spent an average of $80 per day for a total annual spending of approximately $369 million, based on an average visit length of 3.1 days.[159] Based on a multiplier of 1.4, the total estimated spending increases to $517.4 million including

[154] California Economic Forecast. 2013. State of California. Economic Forecast 2013-2040. Prepared by the California Department of Transportation and the California Economic Forecast. Accessed on February 25, 2014, at: http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic_files/2013/Revised_Full_Report.pdf.

[155] Lauren Schlau Consulting. 2009. The Economic and Fiscal Impacts and Visitor Profile of Mono County Tourism in 2008. Prepared for the Mono County Department of Economic Development and Special Projects. January. 105 pp.

[156] *Ibid*.(3 and 48)

[157] *Ibid*. (49)

[158] *Ibid*. (51)

[159] *Ibid*. (3)

indirect spending by local businesses and employees that serve the recreation and tourism industry.[160] The recreation and tourism industry also provides a major source of county taxes, contributing an estimated $16.6 million in 2008 through lodging and sales tax revenues.[161] Exhibit 6-2 summarizes the contribution of specific Mono County recreational sites within proposed critical habitat to the county's tourism industry, as estimated by Mono County.[162]

EXHIBIT 6-2. MONO COUNTY TOURISM VISITATION AND SPENDING FOR SITES WITHIN PROPOSED CRITICAL HABITAT (SORT BY: VISITORS PER YEAR)

TOURISM DESTINATION	UNIT(S)	HABITAT SUITABILITY	ESTIMATED VISITORS PER YEAR	ESTIMATED VISITOR SPENDING PER YEAR
Lee Vining	3	Suitable	478,500	$37,323,000
Mono Lake Area	2, 3	Suitable	318,000	$24,804,000
Bodie	2	Suitable	270,000	$21,060,000
Bridgeport	2	Suitable	219,000	$17,082,000
Convict Lake	3	Suitable	177,000	$13,806,000
Walker	2	Suitable	153,000	$11,934,000
Twin Lakes, Bridgeport	2	Suitable	142,500	$11,115,000
Crowley Lake/McGee Creek	3	Suitable	130,500	$10,179,000

Note: Data extrapolated from Mono County Economic Impact & Visitor Profile Study, 2008-09, by Lauren Schlau Consultants.
Source: Sugimura, Wendy. Mono County Community Development Department. Personal communication on March 18, 2014.

184. Because recreational activities on non-Federal lands typically do not have a nexus for section 7 consultation, we do not include those activities in this analysis. However, we note that many recreational opportunities exist on private lands within the proposed Bi-State DPS critical habitat designation. These activities, which include OHV use, hiking, and rockhounding, among others, generate important revenue for the small, rural economies in the Bi-State area.[163] Additionally, Douglas County representatives expressed concern regarding recreational gliding activities that are based from Minden-Tahoe Airport, which is located adjacent to the proposed critical habitat designation.[164] Gliding activities have been based out of the Minden-Tahoe Airport since the 1960s. This

[160] *Ibid*. (5)

[161] *Ibid*.(5-6)

[162] Sugimura, Wendy. Mono County Community Development Department. Personal communication on March 18, 2014.

[163] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 24, 2014; and Mono County. Personal communication on February 12, 2014.

[164] Soaring, NV. Accessed on February 26, 2014, at: http://www.soaringnv.com/. (Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Minden-Tahoe Airport. History. Accessed on February 26, 2014, at: http://www.douglascountynv.gov/index.aspx?nid=946.)

location is a national destination for high-altitude flights and is considered an important economic resource, according to Douglas County representatives.[165]

6.1.2 OVERVIEW OF FILMING ACTIVITIES ON FEDERAL LANDS

185. In addition to potential impacts to tourism, Mono County also expressed concern over impacts to filming activities which occur on Federal lands within the proposed critical habitat designation through a special use permit. County representatives note that the majority of film permits issued by Federal land managers are for commercials, which generate an average of $25,000 each in local spending. In contrast, filming associated with feature films can generate more than $1 million in local spending[166]. Because of the fast-moving nature of the film industry, an expeditious permitting process is essential to the continued success of the film industry in Mono County. According to Mono County representatives, BLM denied two commercial permits in early 2014 for filming proposed in suitable habitat within proposed Unit 3.[167] Information from Federal land managers suggests that changes to the permitting process may result from the listing of the DPS, but additional changes are not expected due solely to the designation of critical habitat.[168]

6.1.3 OVERVIEW OF VEGETATION MANAGEMENT

186. Federal land managers currently undertake vegetation management and habitat restoration projects, such as conifer removal, to maintain and improve sagebrush habitat. Communication with Federal land managers suggests that some portions of unsuitable habitat have experienced substantial conifer encroachment and are heavily wooded, although levels of conifer encroachment vary widely among sites within the proposed critical habitat designation.[169] In addition, Federal agencies may undertake vegetation management for reasons unrelated to the Bi-State DPS—for example, to improve the health of riparian areas.[170]

187. Communication with all Federal land management agencies within the proposed critical habitat designation indicates that vegetation management projects are expected to continue into the future. According to communication with staff at the Humboldt-Toiyabe National Forest and BLM Carson City District Office, these agencies expect to continue with their current prioritization of vegetation management in habitat known to be suitable for the Bi-State DPS, and, given budget limitations, do not anticipate expanding these

[165] *Ibid*.

[166] For example, a feature film filming outside of the proposed designation in 2013 generated an estimated $1.3 million in local spending.

[167] *Ibid*.

[168] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on March 28, 2014; and Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[169] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014; and Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[170] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

efforts into unsuitable habitat.[171] In contrast, information from the Inyo National Forest indicates vegetation management efforts may increase following the designation of critical habitat for the DPS.[172] The Bishop BLM field office conducts, on average, three to eight vegetation management projects per year.[173]

6.1.4 OVERVIEW OF MILITARY ACTIVITIES

188. The U.S. Marine Corps' Mountain Warfare Training Center is located outside of the proposed Bi-State DPS critical habitat designation but uses a portion of suitable habitat in Unit 2, within the Humboldt-Toiyabe National Forest, to conduct mission critical training activities. The Marine Corps holds a 40-year special use permit for its training activities from USFS. [174] Although the Marine Corps' Mountain Warfare Training Center does not currently have an Integrated Natural Resources Management Plan (INRMP), an environmental assessment is currently underway for the special use permit.[175] This assessment is likely to result in the inclusion of conservation measures for the Bi-State DPS and its habitat.[176]

6.1.5 OVERVIEW OF WILD HORSE AND BURRO MANAGEMENT

189. The proposed Bi-State DPS critical habitat designation overlaps nine wild horse and burro territories managed by BLM and USFS. Exhibit 6-3 shows the location of these areas, which overlap all four proposed critical habitat units. Activities related to herd management typically include inventory efforts and herd gathers. According to information provided by BLM, "wild horse and burro gathers occur according to a national gather schedule. The goal is to maintain horse and burro populations within established Appropriate Management Levels (AML), but due to current budget constraints gathers are only anticipated to occur for emergency situations (removal of horses/burros where a large proportion of the herd would be expected to die due to lack of forage and water)."[177] The Tonopah BLM field office recently completed an emergency

[171] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Lovato, Bernadette. District Manager, BLM Carson City District Office. Personal communication on February 25, 2014.

[172] Inyo National Forest, Inyo NF economic review of the proposed listing of bi-state DPS of greater sage-grouse, September 27, 2013.

[173] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[174] 2013 Proposed Critical Habitat Rule. 78 FR 64342

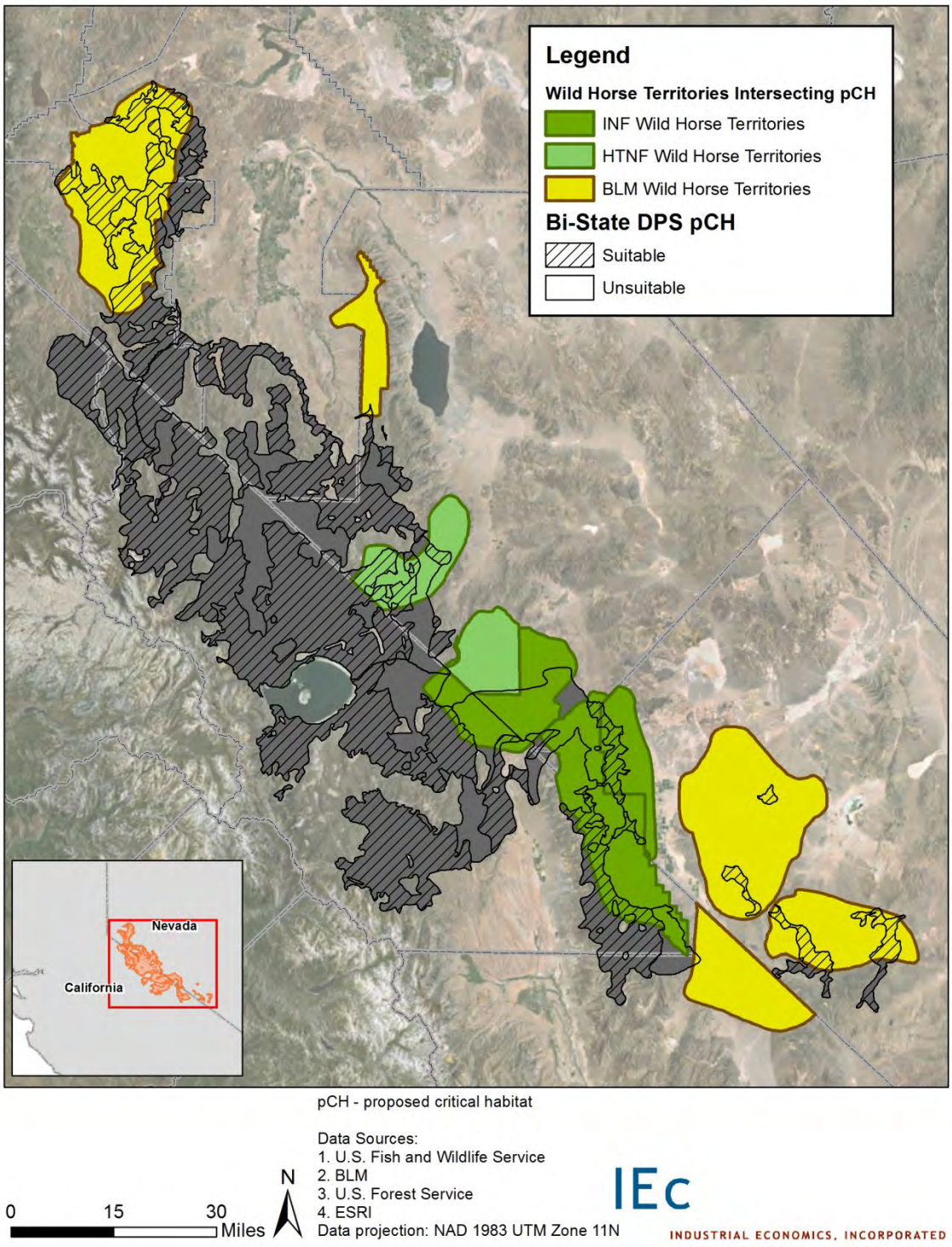
[175] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the Bi-State DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[176] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[177] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

gather, but there are no ongoing or planned wild horse and burro activities on other BLM lands within proposed critical habitat.

EXHIBIT 6-3. WILD HORSE AND BURRO MANAGEMENT AREAS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT



190. Three wild horse and burro areas managed collectively by the Inyo National Forest occur in both suitable and unsuitable habitat in Units 2, 3, and 4. The Inyo National Forest, however, has no plans to conduct management activities in these areas in the foreseeable future.[178] The extent of planned activity within the proposed Bi-State DPS critical habitat designation on USFS lands is the revision of the existing management plan for the Powell Mountain territory by the Humboldt-Toiyabe National Forest in 2014.[179]

6.1.6 FIRE MANAGEMENT, TRAVEL MANAGEMENT, AND OTHER ACTIVITIES

191. Other activities occurring on Federal lands within proposed Bi-State DPS critical habitat include fire management activities and road and trail maintenance. In addition, approximately 3,600 acres of BLM land in Unit 1 are identified for disposal (i.e., the lands are expected to be sold out of Federal ownership).[180] These acres overlap suitable habitat. Information on the intended use of these lands is not available.

192. Fire management activities include wildfire emergency stabilization and rehabilitation (ESR), seeding, and fuels reduction. These types of activities are expected within all Federal lands overlapping the proposed Bi-State DPS critical habitat designation. Specifically, the Humboldt-Toiyabe National Forest intends to conduct a seeding project to recover sage-grouse habitat burned in the 2014 Spring Peak fire.[181] Additionally, the Humboldt-Toiyabe National Forest anticipates future fuel reduction projects to occur on an approximate schedule of one every two years.[182] The Inyo National Forest is currently involved in the June Lake Fuels Reduction Project in suitable habitat in Unit 3.[183] Within the Sierra Front BLM field office in Nevada, wildfire ESR activities are ongoing for the Como, Preacher, Spring, TRE, Ray May, Burbank, and Bison fires.[184] Within the Bishop BLM field office, wildfire ESR activities are ongoing for the Potato, Indian, and Spring Peak fires.[185] Although data are not available to predict future rates of wildfire ESR

[178] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[179] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the Bi-State DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[180] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[181] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the Bi-State DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[182] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[183] Inyo National Forest, Inyo NF economic review of the proposed listing of Bi-State DPS of greater sage-grouse, September 27, 2013.

[184] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[185] *Ibid*.

within proposed Bi-State DPS critical habitat, we assume that the current rate of activity will likely continue into the foreseeable future.

193. Road and trail maintenance on Federal lands are typically addressed through travel management plans. Both the Humboldt-Toiyabe National Forest and the Inyo National Forest recently updated their travel management plans to consider effects to the Bi-State DPS and its habitat. As part of these revisions, some roads and trails were identified for closure or seasonal restrictions. Some of these trails were OHV trails, but the agencies note that restrictions did not affect overall use by recreators.[186] In both the Humboldt-Toiyabe National Forest and the Inyo National Forest, the roads and trails identified for closures or restrictions had not been well-maintained and recreators who would have used these trails were able to use existing, alternate routes instead.[187] Neither National Forest anticipates any further changes to travel management as a result of the proposed Bi-State DPS critical habitat designation.[188] Information from the Carson City BLM District Office suggests that travel management planning for its lands will occur after the revision of its Resource Management Plan in 2016, through approximately 2021. As part of this process, BLM may close some roads or trails or implement usage restrictions within a certain distance of active leks during Bi-State DPS breeding season.[189] However, because these restrictions depend on the presence of the DPS, we do not forecast incremental costs associated with reduced road and trail access.

6.2 POTENTIAL INCREMENTAL COSTS

194. In its guidance on potential recommendations for project modifications in Bi-State DPS suitable and unsuitable habitat, the Service states: "[T]he Service will generally be less restrictive in [its] recommendations concerning actions conducted in these areas [unsuitable habitat]." In particular, the Service emphasizes that it may afford greater latitude to short-term actions that do not result in permanent unavailability of habitat; instead, the Service will focus on the potential long-term effects to the Bi-State DPS and its habitat of these actions.[190] These types of activities include: recreation management; fire and fuels management; wild horse and burro management; special use permits, such as OHV races and the Marine Corps' Mountain Warfare Training Center; and existing transportation system and facilities management.

195. Based on this information and communication with Federal land managers regarding the potential for management changes, we do not forecast any incremental conservation measures. Costs estimated in this chapter include administrative costs associated with

[186] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[187] *Ibid*.

[188] *Ibid*.

[189] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[190] U.S. Fish and Wildlife Service. "Potential recommendation modifications in suitable versus unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse." January 21, 2014.

section 7 consultations, as well as implementation costs associated with an increased rate of vegetation management in the Inyo National Forest. In Bi-State DPS suitable habitat, administrative effort is needed to address both jeopardy and adverse modification issues. The portion of administrative effort to address adverse modification is considered to be an incremental cost; the portion to address jeopardy is considered baseline. Consultations for the DPS forecast in unsuitable habitat are assumed to result solely from the critical habitat designation, and thus all associated administrative costs are considered incremental. We summarize the consultation forecast for each activity below.

- **Recreational activities.** Dispersed recreational activities, such as camping, hiking, fishing, hunting, and OHV use, typically do not result in section 7 consultation. However, to avoid underestimating costs, we forecast four consultations based on information provided by Federal land managers. We forecast a single formal consultation in 2014 for the Little Antelope Pack Station and associated trail usage in the Humboldt-Toiyabe National Forest; based on the location of the pack station, we assume that the consultation addresses suitable habitat in Unit 2, and would have occurred in the baseline.[191] We also forecast three formal consultations in 2014 for general recreation management by the Bishop BLM field office. These consultations consider the planned decommissioning of a road, decommissioning of a shooting area, and installation of a gateway kiosk at the Granite Mountain wilderness. These consultations are assumed to occur in the baseline in Unit 2.[192]
- **Special use permits.** As previously described, recreation and tourism are important contributors to the local economy. A number of large events occur on Federal lands each year including OHV races, and OHV, motorcycle, and horseback tours. Discussions with Federal land managers confirmed that they do not anticipate restrictions in Bi-State DPS unsuitable habitat that would affect participation in these events.[193] Restrictions are most likely to occur in suitable habitat, where USFS may recommend seasonal restrictions or, for events that choose to occur during sage-grouse breeding season, avoidance of trails in close proximity to leks.[194] Such restrictions would occur in the baseline due to the presence of the listed DPS.

[191] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the bi-state DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[192] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[193] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014; Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[194] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

Using information provided by Federal land managers, we identified two special recreation events likely to require consultation in the Humboldt-Toiyabe National Forest in Units 1 and 2. These events, the Sierra Trail Dogs and ATV Jamboree OHV events, are expected to apply for a five-year special use permit with the USFS.[195] We conservatively assume that the permits will be renewed, with an associated consultation every five years from 2014-2033. Based on the location of these events in areas that are identified as Bi-State DPS suitable habitat, we assume that these consultations occur in the baseline.

In addition, according to permitting staff at the Inyo National Forest, the Forest receives approximately 15 to 20 requests for film permits each year in sagebrush habitat. These permit requests are typically located in suitable habitat. Accordingly, USFS does not anticipate any additional restrictions to these permits due to the designation of critical habitat for the DPS.[196] We assume this rate of consultation for film permits will continue into the future. We distribute these future consultations among Units 2, 3, and 4, based on the acreage of suitable habitat within the Inyo National Forest.

We also identified ten special recreation events that occur annually in the Sierra Front and Stillwater BLM field offices in Nevada.[197] Nine of these events overlap both suitable and unsuitable habitat (primarily in Unit 1, but also in a portion of Unit 2), and are, therefore, assumed to require section 7 consultation in the baseline. The remaining event, the Modesto Ridge Runners OHV Rally, crosses only unsuitable habitat.[198] For each of these events, we assume, based on information from BLM, that permits are renewed every five years. In addition, 11 events (including seven recreational events and three to five film permits per year) occur annually in the Bishop BLM field office in California, which overlaps portions of each proposed unit.[199] We assume that consultation occurs every five years for permitted recreation events and annually for film permits. All events occur in Bi-State DPS suitable habitat and, therefore, incremental costs are limited to the administrative effort to consider adverse modification during section 7 consultation.

[195] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the bi-state DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[196] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on March 28, 2014.

[197] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013; and Lovato, Bernadette. District Manager, BLM Carson City District Office. Response to data request provided via personal communication on March 6, 2014.

[198] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 18, 2014.

[199] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

Vegetation management. Vegetation management activities occurring on Federal lands will result also in section 7 consultation. The Humboldt-Toiyabe National Forest anticipates addressing vegetation management activities in a single programmatic consultation; we include costs associated with this consultation in 2014 and distribute costs among units according to the acreage of the Forest located in each unit.[200] Similarly, we forecast two consultations in 2014 for vegetation management in the Inyo National Forest. These consultations are associated with the ongoing Sagehen Summit Habitat Improvement Project and the planned Glass Mountains Escarpment Sage-Grouse Habitat Improvement Project, both located in suitable Bi-State DPS habitat. However, information from the Inyo National Forest indicates vegetation management efforts may increase following the designation of critical habitat for the DPS.[201] Historically, the Inyo National Forest has conducted one conifer removal project per year, covering approximately 200 to 250 acres. [202] To account for an increase in vegetation management projects following the designation of critical habitat, we assume that the historical rate continues in suitable habitat and is also a reasonable forecast of future projects in unsuitable habitat. We therefore forecast a single consultation each year in the baseline for conifer removal in suitable habitat, and a single incremental consultation each year for conifer removal in unsuitable habitat. In addition, we estimate incremental costs of conifer removal associated with the increase in projects in unsuitable habitat. Information provided by the Inyo National Forest suggests that conifer removal projects cost approximately $150 per acre.[203] We apply this value to the typical project size of 250 acres per year.

For BLM lands in Nevada, we forecast one formal consultation in 2014 associated with the planned Pine Nut Health Project.[204] We also forecast approximately one formal consultation each year for future vegetation management projects in both the Sierra Front field office and the Stillwater field office.[205] Because BLM believes that these treatments will overlap both suitable and unsuitable habitat, we attribute the forecast consultations to the baseline and distribute costs among

[200] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the bi-state DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[201] Inyo National Forest, Inyo NF economic review of the proposed listing of bi-state DPS of greater sage-grouse, September 27, 2013.

[202] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[203] Inyo National Forest, Inyo NF economic review of the proposed listing of bi-state DPS of greater sage-grouse, September 27, 2013.

[204] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[205] This consultation rate is based on BLM's estimate of five to eight small-scale treatments plus one large-scale project over 20 years. (Lovato, Bernadette. District Manager, BLM Carson City District Office. Response to data request provided via personal communication on March 6, 2014.)

Units 1, 2, and 4 based on the acreage of Nevada BLM lands in those units.[206] For BLM lands in California, we forecast 5.5 formal consultations per year, based on the agency's forecast of three to eight vegetation management projects per year.[207] We distribute costs of these consultations to each of the proposed units based on the acreage of California BLM lands in each unit.

- **Marine Corps' Mountain Warfare Training Center.** As described above, an environmental assessment is currently underway for the special use permit covering training activities conducted by the Marine Corps' Mountain Warfare Training Center on USFS property. We assume one formal consultation in 2014 associated with this process. The Humboldt-Toiyabe National Forest expects that the special use permit will include conservation measures specific to the Bi-State DPS, although the specific conservation measures are not known at this time.[208] Because of the location of the mission critical training activities on USFS property within Bi-State DPS suitable habitat, these conservation measures are assumed to occur in the baseline.
- **Wild horse and burro management.** Wild horse and burro management activities are currently limited due to budget constraints. According to communication with the Inyo National Forest, we assume a single informal consultation to address all three herd areas overlapping the Inyo National Forest (distributed among Units 2, 3, and 4 based on acreage).[209] Applying this same assumption to BLM lands, we forecast one consultation each for California and Nevada BLM to address wild horse and burro management (distributed among Units 1, 2, and 4). We conservatively assume that these activities will result in formal consultation and will occur in 2014. Because the wild horse and burro herd area overlapping California BLM lands only overlaps Bi-State DPS unsuitable habitat in Unit 4, we assume this consultation will address only an adverse modification analysis of critical habitat. Finally, we assume a single formal consultation for the revision of the Powell Mountain herd area management plan by the Humboldt-Toiyabe National Forest in 2014 in Unit 2.[210] This herd area also overlaps only Bi-State DPS unsuitable habitat, so we assume this consultation will address only an adverse modification analysis of critical habitat.

[206] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[207] BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013.

[208] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.

[209] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[210] Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the bi-state DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

- **Fire management.** We forecast formal consultations for the Bi-State DPS for all ongoing or planned fire management activities on Federal lands. This includes the June Lake Fuels Reduction Project in suitable habitat in Unit 3 in the Inyo National Forest; one new project every two years in the Humboldt-Toiyabe National Forest (distributed among Units 1, 2, and 4 based on acreage); approximately one new project each year in both the Sierra Front field office (Unit 1) and the Stillwater field office (distributed among Units 2 and 4 based on acreage); and one new project each year for the Bishop BLM field office (distributed among all proposed units based on acreage).[211] In addition, the Inyo National Forest anticipates that it will address its fire management practices programmatically as part of the section 7 consultation associated with the revision of its LRMP in 2016.[212]
- **Travel management.** As described above, travel management plans for the Humboldt-Toiyabe National Forest and the Inyo National Forest were recently updated to consider the Bi-State DPS. Neither the Humboldt-Toiyabe National Forest nor the Inyo National Forest anticipates further changes to travel management following a critical habitat designation. However, additional consultations could occur. The Inyo National Forest suggested that routine maintenance activities may be addressed in a programmatic consultation.[213] We assume this consultation occurs in 2014. The Humboldt-Toiyabe National Forest anticipates addressing road projects in individual consultations but does not currently have any planned projects for the proposed critical habitat area.[214] Information from the Carson City BLM District Office suggests that travel management planning for its lands will occur after the revision of its Resource Management Plan, lasting through approximately 2021.[215] Based on this information, we forecast one programmatic consultation for travel management in 2021.

[211] Inyo National Forest, Inyo NF economic review of the proposed listing of Bi-State DPS of greater sage-grouse, September 27, 2013; Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the Bi-State DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013; BLM California and BLM Nevada, Response to Data Request – Economic Analysis and Draft Incremental Effects Memo for Proposed Listing and Proposed Critical Habitat Designation for the Bi-State Distinct Population Segment of Greater Sage-Grouse, October 24, 2013; and Lovato, Bernadette. District Manager, BLM Carson City District Office. Response to data request provided via personal communication on March 6, 2014..

[212] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[213] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[214] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; and Humboldt-Toiyabe National Forest, HTNF response to Nevada FWS request for information to conduct and economic analysis of the proposed rule to designate critical habitat for the Bi-State DPS of greater sage-grouse (*Centrocercus urophasianus*) (8/28/13, File No. CEUR-5), October 29, 2013.

[215] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

- **Resource Management Planning.** The Humboldt-Toiyabe National Forest, Inyo National Forest, Carson City BLM District Office, and Battle Mountain BLM District Office (which encompasses the Tonopah Field Office) are in the process of revising or amending their RMPs to consider the Bi-State DPS. Consultations for these revisions and amendments are assumed to occur in the baseline. Based on information from these agencies, we forecast one formal consultation for amendment of the Humboldt-Toiyabe National Forest LRMP amendment in 2014; one programmatic consultation each for the Inyo National Forest LRMP and Carson City BLM District Office RMP revisions in 2016; and one formal consultation for the Battle Mountain District Office RMP revision in 2014.[216]
- **Other.** As noted above, approximately 3,600 acres of BLM land in Unit 1 are identified for disposal. Although we are not able to forecast costs associated with potential land management changes, we forecast administrative costs associated with one formal consultation in 2014 for the disposal of these lands.

196. Exhibit 6-4 presents the results of the incremental analysis for recreational activities, including special use permits. All costs are limited to the administrative costs of section 7 consultation. Exhibit 6-5 presents the results of the incremental analysis for vegetation management activities, which include both administrative costs of consultation and implementation costs associated with an increased rate of vegetation management projects in the Inyo National Forest. Exhibit 6-6 presents the results of the incremental analysis for other Federal lands management activities. These costs are limited to administrative costs of section 7 consultation.

197. Incremental costs to recreational activities are estimated to be approximately $1.5 million (present value over 20 years) assuming a seven percent discount rate. Approximately two percent of these costs are associated with the designation of unsuitable habitat. Incremental costs to vegetation management are estimated to be approximately $1.0 million (present value over 20 years) assuming a seven percent discount rate. Approximately 58 percent of these costs are associated with the designation of unsuitable habitat. Incremental costs to other Federal lands management activities are estimated to be approximately $260,000 (present value over 20 years) assuming a seven percent discount rate. Approximately 12 percent of these costs are associated with the designation of unsuitable habitat.

[216] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014; Lovato, Bernadette. District Manager, BLM Carson City District Office. Response to data request provided via personal communication on March 6, 2014.; and U.S. Fish and Wildlife Service. Draft Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment of Greater Sage-Grouse (*Centrocercus urophasianus*). January 23, 2014.

EXHIBIT 6-4. FORECAST INCREMENTAL COSTS TO RECREATIONAL ACTIVITIES, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$86,000	$7,600
Unit 2. North Mono Lake	$330,000	$29,000
Unit 3. South Mono Lake	$690,000	$61,000
Unit 4. White Mountains	$380,000	$34,000
Total	**$1,500,000**	**$130,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT 6-5. FORECAST INCREMENTAL COSTS TO VEGETATION MANAGEMENT, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$51,000	$4,500
Unit 2. North Mono Lake	$230,000	$21,000
Unit 3. South Mono Lake	$530,000	$47,000
Unit 4. White Mountains	$220,000	$20,000
Total	**$1,000,000**	**$91,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT 6-6. FORECAST INCREMENTAL COSTS TO OTHER FEDERAL LANDS MANAGEMENT ACTIVITIES, 2014-2033 (2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$64,000	$5,600
Unit 2. North Mono Lake	$92,000	$8,100
Unit 3. South Mono Lake	$39,000	$3,400
Unit 4. White Mountains	$68,000	$6,000
Total	**$260,000**	**$23,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

6.3 KEY UNCERTAINTIES

198. Exhibit 6-7 summarizes the key assumptions of the analysis of economic costs to recreation and other Federal lands management activities. This exhibit also describes the potential direction and relative scale of bias introduced by these assumptions.

EXHIBIT 6-7. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO OTHER FEDERAL LANDS MANAGEMENT ACTIVITIES

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS
The Service will not request additional conservation measures for recreational and other activities occurring on Federal lands.	May **underestimate** costs.	**Probably minor.** Federal land managers noted that road and trail closures and restrictions have been implemented for the Bi-State DPS in the past, with no noticeable effect on visitation and usage. Federal land managers do not anticipate any further restrictions to recreational usage, and as a result, local economies are not likely to experience negative effects. Any additional conservation measures are likely to result in minor costs.
Federal land managers will consult on special recreation permits every five years.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** According to Federal land managers, many events pursue multi-year permits. However, to the extent that events choose not to renew permits, or to the extent that events require permit renewal and consultation each year, this analysis may overestimate or underestimate costs. This assumption affects only the forecast consultation rate.
With the exception of the Inyo National Forest, Federal land managers will continue to conduct vegetation management projects at the historical rate.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Federal land managers noted that the rate at which vegetation management projects are undertaken is dependent on a number of factors, including budgetary constraints. Because these land managers expect future funding to resemble past funding, we assume that the historical rate of projects is a reliable estimate of the future rate.
Each agency will conduct a single consultation addressing management of all wild horse and burro territories managed by that agency.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Inyo National Forest indicated that they intend to conduct a single informal consultation to cover all wild horse and burro management activities. This analysis assumes that all other agencies will address wild horse and burro management through formal consultation. To the extent that agencies consult on individual territories, or engage in informal consultation rather than formal, this assumption may either underestimate or overestimate potential administrative costs.
Historical rates of fire management projects will continue into the future.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Data are not available to predict the likelihood of wildfire ESR activities in a given year. State and Federal agencies are pursuing higher levels of funding for fuels management activities. To the extent that future fuel reduction activities occur on a more regular basis, this assumption may underestimate costs. However, this assumption only affects the forecast consultation rate.

CHAPTER 7 | POTENTIAL ECONOMIC COSTS TO MINING OPERATIONS

199. This section describes the potential for economic costs to mining operations in areas proposed as critical habitat for the Bi-State DPS. As described in the proposed listing rule, surface and subsurface mining for mineral resources may result in direct loss of Bi-State DPS habitat. Indirect impacts may also result from an increase in human presence, changes in land use practices, ground shock, noise, dust, reduced air quality, degradation of water quality and quantity, and changes in vegetation and topography. A potential Federal nexus exists for mining operations that occur on Federal lands. In addition, mining facilities can require a variety of Federal permits, potentially generating a Federal nexus for section 7 consultation under the Act.

200. The chapter proceeds as follows: Section 7.1 provides an overview of the scope and scale of the mining industry in areas affected by the proposed critical habitat designation. Section 7.2 forecasts incremental costs for mining operations in the proposed critical habitat designation. Section 7.3 discusses the key sources of uncertainty in the mining analysis.

7.1 SCOPE AND SCALE OF MINING OPERATIONS

201. This section proceeds as follows. We begin with a discussion of the importance of the mining industry in the counties and States that contain Bi-State DPS habitat. Next we focus on the areas proposed as Bi-State DPS critical habitat and discuss available information on mining operations in these areas. This is followed by discussion of two recently proposed mining projects for which future costs from the proposed rule are likely. This section concludes with an overview of undeveloped mineral resources that may be subject to future development within proposed Bi-State DPS critical habitat.

7.1.1. OVERVIEW OF THE MINING INDUSTRY IN AFFECTED COUNTIES AND STATES

202. Mining is an important industry with a long history in the counties containing proposed Bi-State DPS critical habitat, particularly in the state of Nevada. According to the Nevada Bureau of Mines and Geology (NBMG), the estimated value of Nevada's non-fuel mineral production in 2012 was $10.437 billion and ranked first in the U.S. for non-fuel mineral production.[217]

203. Gold production makes up the majority of non-fuel mineral production in Nevada, contributing approximately $9.25 billion, or 88.6 percent of Nevada's total 2012 value. According to NBMG, in 2011, Nevada accounted for 74 percent of total gold production

[217] U.S. Geological Survey. 2013. Mineral Commodity Summaries 2013. Reston, Virginia. 198 pp. Accessed on February 17, 2013, at: http://minerals.usgs.gov/minerals/pubs/mcs/2013/mcs2013.pdf.

in the U.S. and 6.4 percent of total gold production worldwide. In terms of value, copper ranked second behind gold. Nevada also leads the U.S. in the production of barite, lithium compounds, and magnesium compounds. According to the U.S. Census, the mining industry accounted for approximately 5.2 percent, or $6.937 billion, of Nevada's Gross Domestic Product in 2012.[218] The Nevada mining industry is also a major source of state and local taxes, contributing almost $500 million in taxes in 2010 – the most recent year for which data are available.[219]

204. In 2012, an estimated 1,833 active mining operations employed 25,685 people in Nevada.[220] Additionally, the Nevada Department of Employment Training and Rehabilitation estimates that the Nevada mining industry is responsible for another 65,000 jobs in secxtors supporting the mining industry such as retail, manufacturing, and service industries.[221] As shown in Exhibit 7-1, there are approximately 168 mines, employing 1,310 people, in the four counties affected by the proposed critical habitat designation in Nevada based on data from the Nevada Department of Business and Industry.

EXHIBIT 7-1. NUMBER OF NEVADA MINES AND MINE WORKERS IN AFFECTED COUNTIES (2012)

COUNTY	TOTAL NUMBER OFMINES	TOTAL EMPLOYEES	PERCENT OF TOTAL STATEWIDE EMPLOYEES
Douglas	3	10	0.04%
Esmeralda	62	406	1.58%
Lyon	56	503	1.96%
Mineral	47	391	1.52%
Subtotal	**168**	**1,310**	**5.10%**
Nevada State Total	**1,833**	**25,685**	--

Source: Nevada Department of Business & Industry, Division of Industrial Relations. 2013. Directory of Nevada Mine Operations: January – December 2012. Carson, City, NV. July 23. p. 315. Accessed on February 17, 2014 online at: http://dirweb.state.nv.us/msts/minedirectory.pdf

205. In California, approximately 700 mines, employing 5,300 people, produced $2.9 billion worth of non-fuel minerals in 2011.[222] The majority of non-fuel mineral production in

[218] U.S. Department of Commerce, Bureau of Economic Analysis. Gross Domestic Product by State. Accessed on February 17, 2014, at: http://www.bea.gov/regional/index.htm.

[219] Dobra, J. "An Economic Overview of Nevada's Minerals Industry, 2010-11." Natural Resource Industry Institute. University of Nevada, Reno. pp. 20-22. Accessed on February 17, 2013, at: http://www.nevadamining.org/issues_policy/pdfs/NVMA_2010_Economic_Overview.pdf.

[220] Nevada Department of Business & Industry, Division of Industrial Relations. 2013. Directory of Nevada Mine Operations: January – December 2012. Carson, City, NV. July 23. p. 315. Accessed on February 17, 2014 online at: http://dirweb.state.nv.us/msts/minedirectory.pdf.

[221] Nevada Bureau of Mines and Geology. 2013 Major Mines of Nevada 2012. Special Publication P-24. University of Reno. Accessed on February 17, 2014 online at: http://www.nbmg.unr.edu/dox/mm/mm12.pdf.

[222] Clinkenbeard, John, and Joshua Smith. 2011. "California Non-Fuel Minerals 2011." State of California Department of Conservation Mineral Production. Accessed on February 17, 2014 online at: http://www.conservation.ca.gov/cgs/geologic_resources/mineral_production/Pages/Index.aspx.

California is comprised of boron, and sand and gravel production, accounting for approximately 40 percent of California's 2011 value (or $1.18 billion). According to the USGS, California was the fifth largest state in terms of the value of non-fuel mineral production in 2012, following Nevada, Arizona, Minnesota, and Florida.[223] According to the U.S. Census, the mining industry accounted for less than one percent of California's Gross Domestic Product in 2012.[224]

7.1.2. ACTIVE MINING OPERATIONS IN PROPOSED CRITICAL HABITAT

206. According to USFS, mining on Federal lands are generally cyclical in nature with mining notices and applications increasing when prices for precious metals rise, and then declining or completely ceasing when prices fall.[225] To determine the locations of active mines relative to critical habitat, we rely on geographic data from the USGS Mineral Resource Data System (MRDS).[226] Based on these data, 63 active mining sites fall within proposed Bi-State DPS critical habitat, of which 56 sites are located in California and 7 sites are located in Nevada. According to the MRDS, the primary resources mined at these sites are gold and silver, with a smaller portion of sites also mining for antimony, bismuth, lead, copper, fluorine-fluorite, lead, manganese, marble, mercury, molybdenum, nickel, pumice, sand and gravel, selenium, tellurium, tungsten, and zinc.

207. As shown in Exhibit 7-2, of the 63 sites, only three are located in areas that may experience incremental costs (see discussion in Chapter 2) due to the proposed critical habitat designation for the Bi-State DPS, including one gold mine (Evening Star Mine) and one silver mine (Chidago Mine) in the Inyo National Forest, and one marble mine (Bridgeport Deposits California Red Travertine Mine) on BLM lands managed by the Bishop Field Office. According to discussions with the Inyo National Forest, while the current status of the gold and silver mining operations is unknown, mining operations in the Inyo National Forest are exploratory in nature and the surface footprint of such operations are, on average, less than one acre in size. Large-scale mining activity is not present in Inyo National Forest.[227]

208. BLM also indicates that current mining on BLM lands proposed as critical habitat for the Bi-State DPS are exploratory in nature. In addition to the one marble mine identified from the MRDS, BLM also identified three additional exploratory gold mining operations

[223] USGS, 2013.

[224] U.S. Department of Commerce, Bureau of Economic Analysis. Gross Domestic Product by State. Accessed on February 17, 2014, at: http://www.bea.gov/regional/index.htm.

[225] Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014; U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (54).

[226] U.S. Geological Survey. 2005. Mineral Resources Data System: U.S. Geological Survey, Reston, Virginia. This database contains the records previously provided in the Mineral Resource Data System of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. USGS states that the positional information of the data is variable, and that data may not be updated to current conditions. Accessed at http://tin.er.usgs.gov/mrds/ on February 6, 2014.

[227] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

(Everdeen Elements, Hercules Exploration Project and Mike Powell mining operations) in unsuitable habitat in Unit 1.[228] Under 43 CFR §3809.21, operators engaging in exploratory mining, that will result in surface disturbance of five or acres or less, must submit written notice (referred to as a "notice of intent") to BLM 15 days before commencing such activities.[229,230] Under 43 CFR §3809.301, written notice must be filed with the BLM office with jurisdiction over the lands involved. The written notice should include operator information, a description of the proposed activity (e.g., type, size, and location), a plan for reclamation of disturbed surface acres and an estimate of the cost of reclamation.

EXHIBIT 7-2. SUMMARY OF PRODUCER MINES WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT

UNIT	SUITABLE HABITAT	UNSUITABLE HABITAT
Unit 1. Pine Nut	5	-
Unit 2. North Mono Lake	20	2
Unit 3. South Mono Lake	32	1
Unit 4. White Mountains	3	-
Total	**60**	**3**

Note: Mines classified by MRDS as "producer" indicates that the resource is in active use.

Source: U.S. Geological Survey. 2005. Mineral Resources Data System: U.S. Geological Survey, Reston, Virginia. Accessed at http://tin.er.usgs.gov/mrds/ on February 6, 2014.

7.1.3 ESMERALDA PROJECT[231]

209. The Esmeralda Project, formerly known as the Aurora Project, is a gold and silver mining and milling operation located on a mix of private and public lands in Mineral County, approximately 33 miles southwest of the town of Hawthorne. Mining at this site has been ongoing at various levels since the late 1800s. Active mining operations occurred most recently in February 2004, ceasing shortly thereafter in March 2005.[232]

210. The current permittee, Watertown Global Mining Company (hereafter, "Watertown"), acquired the Esmeralda Project through a bankruptcy auction in April 2013. The project

[228] Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[229] At 43 CFR §3809.5 "exploration" is defined as activities that does not include extraction of material for commercial use or sale. Under 43 CFR §3809.11, commercial mining operations are required to submit a plan of operations and obtain BLM's approval.

[230] According to BLM staff, exploratory mining operations conducted under a Notice of Intent allows for up to five acres of surface disturbance at a time. The total area disturbed by such activities may be greater than five acres over the two-year life of the Notice of Intent, but is unlikely to exceed ten acres total. (Buttazoni, Brian. Planning and Field Coordinator, BLM Sierra Front Field Office. Personal communication on March 21, 2014.

[231] Rogers, Connie. Legal Counsel representing Watertown Global Mining Corporation. Personal communication on February 20, 2014; Johnson, Shane. Environmental Coordinator, Watertown Global Mining Corporation. Personal communication on February 21, 2014; Public comment from Watertown Global Mining Corporation, submitted on February 10, 2014.

[232] Nevada Division of Environmental Protection. Fact Sheet: Esmeralda Project. Accessed on February 9, 2014, at: https://ndep.nv.gov/docs_13/nev0087072_fsFY14.pdf.

includes approximately 436 acres of disturbed areas, of which 341 acres occurs on private lands with the remaining area located on land managed by the Humboldt-Toiyabe National Forest. According to discussions with Watertown representatives, activities at the mine are in the beginning phases and currently limited to exploratory operations that are unlikely to disturb more than a couple of acres on USFS lands, some of which may occur in areas previously disturbed from prior mining operations at the site. Should the project proceed to production status, development of new infrastructure is possible, however, the timing and circumstances under which production at the site will commence is unknown at this time.[233]

7.1.4 PINE GROVE PROPERTY[234]

211. Acquired by the Lincoln Mining Corporation (hereafter, "Lincoln") in 2007, the Pine Grove property is an open-pit gold mining operation project to be developed in Lyon County, Nevada. The project area encompasses approximately 4,480 acres (or seven square miles), in which the company controls 243 unpatented claims (loder, placer, and millsite) on Humboldt-Toiyabe National Forest lands and 12 patented claims on private lands, for which Lincoln holds mining lease agreements with the private landowners (the Wheeler Lease and Wilson Lease).[235] The mine is located approximately 20 miles south of Yerington in the Pine Grove Hills. As shown in Exhibit 7-3, approximately one-third of the Pine Grove property intersects proposed Bi-State DPS critical habitat on Humboldt-Toiyabe National Forest lands in Unit 2.

212. In December 2011, Lincoln completed a Preliminary Economic Assessment (PEA), estimating a mine life of six years with pre-production work occurring in the first year[236] followed by four years of production at approximately 26,200 to 28,200 ounces per year and pad rinsing in the project's final year. Based on these production estimates, the PEA estimates a free cash flow of approximately $32 million, an internal rate of return of 31 percent, and a net present value of $21 million (assuming a five percent discount rate). Lincoln anticipates employing approximately 100 people during the first year for site construction and approximately 56 people during the mine's operating life. The average salary is expected to be approximately $60,000 per year, rising to $80,000 per year including benefits and overtime.[237] As a point of comparison, according to the U.S. Census, the median household income and per capita income in Lyon County in 2012

[233] According to discussions with Watertown, if exploratory operations identify mineral reserves suitable for commercial exploration, the company plans to shift from exploration to production. The timing and configuration of commercial mining operations at the site is highly uncertain. To the extent that new information on the likelihood of future mining operations on USFS lands proposed as critical habitat for the Bi-State DPS, such information will be integrated into the final version of this report. (Fernandez, Laura. Principal, Associate General Counsel, Watertown Global Resource Management. Personal communication on March 22, 2014.)

[234] Lincoln Mining Corp. "Pine Grove Property." Accessed on February 21, 2014 , at: http://www.lincolnmining.com/projects/pine_grove/summary/.

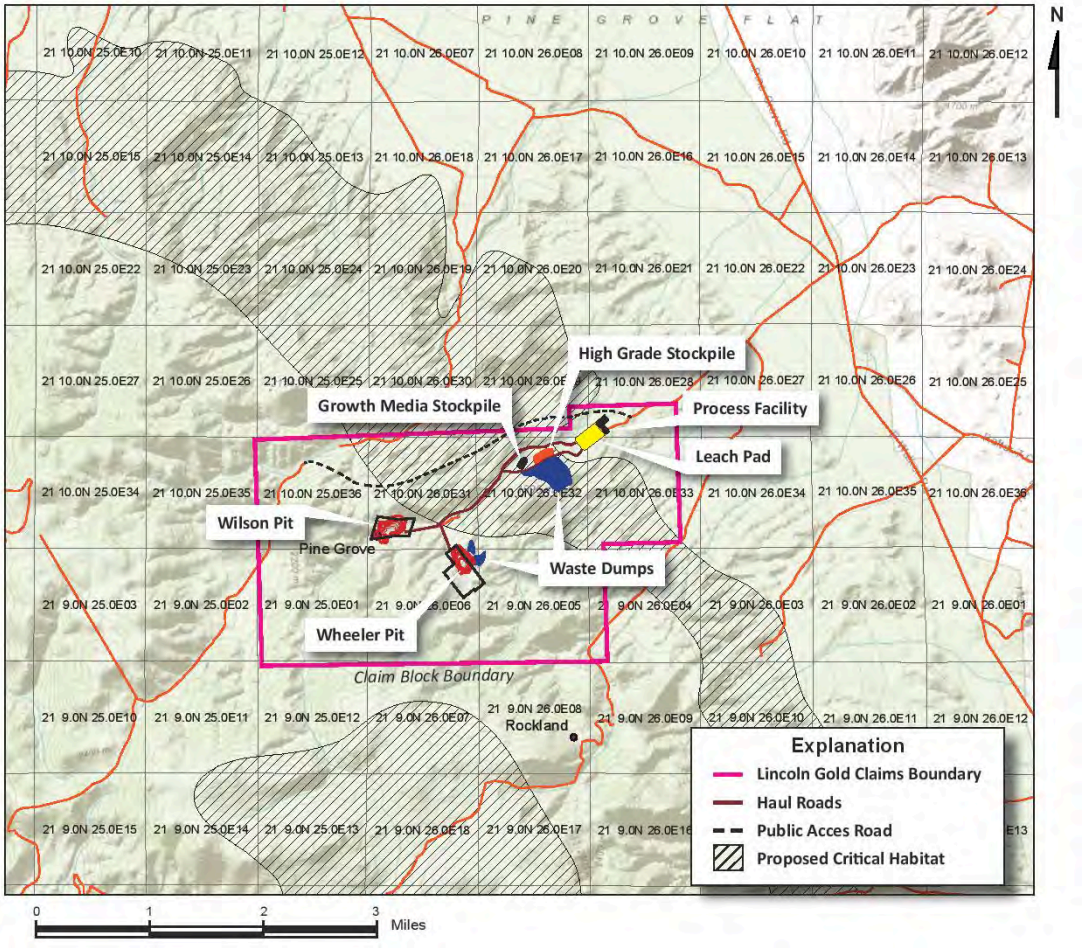
[235] Telesto Nevada Inc. 2011. NI 43-101 Preliminary Economic Assessment for the Pine Grove Project, Lyon County, Nevada. Prepared for Lincoln Mining Corporation and Lincoln Gold US Corporation. Reno, NV. December 8. (3)

[236] Lincoln estimates initial capital construction costs of approximately $22.9 million plus $4.5 million contingency.

[237] Wilson, Jeffrey. Vice President, Lincoln Mining Corporation. Personal communication on February 21, 2014.

was $46,088 and $21,003, respectively.[238] As of December 2013, the BLS estimated the unemployment rate in Lyon County at approximately 13.9 percent, compared to a statewide unemployment rate of 8.8 percent.[239]

EXHIBIT 7-3. PINE GROVE PROJECT AREA WITHIN BI-STATE DPS PROPOSED CRITICAL HABITAT



Source: Wilson, Jeffrey, Vice president, Lincoln Mining Corporation. Personal communication on February 21, 2014.

213. According to discussions with Lincoln, the project is still several years away from production and discussions with the Humboldt-Toiyabe National Forest have not yet commenced.[240] However, Lincoln plans to begin surveys to support the various environmental permitting processes within the next year with a tentative construction date

[238] U.S. Census Bureau: State and County QuickFacts. Accessed on February 21, 2014 online at: http://quickfacts.census.gov/qfd/states/32/32019.html

[239] BLS. "Unemployment rates, seasonally adjusted." Accessed on February 23, 2014 online at: http://www.bls.gov/lau/. BLS. "Labor force data by county, not seasonally adjusted, November 2012-December 2013." Accessed on February 23, 2014 online at: http://www.bls.gov/lau/laucntycur14.txt.

[240] Lincoln estimates its financial investment from property acquisition in 2007 through December 2013 at approximately $3,981,048, of which approximately 90 percent went to U.S. contractors. (Wilson, Jeffrey. Vice President, Lincoln Mining Corporation. Personal communication on February 21, 2014.)

in approximately 2016. Construction is expected to include limited site improvements to support mine development, including but not limited to, a 3,000 square foot office building, waste dumps, growth media and high grade stockpiles, a haul road between mining pits and the processing facility, and transmission lines to distribute power throughout the site.[241] Lincoln representatives estimated the total area of surface disturbance on USFS lands to be approximately 219 acres, of which 109 acres occur within proposed Bi-State DPS critical habitat.[242]

7.1.5 UNDEVELOPED MINERAL RESOURCES IN PROPOSED BI-STATE DPS CRITICAL HABITAT

214. To determine the scope of undeveloped mineral resources in the proposed critical habitat designation, we conducted interviews with planning departments in counties containing proposed Bi-State DPS critical habitat. County representatives indicated undeveloped mineral resources occur throughout the proposed Bi-State DPS critical habitat designation.[243] Mineral County recently applied for funding to map small-scale mineral reserves to assist local mining businesses in developing such resources. Mineral County representatives indicate that development of small-scale mineral resources represents an important contributor to the county's economy – hiring, spending and reinvesting with local economies.[244] To further support this type of small-scale mining, Mineral County recently initiated an effort to streamline the process and facilitate development of small-scale mining operations more quickly and cost-effectively. Additionally, the county is pursuing custom mill operations that make mining small-scale mineral resources more economically feasible for small businesses.[245]

215. Based on discussions with county planning departments, we identified the following areas within proposed Bi-State DPS critical habitat where future development of mineral resources is possible.

[241] Telesto Nevada Inc. 2011. NI 43-101 Preliminary Economic Assessment for the Pine Grove Project, Lyon County, Nevada. Prepared for Lincoln Mining Corporation and Lincoln Gold US Corporation. Reno, NV. December 8. (167-174).

[242] Wilson, Jeffrey. Vice President, Lincoln Mining Corporation. Personal communication on February 26, 2014.

[243] Boland, Nancy. Chair, Esmeralda County Commission, Commissioner District 2. Personal communication on March 5 and 11, 2014; Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014; Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 24, 2014; Page, Jeffrey, Lyon. County Manager. Personal communication on February 19, 2014; Hartmann, Shelley. Mineral County Economic Development Authority. Personal communication on February 18, 2014; Mono County. Personal communication on February 12, 2014.

[244] As an example, Mineral County representatives highlight the importance of the diatomaceous earth mine operated by Grefko Minerals, Inc. This mine occurs in suitable habitat on private lands proposed as critical habitat in Mineral County close to the border with Esmeralda County. This mine has been active for approximately 60 to 70 years. Diatomaceous earth mined is used for use in medical filters for air and water. The mine provides jobs for approximately four to six employees who live in Esmeralda County. With an estimated population in 2012 of approximately 775 people, the Grefko mine is an important business for Esmeralda County residents. Mineral County also benefits from the mine through tax revenues. (Tipton, Jerrie, Mineral County Commissioner. Personal communication on February 24, 2014.)

[245] Hartmann, Shelley. Mineral County Economic Development Authority. Personal communication on February 18, 2014; Tipton, Jerrie, Mineral County Commissioner. Personal communication on February 24, 2014.

- **Mono County, California**. Mineral reserves occur throughout Mono County. According to conversations with county planners, a number of recent exploratory efforts have occurred in the Bodie Hills area, located in Unit 2.
- **Esmeralda County, Nevada**. Mineral reserves, including gold, silver, cinnabar, and obsidian occur in Esmeralda County. These reserves are associated with mining claims located in Unit 4, near Nevada State Route 266 and east of the town of Lida.
- **Lyon County, Nevada**. Gold, silver, and quartz reserves occur on private lands adjacent to lands managed by the BLM south of Dayton and east of Carson City in Unit 1. In southern Lyon County, copper reserves exist on private lands adjacent to land managed by the USFS, near the border with Mono County, California in Unit 2.
- **Mineral County, Nevada.** Gold reserves occur on private and public in the southern part of the county, near the border with Esmeralda County in Unit 4.

216. MRDS also maintains geographic data on exploratory (or "prospect") activities and undeveloped mining resources (or "occurrences"). The locations of these additional types of mining operations are shown in Exhibits 7-4 and 7-5.

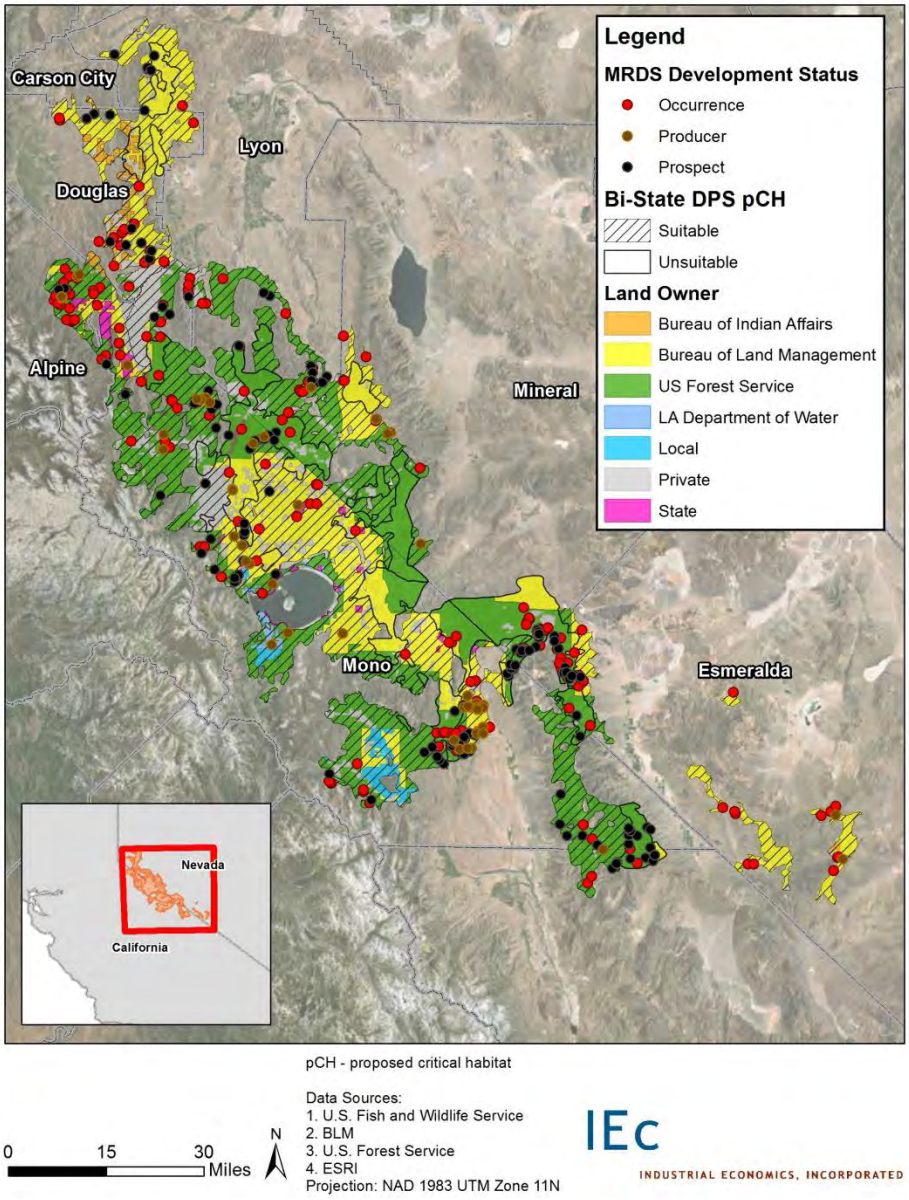
EXHIBIT 7-4. EXPLORATORY AND UNDEVELOPED MINERAL RESOURCES WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT

UNIT	SUITABLE HABITAT			UNSUITABLE HABITAT			TOTAL
	PROSPECT	OCCURRENCE	UNKNOWN	PROSPECT	OCCURRENCE	UNKNOWN	
Unit 1. Pine Nut	16	57	10	2	-	1	**86**
Unit 2. North Mono Lake	41	63	16	12	10	6	**148**
Unit 3. South Mono Lake	12	49	7	10	20		**98**
Unit 4. White Mountains	12	22	1	43	30	7	**115**
Total	**81**	**191**	**34**	**67**	**60**	**14**	**447**

Note: "Prospect" status indicates that although exploration at a mineral deposit is underway, no production is planned in the near term. "Occurrence" status indicates that a mineral deposit exists, yet that no developed mining infrastructure exists on the site. Such status does not imply that any individual or corporation owns rights to the deposit or that any individual or corporation intends to mine the deposit.

Source: U.S. Geological Survey. 2005. Mineral Resources Data System: U.S. Geological Survey, Reston, Virginia. Accessed on February 6, 2014 online at: http://tin.er.usgs.gov/mrds/.

EXHIBIT 7-5. SUMMARY OF MINING OPERATIONS WITHIN PROPOSED BI-STATE DPS CRITICAL HABITAT



7.2 POTENTIAL INCREMENTAL COSTS TO MINING OPERATIONS

217. Because extraction operations on privately owned lands are unlikely to have a Federal nexus for section 7 consultation except where Federal mineral ownership occurs, we limit our analysis to operations occurring on Federal lands. Currently, there are no active, large-scale mining operations on Federal lands within the Bi-State DPS proposed critical habitat designation. However, as previously discussed, exploratory mining operations occur throughout the designation and two mining operations, currently in pre-production, are likely to shift into active mineral production within the timeframe of this analysis. Finally, BLM field offices anticipate no more than ten consultations associated with

mining operations over the timeframe of this analysis. We discuss each type of mining operation in more detail below.

Esmeralda Project

218. The Esmeralda Project overlaps approximately 95 acres of Federal lands managed by the Humboldt-Toiyabe National Forest. The project overlaps proposed Bi-State DPS critical habitat classified by the Service as suitable habitat and considered to be currently used by the DPS. Based on discussions with Watertown representatives, the mine is expected to shift from exploration to production; however, the exact timing is unknown. Accordingly, this analysis conservatively assumes one consultation to occur within two years in approximately 2016. As the project is located in suitable habitat, we do not include the cost of any conservation measures, which, if recommended, are expected to occur regardless of the designation of critical habitat.

Pine Grove Property

219. The Pine Grove Property includes areas managed by the Bridgeport Ranger District in the Humboldt-Toiyabe National Forest. The property overlaps the proposed Bi-State DPS critical habitat in areas identified as unsuitable habitat. Accordingly, this analysis anticipates that future consultation conducted for the Pine Grove Property are attributable to the critical habitat designation, and thus incremental costs include all associated administrative costs and any requested conservation measures.

220. In its guidance on potential recommendations for project modifications in Bi-State DPS suitable and unsuitable habitat, the Service states that it may afford greater latitude which "will likely manifest in recommendations that minimize or mitigate instead of avoid [or preclude] an action." As an example, the Service may seek to "avoid a new energy development in suitable habitat. In areas currently considered unsuitable, while [the Service] may still seek to avoid development, [the Service] would likely look to minimize the long-term loss through recommendations that limit the extent or collocate facilities, micro-siting facilities, or potentially limiting operating periods."[246] Based on this information, we do not anticipate that the Service would request precluding mining operations at the Pine Grove Property.

221. Uncertainty exists on the type of conservation measures that may be appropriate for new mining operations in Bi-State DPS unsuitable habitat. According to discussions with the Service, conservation measures vary based on site-specific details. Potential impacts to the DPS and its habitat from mining operations are addressed in a recent EIS issued by the Humboldt-Toiyabe National Forest in support of an amendment to the forest's Resource Management Plan (RMP) to address the DPS. Example conservation measures identified include timing restrictions, buffers, and off-site habitat restoration.[247]

[246] U.S. Fish and Wildlife Service. "Potential recommendation modifications in Suitable versus Unsuitable proposed critical habitat for the Bi-State DPS of greater sage-grouse". January 21, 2014.

[247] U.S. Fish and Wildlife Service. 2013. Greater Sage-Grouse Bi-State Distinct Population Segment Forest Plan Amendment Draft Environmental Impact Statement. Humbold-Toyiabe National Forest. August. 141 pp.

Conservation measures may also include best management practices to minimize potential indirect impacts to Bi-State DPS habitat, such as minimizing the introduction of invasive species or the presence of predators.[248] In instances where changes in project design or site configuration to avoid or minimize impacts are not possible, the Service could request off-site compensation (e.g., mitigation bank, land acquisition). [249,250]

222. To estimate the economic cost of potential Bi-State DPS conservation measures for the Pine Grove Property, this analysis conservatively assumes off-site compensation at a ratio of 1:1 would be necessary for the approximately 109 acres of surface disturbance likely to occur within the proposed critical habitat designation on USFS lands, as estimated by Lincoln.[251,252] This ratio is based on existing guidelines established by NDOW for Bi-State DPS habitat similar to unsuitable habitat for renewable energy development. To quantify the costs of purchasing off-site habitat to compensate for unavoidable impacts, our analysis relies on the value that NRCS is currently paying for Bi-State DPS habitat through its Grassland Reserve Program, which ranges from $580 to $4,399 in Lyon County for rangeland and irrigated pasture, respectively. This analysis conservatively relies on the higher value for irrigated pasture.

Mining Operations on BLM Lands

223. Over the 20-year analytic timeframe, BLM staff in the Sierra Front Field Office and Stillwater Field Office anticipate no more than:

- Six consultations for exploratory mining operations; and
- Four consultations for mining operations that require a mining plan (i.e., mining operations that disturb more than five acres).

[248] According to the Service, best management practices for minimizing the introduction of invasive species are often followed by mining operations regardless of the presence of a listed species or the designation of critical habitat.

[249] U.S. Fish and Wildlife Service. Personal communication on February 21, 2014.

[250] According to discussions with the Humboldt-Toiyabe National Forest, the only conservation measure requested in the past for mining operations was timing restrictions. Additionally, USFS staff do not believe that they have the authority to preclude or severely restrict mineral extraction on National Forest lands. (Lowden, Joanne. District Wildlife Biologist, Humboldt-Toiyabe National Forest. Personal communication on February 24, 2014.)

[251] Lincoln's estimate of the number of surface acres disturbed in proposed critical habitat on USFS lands reflects new areas of surface disturbance. Lincoln has not conducted any new work on USFS lands in conjunction with this project. (Wilson, Jeffrey. Vice President, Lincoln Mining Corporation. Personal communication on March 26, 2014.)

[252] An off-setting ratio of 1:1 is consistent with compensation ratios recommended by NDOW for energy and resource extraction projects located in Bi-State DPS habitat classified as Category 4 in Nevada. NDOW defines Category 4 habitat as sage-grouse "habitat with moderate potential to become essential [Category 1] or important [Categories 2 and 3]" and serve as "transitional range from one seasonal habitat to another or minimal foraging use." The recommended compensation ratios for projects occurring in the highest habitat value Categories 1 and 2 is 3 to 1; a ratio of 2 to 1 is recommended for projects occurring in habitat Category 3 identified as "important, medium quality habitat." Compensation is not necessary for projects occurring in Category 5, which includes poor Bi-State DPS habitat or areas that would require substantial restoration effort and expense. (NDOW. 2010. Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-Grouse Populations and their Habitats. Prepared by the Governor's Sage-grouse Conservation Team. April. 58 pp.)

The location of future mining operations on BLM lands is uncertain. Accordingly we allocate future consultations across suitable and unsuitable habitat in proportion to historical data available from MRDS on the location of exploratory mining activities (including prospect, occurrence and unknown) and producer activity, respectively, on BLM lands. Based on this approach, this analysis forecasts 5.3 and 0.7 consultations in suitable and unsuitable, respectively, for exploratory operations, and 3.8 and 0.2 consultations in suitable and unsuitable, respectively, for new mining operations. For new mining operations in unsuitable habitat, uncertainty exists on the type of conservation measures that may be appropriate. Accordingly, this analysis applies the cost of project modifications estimated for new mining operations at the Pine Grover Property.

7.3 SUMMARY OF RESULTS

224. As shown in Exhibit 7-6, incremental costs for these two mining projects is estimated to be approximately $560,000 (present value over 20 years), assuming a seven percent discount rate. As discussed in Section 7.1.5, Federal land managers and county representatives indicated that undeveloped mineral reserves occur throughout the designation.[253] However, because of the high level of uncertainty about where and when such mineral reserves may be developed for commercial purposes, this analysis does not estimate costs associated with future development of these undeveloped resources. To the extent that such future activities occur in unsuitable habitat, this analysis underestimates costs.

EXHIBIT 7-6. FORECAST INCREMENTAL COSTS TO MINING OPERATIONS (2014-2033, 2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$67,000	$5,900
Unit 2. North Mono Lake	$490,000	$43,000
Unit 3. South Mono Lake	$0	$0
Unit 4. White Mountains	$2,900	$250
Total	**$560,000**	**$49,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

7.4 KEY UNCERTAINTIES

225. Exhibit 7-7 summarizes the key assumptions of the analysis of economic costs to mining operations. The exhibit also includes information on the potential direction and relative scale of bias introduced by these assumptions.

[253] Boland, Nancy. Chair, Esmeralda County Commission, Commissioner District 2. Personal communication on March 5 and 11, 2014; Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014; Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 24, 2014; Page, Jeffrey, Lyon. County Manager. Personal communication on February 19, 2014; Hartmann, Shelley. Mineral County Economic Development Authority. Personal communication on February 18, 2014; Mono County. Personal communication on February 12, 2014.

EXHIBIT 7-7. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO MINING OPERATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS TO MINING OPERATIONS
Conservation measures for the Pine Grove Property will include off-site compensation at a ratio of 1:1 for all areas disturbed on USFS lands.	May **overstate** costs.	**Possibly major.** Conservation measures for mining operations vary based on site-specific details. According to discussions with the Service, to the extent that project construction and configuration of infrastructure (e.g. haul roads, transmission lines, buildings, etc.) can be sited in areas that minimize potential costs to Bi-State DPS habitat, off-site compensation may not be required or may be requested at a lower ratio. [254]
The extent that future mining of undeveloped mineral reserves occurs within proposed Bi-State DPS critical habitat cannot be predicted.	May **underestimate** costs.	**Possibly major.** Whether and when these sites will result in active, producing mining operations, however, is highly uncertain. To the extent that such activities occur in the future in Bi-State DPS unsuitable habitat, this analysis underestimates costs.
Mining operators will not choose to forego production within proposed Bi-State DPS critical habitat in order to avoid regulatory burden.	May **underestimate** costs.	**Probably minor.** Communications with county planning departments indicate concern that mining companies may choose to forego production in order to avoid regulatory burden. Because the Service would not likely recommend precluding mining development in unsuitable habitat, if such costs should occur, this would be a non-section 7 cost of the proposed rule.

[254] U.S. Fish and Wildlife Service. Personal communication on February 21, 2014.

CHAPTER 8 | POTENTIAL ECONOMIC COSTS TO RESIDENTIAL DEVELOPMENT

226. The proposed rule identifies residential development as a potential threat to the Bi-State DPS and its habitat. Construction of residential and commercial properties within critical habitat may cause habitat loss, degradation, and fragmentation that could adversely affect the proposed Bi-State DPS critical habitat. Additionally, development in sage-grouse habitat can increase the presence of invasive species and predators. Development also increases demand for transportation and utility infrastructure and recreational opportunities; each of these activities is addressed elsewhere in this report.

227. This chapter focuses on forecasting development activities on private lands within the proposed critical habitat designation for the Bi-State DPS. The chapter proceeds as follows: Section 8.1 provides background on the scope and scale of future development activities in the proposed critical habitat designation. Section 8.2 describes the methodology and approach used to forecast economic costs generated by possible conservation measures recommended for development projects and quantifies these costs. Section 8.3 discusses the potential for the proposed critical habitat designation to generate other, non-section 7 costs. Section 8.4 estimates administrative costs, and Section 8.5 discusses key sources of uncertainty in the residential development analysis.

8.1 SCOPE AND SCALE OF RESIDENTIAL DEVELOPMENT

228. While historical habitat loss and fragmentation from development activities have been limited to date, all proposed critical habitat units contain privately owned lands which may be subject to future development pressure. Of the approximately 1.8 million acres proposed as critical habitat for the Bi-State DPS, 175,586 acres (or nine percent) are privately owned. Mono County has the largest amount of private lands proposed as critical habitat with 104,135 acres, followed by Douglas County with 38,330 acres, Lyon County with 17,191 acres, Mineral County with 11,644 acres, Esmeralda with 2,280 acres, and Alpine County, Inyo County, and Carson City with less than 2,000 acres each.

229. Traditional land uses on private lands within the proposed Bi-State DPS critical habitat designation consist of farming and ranching.[255] While the proposed critical habitat designation is predominantly rural, areas of urbanization exist across the counties affected by the proposed rule. According to information provided by the Service and county representatives, the primary sources of development within the proposed critical habitat designation occurs in Mono County, including Bridgeport Valley and Antelope Valley in Unit 2, and Crowley Lake, June Lake, and Lee Vining in Unit 3. Areas proximate to the

[255] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (33).

proposed Bi-State DPS critical habitat with historical development pressures include the town of Mammoth Lakes in California and the cities of Carson City, Dayton, Minden, and Gardnerville, Nevada. To the extent that population growth continues in developed areas proximate to proposed critical habitat, future development from these areas may also extend into the proposed critical habitat designation.

230. To further characterize the potential likelihood for the proposed Bi-State DPS critical habitat designation to influence future development activities, we examined county-level population projections from the State of California, Department of Finance and the Nevada State Demographer's Office.[256] As shown in Exhibit 8-1 on the following page, existing projections forecast population gains in Inyo and Mono Counties in California, and Douglas and Lyon Counties in Nevada. Alpine County in California is expected to gain only six people through 2033 and existing projections forecast net population losses through 2032 in Mineral and Esmeralda Counties in Nevada.[257]

231. The extent to which future development occurs within the proposed Bi-State DPS critical habitat designation depends on many factors in addition to population growth, such as county plans, economic conditions, topography, and water quality. To account for these factors, we conducted interviews with county planners, consulted county planning documents, and reviewed public comments submitted in response to the proposed Bi-State DPS listing and critical habitat rules. Based on this research, extensive future development is not anticipated within the proposed critical habitat designation due to current economic conditions, other competing land uses such as grazing and agriculture, and, in some cases, lack of public infrastructure such as roads or water and sewer systems. In addition, in many of the affected counties the vast majority of land is publically-owned.[258] As a result, private lands and publically managed lands exist together as a patchwork. In some instances, the lack of large, contiguous concentrations of private lands may act as a constraint on development. On the other hand, County representatives note that a lack of contiguous private lands can also lead to development in remote areas that might not have otherwise been considered for development.[259,260]

[256] State of California, Department of Finance, Report P-2: State and County Population Projections by Race/Ethnicity and 5-Year Age Groups, 2010-2060. Sacramento, California, January 2013; and State of Nevada, Demographer's Office, Nevada County Population Projections 2013 to 2032 Based on the Last Estimate Year of 20, Reno, Nevada, October 1, 2013.

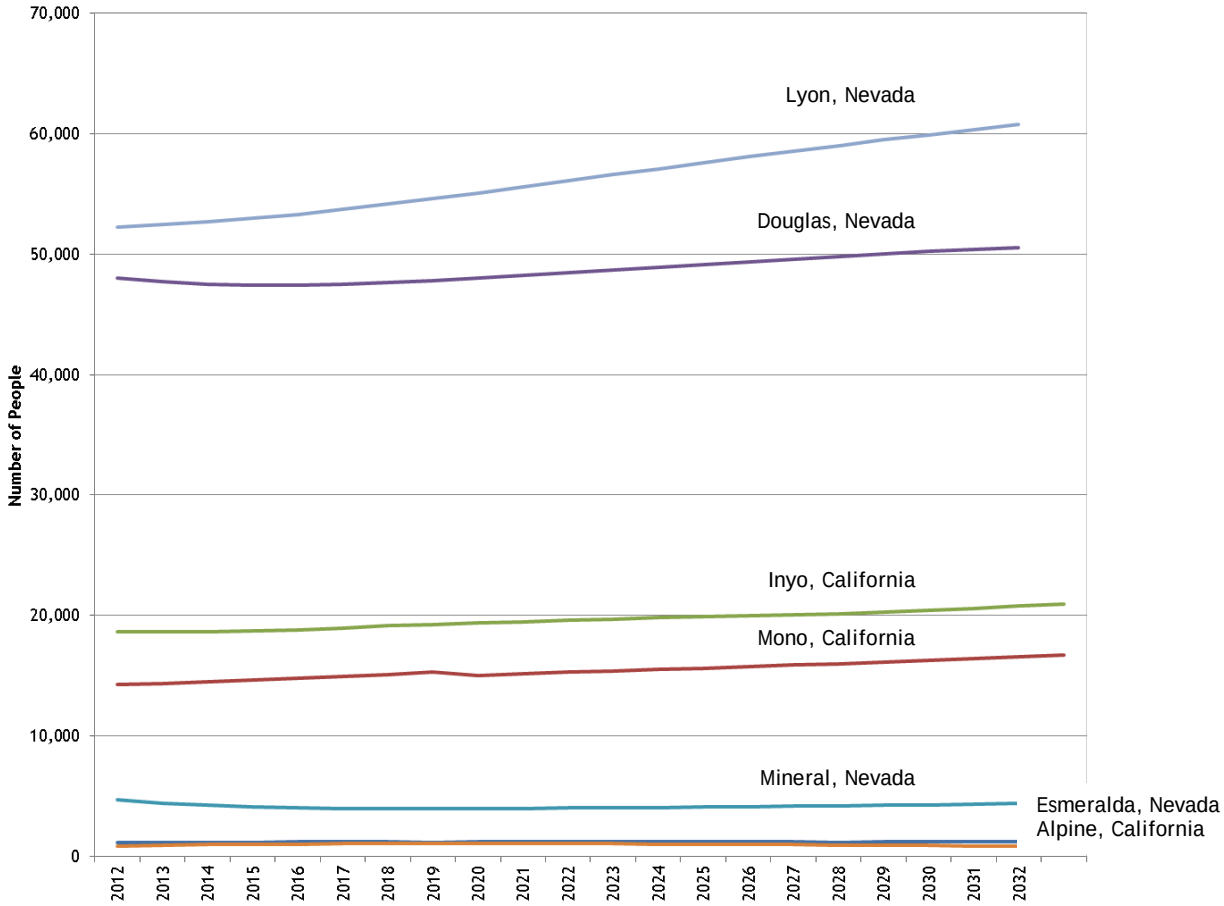
[257] According to discussions with representative of Mineral County, private lands proposed as critical habitat are more likely to be used in the future for mining, livestock grazing or agriculture. (Tipton, Jerrie. Mineral County Commissioner. Personal communication on February 24, 2014.)

[258] For example, public land ownership exceeds 90 percent in Alpine, Inyo and Mono Counties, California and in Esmeralda and Mineral Counties, Nevada. Public land ownership is estimated at 73.5 percent and 64.8 percent in Lyon and Douglas Counties, Nevada, respectively.

[259] Mono County. 2013. Mono County General Plan. Land Use Element. Accessed on February 11, 2014, at: http://www.monocounty.ca.gov/sites/default/files/fileattachments/planning_division/page/812/2013_land_use_elem.pdf.

[260] Development of private lands in remote areas can also result in requests for rights-of-way on surrounding public lands.

EXHIBIT 8-1. POPULATION PROJECTIONS BY COUNTY



8.2 METHODOLOGY AND PROJECT MODIFICATION COST ESTIMATES

232. We focus our analysis on the economic costs of development activities within the subset of proposed Bi-State DPS critical habitat where the likelihood of future development is greatest. Specifically, our study includes:

- The counties where future population gains are forecast: Mono and Inyo Counties in California, and Douglas and Lyon Counties in Nevada) and
- Site-specific information provided by Esmeralda County (Nevada) on future development activities associated with three sites within the proposed critical habitat designation: (1) the Chaitovich Creek subdivision, (2) the property known as Lida Ranch, and (3) an undeveloped parcel west of the town of Lida.[261]

233. In the following sections, we provide a detailed description of the steps followed to estimate the future costs of development in the four counties where future populations gains are forecast and site-specific development projects identified in Esmeralda County.

[261] Boland, Nancy. Chair, Esmeralda County Commission, Commissioner District 2. Personal communication on March 5 and 11, 2014.

STEP 1: IDENTIFY POTENTIALLY DEVELOPABLE LAND

234. In the four counties with future population gains, we begin by identifying potentially developable land that may be subject to development pressure in the foreseeable future. First, we eliminate areas where future development could not reasonably be expected by excluding already developed areas, wetlands, open water, and barren/rocky land based on GIS land cover data from the 2006 National Land Cover Database.[262] We also exclude from our analysis all Federal lands and lands that are covered by a conservation easement according to the U.S. Protected Areas Database.[263] The remaining lands, which include privately owned cultivated, forest, and herbaceous lands not protected by conservation easements, are considered to be potentially developable.

235. Based on these criteria, we identify approximately 130,780 acres (or seven percent) of proposed Bi-State DPS critical habitat suitable for future development, including 116,427 acres of developable land in suitable habitat and 14,352 acres of developable land in unsuitable habitat. Exhibit 8-2 summarizes developable acres by county and habitat type. Exhibit 8-3 provides a map of the relevant study for the development analysis. These estimates may overstate the number of acres available for development because, while we exclude areas that are publicly-owned or permanently conserved, we are not able to account for local zoning or land use restrictions, or geographic features such as slope or proximity to public infrastructure that may further limit development suitability.

EXHIBIT 8-2. SUMMARY OF DEVELOPABLE LAND WITHIN THE BI-STATE DPS CRITICAL HABITAT

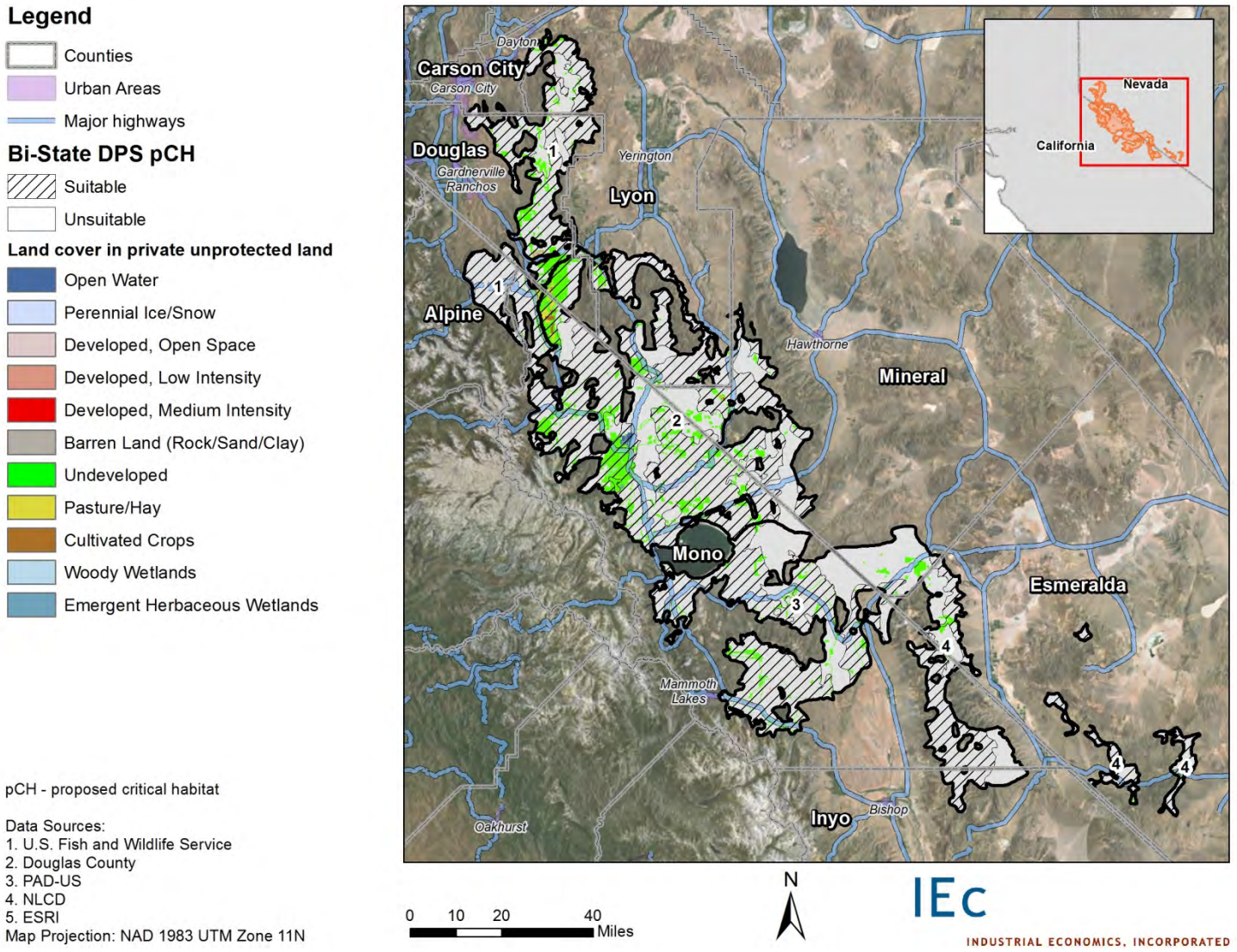
COUNTY	ACRES OF DEVELOPABLE LAND PROPOSED AS CRITICAL HABITAT			TOTAL DEVELOPABLE LAND AVAILABLE	PERCENT OF AVAILABLE DEVELOPABLE LAND PROPOSED AS CRITICAL HABITAT
	SUITABLE HABITAT	UNSUITABLE HABITAT	TOTAL		
Mono, CA	71,551	10,501	82,053	1,820,469	4.51%
Douglas, NV	32,266	2,350	34,616	425,792	8.13%
Lyon, NV	12,573	1,501	14,074	1,200,248	1.17%
Inyo, CA	37	--	37	6,067,305	0.0006%
Total	**116,427**	**14,352**	**130,780**	**14,634,644**	**1.37%**

Sources: Land ownership data obtained from: U.S. Fish and Wildlife Service. Personal communication on January 17, 2014; Land cover based on: U.S. Geological Survey. 2006. National Land Cover Database 2006 (NLCD2006). Available online at: www.mrlc.gov/finddata.php.; Protected Areas based on: U.S. Geological Survey, Gap Analysis Program (GAP). November 2012. Protected Areas Database of the United States (PADUS), version 1.3 Combined Feature Class.

[262] U.S. Geological Survey. 2006. National Land Cover Database 2006. Accessed at: www.mrlc.gov/finddata.php.

[263] U.S. Geological Survey, Gap Analysis Program (GAP). November 2012. Protected Areas Database of the United States (PADUS), version 1.3 Combined Feature Class.

EXHIBIT 8-3. DEVELOPMENT ANALYSIS STUDY AREA



STEP 2: FORECAST POPULATION GROWTH

236. To determine the level of future population growth expected within our study area (excluding Esmeralda County) for development activities, we rely on county-level population projections from the State of California, Department of Finance and the Nevada State Demographer's Office.[264] Specifically, we assume that future development will be evenly distributed across developable lands by multiplying projected population growth in each county by the percentage of developable land located within critical habitat in that same county. This results in an estimate of projected population growth within the proposed Bi-State DPS critical habitat designation. For example, the population in Mono County is expected to grow by approximately 2,181 people between the year 2014 and 2033. We then multiply the projected population growth of 2,181 by the percent of developable land proposed as critical habitat in Mono County, or 4.51 percent. The result is an estimate of the population growth expected to occur within areas proposed as critical habitat in Mono County, or 98 people. Based on this approach, we forecast a total population growth of 479 people in the proposed critical habitat designation over the next 20 years.

STEP 3: FORECAST ACRES OF DEVELOPMENT

237. Based on the projected population growth within the proposed Bi-State DPS critical habitat designation, we then calculate the acres of future development needed to support this growth. Specifically, we divide projected population growth by current population density for each county, as calculated from county-level population data and acres of already-developed land.[265] This approach assumes that future development will be consistent with the current density levels of developed acres in each county. Based on this approach, we forecast approximately 565 acres of private lands is required to support forecast population growth of 485 people. To the extent that population density increases over time, our analysis may underestimate the number of acres likely to be developed within the proposed critical habitat designation. For Esmeralda County, we include an additional 436 acres of developable land associated with the Chaitovich Creek subdivision, of which approximately 90 acres overlap unsuitable habitat.[266]

[264] State of California, Department of Finance, Report P-2: State and County Population Projections by Race/Ethnicity and 5-Year Age Groups, 2010-2060. Sacramento, California, January 2013; and State of Nevada, Demographer's Office, Nevada County Population Projections 2013 to 2032 Based on the Last Estimate Year of 2012, Reno, Nevada, October 1, 2013.

[265] Population density obtained from: U.S. Census Bureau. 2012. 2010 TIGER/Line Shapefiles (Census Tracts). Downloaded January 31, 2014; Land ownership data obtained from: U.S. Fish and Wildlife Service. Personal communication on January 17, 2014; Land cover based on: U.S. Geological Survey. 2006. National Land Cover Database 2006 (NLCD2006). Available online at: www.mrlc.gov/finddata.php.; Protected Areas based on: U.S. Geological Survey, Gap Analysis Program (GAP). November 2012. Protected Areas Database of the United States (PADUS), version 1.3 Combined Feature Class.

[266] Boland, Nancy. Chair, Esmeralda County Commission, Commissioner District 2. Personal communication on March 5 and 11, 2014.

STEP 4: ESTIMATE PROJECT MODIFICATION COSTS

238. As previously discussed, incremental project modifications are expected only for development projects occurring in unsuitable habitat for the Bi-State DPS.[267] Project modifications associated with these projects would not be required absent the designation of critical habitat. According to discussions with the Service, recommended project modifications for development projects will vary based on site-specific conditions. For example, project modifications requested for low-density development projects in unsuitable habitat may be minimal, including adherence to best management practices during construction activities, or perhaps adjustments in site arrangements or configurations to avoid or minimizes impacts to Bi-State DPS habitat. Depending on the quality and location of critical habitat, the Service may also recommend that developers off-set impacts to critical habitat, for example through the purchase of land that could replace affected habitat. Based on information from the Service, complete preclusion of development projects in unsuitable habitat is unlikely.

239. To quantify the costs of purchasing land set-asides, our analysis relies on the value that NRCS is currently paying for Bi-State DPS habitat through its Grassland Reserve Program. Exhibit 8-4 summarizes the per-acre cost for conservation easements paid by NRCS, by land type and county. Because site-specific data on the type of habitat affected by future development activities are not readily available, we conservatively apply the higher value estimates available for irrigated pastureland.

240. Because forecast development in each county is low relative to total undeveloped land available for future development (see Exhibit 8-2), it is possible some developers will avoid parcels in unsuitable habitat in favor of similar parcels outside of the proposed critical habitat designation. In such instances, the loss to landowners in critical habitat is equal to the cost of purchasing land set-asides (see Exhibit 8-4).

EXHIBIT 8-4. NRCS CONSERVATION EASEMENT VALUES BY COUNTY AND LAND TYPE

COUNTY	IRRIGATED PASTURE	RANGELAND
Mono, CA	$1,625 - $2,000	$650 - $800
Douglas, NV	$9,548	$1,910
Esmeralda, NV	$576	$80
Lyon, NV	$4,399	$580
Mineral, NV	$338	$94

Sources: Roeder, Gary. Assistant State Conservationist, NV NRCS. Personal communication on February 18, 2014; Kwasny, Dean. Easement Programs Specialist, CA NRCS. Personal communication on February 20, 2014; CA NRCS. Grassland Reserve Program (GRP): Perpetual Easements. Accessed on February 20, 2014, at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/programs/easements/; CA NRCS. Wetland Program (WRP): California 2013 Geographic Area Rate Caps (GARC). Accessed on February 20, 2014, at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/programs/easements/.

[267] See Chapter 2 for a discussion of the identification of baseline and incremental costs and classification of the proposed designation by suitable and unsuitable habitat.

STEP 5: ESTIMATE INCREMENTAL COSTS OF PROJECT MODIFICATIONS

241. As presented in Exhibit 8-5, we forecast the total incremental costs of purchasing land set-asides to offset potential habitat loss or fragmentation in unsuitable areas of proposed Bi-State DPS critical habitat at approximately $150,000 (present value over 20 years, assuming a discount rate of seven percent).

EXHIBIT 8-5. FORECAST INCREMENTAL COSTS OF LAND SET-ASIDES TO DEVELOPMENT (2014-2034, 2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$55,000	$4,800
Unit 2. North Mono Lake	$44,000	$3,900
Unit 3. South Mono Lake	$0	$0
Unit 4. White Mountains	$52,000	$4,600
Total	**$150,000**	**$13,300**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

8.3 ADMINISTRATIVE COSTS TO DEVELOPMENT ACTIVITIES

242. In addition to the cost of project modifications, the analysis forecasts administrative costs associated with section 7 consultations for development activities. To estimate the magnitude of administrative costs likely to occur, we apply information on typical project size to develop a future rate of formal section 7 consultations generated by development activities in the proposed Bi-State DPS critical habitat designation. Our analysis assumes an average project size of 20 acres based on information from county planners.[268] Using this assumption of typical project size, we anticipate 28 development projects across the proposed designation, of which 26 projects occur in suitable habitat and two projects in unsuitable habitat.[269] For Esmeralda County, we include an additional three projects for: (1) the Chaitovich Creek subdivision, (2) the property known as Lida Ranch, and (3) an undeveloped parcel west of the town of Lida. All, or a majority, of these project overlap suitable habitat.

243. Ideally, we would only estimate costs for the development projects where a Federal nexus is present. Given the rural nature of the study area, the most likely source of a Federal nexus for development activities is issuance of a section 404 CWA permit from the Corps.[270] A review of the historical permitting information provided by the Corps suggests that section 404 CWA permits in areas proposed as critical habitat for the Bi-State DPS are rare. The Corps issued only one permit in the last five years for

[268] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014; Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014.

[269] We exclude areas where this approach results in an estimate of less than half of a single development project over the time period of the analysis. In total, development in areas excluded based on this assumption amounts to less than 0.2 development projects over the 20-year timeframe.

[270] A Federal nexus may also exist for development projects that receive Federal funding.

development activities. Because of the relatively sparse permitting history, it is difficult to forecast with certainty the number of future projects that may be subject to section 7 consultation. Accordingly, our analysis conservatively assumes that a Federal nexus will exist for all development projects forecast in the proposed critical habitat designation. This assumption likely overstates the number of projects where a Federal nexus exists.

244. In unsuitable habitat, these consultations are assumed to result from the proposed Bi-State DPS critical habitat designation, and thus all associated administrative costs are considered incremental. In suitable habitat, administrative effort is needed to address both jeopardy and adverse modification issues. The portion of administrative effort to address adverse modification is considered to be an incremental cost; the portion to address jeopardy is considered baseline.

245. In total, incremental administrative costs are estimated at approximately $110,000 over 20 years, assuming a discount rate of seven percent. We present these costs by critical habitat unit in Exhibit 8-6 below.

EXHIBIT 8-6. FORECAST INCREMENTAL ADMINISTRATIVE COSTS TO DEVELOPMENT (2014-2033, 2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$25,000	$2,200
Unit 2. North Mono Lake	$59,000	$5,200
Unit 3. South Mono Lake	$2,300	$210
Unit 4. White Mountains	$19,000	$1,700
Total	**$110,000**	**$9,300**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

8.4 CONSIDERATION OF NON-SECTION 7 COSTS

246. The designation of critical habitat may, under certain circumstances, affect actions that do not have a Federal nexus and thus are not subject to the provisions of section 7 under the Act. For example, if the designation of critical habitat increases awareness of the presence of the Bi-State DPS or the need for protection of its designated critical habitat, this may cause unintended changes in the behavior of other Federal, State, or local permitting or regulatory agencies. Landowners may also change their behavior in response to concerns that the presence of a listed species on their property or the designation of their property as critical habitat land may result in restrictions of current or future activities, or the potential for a subsequent loss of all or some of their property value. Some county representatives also express concern about whether the listing of a species or the designation of critical habitat may provide additional leverage for third party intervention in ongoing activities; however, such costs are not quantifiable in the context of the current analysis.[271] Time delays associated with the section 7 consultation

[271] County representatives also expressed concern about the potential drain on government resources that may be necessary if the county is required to protect against private property taking claims, or other litigation that may result from the proposed rules. (Johnston, Larry. Public comment on behalf of the Mono County Board of Supervisors submitted on February

process or additional scrutiny by other regulatory agencies and planners may also generate additional costs.[272] In the following sections, we consider potential non-section 7 costs on development from California Environmental Quality Act (CEQA), public perception, and the impact of concurrent rulemakings under the Act in California.

8.4.1 CEQA

247. This section discusses whether the designation of critical habitat provides new information that triggers additional administrative costs under CEQA.[273] CEQA requires proposed projects that have the potential to harm sensitive species or habitat (state- or federally-listed) to identify their environmental effects. CEQA requires State and local agencies ("the lead agency") to determine whether a proposed project would have a "significant" impact on the environment, and for any such impact identified, determine whether feasible mitigation measures or alternatives will reduce the impact to a "less-than significant" level. Under CEQA, the lead agency typically requires projects that may impact sensitive species or habitat to sponsor a biological assessment by a qualified biologist to determine the potential for impacts to all rare, threatened and endangered species. Section 15065 of Article 5 of CEQA states that a finding of significance is mandatory if the project will:

> "substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory."

248. If the lead agency finds that a project causes significant impacts, the project proponent must prepare an Environmental Impact Report (EIR). CEQA requirements are likely to play a role in future conservation of the sage-grouse by requiring an environmental review for projects that may impact the species.

249. In addition, although some projects would typically be categorically exempted from CEQA, based on Section 15300 of Article 9 of CEQA, these projects may not be exempted in the presence of critical habitat:

> "…a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply all instances, except where the project may impact on an environmental resource of hazardous or critical concern where designated,

4, 2013; Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014.)

[272] From the date that the Service receives a written request from the action agency (or its designated representative) for consultation, informal consultations must be completed within 30 days and formal completions within 135 days. (U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook: Procedure for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. March. pp. 3-1 to 3-3, 4-5 to 4-7.)

[273] This State law only affects projects in California; similar statutes do not apply in Nevada.

precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies."

250. CEQA is implemented at a local level by county planning departments. Based on discussions with county planners, the most likely effect of the proposed Bi-State DPS critical habitat designation is increased information about the geographic distribution of habitat. If a project is proposed in unsuitable critical habitat, the counties may initiate a biological assessment that would not have occurred otherwise. Initiating this process would also cause delays in development projects.

251. For development projects that occur in unsuitable areas that are not currently used by the Bi-State DPS, this analysis assumes that project proponents incur incremental administrative costs associated with CEQA, which vary depending on the type of project. Based on discussions with consultants who specialize in CEQA, this analysis uses an average cost for developing an environmental or biological assessment and the relevant documents of $19,600 per project.[274] Of the 31 development projects forecast in the proposed critical habitat designation (Section 8.3), seven development projects occur in California (six projects in suitable habitat and one project in unsuitable habitat). As shown in Exhibit 8-7, we forecast administrative costs due to CEQA of approximately $93,000 over 20 years, assuming a discount rate of seven percent.

EXHIBIT 8-7. FORECAST CEQA COSTS TO RESIDENTIAL DEVELOPMENT (2014-2033, 2014$, 7% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$5,300	$470
Unit 2. North Mono Lake	$79,000	$7,000
Unit 3. South Mono Lake	$9,100	$800
Unit 4. White Mountains	$0	$0
Total	$93,000	$8,200

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

252. Significant uncertainty exists on whether a negative or a mitigated negative declaration would result from biological assessments undertaken for development projects in unsuitable habitat for the Bi-State DPS. We assume, however, that land set-asides undertaken as part of the section 7 consultation process would also mitigate any concerns identified during the course of the CEQA process. Accordingly, we do not estimate any additional cost due to CEQA above and beyond administrative costs.

253. Implementing CEQA may also cause project time delays. According to research conducted in a previous economic analysis of proposed revised critical habitat designation, the CEQA process can delay projects for up to two years. These time delays

[274] Based on research conducted for the economic analysis for Southwestern willow flycatcher. Industrial Economics, Incorporated, "Final Economic Analysis of Critical Habitat Designation for the Southwestern willow flycatcher," prepared for the U.S. Fish and Wildlife Service, December 2012.

result in a non-section 7-related economic cost of the proposed critical habitat designation by increasing the carrying costs of undeveloped properties to developers. Data, however, are not available to estimate the magnitude of time delays associated with implementing CEQA for future development projects occurring in Bi-State DPS habitat in California.

8.4.2 PERCEPTIONAL EFFECTS

254. Representatives of several counties have expressed concern that listing the Bi-State DPS and the designation of critical habitat could result in perceptional impacts on private lands. That is, all else being equal, the public may believe that a property that is inhabited by the DPS, or that lies within the critical habitat designation, will have a lower market value than an identical property that is not inhabited by the DPS or that lies outside of critical habitat. This lower value results from the perception that critical habitat will preclude, limit, or slow development, or somehow alter the highest and best use of the property. County representatives expressed concern that public attitudes about the potential limits and costs that the Act may impose can cause real economic effects, regardless of whether such limits are actually imposed.

255. For example, representatives of Mono County expressed concern that the perception of additional regulatory burdens due to listing the Bi-State DPS and the designation of critical habitat could adversely affect the attractiveness of Mono County real estate for out-of-state homeowners seeking to construct a second, seasonal, or vacation home.[275] According to Mono county representatives, approximately 60 percent of residences in some communities (e.g., the Town of Mammoth Lakes) are seasonal, vacation units.[276]

256. Over time, as public awareness grows of the regulatory burden placed on designated lands, particularly where no Federal nexus compelling section 7 consultation exists, the effect of critical habitat designation on properties may subside. In the interim, however, counties may experience economic costs on local real estate development. Such costs are of particular concern to the counties in the proposed Bi-State DPS critical habitat designation, many of which are still struggling to recover from the financial crisis beginning in 2008.[277,278]

[275] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014.

[276] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014; Town of Mammoth Lakes. Draft 2009 Mammoth Housing Needs Assessment. Accessed on February 25, 2014, at: http://www.ci.mammoth-lakes.ca.us/documents/10/45/53/73/Draft%202009%20Housing%20Needs%20Assessment.PDF.

[277] Alpine and Inyo Counties in California were recently identified as "vulnerable" counties that face challenges as a result of stagnant population, lagging job growth and slow levels of growth in personal income and taxable sales. (California Economic Forecast. 2013. State of California. Economic Forecast 2013-2040. Prepared by the California Department of Transportation and the California Economic Forecast. Accessed on February 25, 2014 online at: http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic_files/2013/Revised_Full_Report.pdf.)

[278] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014.

257. Ideally, to estimate the amount by which land values may be diminished and the duration of this effect, we would conduct a retrospective study of existing critical habitat designations. We would use statistical analysis of land sales transactions to compare the value of similar parcels located within and outside of critical habitat. However, such primary research, which requires substantial collection and generation of new data, is beyond the scope of this effort. Furthermore, while some research has been conducted on the effect of the Act on perception and land use decisions, the results of these studies are not transferrable to this situation.

258. Specifically, several published studies provide evidence that public perception can result in material effects, even absent participation in a section 7 consultation. For example:

- List et al. (2006) examined the effect of the publication of the proposed critical habitat boundaries for the cactus ferruginous pygmy owl (*Glaucidium brasilianum*) near Tucson, Arizona. The authors found that vacant land parcels included in the proposal were developed on average about one year earlier than similar, non-critical habitat parcels. The authors suggest this preemptive behavior was a response to the proposal based on the perception that the final designation could impede landowners' ability to develop these parcels. They acknowledge that the landowner would have developed the land in any case, suggesting that "such a shift can, however, carry a considerable economic cost, and in some circumstances the landowner might not have opted to destroy the habitat had he observed how land prices actually evolved." List et al. (2006) also compare land prices within and outside proposed critical habitat and find that undeveloped land fell in value by about 22 percent if it was within the critical habitat boundaries.
- Lueck and Michael (2003) find that landowners in North Carolina preemptively prevent the establishment of old-growth pine stands by harvesting more frequently to ensure that endangered red-cockaded woodpeckers (*Picoides borealis*) do not inhabit their land. The authors find that increasing proximity to known woodpecker locations results in a 6.8 percent increase in the probability that the plot will be harvested and decreases the age at which the forest is harvested by several years. The authors interpret the latter finding as suggesting that not all landowners make small adjustments (a few years) to harvest age. Rather, they believe a small number of owners make large adjustments in optimal harvest age (e.g., assuming ten percent of landowners switch from a 70- to 40-year rotation would be consistent with a 3-year decrease in the average harvest age). The reduction from a less than optimal stand rotation schedule presumably imposes costs on the landowners in terms of a lower net present value of the harvest.
- Zabel and Paterson (2006) conducted an analysis of building permits issued by California municipalities with and without critical habitat. They found that critical habitat had a statistically significant causal effect on the issuance of permits for single-family houses during the period spanning1990 through 2002. The largest portion of the effect was attributable simply to whether critical habitat

was present in the municipality. The reduction in housing permits also varied in relation to the size of the designation, but this effect was a much smaller portion of the overall effect. These results suggest that critical habitat "acts as a signal that all development in the municipality will be more costly." The authors did not find evidence of preemptive behavior.

259. Collectively, these studies suggest that concerns about possible project delays or the imposition of land use restrictions can lead to changes in the use, and therefore value, of designated parcels and in the overall amount of economic activity undertaken in the designation. Whether the results of these studies are predictive of the effect of designating critical habitat for other species depends on whether the factors contributing to the effects measured in these cases also apply to new designations. Furthermore, this limited number of studies is unlikely to encompass the full range of possible perception-related effects.

260. Characteristics of a designation that might influence the magnitude of the effect caused by public perception include: (1) whether adequate substitute sites are available for the same activities; (2) whether the community has experience with section 7 requirements; (3) whether the actual effect of future section 7 consultations could be economically significant; (4) the level of baseline demand for the land uses of concern; and (5) the time required to undertake development permitting activities under baseline conditions. Furthermore, the length of time over which the effect persists, and the rate at which it diminishes, will be influenced by these factors.

261. For example, for critical habitat designations in communities with multiple alternative development sites that are nearly or equally as good, and where developers can easily switch to an alternative location, the effect on designated property may be more significant and longer lasting. In this situation, it may be relatively easy for developers to select a parcel outside of critical habitat, rather than inside, thus reducing the presumed value of the critical habitat parcel. If a designated site has no reasonable substitute, developers are more likely to work with the Service to develop project modifications that allow them to make use of the critical habitat site as originally planned. In both cases, such effects would only occur if demand for the productive use of those parcels exists in the baseline.

262. In another example, if a community has experience with the Act, developers may be more sophisticated in their understanding of the true implications of the designation. Under such conditions, adverse effects based on perception alone may be minimized or shorter-lived. In addition, understanding of the degree to which future section 7 consultations could delay or affect land use may influence the amount of preemptive action taken by landowners. If critical habitat for a given species is likely to require relatively onerous restrictions in order to avoid adverse modification (e.g., if the remaining habitat is relatively small and the species is near extinction), the public may express more concern over possible restrictions than in a situation where those restrictions are likely to be more moderate.

263. In summary, these studies, in conjunction with prior public comment on previous designations, suggest that costs may result from public perception of how critical habitat

regulations will be implemented. However, due to existing data limitations regarding the probability that such effects will occur, and the likely degree to which property values will be affected, and the degree to which such effects will occur even absent critical habitat as a result listing the Bi-State DPS or the presence of other listed species and their critical habitat, we are unable to estimate the magnitude of perception-related costs resulting from the designation.

8.4.3 CONCURRENT RULEMAKINGS UNDER THE ACT

264. On April 25, 2013, the Service proposed to list the Sierra Nevada yellow-legged frog, the northern DPS of the mountain yellow-legged frog, and the Yosemite toad and, at the same time, proposed to designate critical habitat of 1,105,400 acres for the Sierra Nevada yellow-legged frog, 221,498 acres for the northern DPS of the mountain yellow-legged frog, and 750,926 acres for the Yosemite toad.[279] As part of this proposed designation, the Service proposed portions of Alpine, Inyo, and Mono Counties, California, which are counties also affected by the proposed Bi-State DPS critical habitat designation.

265. Representatives of affected counties in California have expressed concern that the concurrent listing and designation of critical habitat for the three Sierra amphibians and the Bi-State DPS may generate a cumulative economic cost on activities occurring in these small, rural counties. In particular, concerns exist on the potential economic costs to activities on private lands, from which the counties receive a significant amount of their annual budget through property taxes, and from major economic sectors such as tourism and agriculture.[280,281] Quantification, however, of any cumulative costs of the concurrent rulemakings is beyond the scope of the current analysis. Exhibit 8-8 provides a summary of the areas proposed as critical habitat under the two rulemakings for the three affected counties in California.

[279] 2013 Proposed Listing Rule. 78 FR 24471; 2013 Proposed Critical Habitat Rule. 78 FR 24515.

[280] For example, according to the Mono County Board of Supervisors, the County derives 45 percent ($16.2 million) of its General Fund budget through property taxes (Johnston, Larry. Public comment on behalf of the Mono County Board of Supervisors submitted on February 4, 2013).

[281] Johnston, Larry. Public comment on behalf of the Mono County Board of Supervisors submitted on February 4, 2013.

EXHIBIT 8-8. SUMMARY OF PROPOSED CRITICAL HABITAT FOR THE THREE SIERRA AMPHIBIANS AND THE BI-STATE DPS IN ALPINE, INYO, AND MONO COUNTIES, CALIFORNIA (ACRES)

COUNTY	TOTAL COUNTY LAND	SAGE-GROUSE	THREE SIERRA AMPHIBIANS	PERCENT OF TOTAL COUNTY LAND
All Areas Proposed As Critical Habitat				
Alpine, CA	472,960	45,533	113,893	33.7%
Inyo, CA	6,490,880	28,937	62,393	1.4%
Mono, CA	1,948,160	1,044,648	92,285	58.4%
Total	**8,912,000**	**1,119,118**	**268,571**	**15.6%**
Privately-Owned Areas Proposed As Critical Habitat				
Alpine, CA	35,289	4,701	3,690	24%
Inyo, CA	78,503	41	238	0%
Mono, CA	137,140	106,473	271	78%
Private Subtotal	**250,931**	**111,215**	**4,199**	**46%**

Notes:
1. Entries may not sum to totals reported due to rounding.
2. In Mono County, 809 acres overlap the proposed critical habitat designations for the Bi-State DPS and the three Sierra amphibians. This acreage is excluded when estimating the percentage of the county's total land area proposed as critical habitat under the two rulemakings.

8.5 KEY UNCERTAINTIES

266. Exhibit 8-9 summarizes the key assumptions of the analysis of economic costs to residential development. The exhibit also includes information on the potential direction and relative scale of bias introduced by these assumptions.

EXHIBIT 8-9. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO RESIDENTIAL DEVELOPMENT ACTIVITIES

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS FOR DEVELOPMENT ACTIVITIES
A Federal nexus exists for all future development projects forecast.	May **overstate** costs.	**Possibly major.** Development projects will only require consultation if a Federal nexus, such as a permit from the Corps, is present. We identified few permits issued by the Corp in the proposed critical habitat designation over the last five years. To the extent that a Federal nexus does not exist for forecast development projects, this analysis will overstate the incremental costs of the proposed rule on development activities. However, because we forecast a relatively small number of development projects for the next 20 years, the effect of this assumption on total estimated costs is likely to be minor.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS FOR DEVELOPMENT ACTIVITIES
The Service will not recommend additional conservation efforts beyond land set-asides, and landowners will not pursue development of management plans associated with incidental take permits.	May **underestimate** costs.	**Probably minor.** We are not aware of any landowners who plan to develop management plans. To the extent that additional conservation efforts are requested, or that landowners choose to develop management plans associated with incidental take permits for the Bi-State DPS, participating landowners may incur additional costs.
The Service will request a one-to-one land set-aside ratio across the proposed critical habitat designation and the cost of purchasing land set-asides is equal to the cost NRCS is paying for irrigated pasture under the GRP.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** Land set-aside ratios are determined based on site-specific conditions. However, a 1:1 ratio is consistent with an existing mitigation policy followed by NDOW. In addition, according to discussions with the Service, mitigation ratios less than 1:1 may be possible depending on the quality of habitat potentially affected and the ability of the landowner to minimize impacts through site redesign or reconfiguration. To the extent that the actual mitigation ratio differs from 1:1, this analysis may under- or over-estimate costs associated with the purchase of land set-asides.
The cost associated with land set-asides is the cost of purchasing the land and establishing a conservation easement, rather than lost value associated with foregoing future development.	May **underestimate** costs.	**Probably minor.** Development within the proposed critical habitat designation is generally expected to be low. Potentially developable land is abundant given the rural nature of most areas. As a result, we assume that purchase of land set-asides will not require significant restrictions on future development.
The average project size is 20 acres.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** To determine an appropriate project size, we requested information on recent development projects in affected counties. County representatives indicated that project sizes vary but recent projects ranged from 20 to 40 acres in size. To the extent that actual development projects vary, this analysis may underestimate or overestimate costs to land developers.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS FOR DEVELOPMENT ACTIVITIES
Population growth occurs evenly across developable land within each county.	**Unknown**. May overestimate or underestimate costs.	**Probably minor.** If the majority of future population growth occurs in the portion of counties not included in the proposed critical habitat designation, our analysis may overstate the number of consultations for development activities. If the majority of population growth occurs within critical habitat, our analysis may underestimate costs.
The percentage of developable land in a county located within proposed critical habitat and county-wide population projections can accurately forecast expected development.	**Unknown**. May overestimate or underestimate costs.	**Probably minor**. To the extent that development patterns and population projections change over time, this analysis may underestimate or overestimate costs.

CHAPTER 9 | POTENTIAL ECONOMIC COSTS TO RENEWABLE ENERGY DEVELOPMENT

267. Renewable energy development can result in direct and indirect impacts to the Bi-State DPS and its habitat through habitat loss and fragmentation of habitat from facility construction, and installation of supporting infrastructure such as roads and power lines. Noise and increased human presence that result from renewable energy facilities may also indirectly affect sage-grouse populations that occur near facilities.[282]

268. This chapter describes the potential for economic costs to renewable energy development in areas proposed as critical habitat for the Bi-State DPS, including geothermal, wind, and solar energy development. Significant uncertainty exists regarding the potential scope and scale of future development of renewable energy resources in the proposed critical habitat designation. Accordingly, this chapter provides a qualitative discussion of the future renewable energy development opportunities in the proposed critical habitat designation.

9.1 SCOPE AND SCALE OF RENEWABLE ENERGY DEVELOPMENT

269. California and Nevada have abundant natural resources and investments in renewable energy development are increasing throughout both states. As of May 2012, Nevada maintains approximately 800 megawatts (MW) of installed renewable energy capacity from geothermal, solar, wind, hydroelectric, landfill, and biomass projects. Collectively these projects provide approximately 4 million megawatt hours (MWh) of energy per year. Additionally, Nevada established a Renewables Portfolio Standard (RPS) goal of meeting 25 percent of the State's energy demand through renewable energy by 2025.[283] According to the California Energy Commission (CEC), approximately 20.8 percent of all electricity in California was generated from renewable energy sources in 2009.[284] In November 2008, Executive Order S-14-08 established a state-wide RPS goal to generate 33 percent of all energy from renewables by 2020.[285]

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[282] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (33).

[283] Synapse Energy Economics, Inc. 2012. Economic Analysis of Nevada's Renewable Energy and Transmission Development Scenarios. Prepared for Nevada's Governor's Office of Economic Development, Cambridge, Massachusetts, October, 86 pp. Accessed on February 26, 2014 online at: http://energy.nv.gov/uploadedFiles/energynvgov/content/Synapse%20Nevada%20RE%20Report%20w%20Disclaimer%20and%20Comments%20112812.pdf.

[284] CEC. Renewable Energy Program. Accessed on February 26, 2014, at: http://www.energy.ca.gov/renewables/renewable_links.html.

[285] CEC. Renewables Portfolio Standard (RPS) Proceeding. Accessed on February 26, 2014, at: http://www.energy.ca.gov/portfolio/index.html.

270. In the following sections, we describe past, current, and future renewable energy development in areas proposed as critical habitat for the Bi-State DPS.

9.1.1 GEOTHERMAL ENERGY DEVELOPMENT

271. Geothermal energy development is the primary source from which future renewable energy development is likely in the proposed Bi-State DPS critical habitat designation. In particular, Nevada is anticipated to experience a substantial increase in geothermal resource development, an estimated doubling of energy production from geothermal sources by 2025.[286]

272. Within the proposed Bi-State DPS critical habitat designation, BLM issues geothermal leases for lands under its jurisdiction. Geothermal leases may include both Federal and private lands with Federal mineral ownership. In addition, USFS lands are often leased together with BLM lands. On Federal lands, we identified one geothermal plant in the proposed critical habitat designation. The Casa Diablo IV Geothermal Development Project is located within and surrounded by suitable habitat managed by the BLM and USFS in the South Mono Lake Unit 3, near the Town of Mammoth Lakes. In August 2013, the BLM and USFS signed a Record of Decision approving construction of a 40-MW geothermal plant, including construction of a new geothermal power plant, up to 16 new production and injection wells, multiple pipelines, and an electric transmission line.[287] The project is expected to produce power for up to 360,000 homes.[288]

273. Based on information provided by the Service, USFS, BLM, and discussions with county representatives, there is potential for future development of geothermal resources throughout the proposed Bi-State DPS critical habitat. [289,290] According to the Service, the greatest potential for future geothermal operations occurs in the Desert Creek-Fales Population Management Unit (PMU) and Mount Grant PMU, both of which occur in Unit 2, North Mono Lake. In the Humboldt-Toiyabe National Forest, approximately 12,809 acres are being proposed for non-competitive geothermal leasing in the North Aurora and South Aurora areas. Geothermal leases issued on USFS lands that overlap Bi-State DPS habitat are currently subject to a no surface occupancy (i.e., no surface development)

[286] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (55).

[287] The authorized power plant site is located on federal geothermal lease CACA-11667 in Sections 29 and 32, of Township 3 South, Range 28 East, MDB&M, located northeast of the intersection of U.S. Highway 395 and California State Route 203, approximately 2 miles east Mammoth Lakes, California.

[288] BLM. August 13, 2013. BLM Signs Record of Decision for Casa Diablo IV Geothermal Development Project. News Release No. CA-CC-13-873-2427. Accessed on February 10, 2014, at: http://www.blm.gov/ca/st/en/info/newsroom/2013/august/casadiablo.html.

[289] BLM, Nevada State Office, Minerals Division. 2013. Geothermal Leases (GIS Data). Downloaded on January 23, 2014; BLM. 2012. Geothermal Nationwide EIS Pending Lease Sites (GIS Data). Downloaded on February 3, 2014; Nevada Bureau of Mines and Geology. 2010. Geothermal Power Plants in the Western United States (GIS Data). Downloaded on February 17, 2014.

[290] For example, in 2008, the BLM and USFS completed a Programmatic Environmental Impact Statement for leasing geothermal resources on public lands that they manage. As part of this effort, maps of BLM and USFS lands with geothermal potential were developed. Based on these maps, approximately 96 percent of the proposed critical habitat designation overlaps with an area of geothermal potential.

stipulation under the Programmatic Environmental Impact Statement finalized in August 2008. USFS leased lands are further subject to analysis under the National Environmental Policy Act (NEPA), pre-construction field surveys, and, as appropriate, measures to minimize impacts to the Bi-State DPS and their habitat. These DPS-related requirements currently apply to areas within three miles of an active lek, areas identified as Bi-State DPS habitat during pre-construction surveys, and areas categorized by NDOW as preliminary priority DPS habitat (categories 1 and 2).[291] Approximately 91 percent of the North Aurora and South Aurora areas proposed as critical habitat in the Humboldt-Toiyabe National Forest are classified by NDOW as is in either category 1 or 2.

274. We also engaged county planning departments regarding the potential for geothermal energy development across the proposed Bi-State DPS critical habitat designation. County representatives identified the following areas for which they are aware of interest in geothermal resource development:

- **Fales Hot Springs, California**. Mono County representatives indicate that potential for geothermal resource development exists at Fales Hot Springs located in Unit 2 near the Sonora Junction community along Highway 395.[292] According to the NOAA Thermal Springs Database, the temperature of water generated by this spring is recorded at approximately 180 degrees Fahrenheit.[293]
- **Bodie Hills, California.** According to discussions with county representatives, potential for future geothermal resource development occurs throughout the Bodie Hills area (Unit 2) in Mono County, California.[294]
- **Mineral County, Nevada.** According to discussions with county representatives, undeveloped geothermal resources exist throughout areas proposed as critical habitat for the Bi-State DPS in Units 2 and 4, on lands managed by both the USFS and BLM. Construction of the Don. A. Campbell geothermal power plant (formerly Wild Rose) was recently completed in Mineral County. The facility provides an output capacity of 16 MWs and is the first independent power producer to use the One Nevada Transmission Line (ON Line) to deliver renewable energy to California ratepayers. While this project is outside of proposed Bi-State DPS critical habitat, county representatives identify this project as an example of the increasing investment in geothermal energy development in Mineral County.[295] According to discussions with county

[291] Humboldt-Toiyabe National Forest, Bridgeport Ranger District, Response to Data Request for the Bi-State DPS of Greater Sage-Grouse.

[292] Mono County Community Development Department and Mono County Assessor's Office. Personal communication on February 25, 2014.

[293] NOAA Thermal Springs Database. Accessed on February 24, 2014, at: http://www.ngdc.noaa.gov/nndc/servlet/ShowDatasets?dataset=100006&search_look=1&display_look=1.

[294] Callaway, Brent. Community Development Analyst, Mono County. Personal communication on February 18, 2014.

[295] Ormat Press Release. January 6, 2014. Ormat Completes the Don A. Campbell Geothermal Power Plant with Full 16 Megawatt (net) Output. Accessed on February 24, 2014, at: http://www.ormat.com/news/latest-items/ormat-completes-don-campbell-geothermal-power-plant-full-16-megawatt-net-output

representatives, the operator of the Don A. Campbell facility is also considering construction of a second facility in Mineral County.

9.1.2. WIND ENERGY DEVELOPMENT[296]

275. According to the Service, potential for and interest in wind energy development exists in the Pine Nut Mountains in Unit 1 and in the southern part of Mono County in Unit 3. In particular, the Nevada Renewable Energy Transmission Access Advisory Committee identified the Pine Nut Mountains as a renewable energy "wind zone." A Federal nexus exists for wind development projects occurring on Federal lands. In addition, wind projects often require other Federal permits, either from the Corps or the Federal Aviation Administration, which has jurisdiction over structures 200 feet tall.[297]

276. While no active leases, permits, or recent applications exist for wind energy development in the proposed Bi-State DPS critical habitat designation, at least one wind development project was proposed in the South Mono Lake Unit on lands managed by the Inyo National Forest. According to the Service, Inyo National Forest declined the application based largely on Bi-State DPS concerns.[298] The future probability of wind development projects in the DPS's proposed critical habitat is unknown.

9.1.3. SOLAR ENERGY DEVELOPMENT[299]

277. There are no known solar energy facilities in the proposed Bi-State DPS critical habitat designation. According to the Service, topography in the Bi-State areas is "generally not conductive to solar development based on existing technology." BLM recently completed a programmatic EIS on solar development in six southwestern states, including California and Nevada. The EIS identifies criteria and areas under which utility-scale development of solar energy (defined as greater than 20 MWs) would not be allowed. Sage-grouse habitat currently used by the Bi-State DPS is included as one of the criteria by which BLM may preclude development of solar energy from a specific area.

278. Small solar energy developments may occur within the proposed Bi-State DPS critical habitat, however, on other Federal lands not managed by BLM, or on privately owned lands. According to discussions with Douglas County representatives, a solar project is under consideration in areas just south of Carson City in the northwestern corner of the county in Unit 1. While the project footprint is located on private lands outside of proposed Bi-State DPS critical habitat, should the project move forward, transmission lines would be required that would likely cross critical habitat proposed in the western part of the county through Unit 1.[300]

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[296] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (56).

[297] Windustry. Land Considerations. Accessed on February 26, 2014, at www.windustry.org/wind-basics/land-considerations.

[298] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (57).

[299] U.S. Fish and Wildlife Service. 2013. Species Status Assessment for Bi-State Distinct Population Segment of Greater Sage-Grouse. Nevada Fish and Wildlife Office, Reno, Nevada. (57-58).

[300] Douglas County Economic Development and Vitality Department, Personal communication on February 25, 2014.

9.2 POTENTIAL INCREMENTAL COSTS

279. As previously discussed, the Casa Diablo IV Geothermal Development Project occurs on Bi-State DPS suitable habitat in the South Mono Lake Unit 3. According to discussions with the Inyo National Forest, BLM and USFS conferenced with the Service on this project.[301] The project proponents did not identify any significant impacts and USFS does not anticipate reinitiating a section 7 consultation for the Bi-State DPS.[302] Accordingly, we do not forecast any future incremental costs associated with this project at this time.

280. According to discussions with county representatives, however, a number of future projects are under consideration to expand the well field operations or the supporting transmission infrastructure at the Casa Diablo IV Geothermal Development Project.[303] In particular, county representatives suggest that the recent decision to permanently retire the San Onofre Nuclear Generating Station in San Diego County may lead to increased energy demand that further raises interest in expanding energy development at this site.[304] To the extent that the geothermal operations at Mammoth Lakes-Pacific Geothermal facility are expanded, or geothermal development is pursued in other areas within the proposed critical habitat designation, this analysis may underestimate costs.

9.3 KEY UNCERTAINTIES

281. Exhibit 9-1 summarizes the key assumptions of the analysis of economic costs to renewable energy development within proposed Bi-State DPS critical habitat. The exhibit also includes information on the potential direction and relative scale of bias introduced by these assumptions.

EXHIBIT 9-1. KEY ASSUMPTIONS OF THE ANALYSIS OF ECONOMIC COSTS TO RENEWABLE ENERGY DEVELOPMENT

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS
The Casa Diablo IV Geothermal Development Project will not be required to reinitiate consultation.	May **underestimate** costs.	**Probably minor.** The Casa Diablo IV Geothermal Development Project is located in Bi-State DPS suitable habitat. Therefore, to the extent that consultation is reinitiated, only administrative costs are considered an incremental cost, which are relatively minor.

[301] U.S. Fish and Wildlife Service. 2013. Appendix 4. USFWS Concurrence Letter. Ventura Field Office. August 2. Accessed on February 20, 2014 at: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/bishop/casa_diablo_40.Par.3398.File.dat/CD-IV_ROD_APPX4_FWS.pdf.

[302] Perloff, Richard. Wildlife Biologist, Inyo National Forest. Personal communication on February 20, 2014.

[303] Douglas County Economic Development and Vitality Department. Personal communication on February 25, 2014.

[304] *Ibid*.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED COSTS
The extent of future geothermal energy development within proposed Bi-State DPS critical habitat cannot be predicted.	May **underestimate** costs.	**Possibly major.** Geothermal energy development is the likeliest source of renewable energy development in proposed Bi-State DPS critical habitat. Federal land managers and county representatives identified multiple areas where undeveloped geothermal resources are known. In addition, the Service considers the future potential for geothermal development relatively high. To the extent that new facilities are sited in unsuitable habitat, this analysis may underestimate costs.
The extent of future wind energy development within proposed Bi-State DPS critical habitat cannot be predicted.	May **underestimate** costs.	**Possibly minor.** At this time, BLM and USFS are unaware of any planned wind development projects. To the extent that future wind energy development occurs within proposed critical habitat in the future, this analysis will underestimate costs.
The extent of future solar energy development within proposed Bi-State DPS critical habitat cannot be predicted.	May **underestimate** costs.	**Probably minor.** According to the Service, topography in the proposed Bi-State DPS critical habitat is not conductive to solar energy facilities. To the extent that future solar energy development occurs within proposed critical habitat in the future, this analysis will underestimate costs.

CHAPTER 10 | POTENTIAL ECONOMIC COSTS TO TRIBAL ACTIVITIES

282. Approximately 27,400 acres of Tribal lands are included within the proposed Bi-State DPS critical habitat designation. At this time, information to inform our analysis on the likelihood of future consultations is not available. Instead, the chapter provides a qualitative discussion of the Tribal communities potentially affected by the proposed Bi-State DPS critical habitat designation.

283. The chapter proceeds as follows: Section 10.1 first discusses the regulatory framework for analyzing costs to Tribal sovereignty. Section 10.2 provides a qualitative discussion of economic conditions of the four Tribes affected by the proposed Bi-State DPS critical habitat designation. Section 10.3 discusses potential effects to Tribal economic activities, and Section 10.4 discusses key uncertainties of the analysis.

10.1 POTENTIAL IMPACTS TO TRIBAL SOVEREIGNTY

284. Native American Tribes are considered sovereign nations, and therefore have a unique relationship with the U.S. government. As stated in Executive Order 13175:

> The United States has a unique legal relationship with Indian Tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian Tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian Tribes.[305]

A presidential memorandum further charged executive departments and agencies with "engaging in regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications."[306]

285. Department of Interior Secretarial Order 3206 recognizes that Tribes have governmental authority and the desire to protect and manage their resources in the manner that is most beneficial to them.[307] In addition, as trustee for land held by the U.S. for Indian Tribes, the Bureau of Indian Affairs (BIA) provides technical assistance to the Tribes and oversees a variety of programs on Tribal lands. In the context of previous critical habitat

[305] Executive Order 13175, Consultation and Coordination with Indian Tribal Governments.

[306] White House, Memorandum for the Heads of Executive Departments and Agencies: Subject: Tribal Consultation, November 5, 2009. Accessed at: http://www.whitehouse.gov/the-press-office/memorandum-Tribal-consultation-signed-president.

[307] U.S. Department of Interior, Secretarial Order # 3206: Subject: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act, June 1997.

designations for other species, several Tribes have expressed concern that "the Secretary of the Interior lacks legal authority to designate critical habitat on the Nation's lands."[308]

286. Of particular concern to Tribes is generally the potential impact of regulation on Tribal land management activities, including the concern that, due to Federal oversight, the Tribe may be compelled to modify current plans for resource use.

10.2 OVERVIEW OF AFFECTED TRIBES[309]

287. Approximately 27,400 acres of Tribal land are included within the proposed Bi-State DPS critical habitat designation. Potentially affected Tribes include the Washoe Tribe of Nevada and California, the Bridgeport Indian Colony, the Utu Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation, and the Death Valley Timba-sha Shoshone Tribe. Exhibit 10-1 provides an overview of Tribal lands proposed as Bi-State DPS critical habitat.

288. According to data from the 2012 American Community Survey, Tribes represent particularly vulnerable sectors of the affected communities.[310] Exhibit 10-2 at the end of this section presents estimates of unemployment, per capita income, and poverty rates for each Tribe along with comparable data for the State of California and Nevada. In the following sections we discuss each potentially affected Tribe in more detail.

10.2.1 OVERVIEW OF THE WASHOE TRIBE OF NEVADA AND CALIFORNIA[311]

289. The Washoe Reservation is comprised of several geographically distinct colonies in the vicinity of Lake Tahoe and Reno, Nevada, in both western Nevada and eastern California. The total trust area of the reservation is approximately 4,320 acres with more than 61,000 additional acres belonging to individual allotments owned by Tribal members. The Dresslerville Colony originated when lands donated by a rancher in the area were incorporated into the reservation in 1936. The Tribe's economy includes livestock grazing, some services and retail, and tourism. Approximately 25,700 acres of Washoe land in the Dresslerville Colony have been proposed for critical habitat in Unit 1 of the critical habitat designation.[312] Of these acres, approximately 21,300 acres are located in suitable habitat with the remaining approximately 4,400 located in unsuitable habitat.

[308] See, for example: Montgomery, Susan B. Special Legal Counsel to the Yavapai-Apache Nation. Public comment submitted in response to the proposed rule for designation of Southwestern willow flycatcher critical habitat on October 14, 2011.

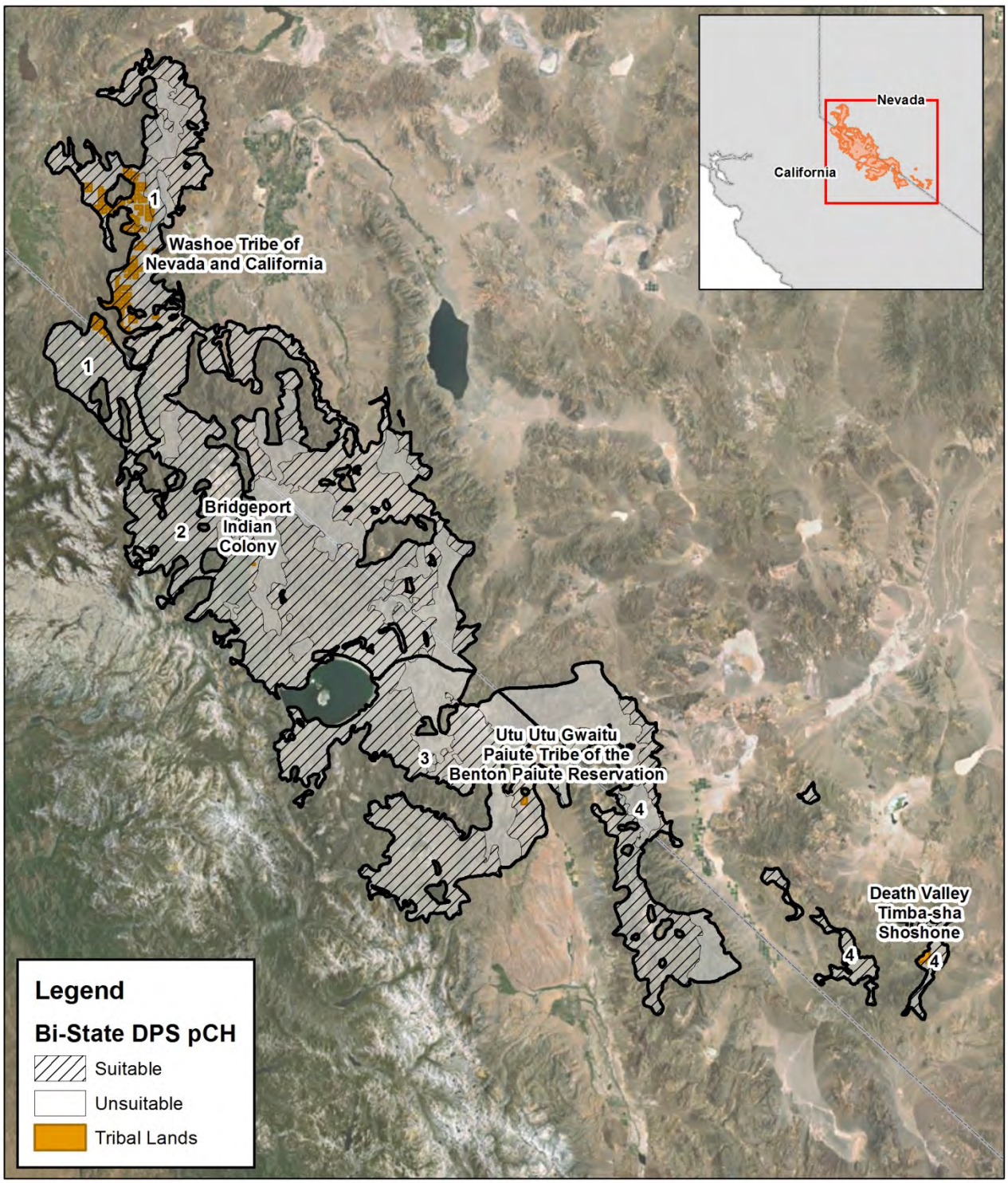
[309] Tiller, Veronica E. Velarde. "Tiller's Guide to Indian Country: Economic Profiles of American Indian Reservations." Bow Arrow Publishing Company, 2005. (709-710)

[310] U.S. Census Bureau, 2008-2012 American Community Survey 5-Year Estimates.

[311] Tiller, Veronica E. Velarde. "Tiller's Guide to Indian Country: Economic Profiles of American Indian Reservations." Bow Arrow Publishing Company, 2005. (709-710)

[312] 2013 Proposed Critical Habitat Rule. 78 FR 64340.

EXHIBIT 10-1. OVERVIEW OF TRIBAL LANDS PROPOSED AS BI-STATE DPS CRITICAL HABITAT



pCH - proposed critical habitat

0 15 30 Miles

N

Data Sources:
1. U.S. Fish and Wildlife Service
2. ESRI
3. Douglas County
Map Projection: NAD 1983 UTM Zone 11N

IEc
INDUSTRIAL ECONOMICS, INCORPORATED

10.2.2. OVERVIEW OF THE BRIDGEPORT INDIAN COLONY[313]

290. The Bridgeport Indian Colony consists of 40 acres of undeveloped land adjacent to Bridgeport, California, in Mono County. The colony was established after BLM acquired the land in 1974. All 40 acres that make up the Colony are proposed as Bi-State DPS critical habitat, overlapping suitable habitat in Unit 2. Currently, county and state highway departments and the USFS represent significant sources for Tribal employment. The Tribe is also exploring strategies to expand the role of tourism and manufacturing to spur economic growth and employment opportunities. Proximity to recreational attractions such as Mammoth Lakes and the June Lake Loop and abundant natural resources that support recreational activities such as ice skating, boating, fishing, camping, and hunting represent assets that can lead to increases in recreation and tourism activities on Tribal lands.

10.2.3 OVERVIEW OF THE UTU UTU GWAITU PAIUTE TRIBE OF THE BENTON PAIUTE RESERVATION[314]

291. The Benton Paiute Reservation, established in 1915, is located on the eastern slope of the Sierra Nevada Range in California near to the Nevada border. Nearly 400 acres of Tribal land is proposed as Bi-State DPS critical habitat in Unit 3; all proposed areas are identified by the Service as suitable habitat. Currently, Tribal economic development is limited by a low population, though, given the reservation's location, significant potential for tourism exists.

10.2.4 OVERVIEW OF THE DEATH VALLEY TIMBA-SHA SHOSHONE TRIBE

292. The Timba-sha Shoshone Homelands are located in Death Valley National Park in California. The Tribe owns land in Nevada, of which nearly 1,300 acres intersect Unit 4 of the proposed Bi-State DPS critical habitat designation. Traditionally, cattle ranching served as a source of income, but a limited land base has prevented the Timba-sha Shoshone from further developing this resource. Past discussions have included development of a casino complex on Tribal lands. For example, in 2004, the Tribe purchased land to develop into a gaming complex, including a casino, hotel, and spa.[315] The current status of this project is, however, unknown.[316]

[313] Tiller, Veronica E. Velarde. "Tiller's Guide to Indian Country: Economic Profiles of American Indian Reservations." Bow Arrow Publishing Company, 2005. (382-383)

[314] *Ibid.*, p.369.

[315] *Ibid*. p. 491.

[316] Yarbrough, B. "Whatever happened to the Hesperia casino?" Hesperia Star. March 13, 2009. Accessed on February 28, 2014 online at: http://www.hesperiastar.com/articles/tribe-2541-casino-city.html.

EXHIBIT 10-2. ECONOMIC CHARACTERISTICS OF TRIBES AFFECTED COMPARED TO AFFECTED COUNTIES AND STATES

ECONOMIC CHARACTERISTIC	WASHOE TRIBE OF CALIFORNIA AND NEVADA	BRIDGEPORT INDIAN COLONY	UTU UTU GWAITU PIAUTE TRIBE OF THE BENTON PAIUTE RESERVATION	DEATH VALLEY TIMBA-SHA SHOSHONE	DOUGLAS COUNTY	ESMERALDA COUNTY	MONO COUNTY	CALIFORNIA	NEVADA
Population	2,787	113	39	34	47,056	916	14,181	37,325,068	2,704,204
Unemployment Rate	8.6%	25%	NA	14%	11.1%	13.2%	10.7%	11.0%	11.9%
Per Capita Income	$26,416	$11,781	$17,423	NA	$34,743	$25,846	$27,135	$29,551	$27,003
Poverty Rate	11.20%	NA	20.50%	NA	9.70%	24.20%	9.50%	15.30%	14.20%

Source: U.S. Census Bureau. 2008-2012 American Community Survey 5-Year Estimates; Tiller, Veronica E. Velarde. "Tiller's Guide to Indian Country: Economic Profiles of American Indian Reservations." Bow Arrow Publishing Company, 2005.

10.3 POTENTIAL INCREMENTAL COSTS TO TRIBES

293. At this time, information to inform our analysis on the likelihood of future consultations related to the Bi-State DPS is not available.[317] Of the approximately 27,400 acres of Tribally owned land within the proposed Bi-State DPS critical habitat designation, incremental costs would only be expected on activities and projects that occur in the approximately 4,400 acres of Tribal land identified as unsuitable habitat in Unit 1, managed by the Washoe Tribe of Nevada and California.

10.4 KEY UNCERTAINTIES

294. To the extent that activities occurring on Tribal lands are required to enter into section 7 consultation with the Service and Bi-State DPS conservation measures are recommended, this analysis may underestimate costs.

[317] To the extent that new information and/or comments are received on activities occurring on Tribal lands, such information will be integrated into the final version of this report.

CHAPTER 11 | POTENTIAL ECONOMIC BENEFITS

295. The prior chapters of this report describe the types of conservation efforts (e.g., project modifications) likely to be undertaken due to the listing of the Bi-State DPS as a threatened species under the Act and the designation of its critical habitat. The incremental costs of these conservation efforts are detailed in Chapters 3 through 10 of this report. Although the Service believes that the direct benefits of the proposed Bi-State DPS critical habitat designation are best expressed in biological terms that can be weighed against the expected costs, this chapter discusses the potential benefits resulting from these conservation efforts. The chapter first provides a qualitative description of the potential categories of benefits resulting from the listing and the designation, and indicates in which units such benefits may occur. The chapter then introduces the economic methods used to estimate benefits and the availability of existing literature to support valuation in the context of this rulemaking.

SUMMARY OF POTENTIAL BENEFITS

The Service believes that the direct benefits of the Bi-State DPS proposed critical habitat designation are best expressed in biological terms that can be weighed against the expected costs of the rulemaking. Information on the incremental change in expected conservation of the Bi-State DPS is not available. However, this chapter provides a description of the categories of potential benefits expected to result from the listing of the DPS and proposed critical habitat designation. We also review existing economic literature regarding use and non-use values for the greater sage-grouse and other avian species. These studies, summarized below, provide context for the potential valuation of conservation benefits.

Greater sage-grouse

- We identify two studies that estimate use and non-use values of the greater sage-grouse.
  - Loft (1998) surveyed mule deer, pronghorn antelope, and greater sage-grouse hunters in northeastern California to determine economic contributions to the region's economy. Loft estimates an economic contribution of approximately $91 per hunter, or $37,000 over the two-day hunting period for the greater sage-grouse.
  - van Kooten and Eiswerth (2007) incorporate a biological growth function into a contingent valuation model. The authors then develop a numerical application of the model to the conservation of the greater sage-grouse across seven states, including Nevada, using a hypothetical existence value.

Other avian species

- Additional studies address use and non-use values associated with other avian species.
  - The public may derive some benefit from viewing the sage-grouse in the Bi-State area. The Service completed a comprehensive bird watching study as an addendum to a 2006 wildlife study. The Service estimates the net annual economic contribution of bird watching in the U.S. to be $35.7 billion. The study does not disaggregate this value by species.
  - The public may also hold recreational use values associated with the Bi-State DPS. One study estimates regional economic contributions of recreation associated with shorebirds in Delaware Bay of $67-91 per household for a day trip, or $202-430 per household for an overnight trip. Another study estimates willingness-to-pay for the prevention of deaths of non-endangered migratory birds in oil-filled ponds of $80 per household. These studies address bird populations in general.
  - Another study estimates the economic benefit of critical habitat designation for the Mexican spotted owl to be $55 per household. Applying this estimate of benefits to the Bi-State DPS may not be appropriate given differences in the species and their habitats.

11.1 POTENTIAL BENEFITS OF BI-STATE DPS CONSERVATION

296. The primary intended benefit of listing a species and designating critical habitat is to ensure the long-term conservation of the species.[318] Various economic benefits, measured in terms of social welfare or regional economic performance, may result from conservation efforts. The benefits can be placed into two categories: (1) those associated with the primary goal of species conservation (i.e. direct benefits), and (2) those additional beneficial services that derive from conservation efforts but are not the purpose of the Act (i.e., ancillary benefits, such as reducing water treatment costs as result of controlling pollution within critical habitat).

297. Because the purpose of the Act is to provide for the conservation of endangered and threatened species, the benefits of actions taken under the Act are often measured in terms of the value placed by the public on species preservation (e.g., avoidance of extinction, and/or increase in a species' population). Such social welfare values may reflect both use and non-use values for the species. Use values derive from a direct use for a species, such as commercial harvesting or recreational wildlife-viewing opportunities. Non-use values are not derived from direct use of the species, but instead reflect the utility the public derives from knowledge that a species continues to exist (e.g., existence or bequest values).

298. As a result of actions taken to preserve endangered and threatened species, such as habitat management, various other benefits may accrue to the public. Conservation efforts may result in improved environmental quality, which in turn may have collateral human health or recreational use benefits. In addition, conservation efforts undertaken for the benefit of an endangered or threatened species may enhance shared habitat for other wildlife. Such benefits may result from project modifications, or may be collateral to such actions. For example, a section 7 consultation for the Bi-State DPS may result in decreased livestock grazing within critical habitat. This reduction in grazing may benefit water quality, and may also provide collateral benefits of preserving habitat for other species occupying the same areas utilized by the DPS.

299. This section qualitatively describes the categories of benefits that may result from Bi-State DPS conservation efforts within the proposed critical habitat designation. Exhibit 11-1 summarizes potential benefits associated with the specific Bi-State DPS conservation efforts described in Chapters 3 through 10 of this report. The first column summarizes conservation efforts by land use activity. The second column identifies the potential ancillary benefits that may result from implementation of these conservation efforts. A description of these benefits is provided below. The final column of the exhibit identifies the units where potential incremental benefits may occur.

300. The categories of economic benefit that may derive from conservation efforts for the Bi-State DPS described in this report include:

[318] The term "conservation" means "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary." (16 U.S.C. 1532)

- **Improved water quality:** Reduction in the intensity and pattern of grazing may reduce adverse effects to downstream water quality. Improved water quality may reduce water treatment costs and result in human or ecological health benefits.
- **Grazing benefits:** Reduction in the conifer encroachment on public grazing lands may increase the amount of forage available for livestock grazing activities.
- **Property value benefits:** Open space preservation or decreased density of development resulting from DPS conservation may increase adjacent or nearby property values.
- **Enhanced recreational experiences:** Recreators may derive benefit from open space preservation or enhanced views.
- **Educational benefits:** Surveying and monitoring of project sites for the Bi-State DPS confers educational benefits by generating more information about the DPS and where populations exist. This knowledge could help direct future conservation efforts.
- **Public safety benefits:** Removal of invasive conifers may result in a reduction of wildfires, wildfire intensity, and associated property damage.

301. In addition to these categories, all of the conservation efforts described in Exhibit 10-1 are related to the broader conservation and recovery of the Bi-State DPS and thus may generate use and non-use values. Moreover, many of the conservation efforts undertaken for this DPS may result in improvements to ecosystem health for other coexisting species, including domestic species such as livestock. The maintenance or enhancement of use and non-use values for these other species, or for general biodiversity, may also result from conservation efforts for the Bi-State DPS.

302. We also note the potential for the proposed Bi-State DPS critical habitat designation to result in negative effects outside of the section 7 consultation process. Specifically, if landowners choose not to participate in voluntary NRCS conservation programs due to perceptions regarding the effect of the designation on private land management, environmental conditions on private lands may be negatively affected. To the extent that NRCS and the Service are able to minimize the perceptional effects of the proposed critical habitat designation on private lands, those areas may also experience the types of benefits listed in Exhibit 11-1 as a result of participation in voluntary conservation programs.

303. All proposed Bi-State DPS critical habitat units include both suitable and unsuitable habitat. As discussed in Chapter 2, conservation efforts for projects located in suitable habitat are assumed to be implemented due to the listing of the DPS, generating baseline costs and benefits. Conservation efforts for projects located in unsuitable habitat are assumed to be implemented due to the critical habitat designation. Associated costs and benefits are therefore considered incremental.

EXHIBIT 11-1. CONSERVATION EFFORTS FOR THE BI-STATE DPS AND ASSOCIATED BENEFITS

CONSERVATION EFFORT	POTENTIAL BENEFITS	RELEVANT UNITS
LIVESTOCK GRAZING		
Reduction in the intensity of grazing activity (reduced AUMs)	• Improved water quality • Ecosystem health for coexisting species	All units
Grazing pattern changes (e.g., seasonal grazing restriction; rotational grazing)	• Improved water quality • Ecosystem health for coexisting species	
VEGETATION MANAGEMENT		
Removal of conifers and plant debris	• Grazing benefits • Enhanced recreational experience • Public safety benefits • Ecosystem health for coexisting species	All units
MINERAL EXTRACTION AND RENEWABLE ENERGY DEVELOPMENT		
Habitat avoidance	• Improved water quality • Property value benefits • Ecosystem health for coexisting species	Unit 1 & 2
Timing restrictions for specific activities	• Ecosystem health for coexisting species	
Restoration and reclamation of habitat	• Improved water quality • Property value benefits • Ecosystem health for coexisting species	
Purchase of land set asides for the purpose of creation of conservation easements	• Improved water quality • Property value benefits • Enhanced recreational experience • Ecosystem health for coexisting species	
Surveying and monitoring	• Educational benefits	
RESIDENTIAL AND RELATED DEVELOPMENT		
Purchase of land set asides for the purpose of creation of conservation easements or other preserved habitat area	• Improved water quality • Property value benefits • Enhanced recreational experience • Ecosystem health for coexisting species	Units 1, 2 and 4
TRANSPORTATION AND UTILITIES		
Habitat loss mitigation via mitigation fees	• Improved water quality • Property value benefits • Enhanced recreational experience • Ecosystem health for coexisting species	Units 2 and 3
Surveying and monitoring	• Educational benefits	

Notes:
1. Conservation efforts derived from detailed discussions in activity-specific chapters of this report.
2. Incremental benefits are those resulting from conservation efforts in unsuitable habitat.
3. All conservation efforts are intended to support the survival and recovery of the Bi-State DPS.
4. Benefits are anticipated in the units where these conservation efforts are undertaken, as described in detail in the activity-specific chapters throughout this report.

11.2 ECONOMIC METHODS USED TO ESTIMATE BENEFITS

304. Economists apply a variety of methodological approaches to estimate use and non-use values for species and for habitat improvements. These include stated preference and revealed preference methods. Stated preference techniques include tools such as contingent valuation, conjoint analysis, and contingent ranking. These methods employ survey techniques, asking respondents to state what they would be willing to pay for a resource or for programs designed to protect that resource. A substantial body of literature describes the application of this technique to the valuation of natural resources.

305. More specific to use values for species or habitats, revealed preference techniques examine individuals' behavior in markets in response to changes in environmental or other amenities (i.e., people "reveal" their value through their behavior). For example, travel cost models are frequently applied to value access to recreational opportunities, as well as to value changes in the quality and characteristics of these opportunities. Basic travel cost models assume that the value of a recreation resource can be estimated by analyzing the time and travel costs incurred by individuals visiting the site. Another revealed preference technique is hedonic analysis, which is often employed to determine the effect of specific site characteristics on property values.

11.2.1 ESTIMATING BASELINE ECONOMIC BENEFITS

306. Numerous published studies estimate individuals' willingness-to-pay to protect endangered or threatened species.[319] The economic values reported in these studies reflect various groupings of benefit categories, including both use and non-use values. For example, these studies assess public willingness-to-pay for wildlife-viewing opportunities; for the option for seeing or experiencing the species in the future; to assure that the species will exist for future generations; and for simply knowing that a species exists. This literature, however, addresses a relatively narrow range of species and circumstances compared to the hundreds of species and habitats that are the focus of the Act.

Literature Specific to Greater Sage-Grouse

307. We identified two studies by Loft (1998) and van Kooten and Eiswerth (2007) that estimate the use and non-use benefits, respectively, of the greater sage-grouse.[320,321] Loft (1998) surveyed hunters of mule deer, pronghorn antelope, and greater sage-grouse in northeastern California to determine the hunters' contribution to the regional economy. Of the nearly 10,000 hunters surveyed, 42 percent responded. The survey indicated that sage-grouse hunters in northeastern California spent approximately $91 each, or $37,000 total during the two-day hunting season. Although Loft's (1998) study arrives at a

[319] See, for example, the summary in Richardson, L. and J. Loomis. March 2009. The Total Economic Value of Threatened, Endangered, and Rare Species: An Updated Meta-Analysis. Ecological Economics 68(5): 1535-1548.

[320] Loft, E. R.1998. Economic contribution of deer, pronghorn antelope, and sage grouse hunting to northeastern California and implications to the overall value of wildlife. Wildlife Management Division. California Department of Fish and Game.

[321] van Kooten, G. C. and M. Eiswerth. The Ghost of Extinction: Preservation values and minimum viable population in wildlife models. Selected paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Portland, Oregon. July 29-August 1, 2007.

numerical result, the primary activity monetized is hunting. Hunting permits for the greater sage-grouse, including the Bi-State DPS, have been significantly limited in recent years.[322] Because the study notes that the primary expenditure by hunters of the greater sage-grouse was for acquisition of the hunting permit, the estimated value may not be applicable to this analysis. In addition, this study did not survey hunters in the area proposed as critical habitat for the Bi-State DPS.

308. In van Kooten and Eiswerth's (2007) study, the authors extend public preservation benefits beyond willingness-to-pay. The study uses a bioeconomic model and assumes that preservation benefit (and the subsequent policy decision to protect the species) occurs only when a minimum population of the species exists (i.e., to allow for successful biological reproduction). The authors then develop a numerical application of the model to the conservation of the greater sage-grouse across seven states (Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Wyoming).

309. While van Kooten and Eiswerth (2007) develop a numerical result of the preservation benefits of conservation of the greater sage-grouse, the application of the model to the species is demonstration of a hypothetical existence value rather than an empirical result. The authors determine the household willingness-to-pay for the greater sage-grouse by examining existing literature estimating willingness-to-pay to preserve various endangered and threatened species.[323] The authors then select what they consider to be a conservative willingness-to-pay per household ($15) and conduct sensitivity analyses around that value. The authors do not provide empirical data to support this value and do not conduct primary contingent valuation research to determine whether this value is appropriate. Additionally, the authors note that the application of the model estimates benefits for species that are considered charismatic and are hunted. Because hunting of the Bi-State DPS is currently limited, this model may not be appropriate. Further, van Kooten and Eiswerth (2007) suggest that the marginal willingness-to-pay to preserve an additional species must be identified, but do not identify such a value, stating that such identification is difficult. We are not aware of any other published studies that estimate the value the public places on conserving the Bi-State DPS and its habitat.

Potential for Benefit Transfer Analysis

310. Absent primary research, resource management decisions can often be informed by applying the results of existing valuation research to a new policy question – a process known to economists as benefit transfer. Benefit transfer involves the application of unit value estimates, functions, data, and/or models from existing studies to estimate the benefits associated with the resource under consideration.

[322] 2013 Proposed Listing Rule. 78 FR 64371. For additional information on greater sage-grouse hunting practices and restrictions, see: California Department of Fish and Wildlife, Sage Grouse Permits, http://www.dfg.ca.gov/licensing/uplandgame/sagegrouse/; and Nevada Department of Wildlife, Sage Grouse Conservation, Sage-Grouse Hunting in Nevada, http://www.ndow.org/uploadedFiles/ndoworg/Content/public_documents/Nevada_Wildlife/Sage-grouse%20Hunting%20in%20Nevada.pdf.

[323] Specifically, the authors rely on willingness-to-pay data provided in Loomis, J.B. and D.S. White. "Economic Benefits of Rare and Endangered Species: Summary and Meta-analysis." *Ecological Economics* 18(1996): 197-206.

311. OMB has written guidelines for conducting credible benefit transfers. The important steps in the OMB guidance are: (1) specify the value to be estimated for the rulemaking; and (2) identify appropriate studies to conduct benefits transfer based on the following criteria:

- The selected studies should be based on adequate data, sound and defensible empirical methods and techniques.
- The selected studies should document parameter estimates of the valuation function.
- The study and policy contexts should have similar populations (e.g., demographic characteristics). The market size (e.g., target population) between the study site and the policy site should be similar.
- The good, and the magnitude of change in that good, should be similar in the study and policy contexts.
- The relevant characteristics of the study and policy contexts should be similar.
- The distribution of property rights should be similar so that the analysis uses the same welfare measure (i.e., if the property rights in the study context support the use of willingness-to-accept measures while the rights in the rulemaking context support the use of willingness-to-pay measures, benefits transfer is not appropriate).
- The availability of substitutes across study and policy contexts should be similar.

312. An ideal study for estimating economic benefits of critical habitat designation for the Bi-State DPS would be specific to the DPS, the greater sage-grouse species, or a closely related species; would consider valuation in a context close to the policy issue in question (i.e., the value the public holds for designating critical habitat for this DPS); and would address a relevant population holding these values (e.g., citizens of the U.S.).

313. As described above, two studies estimate the use and non-use values of the greater sage-grouse. While Loft's (1998) study generates a regional economic contribution value of $91 per hunter or $37,000 in total per two-day hunting season, this value is associated with hunting the DPS within northeastern California and not the Bi-State area. Additionally, although van Kooten and Eiswerth's (2007) study arrives at a non-use value of approximately $81.9 million across a study area that includes a portion of the range of the Bi-State DPS, the underlying assumptions regarding willingness-to-pay are unclear and the study assumes a portion of the value is associated with hunting the species.[324] The study demonstrates a hypothetical valuation after applying a model that incorporates biological factors (i.e., minimum viable population), rather than deriving willingness-to-pay to preserve the species. Ultimately, these studies value scenarios that may not be

[324] van Kooten, G. C. and M. Eiswerth. The Ghost of Extinction: Preservation values and minimum viable population in wildlife models. Selected paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Portland, Oregon. July 29-August 1, 2007, p. 2.

applicable to the change in conservation expected as a result of the Bi-State DPS critical habitat designation.

Literature Valuing Other Bird Populations

314. We also reviewed existing literature that addresses use values that may apply to the Bi-State DPS. For example, a potential benefit of Bi-State DPS conservation may be increased opportunity for bird watching. The most comprehensive study of the value the public holds for bird-watching was published by the Service as an addendum to its 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. The net economic value of all bird viewing, estimated using a series of contingent valuation questions to determine net willingness-to-pay, was found to be approximately $35.7 billion.[325] The value of bird-watching was not disaggregated by species.

315. Other studies estimate the recreational use value of shorebirds in Delaware Bay. One study finds a regional economic contribution of $67-91 per household per day trip, and $202-430 per household per overnight trip.[326] Another study estimates willingness-to-pay for the prevention of deaths of non-endangered migratory birds in oil-filled ponds of $80 per household.[327] Again, these studies address bird populations in general.

316. While the literature supports the notion that the public is willing to pay for the opportunity to view birds, there are no data to indicate how many trips are associated with the Bi-State DPS; how seeing a sage-grouse in the Bi-State area would contribute to the value of a bird watching trip; or how listing the DPS and designating critical habitat could increase the probability of seeing a sage-grouse on a given trip.

317. One study specifically evaluated the economic benefits arising from designating critical habitat for an endangered bird species in the southwestern U.S. The benefits of critical habitat were explored for the Mexican spotted owl in the Four Corners region (i.e., where the borders of Arizona, Colorado, New Mexico, and Utah meet) using a contingent valuation survey.[328] The mean willingness-to-pay for protecting Mexican spotted owl critical habitat was estimated to be $55 per household.

318. While this study evaluated the value of critical habitat for an endangered bird species, the physical characteristics and habitat type of the Mexican spotted owl are dissimilar from those of the sage-grouse. It is therefore possible that the value the public holds for habitat conservation for the Mexican spotted owl and the Bi-State DPS may be quite different.[329]

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[325] U.S. Fish and Wildlife Service. 2006. Birding in the United States: A Demographic and Economic Analysis. Addendum to the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. Report 2006-4.

[326] Myers, K.H. G.R. Parson, and P.E.T. Edwards. 2010. Measuring the Recreational Use Value of Migratory Shorebirds on the Delaware Bay. Marine Resource Economics. 25(3):247-264.

[327] Desvousges, W.H., F.R. Johnson, R.W. Dunford, K.J. Boyle, S.P. Hudson, and K.N. Wilson. 1993. Measuring Natural Resource Damage with Contingent Valuation: Tests of Validity and Reliability. In Hausman, J. ed. Contingent Valuation: A Critical Assessment. Amsterdam: North Holland Press, 91-164.

[328] 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.

[329] Metrick, A. and M.L. Weitzman. 1996. Patterns of Behavior in Endangered Species Preservation. Land Use. 72(1):1-16.

In addition, this estimated value of willingness-to-pay depends on the marginal improvement in species conservation expected from critical habitat designation. Information on the conservation improvement expected from a Bi-State DPS critical habitat designation is not available.

11.2.2 ESTIMATING INCREMENTAL ECONOMIC BENEFITS

319. As described above, the published valuation literature does not support the monetization of incremental changes in the conservation probability for the Bi-State DPS.[330] Quantification and monetization of the incremental benefits of listing a species and designating critical habitat requires information about the change in the probability that the species will be conserved as a result of the listing or designation. No studies exist that provide such information for the Bi-State DPS. In addition, biological information on the incremental conservation benefit expected from listing the DPS and designating its critical habitat is not available.

11.2.3 ESTIMATING ANCILLARY BENEFITS

320. Ancillary benefits may also be achieved through listing and designation of critical habitat. For example, the public may hold a value for habitat conservation, beyond its willingness-to-pay for conservation of a specific species. Studies have estimated the public's willingness-to-pay to preserve wilderness areas; for wildlife management and preservation programs; and for wildlife protection in general. In a contingent valuation study, Loomis et al. (1997) estimated the value of sagebrush ecosystem services along a 45-mile riparian stretch of the Platte River (i.e., dilution of waste water, natural purification of water, erosion control, habitat for fish and wildlife, and recreation) at $82 per acre per year.[331] The study asked participants how much of an increase households would accept on water bills for additional ecosystem services. While this study addresses categories of benefits (e.g., ecosystem services, such as those summarized in Exhibit 10-1) that may be similar to the types of benefits provided by the listing or critical habitat designation, the estimated valuation of the sagebrush habitat is associated with primarily riparian areas that are not representative of sage-grouse habitat in the Bi-State area. Additionally, the marginal increase in conservation benefits estimated in this study may not be representative of those expected to result from listing and designating critical habitat for the Bi-State DPS.

[330] Richardson and Loomis (2009) developed a model to estimate the value of critical habitat designations based on a meta-analysis of 31 studies published between 1985 and 2005. The model generates composite willingness-to-pay values for species conservation based on an estimate of the percent change in species population likely to result from the critical habitat designation. Implementation of the model requires information regarding the change in the population likely to result from the conservation efforts undertaken in response to the listing or critical habitat designation. Such information is not available for this designation. (Richardson, L. and J. Loomis. March 2009. The Total Economic Value of Threatened, Endangered, and Rare Species: An Updated Meta-Analysis. Ecological Economics 68(5): 1535-1548.)

[331] Loomis, J., P. Kent, L. Strange, K. Faush, and A. Covich, 2000. Measure the total economic value of restoring ecosystem services in an impaired river basin: results from a contingent valuation survey. Ecological Economics. 33:103-117.

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APPENDIX A | ADDITIONAL STATUTORY REQUIREMENTS

1. This appendix addresses the remaining analytical requirements under administrative law and executive order. Section A.1 presents an analysis of costs to small entities, which is conducted pursuant to the RFA, as amended by SBREFA and Executive Order 13272. Section A.2 assesses the effects of the proposed rule on state, local, and Tribal governments and the private sector as required by Title II of UMRA. Section A.3 addresses the potential for federalism concerns as required by Executive Order 13132. Section A.4 considers potential costs to the energy industry in response to Executive Order 13211, entitled, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use."

2. The analyses of costs in this appendix rely on the estimated incremental costs resulting from the proposed critical habitat designation. The incremental costs of the rulemaking are most relevant for these analyses because they reflect costs that may be avoided or reduced based on decisions regarding the composition of the final rule.

A.1 SBREFA ANALYSIS

3. When a Federal agency proposes regulation, the RFA requires the agency to prepare and make available for public comment an analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions as defined by the RFA).[332] No initial regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic cost on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have significant economic cost on a substantial number of small entities.

A.1.1 BACKGROUND

4. Three types of small entities are defined in the RFA:

- **Small Business –** Section 601(2) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently-owned and operated and is not dominant in its field of operation. The Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.

[332] 5 U.S.C. §§ 601 et seq.

- **Small Governmental Jurisdiction** – Section 601(5) defines small government jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
- **Small Organization –** Section 601(4) defines a small organization as any not-for-profit enterprise that is independently-owned and operated and not dominant in its field. Small organizations may include private hospitals, education institutions, irrigation districts, public utilities, agricultural co-ops, etc.

5. The courts have held that the RFA/SBREFA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC),* FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The generating utilities that expected to be regulated were large businesses; however, their customers – transmitting utilities such as electric cooperatives – include numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.[333]

6. Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* (EPA) addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.[334] The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of state plans that incorporated the standards. The court found that, while EPA imposed regulation on states, it did not have the authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.

7. Following the court decisions described above, this analysis considers only those entities directly regulated by the proposed Bi-State DPS critical habitat designation. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to insure that any action authorized, funded, or carried out by the Agency is not likely to adversely modify critical habitat. Therefore, under a strict interpretation of the definition of a

[333] Mid-Tex Electric Cooperative, INC. V. Federal Energy Regulatory Commission, 773 F. 2d 327 (D.C. Cir. 1985).

[334] *American Trucking Association vs. EPA*, 175 F. 3d 1027, 2044 (D.C. Cir. 1999).

"directly regulated entity," only Federal action agencies are subject to a regulatory requirement (i.e., to avoid adverse modification) as a result of the designation. Because Federal agencies are not small entities, under this interpretation, the Service may certify that the proposed critical habitat rule will not have a significant economic cost on a substantial number of small entities.

8. We acknowledge, however, that in some cases, third-party proponents of the action subject to permitting or funding may participate in a section 7 consultation and thus may be indirectly affected. While these entities are not directly regulated, the Service has requested information regarding the potential number of third parties participating in consultations on an annual basis in order to ensure a robust examination of the effects of the proposed rule. Below, we provide that information. We also provide information to assist the Service in determining whether these entities are likely to be "small," and whether the number of potentially affected small entities is "substantial."[335]

9. Importantly, the impacts of the proposed rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the critical habitat designation, but the per-entity economic cost is not significant, the Service may certify. Likewise, if the per entity economic cost is likely to be significant, but the number of affected entities is not substantial, the Service may also certify.

A.1.2. THIRD-PARTY PARTICIPANTS IN SECTION 7 CONSULTATIONS

10. Critical habitat designation for the Bi-State DPS is not expected to affect a substantial number of small entities in several economic sectors potentially affected by this rule for the following reasons:

- **Transportation projects:** We anticipate 20 section 7 consultations annually for transportation activities in the proposed Bi-State DPS critical habitat designation. These consultations will involve Federal land managers, such as BLM and USFS. These consultations may include Caltrans and NDOT as third parties. However, these entities are both State agencies and are not considered small entities by SBA. Thus small entities are not expected to be affected.
- **Airport operations**: We anticipate two projects per year for one commercial airport in Mono County. The relevant action agency for these consultations is the FAA. These consultations may involve Mono County or the Town of Mammoth Lakes as third parties, both of which have populations below 50,000 and, thus, are considered to be small governmental entities. Thus, the rule is unlikely to affect more than one small airport.
- **Mining projects:** This analysis anticipates up to three mining operations will undergo section 7 consultation in 2016. The relevant action agency is USFS and BLM; however, mining companies are likely to participate in these consultations

[335] The RFA does not provide quantitative thresholds to defining the terms "substantial" and "significant." In its guidance to Federal agencies on complying with the RFA, SBA provides qualitative descriptions of these terms, leaving the Agencies with discretion to interpret these terms on a case-by-case basis.

as third parties. The projects include the Esmeralda Project owned by Watertown Global Mining Company, the Pine Grove Property, owned by the Lincoln Mining Corporation, and a third potentially unknown operator on BLM lands. SBA defines small mining entities as companies with fewer than 500 employees. All companies are likely to be small entities.[336] We conclude that no more than three small mining entities are likely to be affected in a given year.

- **Residential development projects:** This analysis forecasts approximately 31 section 7 consultations for development activities during the 20-year time frame, with less than two consultations occurring each year. Even assuming each consultation is undertaken by a separate entity, and all entities affected are small, fewer than two small entities would be affected annually.
- **Vegetation management activities on Federal lands:** We forecast approximately 170 formal consultations, one re-initiated consultation, and one programmatic consultation over 20 years for vegetation management activities carried out by BLM and USFS. These consultations will not involve third-party participants. Therefore, small entities are not expected to be affected.
- **Other activities on Federal lands:** We anticipate that BLM and USFS will undertake one informal, 65 formal, and five programmatic consultations over 20 years to consider other management activities on their lands, including fuels management, wild horse and burro management, travel management, and military activities. These consultations are expected to only involve Federal agencies. Therefore, small entities are not expected to be affected.
- **Utility infrastructure:** We do not anticipate any section 7 consultations associated with utility infrastructure at this time.
- **Renewable energy development:** We do not anticipate any section 7 consultations for renewable energy development at this time.

11. Small entities related to livestock grazing, agriculture, utilities, and recreation may be affected by the proposed Bi-State DPS critical habitat designation. A description of the types and number of small entities potentially affected and, where relevant, the magnitude of potential costs follows.

Livestock Grazing and Agricultural Operations

12. In Chapters 3 and 4, we identify 157 active allotments and ten private farms overlapping the proposed Bi-State DPS critical habitat designation; therefore, no more than 167 entities may be affected over the analysis period. We assume that approximately 12 entities are likely to be affected on an annual basis for consultation on Federal grazing allotments, and approximately 10 entities are likely to be affected each year for consultation on other Federal programs implemented by NRCS or the Service. This

[336] The total number of employees at Watertown Global Mining Company is likely no greater than 100 employees (Johnson, Shane. Environmental Coordinator, Watertown Global Mining Company. Personal communication on February 19, 2014). Lincoln Mining Corporation is a Canadian mineral exploration and development company headquartered in Vancouver, British Colombia. We do not have information regarding the size of this company; therefore, we assume it is small.

estimate is based on several simplifying assumptions. For example, we assume every affected grazing allotment is associated with a separate entity, every potential NRCS and Service project is undertaken by a different farm entity, and that the Federal action agencies consult separately on each individual action.

13. In reality, consultations may involve individual projects, batched actions or programmatic actions. Many may not involve third parties, particularly if the Federal agencies are able to address potential costs under the Act through a small number of programmatic consultations. Thus, we likely overstate the number of livestock grazing and agricultural third parties participating in section 7 consultations.

14. To estimate the total number of small entities found within our eight county study area for the Bi-State DPS, we rely on data obtained from the 2007 U.S. Department of Agriculture's Census of Agriculture. [337] The U.S. Census collects data every five years on the characteristics of agricultural operations across the U.S. including land use and ownership, total number of farms, average farm size and operator characteristics.[338] Based on the U.S. Census of Agriculture, there are 813 farms located in the eight counties overlapping proposed critical habitat. Because we cannot easily extract only the number of small entities from these data, we assume that all of the entities identified by the U.S. Census of Agriculture are "small," defined by the SBA as an entity reporting annual revenues of approximately $750,000. If we assume that all of the entities participating in section 7 consultation are small, then approximately 2.7 percent (i.e., (12 + 10) / 813 * 100 = 2.7 percent) of small entities in the study area could be affected by the designation of critical habitat on an annual basis.[339]

15. We believe this estimate is conservative (i.e., more likely to overstate than understate the percentage of affected entities) for three reasons. First, as previously discussed, not all section 7 consultations will involve a third party if the affected Federal agencies conduct consultations in batches or programmatically. Second, ranchers likely hold permits for more than one allotment. Finally, not all of the third parties will be small entities. In addition, we note that we have constrained our population of potentially affected entities to those found in counties overlapping the proposed Bi-State DPS critical habitat, as opposed to including others found outside of the study area but within the States of California and Nevada.

16. Total incremental costs to small entities are estimated at approximately $80,000 annually for ranchers on Federal allotments, plus approximately $64,000 annually for private landowners participating in Federal programs. We assume that each entity has annual revenues of $424,000, which is calculated as the weighted average revenue for small

[337] U.S. Department of Agriculture. 2009. 2007 Census of Agriculture. Table 8.

[338] U.S. Department of Agriculture. "About the Census." Accessed on March 3, 2014 online at: http://www.agcensus.usda.gov/Help/FAQs/General_FAQs/

[339] If some portion of these entities are large farms or ranches, then our denominator is overstated. However, we would also need to adjust the number of farms and ranches participating in consultations that are small. Lacking better data, we would adjust the numerator by the same proportion. Thus, our overall estimate of the percent of affected small entities would not change.

entities in beef cattle ranching and farming.[340] Conservatively assuming that all costs are incurred by a single entity in a given year, forecast costs represent 34 percent of average annual revenues for a small entity. If costs are assumed to be spread evenly among the 22 entities affected, forecast costs represent 1.6 percent of average annual revenues for a small entity.

17. In addition, we forecast two programmatic consultations associated with the Walker Basin Restoration Program in 2014. These consultations will be carried out by the Federal agencies funding and managing the project (BLM and NFWF) and are not likely to involve third-party participants.

Recreation

18. We anticipate that BLM and USFS will undertake approximately 510 formal consultations over 20 years to consider recreational activities and special use permits on their lands. These consultations may involve third-party participants for activities associated with special use permits. As discussed in Chapter 8, a number of recreational events and tour operations cross through Federal lands in the proposed Bi-State DPS critical habitat designation, such as OHV races or horseback riding tours. Operators of such recreational events or tours may include small entities. If we conservatively assume that a separate entity holds each special use permit, up to 30 small entities may be affected in a given year.

19. Incremental costs to special use permit holders are anticipated to be administrative in nature, estimated at approximately $900 per consultation for consultations that would have occurred in the baseline and $1,800 per consultation for new consultations that result from the designation of critical habitat. We assume that small entities that operate in this industry have annual revenues of $1.4 million, which is calculated as the weighted average revenue for small entities in the recreational services industry.[341] Assuming a single entity undertakes all 30 consultations in a given year (29 baseline consultations plus one fully incremental consultation), forecast costs represent 1.8 percent of revenues in a given year.

[340] The NAICS code for the beef cattle ranching and farming industry is 112111. The SBA defines small entities in this NAICS code as entities with sales less than $750,000. Annual revenue data for this NAICS code were obtained from Risk Management Association (RMA), Annual Statement Studies: Financial Ratio Benchmarks 2013- 2014, 2013. Weighted average annual revenues are calculated using the average annual revenue reported for each small entity size class. These averages are then weighted based on the number of entities reported for each size class.

[341] The NAICS code for businesses providing recreational services is 713990. SBA defines small entities in this NAICS code as entities with sales less than $7 million. Annual revenue data for this NAICS code were obtained from Risk Management Association (RMA), *Annual Statement Studies: Financial Ratio Benchmarks 2013-2014*, 2013. We calculated the weighted average annual revenues for the smallest size class, which includes entities with revenues up to $5.0 million. We calculate the average annual revenue by dividing total revenues reported for the smallest size class by the number of entities reported in the size class. Because the SBA defines small entities in this industry as entities with revenues less than $7.0 million, this calculation may understate average annual revenues per entity. As a result, this analysis may therefore overstate costs as a percentage of annual revenues.

A.2 UMRA ANALYSIS

20. Title II of UMRA requires agencies to assess the effects of their regulatory actions on state, local, and Tribal governments and the private sector.[342] Under Section 202 of UMRA, the Service must prepare a written statement, including a cost-benefit analysis, for rules that may result in the expenditure by state, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year. If a written statement is needed, Section 205 of UMRA requires the Service to identify and consider a reasonable number of regulatory alternatives. The Service must adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule, unless the Secretary publishes an explanation of why that alternative was not adopted. The provisions of Section 205 do not apply when they are inconsistent with applicable law.

21. As stated in the proposed rule, "the designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly affected by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency."[343] Therefore, this proposed Bi-State DPS critical habitat designation does not place an enforceable duty upon state, local, or Tribal governments, or the private sector.

A.3 FEDERALISM IMPLICATIONS

22. Executive Order 13132, entitled "Federalism," requires the Service to develop an accountable process to ensure "meaningful and timely input by state and local officials in the development of regulatory policies that have federalism implications."[344] "Policies that have federalism implications" are defined in the Executive Order to include regulations that have "substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government."[345] Under Executive Order 13132, the Service may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the compliance costs incurred by state and local governments, or the Service consults with state and local officials early in the process of developing the regulation.

23. This proposed Bi-State DPS critical habitat designation does not have direct federalism implications. The designation of critical habitat directly affects only the responsibilities of

[342] 2 U.S.C. §§ 1531 et seq.

[343] 2013 Proposed Critical Habitat Rule. 78 FR 64348.

[344] Executive Order 13132, Federalism. 64 FR 43255.

[345] *Ibid*.

Federal agencies. As a result, the proposed rule does not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in the Executive Order.

24. State or local governments may be indirectly affected by the proposed Bi-State DPS critical habitat designation if they require Federal funds or formal approval or authorization from a Federal agency as a prerequisite to conducting an action. In these cases, the state or local government agency may participate in the section 7 consultation as a third party. As discussed in Chapter 2, one of the key conclusions of the economic analysis is that we do not expect the Bi-State DPS critical habitat designation to generate additional requests for project modifications in proposed suitable habitat (75 percent of the proposed critical habitat designation). Section 7-related incremental costs of the designation will likely be limited to additional administrative costs to the Service, Federal agencies and third parties of considering critical habitat during consultation, as well as potential project modifications in unsuitable habitat. These per consultation costs are generally less than $2,100 per consultation.

25. In unsuitable habitat (the remaining 25 percent of proposed acres), costs may be higher. Transportation-related costs may be $50,000 per project. However, we only forecast approximately 3.2 formal consultations per year in these areas.

A.4 POTENTIAL COSTS TO THE ENERGY INDUSTRY

26. Pursuant to Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001, Federal agencies must prepare and submit a "Statement of Energy Effects" for all "significant energy actions." The purpose of this requirement is to ensure that all Federal agencies "appropriately weigh and consider the effects of the Federal Government's regulations on the supply, distribution, and use of energy."[346]

27. The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may constitute "a significant adverse effect" when compared with the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatt-hours per year or in excess of 500 MWs of installed capacity;

[346] U.S. Office of Management and Budget. Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27. July 13, 2001. Accessed at: http://www.whitehouse.gov/omb/memoranda/m01-27.html.

- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.[347]

28. As presented in Chapter 5, we do not forecast any consultations at this time associated with existing electric power transmission and distribution infrastructure. We therefore do not anticipate that the designation of critical habitat for the Bi-State DPS will result in significant costs to the energy industry on a national scale.

[347] *Ibid.*

APPENDIX B | SENSITIVITY OF RESULTS TO DISCOUNT RATE

1. This appendix first summarizes incremental costs calculated assuming a three percent discount rate. We provide these exhibits to demonstrate the sensitivity of our results to the discount rate selected. They can be compared with similar exhibits in the Executive Summary and Chapters 3-10 that present results assuming a seven percent discount rate. We also present the stream of undiscounted costs by economic activity.

EXHIBIT B-1. FORECAST INCREMENTAL COSTS BY UNIT, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$1,000,000	$69,000
Unit 2. North Mono Lake	$5,400,000	$350,000
Unit 3. South Mono Lake	$4,000,000	$260,000
Unit 4. White Mountains	$1,300,000	$84,000
Total	**$12,000,000**	**$760,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-2. FORECAST INCREMENTAL COSTS TO LIVESTOCK GRAZING, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$200,000	$13,000
Unit 2. North Mono Lake	$390,000	$26,000
Unit 3. South Mono Lake	$310,000	$20,000
Unit 4. White Mountains	$200,000	$13,000
Total	**$1,100,000**	**$72,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-3. FORECAST INCREMENTAL COSTS TO PRIVATE AGRICULTURE AND RANCHING, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$130,000	$8,300
Unit 2. North Mono Lake	$350,000	$23,000
Unit 3. South Mono Lake	$160,000	$10,000
Unit 4. White Mountains	$94,000	$6,100
Total	**$720,000**	**$47,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-4. FORECAST INCREMENTAL COSTS TO VEGETATION MANAGEMENT, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$65,000	$4,300
Unit 2. North Mono Lake	$310,000	$20,000
Unit 3. South Mono Lake	$710,000	$46,000
Unit 4. White Mountains	$300,000	$20,000
Total	**$1,400,000**	**$91,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-5. FORECAST INCREMENTAL COSTS OF LAND SET-ASIDES TO DEVELOPMENT ACTIVITIES, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$79,000	$5,200
Unit 2. North Mono Lake	$60,000	$3,900
Unit 3. South Mono Lake	$0	$0
Unit 4. White Mountains	$52,000	$3,400
Total	**$190,000**	**$13,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-6. FORECAST INCREMENTAL ADMINISTRATIVE COSTS TO DEVELOPMENT (2014-2034, 2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$36,000	$2,400
Unit 2. North Mono Lake	$81,000	$5,300
Unit 3. South Mono Lake	$3,200	$210
Unit 4. White Mountains	$19,000	$1,300
Total	**$140,000**	**$9,100**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-7. FORECAST NON-SECTION 7 CEQA COSTS TO DEVELOPMENT (2014-2034, 2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$7,100	$460
Unit 2. North Mono Lake	$110,000	$6,900
Unit 3. South Mono Lake	$12,000	$800
Unit 4. White Mountains	$0	$0
Total	**$130,000**	**$8,200**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-8. FORECAST INCREMENTAL COSTS TO TRANSPORTATION AND UTILITIES, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$240,000	$16,000
Unit 2. North Mono Lake	$3,000,000	$190,000
Unit 3. South Mono Lake	$1,800,000	$120,000
Unit 4. White Mountains	$19,000	$1,300
Total	**$5,100,000**	**$330,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-9. FORECAST INCREMENTAL COSTS TO MINING, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$92,000	$6,000
Unit 2. North Mono Lake	$530,000	$35,000
Unit 3. South Mono Lake	$0	$0
Unit 4. White Mountains	$3,900	$250
Total	**$630,000**	**$41,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-10. FORECAST INCREMENTAL COSTS TO RECREATIONAL ACTIVITIES, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$120,000	$7,600
Unit 2. North Mono Lake	$450,000	$29,000
Unit 3. South Mono Lake	$920,000	$60,000
Unit 4. White Mountains	$520,000	$34,000
Total	**$2,000,000**	**$130,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-11. FORECAST INCREMENTAL COSTS TO OTHER FEDERAL LAND MANAGEMENT ACTIVITIES, 2014-2033 (2014$, 3% DISCOUNT RATE)

UNIT	PRESENT VALUE	ANNUALIZED
Unit 1. Pine Nut	$82,000	$5,300
Unit 2. North Mono Lake	$110,000	$7,500
Unit 3. South Mono Lake	$47,000	$3,100
Unit 4. White Mountains	$80,000	$5,200
Total	**$320,000**	**$21,000**

Note: Entries may not sum to totals reported due to rounding. Estimates are rounded to two significant digits.

EXHIBIT B-12. STREAM OF UNDISCOUNTED COSTS TO UNIT 1 (PINE NUT) (2014$)

YEAR	ACTIVITY							
	GRAZING ON FEDERAL LANDS	GRAZING AND AGRICULTURAL OPERATIONS ON PRIVATELY-OWNED LANDS	VEGETATION MANAGEMENT	RESIDENTIAL DEVELOPMENT	TRANSPORTATION AND UTILITY INFRASTRUCTURE	MINING	RECREATION AND SPECIAL USE PERMITS	OTHER FEDERAL LANDS MANAGEMENT
2014	$14,584	$9,223	$14,341	$768	$20,651	$5,911	$7,595	$16,709
2015	$14,584	$8,183	$3,561	$800	$15,610	$5,749	$7,595	$4,238
2016	$14,584	$8,183	$3,561	$1,089	$15,610	$10,746	$7,595	$4,238
2017	$14,584	$8,183	$3,561	$5,180	$15,610	$5,704	$7,595	$4,238
2018	$14,584	$8,183	$3,561	$8,504	$15,610	$5,704	$7,595	$4,238
2019	$14,584	$8,183	$3,561	$9,572	$15,610	$5,704	$7,595	$4,238
2020	$14,584	$8,183	$3,561	$9,680	$15,610	$5,704	$7,595	$4,238
2021	$14,584	$8,183	$3,561	$10,666	$15,610	$5,704	$7,595	$9,313
2022	$14,584	$8,183	$3,561	$11,516	$15,610	$5,704	$7,595	$4,238
2023	$14,584	$8,183	$3,561	$11,782	$15,610	$5,704	$7,595	$4,238
2024	$11,090	$8,183	$3,561	$11,966	$15,610	$5,704	$7,595	$4,238
2025	$11,090	$8,183	$3,561	$12,078	$15,610	$5,704	$7,595	$4,238
2026	$11,090	$8,183	$3,561	$11,942	$15,610	$5,704	$7,595	$4,238
2027	$11,090	$8,183	$3,561	$11,799	$15,610	$5,704	$7,595	$4,238
2028	$11,090	$8,183	$3,561	$11,465	$15,610	$5,704	$7,595	$4,238
2029	$11,090	$8,183	$3,561	$10,716	$15,610	$5,704	$7,595	$4,238
2030	$11,090	$8,183	$3,561	$9,853	$15,610	$5,704	$7,595	$4,238
2031	$11,090	$8,183	$3,561	$8,920	$15,610	$5,704	$7,595	$4,238
2032	$11,090	$8,183	$3,561	$7,699	$15,610	$5,704	$7,595	$4,238
2033	$11,090	$8,183	$3,561	$650	$15,610	$5,704	$7,595	$4,238
Total	**$256,741**	**$164,692**	**$81,993**	**$166,644**	**$317,238**	**$119,376**	**$151,907**	**$102,311**

EXHIBIT B-13. STREAM OF UNDISCOUNTED COSTS TO UNIT 2 (NORTH MONO LAKE) (2014$)

YEAR	ACTIVITY							
	GRAZING ON FEDERAL LANDS	GRAZING AND AGRICULTURAL OPERATIONS ON PRIVATELY-OWNED LANDS	VEGETATION MANAGEMENT	RESIDENTIAL DEVELOPMENT	TRANSPORTATION AND UTILITY INFRASTRUCTURE	MINING	RECREATION AND SPECIAL USE PERMITS	OTHER FEDERAL LANDS MANAGEMENT
2014	$31,511	$38,673	$26,697	$13,754	$239,466	$1,428	$38,481	$31,866
2015	$31,511	$21,519	$19,985	$14,364	$191,570	$1,428	$28,398	$5,625
2016	$31,511	$21,519	$19,985	$17,262	$191,570	$541,086	$28,398	$6,358
2017	$31,511	$21,519	$19,985	$12,047	$191,570	$1,428	$28,398	$5,625
2018	$31,511	$21,519	$19,985	$21,813	$191,570	$1,428	$28,398	$5,625
2019	$31,511	$21,519	$19,985	$21,317	$191,570	$1,428	$28,398	$5,625
2020	$31,511	$21,519	$19,985	$6,201	$191,570	$1,428	$28,398	$5,625
2021	$31,511	$21,519	$19,985	$16,740	$191,570	$1,428	$28,398	$7,005
2022	$31,511	$21,519	$19,985	$17,439	$191,570	$1,428	$28,398	$5,625
2023	$31,511	$21,519	$19,985	$17,009	$191,570	$1,428	$28,398	$5,625
2024	$17,430	$21,519	$19,985	$16,839	$191,570	$1,428	$28,398	$5,625
2025	$17,430	$21,519	$19,985	$17,071	$191,570	$1,428	$28,398	$5,625
2026	$17,430	$21,519	$19,985	$17,120	$191,570	$1,428	$28,398	$5,625
2027	$17,430	$21,519	$19,985	$17,041	$191,570	$1,428	$28,398	$5,625
2028	$17,430	$21,519	$19,985	$17,023	$191,570	$1,428	$28,398	$5,625
2029	$17,430	$21,519	$19,985	$17,222	$191,570	$1,428	$28,398	$5,625
2030	$17,430	$21,519	$19,985	$17,080	$191,570	$1,428	$28,398	$5,625
2031	$17,430	$21,519	$19,985	$17,409	$191,570	$1,428	$28,398	$5,625
2032	$17,430	$21,519	$19,985	$17,842	$191,570	$1,428	$28,398	$5,625
2033	$17,430	$21,519	$19,985	$12,292	$191,570	$1,428	$28,398	$5,625
Total	**$489,407**	**$447,535**	**$406,416**	**$324,885**	**$3,879,305**	**$568,227**	**$578,047**	**$140,860**

EXHIBIT B-14. STREAM OF UNDISCOUNTED COSTS TO UNIT 3 (SOUTH MONO LAKE) (2014$)

YEAR	ACTIVITY							
	GRAZING ON FEDERAL LANDS	GRAZING AND AGRICULTURAL OPERATIONS ON PRIVATELY-OWNED LANDS	VEGETATION MANAGEMENT	RESIDENTIAL DEVELOPMENT	TRANSPORTATION AND UTILITY INFRASTRUCTURE	MINING	RECREATION AND SPECIAL USE PERMITS	OTHER FEDERAL LANDS MANAGEMENT
2014	$31,511	$10,199	$53,263	$1,064	$140,761	$0	$69,756	$13,009
2015	$31,511	$10,199	$45,911	$1,095	$118,074	$0	$59,673	$2,068
2016	$31,511	$10,199	$45,911	$1,322	$118,074	$0	$59,673	$7,159
2017	$31,511	$10,199	$45,911	$687	$118,074	$0	$59,673	$2,068
2018	$31,511	$10,199	$45,911	$1,498	$118,074	$0	$59,673	$2,068
2019	$31,511	$10,199	$45,911	$1,412	$118,074	$0	$59,673	$2,068
2020	$31,511	$10,199	$45,911	$0	$118,074	$0	$59,673	$2,068
2021	$31,511	$10,199	$45,911	$943	$118,074	$0	$59,673	$2,068
2022	$31,511	$10,199	$45,911	$982	$118,074	$0	$59,673	$2,068
2023	$31,511	$10,199	$45,911	$938	$118,074	$0	$59,673	$2,068
2024	$17,430	$10,199	$45,911	$919	$118,074	$0	$59,673	$2,068
2025	$17,430	$10,199	$45,911	$939	$118,074	$0	$59,673	$2,068
2026	$17,430	$10,199	$45,911	$948	$118,074	$0	$59,673	$2,068
2027	$17,430	$10,199	$45,911	$959	$118,074	$0	$59,673	$2,068
2028	$17,430	$10,199	$45,911	$971	$118,074	$0	$59,673	$2,068
2029	$17,430	$10,199	$45,911	$1,022	$118,074	$0	$59,673	$2,068
2030	$17,430	$10,199	$45,911	$1,044	$118,074	$0	$59,673	$2,068
2031	$17,430	$10,199	$45,911	$1,114	$118,074	$0	$59,673	$2,068
2032	$17,430	$10,199	$45,911	$1,115	$118,074	$0	$59,673	$2,068
2033	$17,430	$10,199	$45,911	$1,121	$118,074	$0	$59,673	$2,068
Total	**$489,407**	**$203,973**	**$925,581**	**$20,091**	**$2,384,159**	**$0**	**$1,203,534**	**$57,390**

EXHIBIT B-15. STREAM OF UNDISCOUNTED COSTS TO UNIT 4 (WHITE MOUNTAINS) (2014$)

YEAR	ACTIVITY							
	GRAZING ON FEDERAL LANDS	GRAZING AND AGRICULTURAL OPERATIONS ON PRIVATELY-OWNED LANDS	VEGETATION MANAGEMENT	RESIDENTIAL DEVELOPMENT	TRANSPORTATION AND UTILITY INFRASTRUCTURE	MINING	RECREATION AND SPECIAL USE PERMITS	OTHER FEDERAL LANDS MANAGEMENT
2014	$14,142	$6,149	$19,098	$71,422	$5,978	$252	$33,903	$28,986
2015	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2016	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$14,934
2017	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2018	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2019	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2020	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2021	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$5,206
2022	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2023	$14,142	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2024	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2025	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2026	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2027	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2028	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2029	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2030	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2031	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2032	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
2033	$12,241	$6,149	$19,719	$0	$936	$252	$33,903	$2,563
Total	**$263,827**	**$122,987**	**$393,760**	**$71,422**	**$23,760**	**$5,042**	**$678,063**	**$92,699**

APPENDIX C

INCREMENTAL EFFECTS MEMORANDUM

Attachment/Enclosure

January 23, 2014

MEMORANDUM

To: Industrial Economics, Incorporated (IEc)

From: State Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Draft Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Bi-State Distinct Population Segment of Greater Sage-Grouse (*Centrocercus urophasianus*)

The purpose of this memorandum is to provide information to serve as a basis for conducting an economic analysis for the proposed designation of critical habitat for the Bi-State Distinct Population Segment (DPS) of greater sage-grouse. Section 4(b)(2) of the Endangered Species Act (Act) requires the Secretary of Interior (Secretary), and therefore by delegation the U.S. Fish and Wildlife Service (Service), to consider the economic, national security, and other impacts of designating a particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of exclusion outweigh the benefits of including the area as critical habitat, unless the exclusion will result in the extinction of the species. To comply with section 4(b)(2) of the Act and consider the economic impacts of a proposed critical habitat designation, the Service prepares an economic analysis that describes and monetizes, where possible, the probable economic impacts of the proposed regulation. The data in the economic analysis are then used to inform the balancing evaluation under section 4(b)(2) of the Act to consider any particular area for exclusion from the final designation.

Determining the economic impacts of a critical habitat designation involves evaluating the "without critical habitat" baseline versus the "with critical habitat" scenario, to identify those effects expected to occur solely due to the designation of critical habitat and not from the protections that are in place due to the species being listed under the Act. Effects due to solely the critical habitat designation equal the difference, or increment, between these two scenarios, and include the costs of both changes in management and increased administrative efforts that result from the designation. These changes are often thought of as "changes in behavior" or the "incremental effect" that would most likely result from the designation if finalized. Specific measured differences between the baseline (without critical habitat) and the designated critical habitat (with critical habitat) may include, but are not limited to, the economic effects stemming from changes in land or resource use or extraction, environmental quality, or time and effort expended on administrative and other activities by Federal landowners, Federal action agencies, and in some instances, State and local governments or private third parties. These are the incremental effects that serve as the basis for the economic analysis.

There are a number of ways that designation of critical habitat could influence activities, but one of the important functions of this memorandum is to explain any differences between actions required to avoid jeopardy to the species versus actions that may be required to avoid adverse

modification of critical habitat. The Service is working to update the regulatory definition of adverse modification since it was invalidated by several Courts of Appeal, including the Ninth Circuit and the Fifth Circuit. At this time (without updated regulatory language) the Service is analyzing whether destruction or adverse modification would occur based on the statutory language of the Act itself, which requires the Service to consider whether the agency's action is likely "to result in the destruction or adverse modification of habitat which is determined by the Service to be critical" to the conservation of the species. To perform this analysis, the Service considers how the proposed action is likely to affect the function of the critical habitat unit to serve the intended conservation role. The information provided below is intended to identify the possible differences for this species under the two different section 7 standards (i.e., jeopardy to the species and adverse modification of critical habitat). Ultimately, however, a determination of whether an activity may result in the adverse modification of critical habitat is based on the effects of the action to the designated critical habitat in its entirety. The information provided below is intended to identify the possible differences for the Bi-State DPS under the different section 7 standards for jeopardy to the species and adverse modification of critical habitat.

BACKGROUND

Bi-State DPS

The greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse) is the largest North American grouse species. Adult male sage-grouse range in length from 66 to 76 centimeters (cm) (26 to 30 inches (in)) and weigh between 2 and 3 kilograms (kg) (4 and 7 pounds (lbs)). Adult females are smaller, ranging in length from 48 to 58 cm (19 to 23 in) and weighing between 1 and 2 kg (2 and 4 lbs). Males (cocks) and females (hens) have dark grayish-brown body plumage with many small gray and white speckles, fleshy yellow combs over the eyes, long pointed tails, and dark green toes. Males also have blackish chin and throat feathers, conspicuous phylloplumes (specialized erectile feathers) at the back of the head and neck, and white feathers forming a ruff around the neck and upper belly. During breeding displays, males exhibit olive-green apteria (fleshy bare patches of skin) on their breasts (Schroeder *et al.* 1999, p. 2).

In our 12-month finding on petitions to list three entities of sage-grouse (Service 2010, entire), we found that the Bi-State population of sage-grouse meets our criteria as a DPS of the greater sage-grouse under Service policy (February 7, 1996, 61 FR 4722). This determination was based principally on genetic information, where the Bi-State DPS was found to be both markedly separated and significant to the remainder of the sage-grouse taxon. The Bi-State DPS defines the far southwest limit of the species' range along the border of eastern California and western Nevada (Stiver *et al.* 2006, pp. 1–11; December 19, 2006, 71 FR 76058). The Bi-State DPS extends from approximately Carson City, Nevada, south to Bishop, California, and from the Sierra Nevada Mountains in the west to the Wassuk Range in the east. Sage-grouse in the Bi-State area contain a large number of unique genetic haplotypes not found elsewhere within the range of the species (Benedict *et al.* 2003, p. 306; Oyler-McCance *et al.* 2005, p. 1,300; Oyler-McCance and Quinn 2011, p. 92). The genetic diversity present in the Bi-State DPS is comparable to other populations, suggesting that the differences are not due to a genetic bottleneck or founder event (Oyler-McCance and Quinn 2011, p. 91). These studies provide

evidence that the present genetic uniqueness exhibited by the Bi-State DPS developed over thousands and perhaps tens of thousands of years, hence, prior to the Euro-American settlement (Benedict *et al.* 2003, p. 308; Oyler-McCance *et al.* 2005, p. 1,307).

The Bi-State DPS of greater sage-grouse depend on a variety of shrub-steppe habitats throughout their life cycle and are considered obligate users of several species of sagebrush (Patterson 1952, p. 42; Braun *et al.* 1976, p. 168; Schroeder *et al.* 1999, pp. 4–5; Connelly *et al.* 2000, pp. 970–972; Connelly *et al.* 2004, p. 4-1, Miller *et al.* 2011, pp. 148–149). Large blocks of sagebrush-dominated habitats are needed. Sage-grouse dietary requirements are composed of nearly 100 percent sagebrush in the winter and forbs, insects, and sagebrush during the remainder of the year (Wallestad and Eng 1975, p. 629; Schroeder *et al.* 1999, p. 5). In addition to serving as a primary year-round food source, sagebrush also provides cover for nests (Connelly *et al.* 2000, pp. 970–971). Thus, sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder *et al.* 2004, p. 364).

Sage-grouse habitat requirements are generally segregated into three seasons: (1) Breeding, (2) brood-rearing (summer–late fall), and (3) winter (Connelly *et al*. 2011a, pp. 71–80). Sage-grouse exhibit a polygamous mating system where a male mates with several females. Males perform courtship displays and defend their leks (Patterson 1952, p. 83). Lek displaying occurs from late February through late May, depending on snow depth, elevation, weather, and region (Connelly *et al.* 2011b, p. 61).

Within the Bi-State DPS, we refer to six Population Management Units (PMUs) that were previously described in Nevada and California as management tools for defining and monitoring sage-grouse distribution (Sage-Grouse Conservation Planning Team 2001, p. 31). The PMU boundaries were defined based on aggregations of leks, known seasonal habitats, and telemetry data, each representing generalized subpopulations or local breeding complexes. The six PMUs include: Pine Nut, Desert Creek–Fales, Bodie, Mount Grant, White Mountains, and South Mono (Figure 1). Due to more recent understanding of biology and management considerations, the Bodie and Mount Grant PMUs are often combined.

We are proposing to designate approximately 761,381 hectares (ha) (1,881,414 acres (ac)) in four critical habitat units across California and Nevada for designation as Bi-State DPS critical habitat (Service 2013, p. 53; Figure 2). The proposed critical habitat designation includes lands under Tribal (2 percent), Federal (86 percent), State (1 percent), County/City (2 percent), and private (9 percent) land ownership (Table 1). The four units we propose as critical habitat correspond to the four populations recognized by the Western Association of Fish and Wildlife Agencies (WAFWA), which include: (1) Pine Nut, (2) North Mono Lake, (3) South Mono Lake, and (4) White Mountains. These units are contained within the PMU boundaries; however, the proposed North Mono Lake Unit (Unit 2) combines three PMUs (Desert Creek–Fales, Bodie, and Mount Grant PMUs) into a single unit.

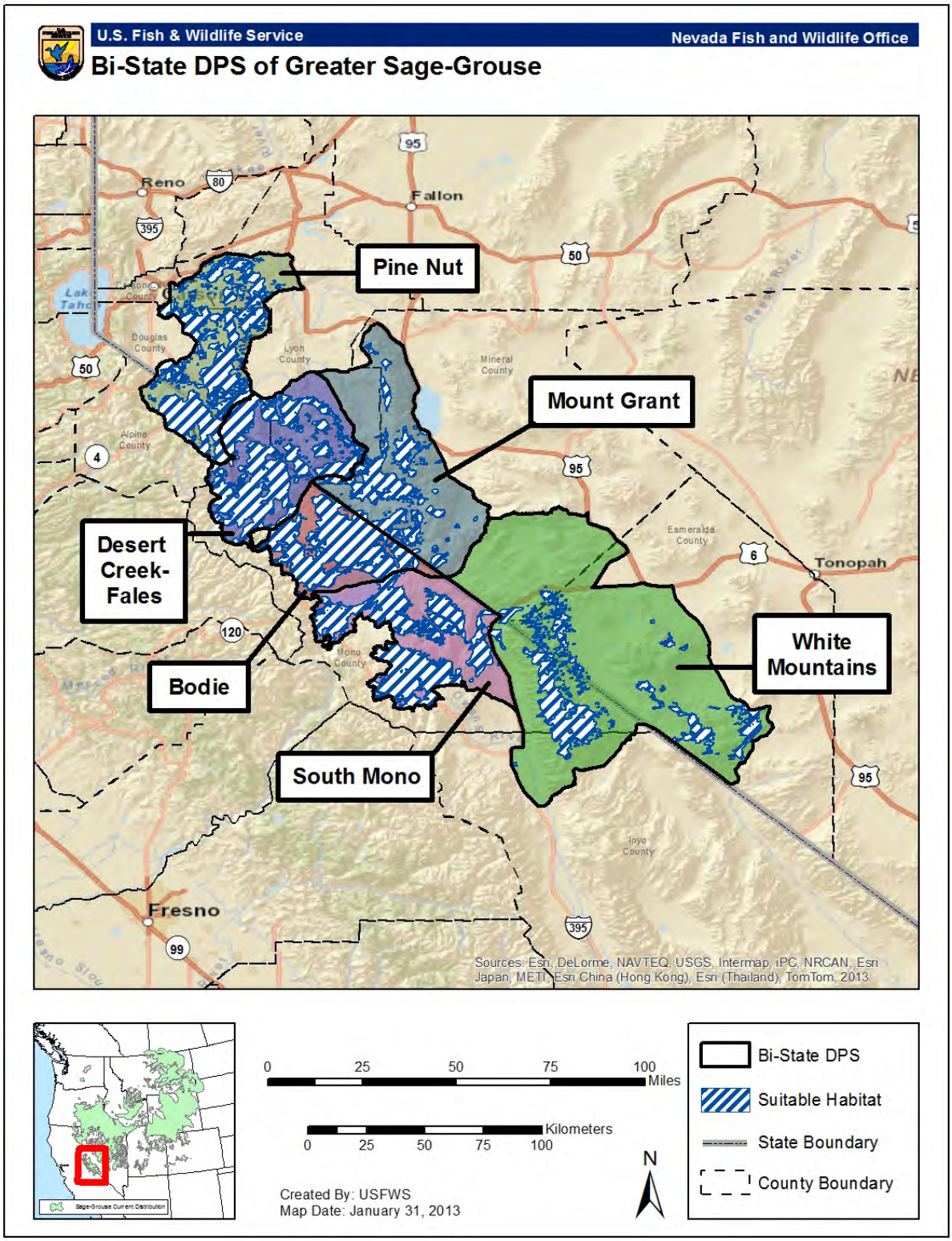

Figure 1. Population Management Units and suitable habitat for the Bi-State DPS of greater sage-grouse, Nevada and California. The suitable habitat layer is based on Bi-State Technical Advisory Committee (2012) and Bureau of Land Management (2008a).

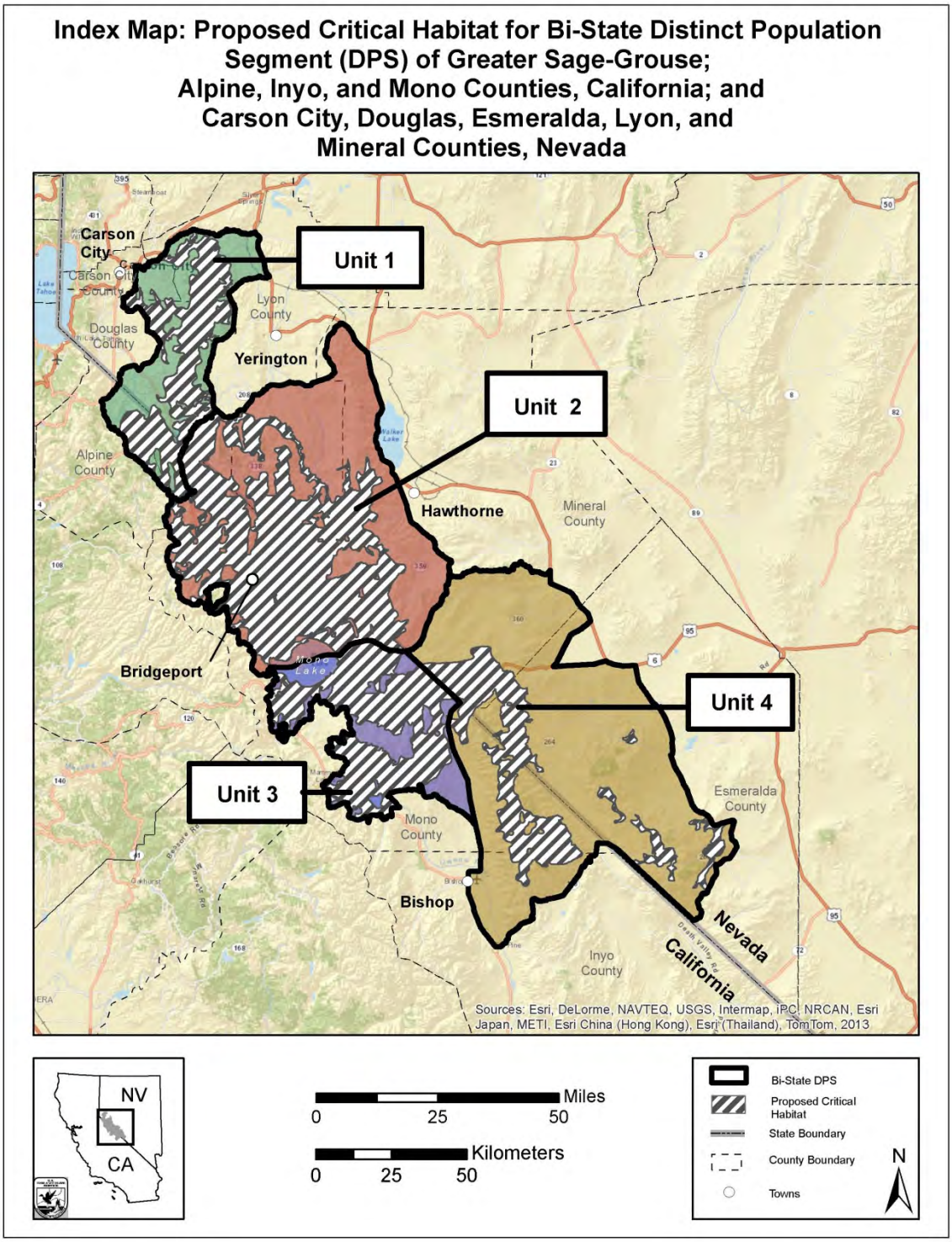

Figure 2. Proposed critical habitat unit and critical habitat boundaries for the Bi-State DPS of greater sage-grouse, Nevada and California. Unit 1: Pine Nut, Unit 2: North Mono Lake , Unit 3: South Mono Lake, and Unit 4: White Mountains.

Table 1. Size and ownership status of the proposed Bi-State DPS critical habitat units.

Critical Habitat Unit	Occupancy	Land Ownership by Type	Size of Unit in Hectares (Acres)	Co-Occurring Listed Species or Existing Critical Habitat for Listed Species?	Acres/Stream miles of distributional overlap with proposed Bi-State DPS critical habitat
1. Pine Nut	Occupied	Tribal	10,401 (25,701)	Lahontan cutthroat trout; no critical habitat	Lahontan cutthroat trout – 7.6 miles
		Federal (USFS and BLM)	92,324 (228,137)		
		State	4,822 (11,917)		
		Private	14,197 (35,081)		
Subtotal Unit 1			*121,744 (300,836)*		
2. North Mono Lake	Occupied	Tribal	16 (40)	Lahontan cutthroat trout; no critical habitat. Sierra Nevada bighorn sheep and critical habitat	Lahontan cutthroat trout – 3.4 miles
		Federal (USFS, BLM, and DOD*)	294,775 (728,404)		
		State	3,374 (8,338)		Sierra Nevada bighorn sheep 1,645 acres
		Local Agency	1,295 (3,200)		
		Private	46,031 (113,744)		
Subtotal Unit 2			*345,491 (853,726)*		
3. South Mono Lake	Occupied	Tribal	161 (398)	Owens tui chub and critical habitat. Sierra Nevada bighorn sheep and critical habitat	Owens tui chub – 3.8 miles
		Federal (USFS and BLM)	138,905 (343,242)		
		State	1,345 (3,323)		Sierra Nevada bighorn sheep – 1,640 acres
		Local Agency	13,312 (32,894)		
		Private	7,750 (19,151)		
Subtotal Unit 3			*161,473 (399,008)*		
4. White Mountains	Occupied	Tribal	521 (1,286)	None	
		Federal (USFS and BLM)	123,831 (305,994)		
		Private	2,901 (7,167)		
Subtotal Unit 4			*127,252 (314,447)*		
Subtotal		**Tribal**	**11,099 (27,425)**		
		Federal	**649,835 (1,605,777)**		
		State	**9,541 (23,578)**		
		Local Agency	**14,607 (36,094)**		
		Private	**70,878 (175,143)**		
GRAND TOTAL			**755,960 (1,868,017)**		

Note: Area sizes may not sum due to rounding.
* The U.S. Marine Corps Mountain Warfare Training Center has a 40-year Special Use Permit to utilize USFS lands within Critical Habitat Unit 2 for military readiness training.

The four proposed critical habitat units are considered occupied and were determined using location information from three sources; two of which depict habitat that is potentially occupied or currently suitable for occupation by sage-grouse and the third represents habitat that may be

currently less suitable or unsuitable for use but given appropriate special management considerations could become suitable or act as a corridor to connect sage-grouse populations. We based our identification of lands that contain the physical and biological features essential to the conservation of the Bi-State DPS of greater sage-grouse on polygons delineated and defined by the Bi-State Technical Advisory Committee (TAC) during the development of the 2012 Bi-State greater sage-grouse Preliminary Priority Habitat (PPH) Map (Bi-State TAC 2012a), and a map product depicting occupied habitat developed by the Bureau of Land Management (BLM) in conjunction with the U.S. Forest Service in 2008 (BLM 2008a). The Bi-State TAC is comprised of biologists representing the California Department of Fish and Wildlife (CDFW), Nevada Department of Wildlife (NDOW), BLM, the U.S. Forest Service, Natural Resources Conservation Service (NRCS), USGS, and our offices (i.e., the Service). Both of these products (i.e., the PPH map and BLM map) largely correlate with one another, although the combined map encompasses more area than either product individually. We identified potential habitat as unused habitats that could be suitable for use by sage-grouse if practical restoration was applied. These corridors/sites are most commonly former sagebrush areas overtaken by pinyon-juniper woodlands. To further refine these areas, we identified locations that are: (1) Contiguous with currently utilized habitat that occurs within the present range; (2) provide for connectivity between and within populations; and (3) identified within the 2012 Bi-State Action Plan. We consider the size and degree of isolation among various populations contained within the Bi-State DPS to be a significant conservation concern; therefore, restoring historical connectivity among populations is essential to the conservation of the species. The corridors/sites are all contained within the borders of the delineated PMUs.

Under the Act and its implementing regulations, we are required to identify specific areas containing the physical and biological features essential to the conservation of the Bi-State DPS within the geographical area occupied at the time of listing. In identifying those physical and biological features within a specific area, we focus on the principal biological or physical constituent elements (primary constituent elements (PCEs)) such as roost sites, nesting grounds, seasonal wetlands, soil type) that are essential to the conservation of the species. PCEs are those specific elements of the physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

The four PCEs for the Bi-State DPS critical habitat from the proposed rule include:

Landscape-scale Primary Constituent Element

PCE 1—Areas with vegetation composed primarily of sagebrush plant communities of sufficient size and configuration to encompass all seasonal habitats for a given population of greater sage-grouse, or facilitate movements within and among populations. The landscape-scale PCE also includes former sagebrush plant communities in specific locations that are now primarily woodland encroached sites that are restorable to a suitable sagebrush plant community, providing connectivity between populations.

Site-scale Primary Constituent Elements (Based on Vegetation Structural Characteristics)

PCE 2—Breeding habitat composed of sagebrush plant communities with appropriate structural characteristics.

PCE 3—Brood-rearing habitat composed of sagebrush plant communities and mesic habitats used primarily in the summer to late fall seasons. These sites include, but are not limited to, riparian communities, springs, seeps, mesic meadows, and irrigated hay pastures with appropriate structural characteristics.
PCE 4—Winter habitat composed of sagebrush plant communities with sagebrush canopy cover greater than 10 percent and sagebrush height of greater than 25 cm (9.8 in) above snow level.

We only consider areas as critical habitat if they meet the "Landscape-scale Primary Constituent Element" (PCE 1) because small, isolated patches of sagebrush do not support the Bi-State DPS. If an area meets the landscape scale requirement, then a particular site is considered critical habitat if it contains one or more of the "Site-scale Primary Constituent Elements" (PCEs 2 through 4).

For PCEs 2 through 4 for the Bi-State DPS, we adopt the values from the literature on sage-grouse across the species' range, but we modify them with available specific research conducted in the Bi-State area and southern Great Basin. Combined, these data provide structural habitat values for the Bi-State DPS in all seasonal habitats. Source data include (but are not limited to) structural vegetation data collected during the spring breeding season (Connelly *et al*. 2000a; Hagen *et al.* 2007; Kolada *et al*. 2009a; Kolada *et al*. 2009b; Coates and Delehanty 2010; Blomberg *et al*. 2012), summer-fall brood-rearing season (Casazza *et al*. 2011), and winter (Connelly *et al.* 2000a). To the greatest extent possible, these structural habitat values are representative of the Bi-State area and the southern Great Basin specifically, and reflect the shrub structure, understory structure, and understory composition selected for by sage-grouse in this region. As such, these values are based on the most current and comprehensive assessment of the Bi-State DPS habitat structure.

Unit Descriptions

Unit 1: Pine Nut
The Pine Nut Unit consists of approximately 121,744 ha (300,836 ac) and is located in Mono and Alpine Counties, California, and Douglas, Lyon, and Carson City Counties, Nevada. The unit encompasses the Pine Nut Mountains and several surrounding locations and represents the northern extent of the DPS. The Pine Nut Unit includes lands in the Humboldt-Toiyabe National Forest, and lands managed by the Carson City District Office of the Bureau of Land Management. State lands within this unit include Slinkard/Little Antelope Valley Wildlife Area in California. This unit is within the geographical area occupied by the DPS at the time of listing. The unit contains the physical or biological features essential to the conservation of the species and contains the suite of seasonal habitats utilized by sage-grouse to complete their annual life cycle.

Unit 2: North Mono Lake
The North Mono Lake Unit consists of approximately 350,912 ha (867,123 ac) and is located in Mono County, California, and Lyon, Douglas, and Mineral Counties, Nevada. The unit extends from southern Smith Valley, Nevada, in the north to Mono Lake, California, in the south, and the Wassuk Range in Nevada in the east to the foothills of the Sierra Nevada Mountains in the west.

The North Mono Lake Unit includes lands managed by the Humboldt-Toiyabe National Forest, Bureau of Land Management's Bishop Field Office and Carson City District Office, and the City of Los Angeles and managed by the Los Angeles Department of Water and Power (LADWP). A portion of the lands managed by the Humboldt-Toiyabe National Forest within Unit 2 are utilized by the DOD's U.S. Marine Corps Mountain Warfare Training Center for military readiness training under a 40-year Special Use Permit. State lands within this unit include the Green Creek, East Walker River, Slinkard/Little Antelope, and Pickel Meadow Wildlife Areas in California. This unit is within the geographical area occupied by the DPS at the time of listing and contains the physical or biological features essential to the conservation of the species including the suite of seasonal habitats utilized by sage-grouse to complete their annual life cycle. The Bodie Hills population contained within this unit represents one of two core populations within the Bi-State DPS and harbors greater than 30 percent of the entire Bi-State DPS population, providing both resiliency and redundancy to the DPS.

Unit 3: South Mono Lake

The South Mono Lake Unit consists of approximately 161,473 ha (399,008 ac) and is located entirely within Mono County, California. The unit extends from Mono Lake in the north to Lake Crowley in the south, and from the Nevada-California border in the east to foothills of the Sierra Nevada Mountains in the west. The South Mono Unit includes lands managed by the Inyo National Forest and the Bureau of Land Management's Bishop Field Office. State lands within this unit include several isolated parcels on sections 16 and 36 of various townships and ranges that represent public school trust lands (Oregon Territory Act of 1848; 9 Stat. 323). The majority of City lands within this unit are owned by the City of Los Angeles and managed by LADWP. This unit is within the geographical area occupied by the Bi-State DPS at the time of listing and contains the physical or biological features essential to the conservation of the species including the suite of seasonal habitats utilized by sage-grouse to complete their annual life cycle. The Long Valley population contained within this unit represents one of two core populations within the Bi-State DPS and harbors approximately 30 percent of the entire Bi-State DPS population, providing both resiliency and redundancy to the DPS.

Unit 4: White Mountains

The White Mountains Unit consists of approximately 127,252 ha (314,447 ac) and is located in Inyo and Mono Counties, California, and Esmeralda and Mineral Counties, Nevada, at the southern extent of the Bi-State DPS. The unit extends from the Candelaria Hills and Truman Meadows areas in the north to California Highway 168 in the south and from California Highway 6 in the west to the Silver Peak Range in Nevada. The White Mountains Unit includes lands managed by the Inyo and Humboldt-Toiyabe National Forests, and the Bishop, Tonopah, and Stillwater Field Offices of the Bureau of Land Management. This unit is within the geographical area occupied by the DPS at the time of listing and contains the physical or biological features essential to the conservation of the species including the suite of seasonal habitats utilized by sage-grouse to complete their annual life cycle. This unit is essential to the conservation of the DPS due to the redundancy, resiliency, and representation it affords the remainder of the Bi-State DPS. Although the population is relatively small, it still represents approximately 5–10 percent of the entire DPS. Further, the unit remains generally remote and lacks many of the imminent anthropogenic threats present in other portions of the DPS; thus, the additional redundancy and resiliency afforded by this unit may influence conservation of the

entire DPS in the future. Additionally, this population has a unique genetic signature and occurs at high elevation on the extreme southwest portion of the species' range, thereby adding ecological and genetic representation not found elsewhere across the DPS.

BASELINE ANALYSIS

Identify conservation plans and regulatory mechanisms that provide protection to the DPS and its habitat without critical habitat designation

Conservation Plans/Efforts

The following are ongoing conservation efforts that provide some benefits to the Bi-State DPS and are considered part of the baseline because these activities will occur with or without critical habitat designation (Table 2).

(1) Draft LADWP Habitat Conservation Plan (HCP): The LADWP owns and manages approximately 15,535 ha (38,389 ac) of the Bi-State DPS's habitat within the Bodie and South Mono PMUs (North Mono Lake Unit 2 and South Mono Lake Unit 3) in Mono County, California. The LADWP has been managing their lands for the conservation of the Bi-State DPS, including implementing measures that enhance the habitat and also reduce threats. The Service is working with LADWP to develop a HCP that would provide a conservation benefit to the Bi-State DPS and its habitat; the activities covered in the HCP will include fire and weed (i.e., nonnative invasive plants) management, livestock grazing, irrigated agriculture (i.e., irrigated pasture management), recreation, road maintenance and closures (i.e., infrastructure – roads), power production, and power transmission (i.e., infrastructure – power lines, transmission, and communication towers). The LADWP has committed to developing and implementing a conservation strategy to proactively manage the Bi-State DPS on their lands within the Bodie and South Mono PMUs while the draft HCP is under development.

(2) Bi-State Action Plan: In 2012, an existing Bi-State greater sage-grouse conservation plan (i.e., *Greater Sage-Grouse Conservation Plan for the Bi-State Plan Area of Nevada and Eastern California*, which was an appendix to the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (2004)) completed by the Bi-State Local Planning Group was updated (Bi-State Local Planning Group 2004, entire). This new document (i.e., 2012 Bi-State Action Plan) is a general roadmap toward species conservation. The 2012 *Bi-State Action Plan* (Bi-State TAC 2012b, entire) provides updates on population status, threats assessment, conservation efforts implemented, and a strategic approach toward future conservation efforts. Signatories to this plan include the State wildlife agencies from Nevada and California, Bureau of Land Management (BLM), U.S. Forest Service (USFS), Natural Resource Conservation Service (NRCS), U.S. Geological Service (USGS), and the Service, and the plan was vetted through Local

Planning Group participants associated with the 2004 Bi-State Plan. While the 2012 Bi-State Action Plan remains non-regulatory, it provides a general strategic path forward toward conservation and affords a degree of confidence in implementation among stakeholders.

(3) *Conservation Easements, Land Exchange, and Fee Title Acquisitions*: Over the past 10 years, approximately 2,894 ha (7,152 ac) of land in the Bi-State area have been acquired through land exchange or direct purchase by State, Federal, and nongovernmental organizations. Additionally, approximately 7,058 ha (17,442 ac) of private lands have been enrolled in a conservation easement program, administered by various State, Federal, and nongovernmental organizations. The details of individual agreements vary. For example, some acquisitions are devoted to wildlife conservation and others were incorporated into the federal system, to be administered under the multiple use mandate. In the case of conservation easements, most easements target the removal of development rights from the property, while the owner retains others rights such as ranch use. Also, easements duration varies but is typically at least 30 years and frequently permanent.

(4) *NRCS Sage-Grouse Initiative (SGI)*: In 2010, the NRCS launched a new effort to sustain working ranches and conserve sage-grouse populations across the West. The NRCS is using their voluntary conservation programs (Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentive Program (WHIP)) to assist producers in simultaneously improving habitat for sage-grouse and productivity of native rangelands. The NRCS provides financial and technical assistance to implement the SGI and targets its efforts within high sage-grouse abundance centers. Excluding conservation easements (discussed above), within the Bi-State area the NRCS has provided over 1,293,582 dollars through EQIP and WHIP to affect conservation on private and public lands. Conservation actions include implementing sustainable grazing systems to improve hiding cover for birds; removing invasive conifers from shrublands to allow birds to re-colonize otherwise suitable habitat; installing wildlife escape ramps in watering facilities; marking or moving "high-risk" fences near breeding sites to reduce bird collisions; and restoring wet meadows to improve brood-rearing habitat.

Federal Regulations/Acts

The Bi-State DPS is not currently protected under Federal law. However, the DPS's proposed threatened status and proposed critical habitat requires that Federal agencies ensure their projects do not jeopardize the species or result in destruction or adverse modification of critical habitat. Federal agencies are responsible for managing 86 percent of the proposed Bi-State DPS critical habitat: BLM and USFS manage the majority of this area (>99 percent), along with a small percentage (<1 percent) managed by DOD.

The following Federal laws and regulations provide some benefits to the Bi-State DPS and are considered part of the baseline because these benefits will continue with or without critical habitat designation.

(1) Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seq.): The FLPMA requires that ". . . the 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 . . . will preserve and protect certain public lands in their natural condition; (and) that will provide food and habitat for fish and wildlife . . ." Furthermore, it is the policy of BLM "to manage habitat with emphasis on ecosystems to ensure self-sustaining populations and a natural abundance and diversity of wildlife, fish, and plant resources on public lands" (BLM Manual 6500.06).

(2) National Forest Management Act of 1976 (NFMA): The NFMA directs that the National Forest System "…where appropriate and to the extent practicable, will preserve and enhance the diversity of plant and animal communities." Additionally, section 219.12(g) requires the maintenance of viable populations of native vertebrates in National Forests.

(3) Sikes Act of 1960 (16 U.S.C. 670a, as amended): The Sikes Act provides for cooperation by the Department of the Interior and DOD with State agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States.

(4) Wilderness Act (Public Law 88–577): Wilderness designation is a protective overlay Congress applies to selected portions of national forests, parks, wildlife refuges, and other public lands. Within wilderness areas, the Wilderness Act strives to restrain human influences so that ecosystems can change over time in their own way—free, as much as possible, from human manipulation. In these areas, as the Wilderness Act states, "the earth and its community of life are untrammeled by man" (i.e., the forces of nature operate unrestrained and unaltered). Wilderness areas serve multiple uses (e.g., protect watersheds, provide clean-water supplies vital to downstream municipalities and agriculture, and protect habitats supporting diverse wildlife, including endangered species). However, the law limits uses to those consistent with the Wilderness Act mandate that each wilderness area be administered to preserve the "wilderness character of the area." For example, logging and oil/gas drilling are prohibited.

<u>Federal Land Management</u>

The following Federal agencies manage U.S. owned lands within some of the areas designated as critical habitat. Their ongoing land management activities are considered part of the baseline because they will provide some benefits to the Bi-State DPS with or without critical habitat designation. For those future proposed activities that may affect the Bi-State DPS or its critical habitat, section 7 consultation will occur and may be considered as part of the incremental effects of critical habitat designation (see further discussions that follow and Table 2).

(1) BLM, Bishop Field Office: Sage-grouse conservation has been a management focus for the BLM's Bishop Field Office for over 20 years and was a key issue during development of the Bishop Resource Management Plan (RMP) (BLM 1993, entire). In 2012, the Bi-State DPS was designated specifically as a California BLM Sensitive Species (BLM 2012a, entire). BLM Sensitive Species are defined under BLM Manual 6840–Special Status Species Management as species that will be "… managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the Endangered Species Act" (BLM 2008b, p. 05V). As a BLM designated Sensitive Species, sage-grouse are provided the same level of protection as listed species pursuant to land use decisions prescribed in the Bishop RMP (BLM 1993, p. 18). The Bishop RMP includes several land use decisions and best management practices (i.e., guidelines and standard operating procedures (SOPs)) designed specifically to conserve the Bi-State DPS and its habitat. Of most significance, the Bishop RMP provides for "yearlong protection of endangered, threatened, candidate, and sensitive plants and animal habitats" (BLM 1993, p. 18). Yearlong protection is defined as "no discretionary action which would adversely affect target resources would be allowed. Existing uses and casual use would be managed to prevent disturbance which would adversely affect target resources. Locatable mineral exploration and development could continue, with appropriate mitigation" (BLM 1993, p. 18).

In 1999, the Bishop RMP was amended by the Central California Standards for Rangeland Health and Guidelines for Livestock Grazing Management (i.e., Central California Standards and Guidelines (S&Gs)) (BLM 1999, entire). The Central California S&Gs provide additional direction for the management of permitted livestock grazing on public lands administered by the Bishop Field Office. Standards were established for soil, species, riparian, and water quality and metrics, by which the achievement of these standards could be measured. This affects Bi-State DPS conservation by enabling BLM to manage livestock grazing to ensure "special status species and other local species of concern are healthy and in numbers that appear to ensure stable to increasing populations; habitat areas are large enough to support viable populations or are connected adequately with other similar habitat areas."

In 2005, the Bishop RMP was amended by the Bishop Fire Management Plan (FMP) (BLM 2005, entire). The Bishop FMP provides additional direction for the management of wildland fire incidents and fuels management projects on public lands administered by the Bishop Field Office including objectives, management coordination, and use of resource advisors. The intent within the sagebrush vegetation community is to limit habitat loss and degradation, and minimize disturbance during suppression activities. The Bishop FMP benefits sage-grouse by increasing early awareness of responders to the presence of sage-grouse habitat, limiting disturbances that create favorable conditions for nonnative vegetation, and also increasing the likelihood of appropriate habitat restoration measures after a wildfire.

(2) BLM, Carson City District Office: The Carson City District Office Consolidated RMP (BLM 2001, entire), which provides direction to both the Stillwater and Sierra Front

Field Offices, incorporates National BLM Policy (BLM Manual Section 6840–Special Status Species Management; BLM 2008b, p. 05V) on Candidate and Sensitive Species including sage-grouse. National policy states that BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats, and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any candidate species (BLM 2008b, p. 05V). The Carson City District Office Consolidated RMP includes some land decisions and SOPs specifically for managing the Bi-State DPS and its habitat (BLM 2001, entire). Several land use decisions and SOPs for general wildlife apply to sage-grouse management (*e.g.*, seasonal restrictions on activities; wildlife-friendly structures, such as fences; maintaining or improving the habitat condition of meadow and aquatic areas; limiting vehicle traffic to designated roads and trails in the higher elevations of the Pine Nut Mountains; revegetation of disturbed areas) (BLM 2001, pp. SOP 1–3, WLD 1–2, 7–8, SSS 1–4). The Carson City District Office is currently operating under a new Instruction Memorandum (BLM 2012b, entire), which provides interim policies and procedures to be applied to ongoing and proposed authorizations and activities that affect the Bi-State DPS and its habitat. The Instruction Memorandum applies to all BLM programs within the district, and its intent is to maintain, enhance, and restore sage-grouse habitat in the Bi-State area.

(3) BLM, Tonopah Field Office: Sage-grouse are recognized as BLM Sensitive Species in the State of Nevada (BLM 2008b, p. 05V). The Tonopah Field Office RMP (BLM 1997, entire) includes some land use decisions and best management practices (guidelines and SOPs) written specifically for sensitive species, including the Bi-State DPS and its habitat such as seasonal timing restrictions on activities, restrictions on land disposals, and restrictions on sagebrush vegetation treatments. The Tonopah Field Office is under the jurisdiction of the Battle Mountain District Office. The Battle Mountain District Office is currently revising their RMP, which will supersede the existing Tonopah Field Office RMP (BLM 2010, entire). The draft Battle Mountain District Office RMP is expected to be completed in 2014 (BLM 2013, entire). The Tonopah Field Office is currently operating under the same new Instruction Memorandum (BLM 2012b, entire) as described above under the BLM, Carson City District Office.

(4) USFS, Humboldt-Toiyabe National Forest: Sage-grouse are designated as a Management Indicator Species (MIS) and a Sensitive Species in Region 4 of the USFS, which includes the Humboldt-Toiyabe National Forest (USFS 1986, p. V-15; USFS 2013, p. 4). The USFS adopted the concept of MIS in the 1980s as a means of monitoring overall ecosystem health by focusing on a limited number of species that could potentially represent an index to inform understanding of a larger assemblage of species or broader community. USFS Sensitive Species are species deemed to need special management to maintain and improve their status in order to prevent a need to list them under the Act; implementation of all USFS management activities is done to avoid or minimize adverse effects to Sensitive Species. Both of these designations potentially afford an additional degree of consideration when evaluating actions conducted on USFS managed lands as they mandate a full effect analysis for all projects occurring in sage-grouse habitat (Bi-State TAC 2012b, Appendix G). The Humboldt-Toiyabe National Forest Land and

Resource Management Plan (LRMP) identified several standards for monitoring the Bi-State DPS and its habitat, including protections for designating priority areas, direction for protecting the spatial integrity of habitat, and instructions for choosing vegetation for restoration (USFS 1986, entire). Currently, Humboldt-Toiyabe National Forest is engaging in an amendment to the existing LRMP to update their existing management guidelines to better address the Bi-State DPS and its habitat; this amendment is scheduled to be completed by fall 2013 (USFS, entire).

(5) USFS, Inyo National Forest: Sage-grouse are designated as a MIS in the Inyo National LRMP (USFS 1988, entire; 2007, entire). Furthermore, Region 5 of the USFS, which includes Inyo National Forest, currently recognizes sage-grouse as USFS Sensitive Species (CNDDB 2011, p. 39). The Inyo National Forest LRMP and supplemental directives identify several standards and guidelines for managing the Bi-State DPS and its habitat (e.g., seasonal and spatial restrictions to avoid disturbance and habitat loss, restrictions on vegetation treatments to avoid disturbance and limited to improving sage-grouse habitat condition, and stipulations on coordination with the Service and state wildlife agencies during project development). These guidelines represent management actions necessary to maintain and improve sage-grouse habitat throughout the forest. Subsequently, guidance on implementation of proposed projects has been added as design features (Bi-State TAC 2012b, Appendix G), specifically within livestock grazing and vegetation treatment environmental analyses. Currently, the Inyo National Forest is developing a new LRMP, which is scheduled to be completed in 2016, (USFS 2013, entire). In addition, Inyo National Forest adopted an Interim Management Policy specific to the Bi-State DPS to improve regulatory effectiveness and consistency for discretionary actions that may affect the Bi-State DPS and its habitat (USFS 2012, entire).

(6) U.S. Department of Defense: The Marine Corps' Mountain Warfare Training Center occurs outside of the proposed critical habitat boundary but conducts training via a special use permit on USFS lands within the proposed critical habitat boundary. The U.S. Marine Corps does not currently have an Integrated Natural Resources Management Plan (INRMP); however, they are currently engaged in developing this management product.

State Laws and Executive Orders

The following Nevada and California state laws by provide some benefit to the Bi-State DPS and its habitat. These laws are considered part of the baseline because these benefits will continue with or without critical habitat designation. Both Nevada and California currently recognize the Bi-State DPS of greater sage-grouse as a resident native game bird, thus direct taking during the hunting season is allowed. Nevada, however, has not had an open season in the Bi-State area since 1997. Further, the State of California recognizes sage-grouse as a Bird Species of Special Concern, although this designation is not associated with obligatory regulatory requirements. State lands comprise approximately 1 percent of the proposed critical habitat in the Bi-State area.

(1) Nevada Revised Statutes (NRS): The NRS 501.100 states "preservation, protection, management and restoration of wildlife within the State contribute immeasurably to

the aesthetic, recreational and economic aspects of these natural resources." NRS 321.5977 provides the following objectives in administering Nevada public lands: "The public lands of Nevada must be administered in such a manner as to conserve and preserve natural resources, wildlife habitat, wilderness areas, … and to permit the development of compatible public uses for recreation, agriculture, ranching, mining and timber production and the development, production and transmission of energy and other public utility services under principles of multiple use which provide the greatest benefit to the people of Nevada." Multiple use objectives do not ensure that Nevada public lands are managed for conservation of the Bi-State DPS and its habitat.

The State of Nevada Board of Wildlife Commissioners (under the authority of NRS sections 501.181, 503.090, 503.140, and 503.245) adopt regulations (i.e., seasons, bag limits, and special regulations) for the management of upland game birds, including sage-grouse. In Nevada, sage-grouse are managed as resident native game birds by the Nevada Department of Wildlife (NDOW). The game bird classification allows the direct taking of sage-grouse during hunting seasons authorized and conducted under State laws and regulations. However, sage-grouse have not been hunted in the Nevada portion of the Bi-State area since 1997.

Under NRS 501.181 3(c), the State of Nevada Board of Wildlife Commissioners also establish policies for acquisition of lands, water rights, easements, and other property for the management, propagation, protection, and restoration of wildlife. There have been no land acquisitions or easements in the Bi-State area by the State of Nevada for the Bi-State DPS or other wildlife.

(2) Nevada Executive Order (EO) 2008–19: The Governor of Nevada signed Executive Order (EO) 2008–19 on September 26, 2008, calling for the preservation and protection of sage-grouse habitat in the State of Nevada (Gibbons 2008, entire). The EO directs the NDOW to continue to work with State and Federal agencies, and the interested public to implement the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (2004), including within the Bi-State region (Gibbons 2008, p. 1). The EO also directs other State agencies to coordinate with NDOW in these efforts (Gibbons 2008, p. 1). The EO does not outline specific measures that will be undertaken to reduce threats and ensure conservation of the Bi-State DPS and its habitat in Nevada.

(3) Nevada Executive Order (EO) 2012–09: The Governor of Nevada signed EO 2012–09 on March 30, 2012, establishing a Greater Sage-Grouse Advisory Committee (Sandoval 2012a, entire). The Committee was tasked with developing recommendations on policies and actions that could form the basis for a State-wide strategy to preclude the need to list the greater sage-grouse (including the Bi-State DPS) under the Act. This Committee completed the task in July 2012 (Greater Sage-Grouse Advisory Committee 2012, entire). The Committee was solely advisory, and it is not clear how these recommendations will be adopted, mandated, or enforced. Therefore, the protection afforded to the Bi-State DPS through this effort is currently undefined.

(5) *Nevada Executive Order (EO) 2012–19:* The Governor of Nevada signed EO 2012–19 on November 19, 2012, establishing a Sagebrush Ecosystem Council (Sandoval 2012b, entire). The Council was tasked with implementing a conservation strategy for greater sage-grouse (to include the Bi-State DPS) based on the recommendations developed by the Greater Sage-Grouse Advisory Committee. On June 11, 2013, the Nevada Governor signed into State law the Nevada State Legislature Assembly Bill 486, which codified Governor Sandoval Executive Order (2012-19) establishing a Sagebrush Ecosystem Council and authorizing the Division of State Lands of the State Department of Conservation and Natural Resources to establish and carry out programs to conserve certain sagebrush ecosystems. We are encouraged by the steps taken by the State of Nevada, but currently specific detail has not been developed. Therefore, until a conservation strategy can be developed and implemented, the protection afforded to the Bi-State DPS and its habitat through this effort is undefined.

(6) *Nevada State Senate Bill 394:* In 2009, Senate Bill 394 became law in Nevada (State of Nevada 2009, entire). This law requires registration and visual identification for all Off-Highway Vehicles (OHVs) sold in Nevada after July 1, 2011. Potential benefits to the Bi-State DPS from this law include a better educated and conscientious user group, potential availability of funding to improve management and coordination of OHV use (ideally to reduce impacts to sagebrush habitat), and establishment of a mechanism by which law enforcement can identify vehicle owners in instances where State or Federal laws pertaining to OHV access or use are violated. While we recognize the potential conservation benefit gained through education and restoration of habitats impacted by OHV use, we do not currently have information supporting benefits to the Bi-State DPS and its habitat from enacting this law.

(7) *California Environmental Quality Act (CEQA):* CEQA (Public Resources Code Sections 21000–21178.1) and the regulations enacting it (California Code of Regulations 15000–15387) are important tools for protecting biological resources in California. CEQA, which is similar to the National Environmental Policy Act (NEPA), has three primary purposes: (1) Minimizing impacts on the environment by identifying impacts and then applying mitigation measures, (2) disclosing to decision makers and the public the potential impacts of a proposed action and associated mitigation measures, and (3) disclosing the rationale behind decision makers' determinations to the public. With the exception of a few exempt actions, CEQA must be followed by all State and local public agencies for discretionary projects.

Projects are defined as those actions carried out, funded, or permitted by the agencies. CEQA is affected by completing documentation appropriate for the level of impact. Documentation ranges from a Negative Declaration for low- or no-impact projects to Environmental Impact Reports for high-impact or complex projects. Review and opportunity to comment by the public and agencies (other than the action agency) is mandatory. There is no enforcement agency for CEQA compliance; its intents are realized by the good-faith efforts of the decision-making agency, or through litigation.

The California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game (CDFG)) is entitled, under certain circumstances involving noncompliance with CEQA, to replace another State or local public entity as lead agency.

The impacts of a project on biological resources are considered significant if the project has the potential to substantially reduce the habitat of fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, and/or reduce the number or restrict the range of an endangered, rare, or threatened species. Further, CEQA requires that threats to a fish or wildlife species are viewed as both those posed directly by the project and those posed cumulatively by the project and other ongoing projects. CEQA defines endangered, rare, or threatened species as those listed under the Federal and State Endangered Species Acts and also any other species that meet the definition under those Acts, even if no listing action has been taken.

Decision-making agencies may deny projects that may cause a significant impact after mitigation, or for which the proponent is unwilling to accept mitigation conditions attached to the permit. On the other hand, if after applying feasible mitigation measures a project will result in significant impacts, the decision-making agency may still approve the action by adopting a "Statement of Overriding Considerations." In this, the decision-making body must describe in writing the specific reasons (economic, legal, social, technological, or other benefits) that override the adverse environmental effects.

(8) California Fish and Game Codes (CFGC): It is the policy of the State of California to "encourage the preservation, conservation, and maintenance of wildlife resources" (CFGC Title 14, Part 1, Chapter 8, section 1801). The CFGC section 1301 states that "it is the policy of the State to acquire and restore to the highest possible level, and maintain in a state of high productivity, those areas that can be most successfully used to sustain wildlife and which will provide adequate and suitable recreation. To carry out these purposes, a single and coordinated program for the acquisition of lands and facilities suitable for recreational purposes, and adaptable for conservation, propagation, and utilization of the fish and game resources of the State, is established." This regulation allows for State land purchases and State easements with private landowners in California. Under CFGC sections 3682 and 3683, the Bi-State DPS are managed as resident native game birds by the CDFW. The game bird classification allows the direct taking of sage-grouse in California during hunting seasons authorized and conducted under State laws and regulations. The CFGC section 3684 specifically funds acquisitions and easements of upland game bird habitat in California.

Table 2: Conservation plans or other protections afforded to Bi-State DPS.

Unit	Conservation Plan/Protection Measure	Area Covered by Plan/Measure	All or Some Activities Covered?	Recommend Changes After Critical Habitat Designated?	Major Changes?
Unit 1: Pine Nut	Humboldt-Toiyabe National Forest LRMP	15% 46,321 ac (18,745 ha)	Some	Yes	No
Unit 1: Pine Nut	BLM: Carson City District Office Consolidated RMP	54% 162,878 ac (65,914 ha)	Some	Yes	No
Unit 1: Pine Nut	BLM: Bishop RMP	6% 18,937ac (7,663 ha)	All	No	No
Unit 1: Pine Nut	California Department of Fish and Wildlife: Wildlife Area	<1% <100 ac (<40 ha)	All	No	No
Unit 2: North Mono Lake	California Department of Fish and Wildlife: Wildlife Area	1.7% 14,661 ac (5,933 ha)	All	No	No
Unit 2: North Mono Lake	Humboldt-Toiyabe National Forest LRMP	54% 471,198 ac (190,683 ha)	Some	Yes	No
Unit 2: North Mono Lake	BLM: Bishop RMP	21% 185,018 ac (74,874 ha)	All	No	No
Unit 2: North Mono Lake	BLM: Carson City District Office Consolidated RMP	5% 44,142 ac (17,863 ha)	Some	Yes	No
Unit 2: North Mono Lake	LADWP Draft HCP	0.3% 2,478 ac (1,002 ha)	Some	Yes	No
Unit 3: South Mono Lake	Inyo National Forest LRMP	49% 194,882 ac (78,866 ha)	Some	Yes	No
Unit 3: South Mono Lake	BLM: Bishop RMP	37% 148,350 ac (60,035 ha)	All	No	No
Unit 3: South Mono Lake	LADWP Draft HCP	9% 35,911 ac (14,533 ha)	Some	Yes	No
Unit 4: White	Humboldt-Toiyabe	27%	Some	Yes	No

Unit	Conservation Plan/Protection Measure	Area Covered by Plan/Measure	All or Some Activities Covered?	Recommend Changes After Critical Habitat Designated?	Major Changes?
Mountains	National Forest LRMP	86,689 ac (35,082 ha)			
Unit 4: White Mountains	Inyo National Forest LRMP	40% 125,308 ac (50,710 ha)	Some	Yes	No
Unit 4: White Mountains	BLM: Bishop RMP	3% 9,385 ac (3,798 ha)	All	No	No
Unit 4: White Mountains	BLM: Tonopah Field Office RMP	21% 66,085 ac (26,743 ha)	Some	Yes	No
Unit 4: White Mountains	BLM: Carson City District Office Consolidated RMP	6% 18,524 ac (7,496 ha)	Some	Yes	No

Federal agencies and other project proponents that are likely to consult with the Service under section 7 absent the critical habitat designation

In the baseline scenario, section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of the Bi-State DPS. As stated previously, 86 percent of the acreage known to be occupied by the Bi-State DPS is on lands managed by Federal agencies. Some of the Federal agencies and activities that would likely go through the section 7 consultation process whether or not critical habitat is designated include the following:

U.S. Bureau of Land Management (BLM) – The activities on BLM lands that may lead to section 7 consultation could include: recreation management; fire and fuels management; grazing and rangeland management; wild, free-roaming horse and burro management; rights-of-way management; special uses (e.g., off-highway vehicle race), transportation system and facilities management; mineral management (i.e., locatable, fluid, saleable); habitat restoration/vegetation management; and renewable energy development (geothermal, or possibly hydropower or wind).

U.S. Forest Service (USFS) – The activities on USFS lands that may lead to section 7 consultation could include: recreation management; fire and fuels management; grazing and rangeland management; wild, free-roaming horse and burro management; rights-of-way management; special uses (e.g., U.S. Marine Corps Marine Mountain Warfare Training Center permit for military training activities on USFS lands); transportation system and facilities management; mineral management (i.e., locatable, fluid, saleable); habitat restoration/vegetation management; and renewable energy development (geothermal, or possibly wind).

U.S. Department of Defense (DOD) – The activities on DOD lands that may lead to section 7 consultation include: military mission, fire and fuels management, habitat restoration/vegetation management, transportation system and facilities management, mineral management, and water resource management.

U.S. Bureau of Indian Affairs (BIA) – BIA works with Tribal land owners who own allotted lands in the Bi-State area. BIA consults with tribes on Federal actions, policies, rules, or regulations that will directly affect them. As such, activities that may lead to section 7 consultation are likely limited to rangeland management and habitat restoration/vegetation management.

U.S. Fish and Wildlife Service (Service) – Intra-Service section 7 consultations could occur related to: issuance of section 10 permits for enhancement of survival, habitat conservation plans, and safe harbor agreements; Partners for Fish and Wildlife program projects benefiting sage-grouse and its habitat; issuance of grants to States under section 6 and the Wildlife and Sport Fish Restoration Program; and issuance of grants to Tribes under the Tribal Wildlife Grant Program.

U.S. Department of Transportation (DOT) – DOT activities that may lead to section 7 consultation include: construction of highways and bridges (Federal Highway Administration), airports (Federal Aviation Administration), pipelines (Pipelines and Hazardous Materials Safety Administration), and railroads (Federal Railroad Administration), as well as routine maintenance of associated infrastructure.

U.S. Army Corps of Engineers (ACOE) – ACOE activities that may lead to section 7 consultation include: permit issuance for bridge, stream restoration, vegetation management, water quality and quantity management, and urban development projects.

U.S. Natural Resources Conservation Service (NRCS) – NRCS activities that may lead to section 7 consultation include funding and implementation of rangeland management habitat restoration/vegetation management, agricultural developments/improvements (i.e., hay/alfalfa production), water developments, and conservation easements.

Federal Communications Commission (FCC) – FCC activities that may lead to section 7 consultation include installation and maintenance of communication facilities such as cellular phone and radio towers, as well as above ground and below ground cable and fiber optic lines or other platforms of communications.

Federal Energy Regulatory Commission (FERC) – FERC activities that may lead to section 7 consultation include installation of interstate electrical transmission lines, natural gas and oil pipelines, and power generation facilities.

Once Critical Habitat Is Designated, Will The Outcome Of Section 7 Consultations In Suitable Habitat Be Different?

Given the strong connection between sage-grouse and sagebrush habitat, maintenance and conservation of the sagebrush vegetation community is integral to affecting sage-grouse conservation. Therefore, within currently suitable habitat we do not foresee the outcome of consultation differing due to critical habitat designation.

What Types Of Project Modifications Are Currently Recommended Or Will Likely Be Recommended By The Service To Avoid Jeopardy (i.e., The Continued Existence Of The Species)?

For actions located on Federal lands or subject to consultation through a Federal action (e.g. Federal permit, authorization, or funds), a jeopardy analysis for this species would examine the magnitude of a project's impacts relevant to the population and individuals of sage-grouse across the range of the Bi-State DPS. Furthermore, the jeopardy analysis would focus on effects to the DPS's reproduction, numbers, or distribution.

To avoid jeopardy determinations, project proponents may be required, for example, to alter or site projects such that habitat impacts are avoided or minimized, conduct activities outside of crucial time-periods, and conduct habitat management actions in association with other avoidance or minimization actions (i.e., reach a "may affect, not likely to adversely affect" determination as described above).

Recommendations for designing projects that could avoid jeopardy to the Bi-State DPS may include:

(1) Implement seasonal and hourly timing restrictions to reduce disturbance during the breeding season.

(2) Modify infrastructure design features (e.g., install perch deterrents on tall structures to reduce avian predation pressure; bury power lines to reduce overhead structures that may cause sage-grouse to avoid certain areas and reduce the number of perches for predators; co-locate features to reduce additional habitat loss, which further fragments the populations).

(3) Use native seed or native plant seedlings to restore disturbed areas such that areas become suitable to sage-grouse.

(4) Minimize ground-disturbing activities in sagebrush habitat to reduce the loss and fragmentation of sage-grouse habitat, and the potential introduction or spread of invasive, nonnative plant species that may render habitat unsuitable to sage-grouse.

(5) Modify actions to reduce invasive, nonnative plant species establishment (e.g., washing vehicles, vegetation treatment methods, rangeland management), thereby maintaining suitability of habitat for sage-grouse.

(6) Modify or limit activities in certain locations to minimize disturbance to sage-grouse during critical periods (e.g., establish buffers around leks).

(7) Modify fuels treatments, livestock grazing, and rangeland prescriptions to enhance or maintain those vegetation characteristics that are important for sage-grouse breeding and brood-rearing.

(8) Minimize construction of new fence or use fence markers (or other appropriate fencing, such as let-down fencing) in areas that may pose a collision risk to sage-grouse or increase the number of perches for sage-grouse predators.

(9) Reduce impacts associated with commercial development activities (e.g., mining and renewable energy) to minimize noise, dust, vehicle speed, industrial waste, habitat loss, and other factors that may affect sage-grouse either directly through disturbance and mortality or indirectly through reduction in habitat suitability.

Recommendations for designing projects that could avoid both jeopardy to the Bi-State DPS and adverse modification of critical habitat may include:

(1) Research and monitoring should be used to evaluate the efficacy of habitat treatments and measures intended to minimize or reduce impacts from project-related effects, but should not be used to offset actions that may result in loss, fragmentation, or modification of habitat.

(2) All efforts should focus on preventing loss of Bi-State DPS habitat. However, where habitat would be lost, modified, fragmented, or otherwise degraded, it should be replaced, permanently protected, and managed within close proximity to project impacts or within the same population or subpopulation area (or critical habitat unit). All efforts should strive to acquire, protect, restore, and manage compensation habitat prior to project initiation. Given these uncertainties and the available data, specific analyses should be conducted on a project-by-project basis to determine the amount of compensation habitat required to approach no net loss. For instance, a relatively high compensation ratio may be needed if: (a) The affected habitat has a higher than average population density, (b) the habitat has had long-term presence of the species, (c) the habitat contains a large population, or (d) compensation lands are not near the affected habitat.

(3) Permanent habitat loss, modification, or fragmentation resulting from agency actions should be offset with habitat that is permanently protected, including adequate funding to ensure the habitat is managed permanently to provide a benefit to the Bi-State DPS.

(4) Protection of off-site lands to mitigate habitat loss, modification, or fragmentation should not include lands already under some form of protection (e.g., guidance, land use decisions, or other regulatory mechanisms).

(5) Areas slated for protection as a means of offsetting impacts to other lands should be identified using existing documents that have evaluated habitat conservation priorities rangewide. These areas should be conserved based on their relative value to the Bi-State DPS.

(6) Suitable habitat should be considered occupied year-round for long-term project-related effects that degrade habitat quality.

ADVERSE MODIFICATION ANALYSIS

Explain Additional Recommendations The Service Will Make When Considering Both Jeopardy And Adverse Modification.

Given the strong connection between sage-grouse and sagebrush habitat, maintenance and conservation of the sagebrush vegetation community is integral to affecting sage-grouse conservation. Therefore, within currently suitable habitat we do not foresee the outcome of consultation differing due to critical habitat designation.

What Federal Agencies Or Project Proponents Are Likely To Consult With The Service Under Section 7 With Designation Of Critical Habitat? What Kinds Of Additional Activities Are Likely To Undergo Consultation With Critical Habitat?

The same Federal agencies listed above under the baseline analysis are also anticipated to be the primary agencies that would consult with the Service under section 7 actions within Bi-State DPS designated critical habitat. All four proposed critical habitat units for the Bi-State DPS are occupied by sage-grouse and approximately 75 percent of the total proposed critical habitat designation is considered utilized or suitable sage-grouse habitat; therefore, the majority of activities likely to undergo consultation as a result of critical habitat are also likely to require consultation as a result of adverse effects to the DPS. Negative modifications to the PCEs are closely tied to adverse effects to the DPS, so that activities that would require consultation for currently suitable critical habitat would generally be no different than activities that currently require jeopardy consultation for the species. There may be some Federal activities that have potential to impact the DPS but not critical habitat. An example is Federal authorization for the construction of an industrial facility outside of critical habitat but that would impede sage-grouse mating displays through high noise volume. In contrast, we note that currently unsuitable areas within the proposed critical habitat or areas that are utilized seasonally (e.g., meadows) would not necessarily undergo consultation (depending on the nature of the action) if not for the critical habitat designation. Portions of currently unsuitable habitat may include woodland encroached sites that could provide connectivity between populations once special management considerations are implemented. It is likely that Federal agencies would not consider the need for section 7 consultation in those areas if not for a critical habitat designation.

Provide Examples Representing Typical Recommendations Applicable Across A Broad Suite Of Projects. Where Significant Uncertainty Exists, Provide Ranges Of Potential Outcomes.

Typical recommendations intended to avoid adverse modification of critical habitat are likely to be similar to those intended to avoid jeopardy. Specifically, these recommendations would include those that minimize habitat loss or fragmentation, or effects to vegetation characteristics determined to be important for breeding, brood-rearing, and wintering habitats (i.e., percent of sagebrush, non-sagebrush, and total canopy cover; sagebrush height; forb, and perennial and annual grass cover; perennial forb diversity; grass and forb height; meadow edges; species richness). These recommendations are described above under the baseline analysis.

What Types Of Project Modifications Might The Service Make During A Section 7 Consultation To Avoid Destruction Or Adverse Modification Of Critical Habitat That Are Different Than Those For Avoiding Jeopardy?

Our proposed critical habitat designation for sage-grouse consists of areas known to contain the physical and biological features that may require special management for the Bi-State DPS. All of the critical habitat units being proposed for designation are occupied by the Bi-State DPS, although the DPS is not uniformly distributed within each unit (i.e., sage-grouse are not evenly distributed throughout the area where the physical and biological features exist). As a result, in most cases, activities occurring within designated critical habitat with a potential to affect the DPS's habitat are also likely to adversely affect the DPS, either directly or indirectly.

Under limited circumstances, it may be possible to differentiate between project modifications recommended to minimize impacts to individuals (and therefore avoid jeopardy), and measures intended to minimize impacts to the physical and biological features so as to avoid adverse modification of critical habitat. These instances would primarily involve project-related activities where disturbance or displacement of sage-grouse may occur but habitat impacts are not realized or activities that may impact the physical and biological features within the critical habitat unit boundary where sage-grouse are not present due to vegetation condition (e.g., woodland encroached sites. In this latter instance, recommendations to avoid adverse modification are likely to be similar to those previously described to avoid jeopardy and would likely include: 1) Minimizing ground disturbance to prevent loss or resiliency of the remaining sagebrush vegetation community such as during woodland treatment projects; 2) Minimizing physical or impact footprint of an action to retain the greatest opportunity the area could be restored to functioning habitat given special management considerations (e.g., commercial development in a potential corridor between populations that currently is unsuitable for occupation); 3) Project modifications that reduce the potential impact to future site function (e.g., minimizing surface water loss, minimizing predator subsidies).

If The Area Is Only Seasonally Or Sporadically utilized Would The Outcome Of The Consultation Be The Same If it were consistently utilized?

The outcome of section 7 consultation could potentially differ depending on degree of site utilization in the Bi-State area. Sage-grouse utilize different habitat types or conditions

seasonally to successfully complete their annual life cycle. While the amount of each seasonal habitat type necessary to maintain the same population of sage-grouse may differ between seasons, each piece is needed to maintain the population. For example, the amount of wintering habitat may be limiting growth in a population. Thus, some loss of nesting or brood-rearing habitat may not affect population growth because wintering habitat remains the limiting factor. However, each seasonal habitat is important to population maintenance. Thus, complete loss of nesting or brood-rearing habitat, or loss to a degree that results in either of these seasonal habitats becoming the limiting factor to population growth, would be the same as loss of occupied habitat. Therefore, simply because a location is only used seasonally does not imply that it is unimportant with respect to sage-grouse ecology. As with seasonally utilized habitat, there is potential that section 7 consultation outcomes could differ between sporadically used sites and consistently used sites in the Bi-State area. There could be instances when sporadic use represents a random occurrence and loss of the location would have negligible impact on DPS. However, there could be sporadically used areas within the range of the Bi-State DPS that represent important habitat but which are used irregularly. For example, during severe winters, locations not typically used may be important for overwinter survival. More to the point, there may be locations that currently do not function as suitable habitat due to changes in vegetation condition (woodland encroached areas) but still represent sites that may act as corridors to connect populations. While we have significant concern in maintaining connectivity among populations in the Bi-State DPS, there will likely be greater latitude in potential project modifications on actions occurring in these woodland encroached sites as compared to actions occurring in fully functional utilized habitat.

What Project Proponents Are Likely To Pursue HCPs Under Section 10 After The Designation Of Critical Habitat?

When a non-Federal entity voluntarily seeks coverage under the ESA, it is for incidental take of the species only. The internal Service section 7 consultation on the issuance of the HCP/incidental take permit addresses the potential for adverse modification of critical habitat within the HCP area.

Because the listing of the Bi-State DPS will be concurrent with this designation of critical habitat, there may be interest from county governments in pursuing HCPs. Based on the degree of overlap with the Bi-State DPS, we assume this interest will mostly likely come from Mono County California and possibly from Lyon, Douglas, and Mineral Counties, Nevada. However, if interest is realized we believe these HCPs will be prompted primarily by the listing action and not the critical habitat designation.

Does The Designation Include Unoccupied Habitat That Was Not Previously Subject To The Requirements Of Section 7?

No. We consider all of the proposed critical habitat units occupied by sage-grouse. Although there may be specific locations contained within units that are currently unsuitable due to current vegetation condition (i.e., woodland encroached sites) we still consider these areas occupied for the purpose of the designation.

Provide Information About The Likelihood That Project Proponents Would Have Known About The Potential Presence Of The DPS Absent Critical Habitat

The Bi-State DPS is considered relatively high profile within Nevada and California due to the pending listing decision by the Service. While some uncertainty remains, land managers in the Bi-State area have a relatively robust understanding of sage-grouse distribution and locations of occurrence within the Bi-State area. Thus, it is unlikely a project proponent would be unaware of the potential presence of the DPS. However, of the 1,881,414 ac identified in our proposed critical habitat designation approximately 22 percent (422,399 ac) is not currently considered suitable sage-grouse habitat and of this approximately 6 percent is privately owned. Therefore, there are likely locations contained within our critical habitat designation, specifically on privately owned lands, where project proponents would be unaware of the presence of the DPS absent critical habitat.

Describe Typical Project Modifications The Service Will Recommend When Considering Adverse Modification. Provide Examples Representing Typical Recommendations Applicable Across A Broad Suite Of Projects. Where Significant Uncertainty Exists, Provide Ranges Of Potential Outcomes.

Because persistence of the Bi-State DPS is closely tied to the quality of its habitat, significant alteration of its habitat may result in jeopardy as well as adverse modification. Therefore, we anticipate that section 7 consultation analyses will result in no differences between recommendations to avoid jeopardy or adverse modification in areas of critical habitat currently suitable to sage-grouse. However, we note that in portions of critical habitat that are currently unsuitable (see discussions above regarding woodland encroached locations) recommendations may vary but will still be similar. In these instances there will likely be greater latitude afforded to the degree of our concern surrounding specific actions. Namely, actions that may harm or harass sage-grouse due to the timing of an activity would not be a concern and only alterations to habitat characteristics would be evaluated.

If we determine that an adverse modification finding may be likely, we would recommend changes to the proposed action or may need to identify reasonable and prudent alternatives to eliminate or reduce the impacts. These measures or alternatives may modify the development project such that: (1) less land disturbance would occur within critical habitat; (2) the proposed action would be redesigned to avoid specific areas important to the species; (3) the proposed action would incorporate "best management practices" to protect habitat; and (4) the proposed action would include conservation measures to enhance and protect habitat within the critical habitat unit. These alternatives may have economic consequences to the local community.

We expect that for a proposed action to result in adverse modification (in other words substantially reduce the conservation value of critical habitat to reach recovery goals), it would likely have to dramatically alter a significant proportion of the Bi-State DPS habitat by changing the physical and biological features and, thus, the PCEs. Following are potential project modifications that might be sought to avoid adverse modification, which are not mutually exclusive to potential project modifications that might be recommended during a jeopardy analysis for the species:

- Modify grazing operations through fencing, reconfiguration of grazing units, off-site water development, and seasons of use.

- Modify OHV management through fencing, signage, education, areas, and timing of use.

- Improve the development of native riparian vegetation through reducing land and water management stressors.

- Modify infrastructure design features (e.g., bury power lines to reduce overhead structures that may cause sage-grouse to avoid certain areas; co-locate features to reduce additional habitat loss, and avoid further fragments of the habitat).

- Use native seed or native plant seedlings to restore disturbed areas such that areas become suitable to sage-grouse.

- Minimize ground-disturbing activities in sagebrush habitat to reduce the loss and fragmentation of sage-grouse habitat, and the potential introduction or spread of invasive, nonnative plant species that may render habitat unsuitable to sage-grouse.

- Modify actions to reduce invasive, nonnative plant species establishment (e.g., washing vehicles, vegetation treatment methods, rangeland management), thereby maintaining suitability of habitat for sage-grouse.

- Modify fuels treatments, livestock grazing, and rangeland prescriptions to enhance or maintain those vegetation characteristics that are important for sage-grouse breeding and brood-rearing.

- Minimize construction of new fence or other infrastructure to minimize habitat loss and fragmentation due to behavioral avoidance of otherwise suitable sage-grouse habitat.

- Reduce impacts associated with commercial development activities (e.g., mining and renewable energy) to minimize dust, industrial waste, habitat loss, and other factors that may affect sage-grouse reduction in habitat suitability.

BEHAVIOR CHANGES

Will the designation provide new information to stakeholders resulting in different behavior?

Describe Actions Taken By Stakeholders As A Result Of Critical Habitat.

With the exception of Federal agencies and project proponents seeking permits to conduct activities on federally-managed lands, we generally do not anticipate considerable changes in behavior from stakeholders as a result of the Bi-State DPS critical habitat designation. Stakeholders, including non-Federal landowners, may perceive the designation of critical habitat on non-Federal lands as an added regulatory burden; however, there are no statutory requirements for section 7 consultations for actions undertaken on non-Federal lands without a Federal nexus.

Describe How Local Agencies Might Change Project Requirements.

Although the critical habitat designation may prompt local agencies to increase scrutiny of development or other activities within critical habitat units, we regard these behavioral changes as unlikely. We are aware of no provisions in local statutes, or local policies or guidelines that would require or encourage such agencies to change project requirements as a result of critical habitat for the Bi-State DPS.

How Many New Consultations May Result From The Critical Habitat Alone?

Currently, approximately 75 percent of the lands in the proposed designation are considered in suitable, and approximately 25 percent of the lands in the proposed designation are considered in less than suitable or currently unsuitable condition due to the current vegetation condition. The unsuitable habitat areas can be rehabilitated back to suitable condition following implementation of special management considerations. In these latter locations, we anticipate some additional consultations as a result of the critical habitat designation alone. We consider the increase in consultations resulting solely from critical habitat designation will be less than 25 percent as project proponents conducting activities within locations where some unsuitable conditions currently exists may have an indirect impact on the DPS (e.g., due to noise or other forms of human activity) and would likely consult with the Service under section 7 of the ESA due to potential DPS impacts because of the proximity of individual sage-grouse.

How Many New HCPs May Be Undertaken Or Reinitiated As A Result Of The Critical Habitat Designation Alone?

As stated previously, interest in HCPs will likely be limited to County governments. However, there may also be limited additional interest from mineral developers and livestock producers. Currently, one HCP is in development with the LADWP. We are currently unaware of specific additional HCP interest in the near future, although we assume some local governments may inquire and even pursue this avenue. However, we consider any additional interest in developing HCPs will likely be prompted primarily by the listing action and not the critical habitat designation.

Will There Be Changes In Permitting Processes By Other State Or Local Agencies Or Other Land Managers?

We are unaware of any potential changes to permitting processes by State or local agencies that will occur due to this proposed critical habitat designation. Due to Federal agencies' section 7

responsibilities, additional administrative effort will occur on projects that have a Federal nexus. As described above, we anticipate requests for consultation will be most influenced by the presence of the Bi-State DPS and not by the designation of critical habitat. However, there will be additional effort expended on consultation due to the addition of an adverse modification analysis.

ADMINISTRATIVE EFFORTS

How Much Administrative Effort Does Or Will The Service Expend To Address Adverse Modification In Its Section 7 Consultations With Critical Habitat? Estimate The Difference Compared To Baseline.

Because the Bi-State DPS is not listed as threatened or endangered, there is no baseline comparison to estimate the difference in consultations with and without critical habitat. In consultations for projects where impacts would occur to sage-grouse, we would likely conduct a coincidental analysis of the impacts to critical habitat for the same action. Therefore, there may be additional administrative effort to conduct an adverse modification analysis, but the effort would be minimal. In those instances when projects would adversely affect the physical and biological features but not the sage-grouse, there may be additional workload.

PROBABLE PROJECTS

Based on responses received from our federal partners, we have identified projects that will require some level of consultation (informal, formal) with the Service in the next few years as either new consultations or re-initiations if the listing and critical habitat designation for the Bi-State DPS were to take effect (Table 3).

Table 3: Ongoing and potential future actions in the Bi-State DPS that will likely require Section 7 consultation over the next five years.

Agency	Critical habitat Unit	Action	Consultation type
Humboldt-Toiyabe National Forest	Unit 2	China Camp PJ removal & meadow restoration	Re-initiation
Humboldt-Toiyabe National Forest	Unit 2	Long Doctor PJ removal	Re-initiation
Humboldt-Toiyabe National Forest	Unit 2	Sweetwater PJ removal	Re-initiation
Humboldt-Toiyabe National Forest	Unit 2	Rosaschi Ranch habitat improvement	Re-initiation
Humboldt-Toiyabe National Forest	Unit 2	East Walker Landscape Improvement Project PJ removal	New

Humboldt-Toiyabe National Forest	Unit 2	Wheeler Creek stream and meadow restoration	New
Humboldt-Toiyabe National Forest	Unit 2	Spring Peak Fire restoration	New
Humboldt-Toiyabe National Forest	Units 1, 2, 4	LRMP Amendment	New
Humboldt-Toiyabe National Forest	Unit 1, 2, 4	Grazing permit renewal on approximately 14 allotments over next few years	New and Re-initiation
Humboldt-Toiyabe National Forest	Unit 2	Powell Mountain Wild Horse Territory Planning	New
Humboldt-Toiyabe National Forest	Unit 2	Marine Corps Mountain Warfare training Center Special Use Permit	New
Humboldt-Toiyabe National Forest	Unit 2	Sierra Train Dog Special Use Permit	New
Humboldt-Toiyabe National Forest	Unit 2	ATV Jamboree Special Use Permit	New
Humboldt-Toiyabe National Forest	Unit 2	PMMR Clay Mine	New
Humboldt-Toiyabe National Forest	Unit 2	Lucky Boy Silica Mine	New
Humboldt-Toiyabe National Forest	Unit 2	Little Antelope Pack Station Special Use Permit	Re-initiation
Inyo National Forest	Unit 3	Sagehen Summit Habitat Improvement Project	New
Inyo National Forest	Unit 3, 4	Grazing Permit Renewal: 22 Allotments	Re-initiation
Inyo National Forest	Unit 4	Montgomery Pass and White Mountain Wild Horse Territory Planning	Re-initiation

Inyo National Forest	Unit 3	June Lake Fules Reduction Project	Re-initiation
Inyo National Forest	Unit 3	Recreation management-dispersed camping	Re-initiation
Inyo National Forest	Unit 3, 4	Travel Management Planning	Re-initiation
Inyo National Forest	Unit 3	Casa Diablo Geothermal Energy Project	Re-initiation
Inyo National Forest	Unit 3	Glass Mountain Habitat Improvement Project	New
NRCS	Units 1, 2, 3, 4	Converting Sage Grouse Initiative Conference Report to Conference/Biological Opinion	New
Sierra Front Field Office BLM	Unit 1	Weed abatement	Re-initiation
Sierra Front Field Office BLM	Unit 1, 2	OHV Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	High Desert Horse Endurance Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	OHV Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	NASTR Dayton Horse Endurance Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	Pinenut cracker bike race Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	VORRA OHV Special Use Permit	Re-initiation
Sierra Front Field Office BLM	Unit 1	Transmission Line ROW maintenance	Re-initiation
Sierra Front Field Office BLM	Unit 1	Brunswick Canyon Road Land Use Permit	Re-initiation
Sierra Front Field	Unit 1	Mineral Exploration	New

Office BLM		Notice of Intent – Everdeen Elements	
Sierra Front Field Office BLM	Unit 1	Mineral Exploration Notice of Intent - Bridgeport	New
Sierra Front Field Office BLM	Unit 1	Mineral Exploration Notice of Intent – Willow Creek	New
Sierra Front Field Office BLM	Unit 1	Bison Fire Restoration	New
Sierra Front Field Office BLM	Unit 1	Eastern Sierra jamboree OHV Special Use Permit	New
Sierra Front Field Office BLM	Unit 1	Pinenut Express Horse Endurance Ride Special Use Permit	New
Sierra Front Field Office BLM	Unit 1	Pine Nut Land Health Improvement project	New
Sierra Front Field Office BLM	Unit 1	Grazing Permit Renewal: 2 Allotments	New
Stillwater Field Office BLM	Unit 2	ROW maintenance: 14 communication sites and transmission corridors	Re-initiation
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Gryphon Gold Co.	New
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – World Ventures Inc.	New
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Quaterra Alaska	New
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Ronald Schumacher	New
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Altran Rio US Inc.	New

Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Nevada Copper Inc.	New
Stillwater Field Office BLM	Unit 2	Mineral Exploration Notice of Intent – Mike Powell	New
Stillwater Field Office BLM	Unit 2	Grazing Permit Renewal: 3 Allotments	New
Tonopah Field Office BLM	Unit 4	Grazing Permit Renewal: None currently proposed	New
Tonopah Field Office BLM	Unit 4	Wild Horse and Burro Management	New
Bishop Field Office BLM	Unit 2	Fire Restoration: Potato Fire	Re-initiation
Bishop Field Office BLM	Unit 2	Fire Restoration: Spring Peak Fire	New
Bishop Field Office BLM	Unit 2	Fire Restoration: Indian Fire	Re-initiation
Bishop Field Office BLM	Unit 2, 3	Recreation Management	New
Bishop Field Office BLM	Unit 2, 3	Nevada Event Promotion OHV Special Use Permit	Re-initiation
Bishop Field Office BLM	Unit 2	Eastern Sierra ATV Jamboree Special Use Permit	Re-initiation
Bishop Field Office BLM	Unit 2, 3	Ultimate Moto Adventure OHV Special Use Permit	Re-initiation
Bishop Field Office BLM	Unit 3	Bishop Dual Sport OHV Special Use Permit	Re-initiation
Bishop Field Office BLM	Unit 2	Friends of the Inyo guided hike Special Use Permit	Re-initiation
Bishop Field Office BLM	Unit 2	Mammoth Lake Pack Outfitter Special Use Permit	Re-initiation

Bishop Field Office BLM	Unit 3	Rock Creek Pack Station Guided horseback tours	Re-initiation
Bishop Field Office BLM	Unit 2, 3	ROW Maintenance: 170 existing ROW: 5-7 maintenance activities approved annually	Re-initiation
Bishop Field Office BLM	Unit 2, 3	New ROW: 3-5 annually	New
Bishop Field Office BLM	Unit 2, 3	Film Permits: 3-5 annually	New
Bishop Field Office BLM	Unit 2, 3	Minerals management: ~ 2 Notice of Intents processed annually	New
Bishop Field Office BLM	Unit 2, 3	Grazing Management: ~21 Allotments contained in the area, 3 to 5 permit renewals scheduled over next 3 years	New and Re-initiation
Bishop Field Office BLM	Unit 2, 3	Habitat improvement projects: 3-8 projects completed annually	New
Bishop Field Office BLM	Unit 3	Road removal	New
Bishop Field Office BLM	Unit 3	Shooting area and road removal	New
Bishop Field Office BLM	Unit 3	Fuels Management	New
Bishop Field Office BLM	Unit 3	SCE Powerline Removal	New
Bishop Field Office BLM	Unit 2, 3	Potential ROW: 5 small communication and road right of ways possible in next few years	New
Bishop Field Office BLM	Unit 2	Bodie Hills Upland Vegetation	New

		Restoration Project	

LAND USE SECTORS

As mentioned in the Background section above, proposed critical habitat includes lands under Tribal (2 percent), Federal (86 percent), State (1 percent), County/City (2 percent), private (9 percent) land ownership. Within this area, the types of projects that proponents may seek a Federal permit for include: construction, operation, or maintenance of development projects of other infrastructure; fire suppression or fuel-reduction treatments; invasive, nonnative plant species treatments or other types of vegetation management activity; road closures; livestock grazing; irrigated pasture management; exploration or extraction of renewable or nonrenewable energy resources or other minerals; and large-scale recreational use of public lands.

CONSULTATION HISTORY

No section 7 consultations have occurred for the Bi-State DPS because the DPS is not listed under the ESA. These critical habitat maps represent the first maps of this DPS's distribution widely published by the Service.

CONCLUSION

We expect incremental costs due to designation of critical habitat for the Bi-State DPS as a result of: (1) Increased administrative costs of completing consultations for new projects in critical habitat units; and (2) possible project modifications to avoid adverse modification of critical habitat in areas where a significant alteration of habitat is proposed (i.e., woodland encroached areas that can improve connectivity between populations once special management considerations have been implemented).

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