

**Economic Analysis of Critical Habitat Designation for
Bear Valley Sandwort, Ash-Gray Indian Paintbrush, and
Southern Mountain Wild-Buckwheat
(Pebble Plains Plants)**

San Bernardino County, California

Draft
July 26, 2007

Prepared for:
U.S. Fish and Wildlife Service
4401 North Fairfax Drive
Arlington, VA 22203

Prepared by:
Berkeley Economic Consulting
2550 Ninth St. Suite 102
Berkeley, CA 94710

Table of Contents

Executive Summary	ES-1
Key Findings	ES-2
Chapter 1: Introduction and Framework	1
1.1 Background	2
1.1.1 Regulatory History	2
1.1.2 Description of Proposed Critical Habitat and Landownership	2
1.2 Regulatory Alternatives	3
1.3 Threats	3
1.4 Approach to Estimating Economic Impacts	5
1.4.1 Efficiency Effects	5
1.4.2 Distributional and Regional Economic Impacts	6
1.4.3 Calculating Present Value and Annualized Impacts	6
1.5 Scope of the Analysis	7
1.5.1 Sections of the Act Relevant to the Analysis	8
1.5.2 Other Relevant Protection Efforts	9
1.5.3 Additional Analytic Considerations	9
1.5.3.1 Time Delay and Regulatory Uncertainty Impacts	9
1.5.3.2 Stigma Impacts	10
1.5.4 Geographic Scope of the Analysis	10
1.5.5 Time Frame of the Analysis	10
1.5.6 Benefits	10
1.6 Information Sources	11
1.7 Sources of Uncertainty	12
1.8 Structure of the Report	12
Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities	13
2.1 United States Forest Service	13
2.2 Private Landowners	14
2.3 Other Landowners: California Department of Fish and Game, the Wildlands Conservancy, and Boy Scouts of America	15
Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management	17
3.1 United States Forest Service	17
3.2 Other Landowners: California Department of Fish and Game, the Wildlands Conservancy, Boy Scouts of America, and Private Entities	18
Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management	21
4.1 United States Forest Service	22
4.2 Private Landowners	22
Appendix A: Economic Impacts on Small Businesses and Energy Production	A-1
A.1 SBREFA Analysis	A-1
A.2: Potential Impacts to the Energy Industry	A-3
Appendix B: Past Economic Impacts	B-1

List of Figures

Figure ES-1: Proposed Critical Habitat Units for Pebble Plains Plants
Figure ES-2: Proposed Critical Habitat Unit 1
Figure ES-3: Proposed Critical Habitat Unit 2
Figure ES-4: Proposed Critical Habitat Unit 3
Figure ES-5: Proposed Critical Habitat Unit 4
Figure ES-6: Proposed Critical Habitat Unit 5
Figure ES-7: Proposed Critical Habitat Unit 6
Figure ES-8: Proposed Critical Habitat Unit 7
Figure ES-9: Proposed Critical Habitat Unit 8
Figure ES-10: Proposed Critical Habitat Unit 9
Figure ES-11: Proposed Critical Habitat Unit 10
Figure ES-12: Proposed Critical Habitat Unit 11

List of Tables

Table ES-1: Summary of Estimated Economic Impacts, Activity Ranking
Table ES-2: Summary of Estimated Economic Impacts, Landowner Ranking
Table ES-3: Summary of Estimated Economic Impacts, Unit Ranking
Table 1: Landownership in PCH by Type
Table 2: Landownership in PCH for Pebble Plains Plants
Table 3: Threats in PCH for Pebble Plains Plants
Table 4: Impacts of Unauthorized Off-Road Vehicle Management
Table 5: Impacts of Invasive, Nonnative Plant Species Management
Table 6: Impacts of Dispersed Recreation Management
Table A-1: Identification of Small Entities
Table A-2: Potentially Affected Small Entity
Table B-1: Summary of Estimated Past Economic Impacts

Executive Summary

The purpose of this report is to identify and analyze the potential economic impacts associated with the proposed critical habitat designation for the Bear Valley sandwort (*Arenaria ursina*), ash-gray Indian paintbrush (*Castilleja cinerea*), and the southern mountain wild-buckwheat (*Eriogonum kennedyi* var. *austromontanum*), referred to as the Pebble Plains Plants, or PPP. This report was prepared by Berkeley Economic Consulting under contract with the U.S. Fish and Wildlife Service (the Service).

The Service identified 1,511.2 acres in San Bernardino County as proposed critical habitat for the PPP.^{1,2} The proposed critical habitat is divided into eleven units, most of which are further divided into subunits. The landscape is characterized by treeless openings surrounded by woodland or coniferous forest. Figures ES-1 through ES-12 show the areas of proposed critical habitat and current landowners or managers. As shown in the figures, the U.S. Forest Service manages the majority of the proposed critical habitat (1,395.2 acres). Other landowners or managers include: California Department of Fish and Game (4 acres), Boy Scouts of America (6 acres), the Wildlands Conservancy (71 acres), and other private landowners (35 acres).³

The analysis quantifies economic impacts of PPP conservation efforts on each affected entity – typically landowners or managers – associated with the following: (1) vehicle use off of designated routes; (2) the presence of nonnative plant species; and (3) dispersed recreation activities.⁴

The consultation history for all three plant species is limited to three biological opinions issued by the Service for the implementation of the 2002 Pebble Plains Habitat Management Guide and the San Bernardino National Forest Land and Resource Management Plan. As a result, the information in this analysis is based on those consultations, the 2002 Pebble Plains Habitat Management Guide, and conversations with local land managers and the Service.

¹ Fish and Wildlife Service, “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Arenaria ursina* (Bear Valley sandwort), *Castilleja cinerea* (ash grey Indian paintbrush), and *Eriogonum kennedyi* var. *austromontanum* (southern mountain wild-buckwheat); Proposed Rules,” Federal Register, v 71, November 22 2006, p 67720-67721 (71 FR 67720-21).

² Note that total acreage (1511.2 acres) is not rounded in this analysis to 1,511 as it is in the proposed rule because rounding would omit all of subunit 5c (0.2 acres) from the total.

³ 71 FR 67721, Table 3 of proposed rule.

⁴ These activities were identified in the proposed rule as threats to the species that may require special management, 71 FR 67719-25.

The Key Findings highlighted below and Tables ES-1, ES-2, and ES-3 summarize the quantitative results of the analysis.⁵ The relative magnitudes of impacts to each type of affected activity are shown in Table ES-1. Table ES-2 presents the economic impacts on each affected entity, while Table ES-3 presents the estimated economic impacts associated with each proposed critical habitat (PCH) subunit. Past costs can be found in Appendix B.

Key Findings

Total Future Impacts: The draft economic analysis forecasts future costs associated with conservation efforts for the Pebble Plains Plants in the areas proposed for designation to be approximately \$1.95 million (undiscounted) over the next 20 years. The present value of these impacts, applying a three percent discount rate, is \$1.45 million (\$0.10 million annualized); or \$1.03 million, using a discount rate of seven percent (\$0.10 million annualized).

Estimated Impacts: The costs to the landowners associated with the highest future efforts to conserve the PPP within the area of proposed critical habitat are summarized below.

US Forest Service (USFS): The USFS will continue its current efforts to control unauthorized, off-road vehicles and dispersed recreation, according to the management requirements in the 2002 Pebble Plains Management Guide and the 2001 Biological Opinion. In addition, the Service has recommended that the USFS monitor for the spread of invasive, nonnative plant species and, if found necessary as a result of monitoring, conduct an invasives removal effort. In total, impacts to the USFS are estimated to be \$1.8 million over the next 20 years in undiscounted dollars.

The Wildlands Conservancy (TWC): Economic impacts to TWC of voluntarily controlling unauthorized off-road vehicles and invasive, non-native plant species are estimated based on the cost per acre to the USFS of conducting these management actions. Impacts to TWC in undiscounted dollars are estimated to be \$0.09 million over 20 years.

Private Entities: Private landowners may voluntarily control the activities that were identified as threats to the PPP within proposed critical habitat units 8a and 8b. Economic impacts to private entities are based on the cost per acre to the USFS of conducting these management actions. Impacts to private entities over the next 20 years are estimated to be \$0.05 million in undiscounted dollars.

⁵ Annualized impacts at 3% and 7% discount rates differ slightly due to rounding only.

Table ES-1: Summary of Estimated Economic Impacts						
Activity Ranking						
		Future Costs: 2007-2026				
Activity	PCH Units	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
Invasive Plants	All	\$1,516,399	\$1,128,009	\$803,238	\$75,820	\$75,820
Off-Road Vehicles	All	\$400,763	\$298,117	\$212,284	\$20,038	\$20,038
Dispersed Recreation	All except 3a & 3b	\$30,968	\$23,036	\$16,404	\$1,548	\$1,548
Total:		\$1,948,129	\$1,449,162	\$1,031,925	\$97,407	\$97,406
Notes:						
(1) Undiscounted value is calculated using 2007 dollar values. For the present value calculation, 2007 dollar values are used as the base year.						
(2) Guidance provided by the Office of Management and Budget (OMB) specifies the use of a real discount 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).						

Table ES-2: Summary of Estimated Economic Impacts						
Landowner Ranking						
		Future Costs: 2007-2026				
Landowner	PCH Units	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$1,800,000	\$1,338,973	\$953,461	\$90,000	\$90,000
TWC	3b	\$90,073	\$67,003	\$47,712	\$4,504	\$4,504
Private	8a, 8b	\$45,155	\$33,589	\$23,919	\$2,258	\$2,258
BSA	6a	\$7,741	\$5,758	\$4,100	\$387	\$387
CDFG	7b	\$5,161	\$3,839	\$2,734	\$258	\$258
Total:		\$1,948,129	\$1,449,162	\$1,031,925	\$97,407	\$97,406
Notes:						
(1) USFS=United States Forest Service, TWC=The Wildlands Conservancy, Private=other private entities, BSA=the Boy Scouts of America, CDFG=California Department of Fish and Game						
(2) Guidance provided by the OMB specifies the use of a real discount 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).						

Table ES-3: Summary of Estimated Economic Impacts						
Unit Ranking						
		Future Costs: 2007-2026				
PCH Units	Acres	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
3b	326	\$419,058	\$311,726	\$221,975	\$20,953	\$20,953
7a	320	\$412,844	\$307,104	\$218,684	\$20,642	\$20,642
1b	229	\$295,442	\$219,771	\$156,496	\$14,772	\$14,772
11a	127	\$163,847	\$121,882	\$86,790	\$8,192	\$8,192
1a	69	\$89,019	\$66,219	\$47,154	\$4,451	\$4,451
5a	62	\$79,989	\$59,501	\$42,370	\$3,999	\$3,999
3a	58	\$74,828	\$55,663	\$39,636	\$3,741	\$3,741
8a	45	\$58,056	\$43,186	\$30,752	\$2,903	\$2,903
6b	44	\$56,766	\$42,227	\$30,069	\$2,838	\$2,838
5b	43	\$55,476	\$41,267	\$29,386	\$2,774	\$2,774
11b	34	\$43,865	\$32,630	\$23,235	\$2,193	\$2,193
6a	28	\$36,124	\$26,872	\$19,135	\$1,806	\$1,806
9	26	\$33,544	\$24,952	\$17,768	\$1,677	\$1,677
4b	24	\$30,963	\$23,033	\$16,401	\$1,548	\$1,548
10	23	\$29,673	\$22,073	\$15,718	\$1,484	\$1,484
2a	21	\$27,093	\$20,154	\$14,351	\$1,355	\$1,355
4a	15	\$19,352	\$14,395	\$10,251	\$968	\$968
2b	6	\$7,741	\$5,758	\$4,100	\$387	\$387
8b	5	\$6,451	\$4,798	\$3,417	\$323	\$323
7b	4	\$5,161	\$3,839	\$2,734	\$258	\$258
4c	2	\$2,580	\$1,919	\$1,367	\$129	\$129
5c	0.2	\$258	\$192	\$137	\$13	\$13
Total:		\$1,948,129	\$1,449,162	\$1,031,925	\$97,407	\$97,406
Notes:						
(1) Guidance provided by the OMB specifies the use of a real discount 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).						

Figure ES-1: Proposed Critical Habitat Units for Pebble Plains Plants

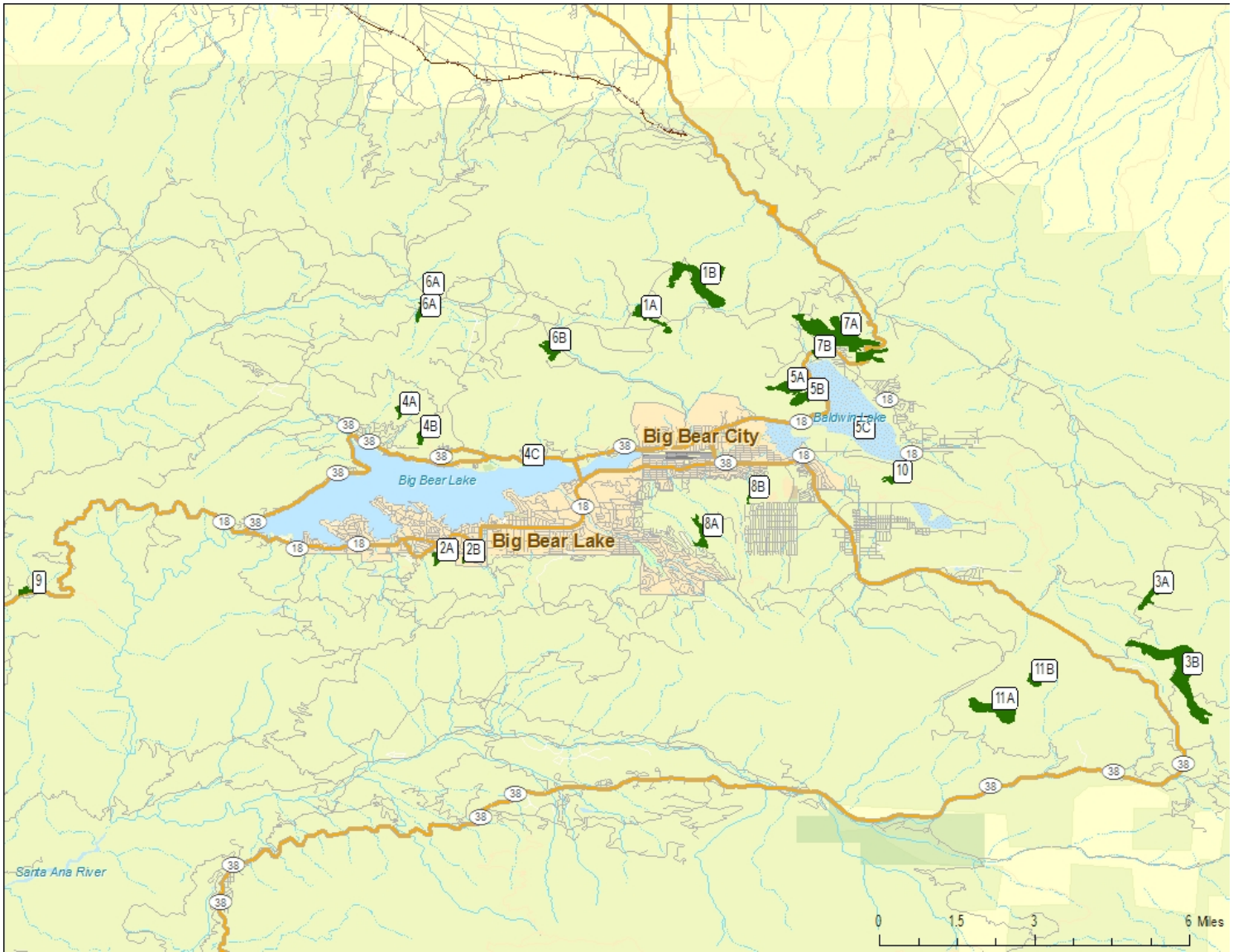


Figure ES-2: Proposed Critical Habitat Unit 1

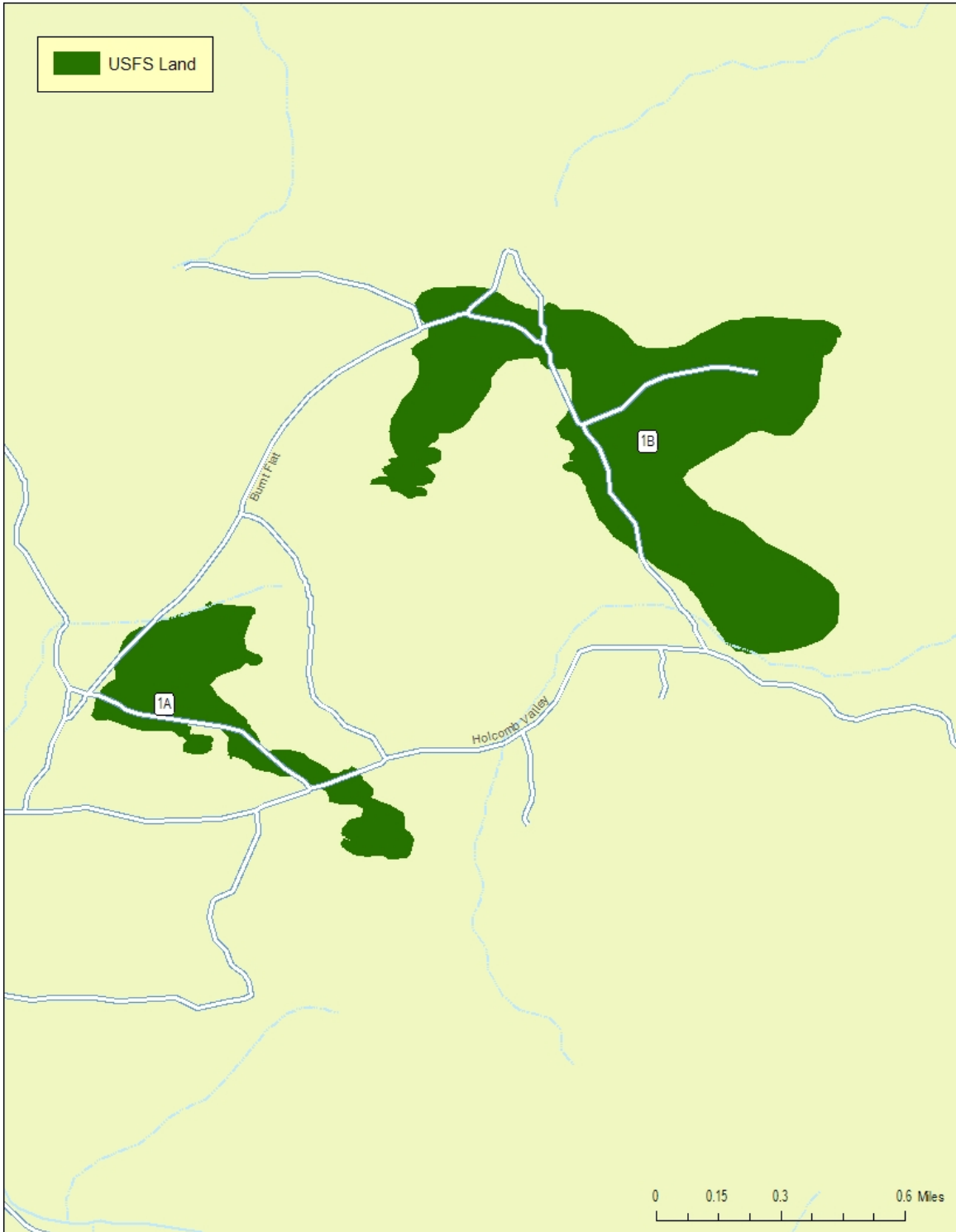


Figure ES-3: Proposed Critical Habitat Unit 2

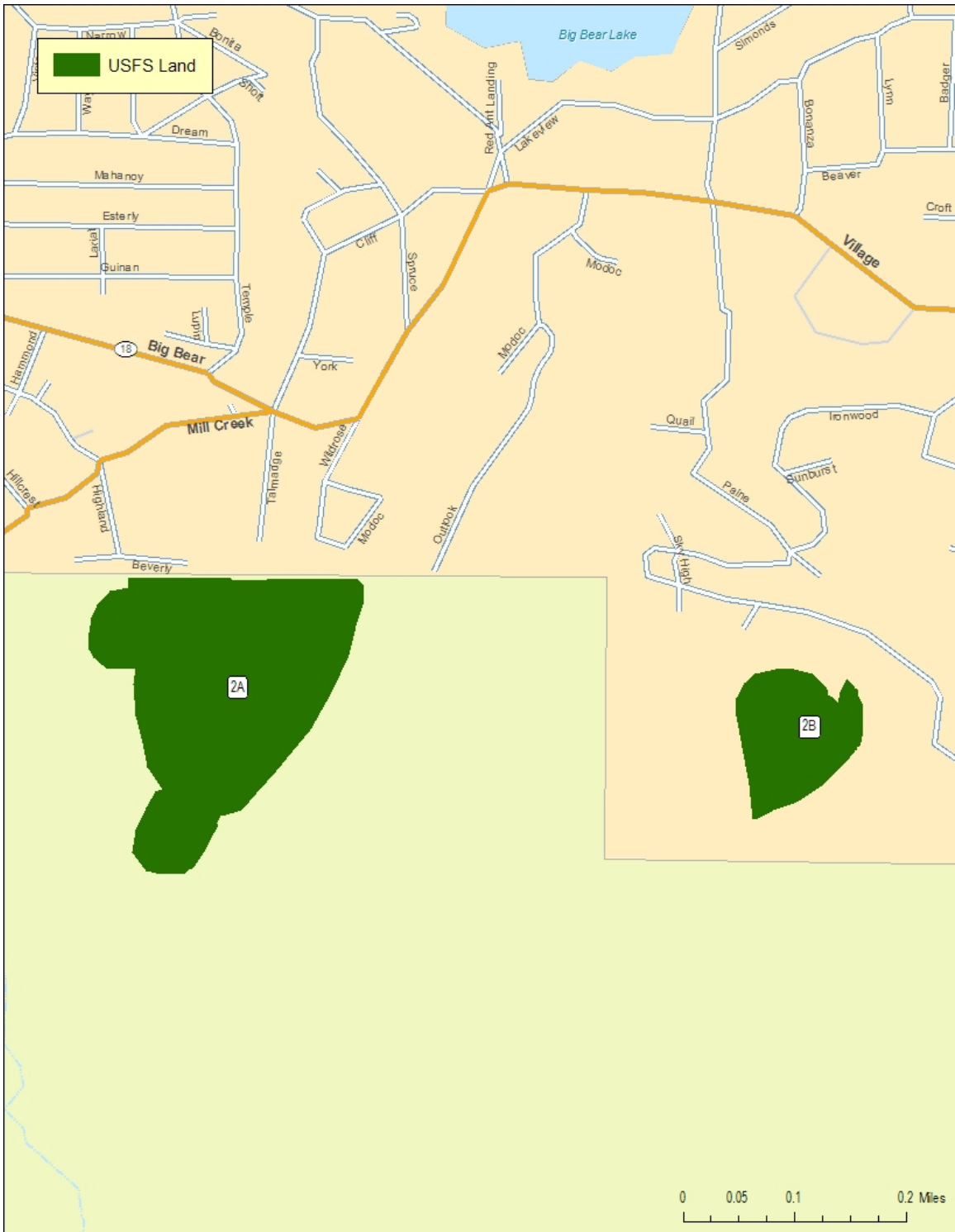


Figure ES-4: Proposed Critical Habitat Unit 3

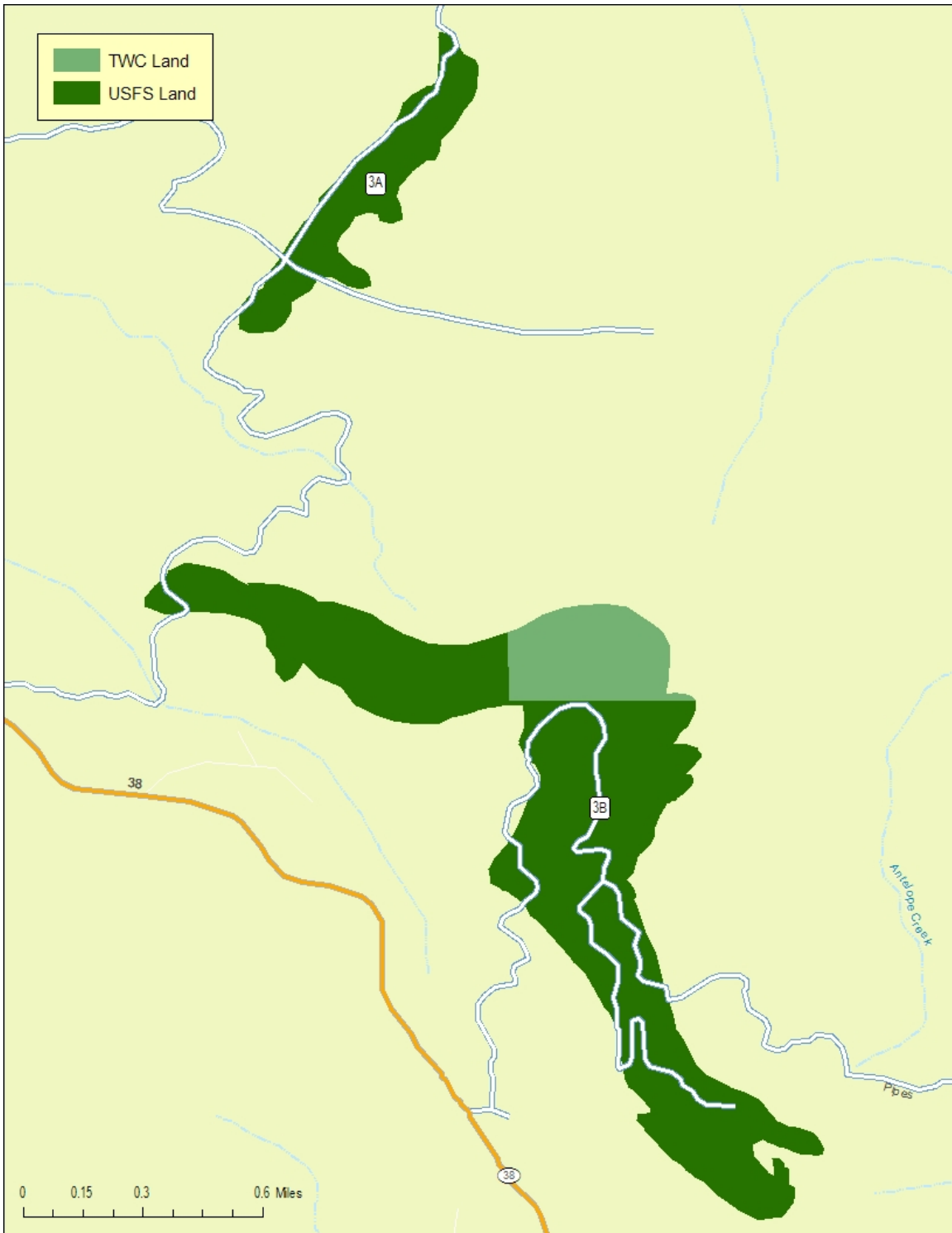


Figure ES-5: Proposed Critical Habitat Unit 4

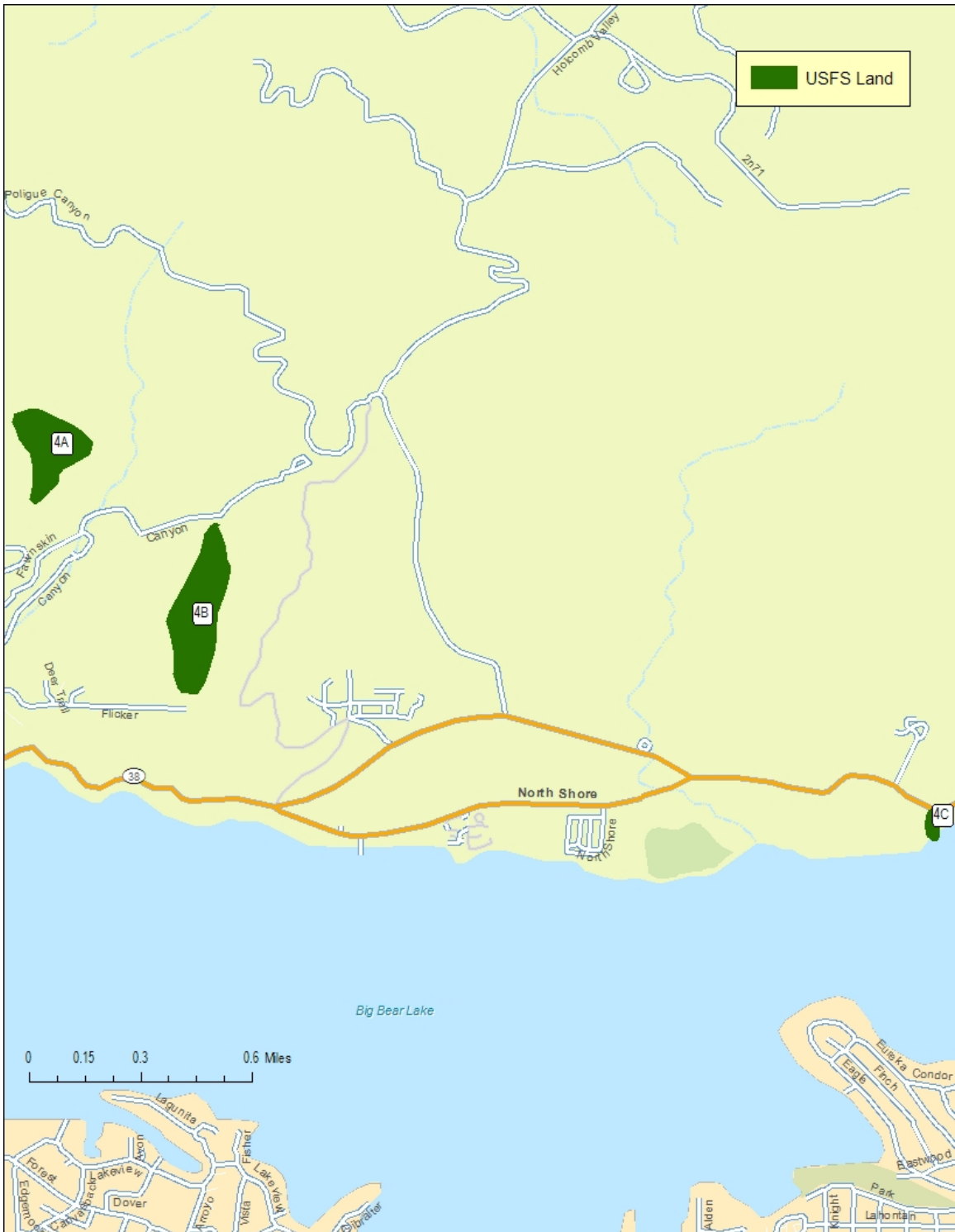


Figure ES-6: Proposed Critical Habitat Unit 5

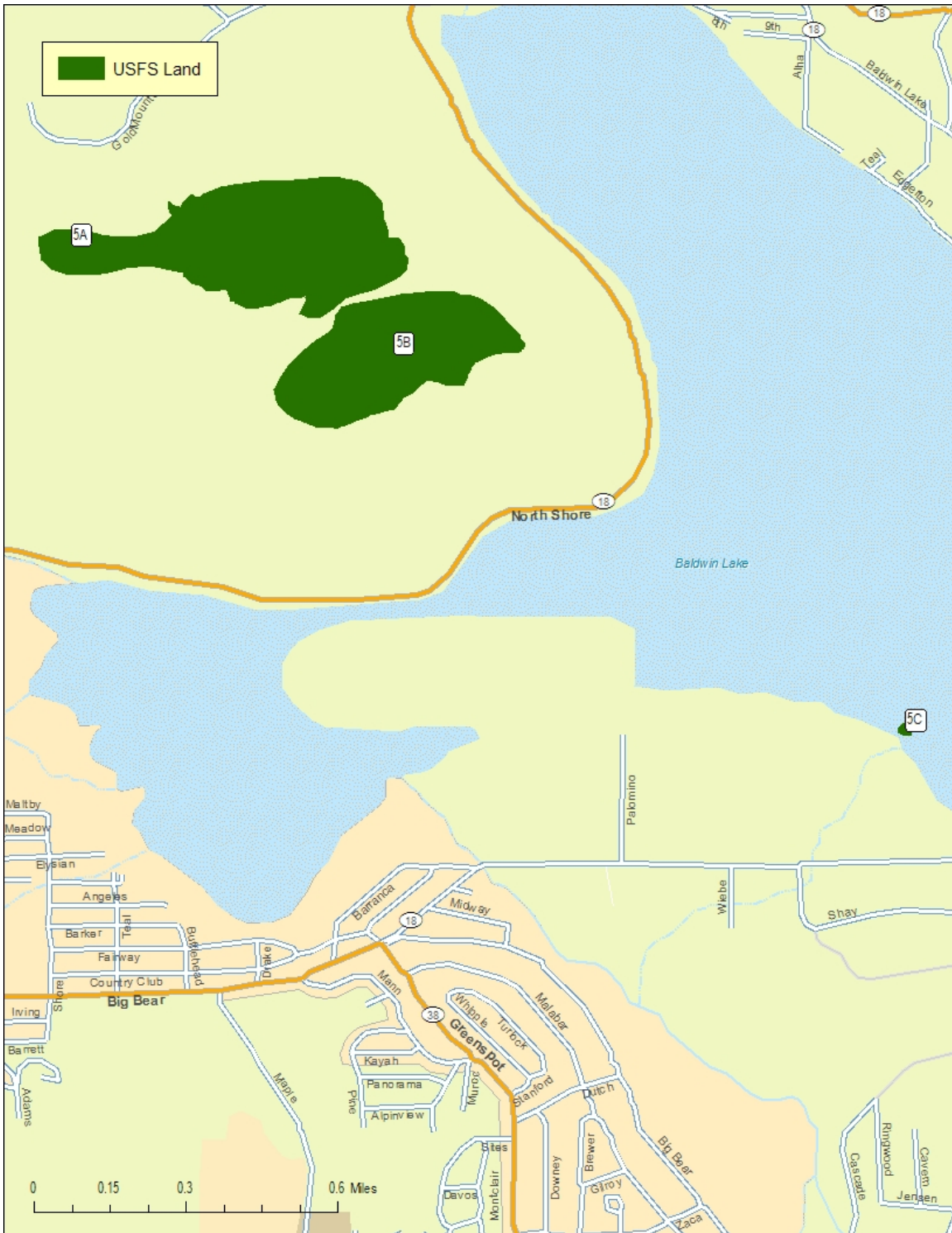


Figure ES-7: Proposed Critical Habitat Unit 6

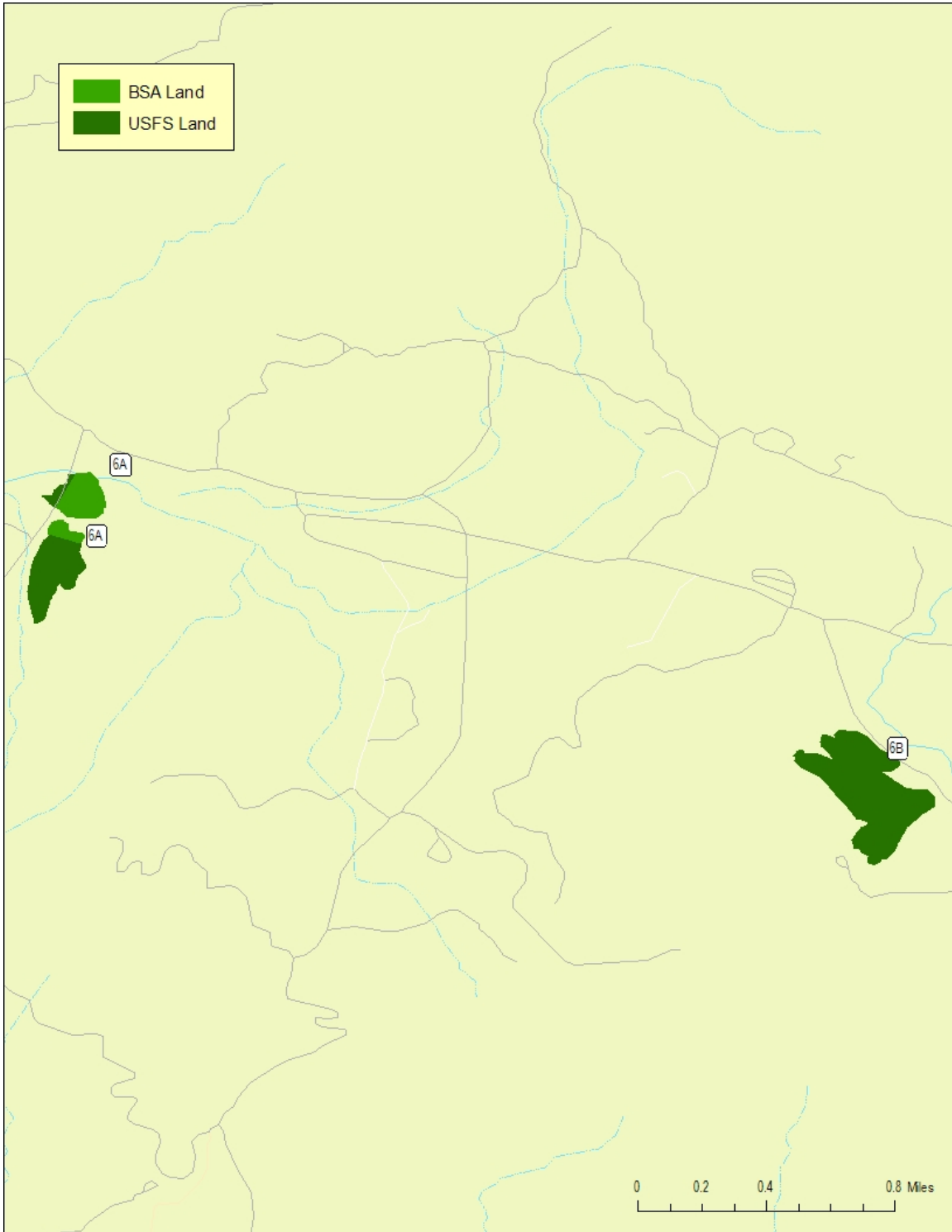


Figure ES-8: Proposed Critical Habitat Unit 7

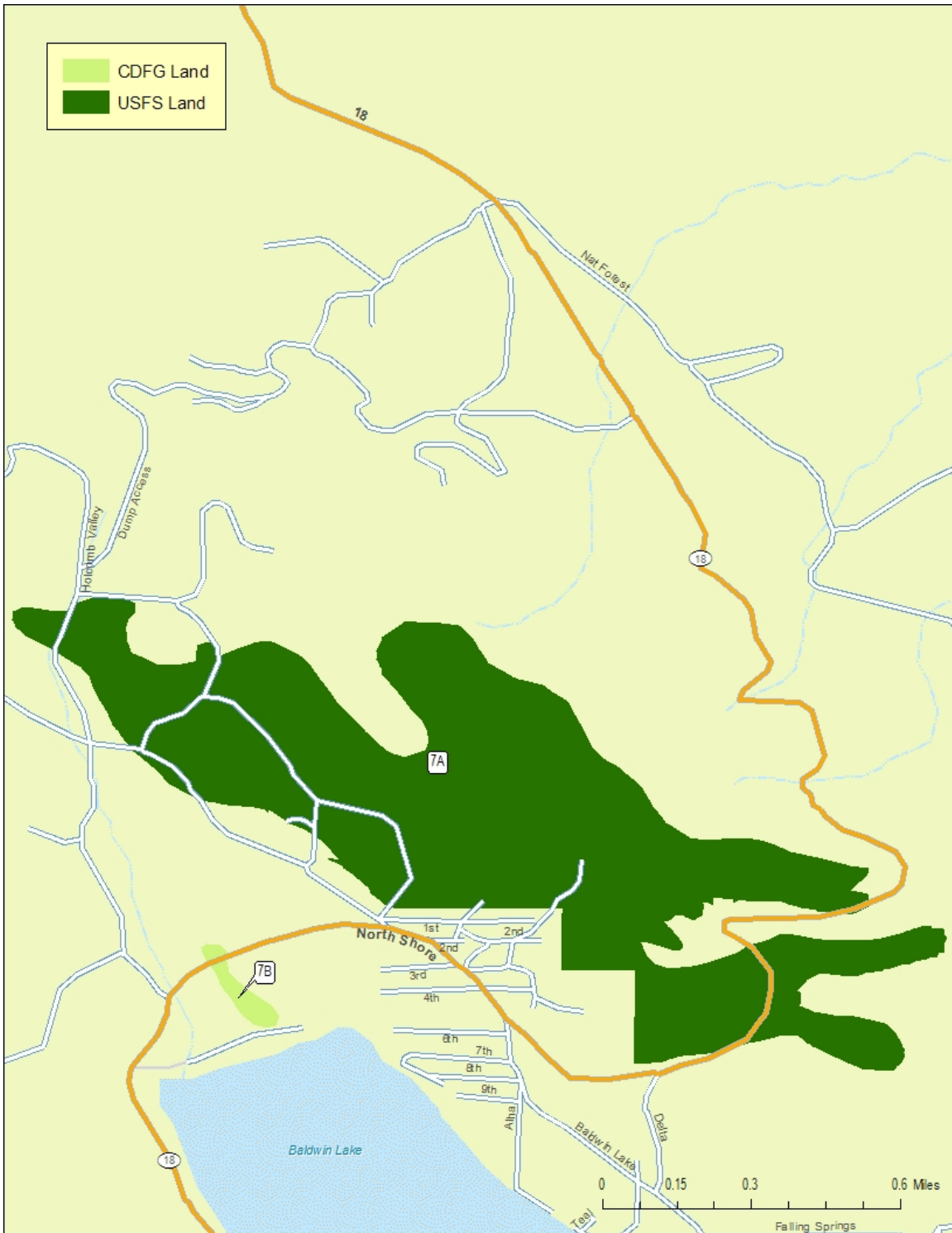


Figure ES-9: Proposed Critical Habitat Unit 8

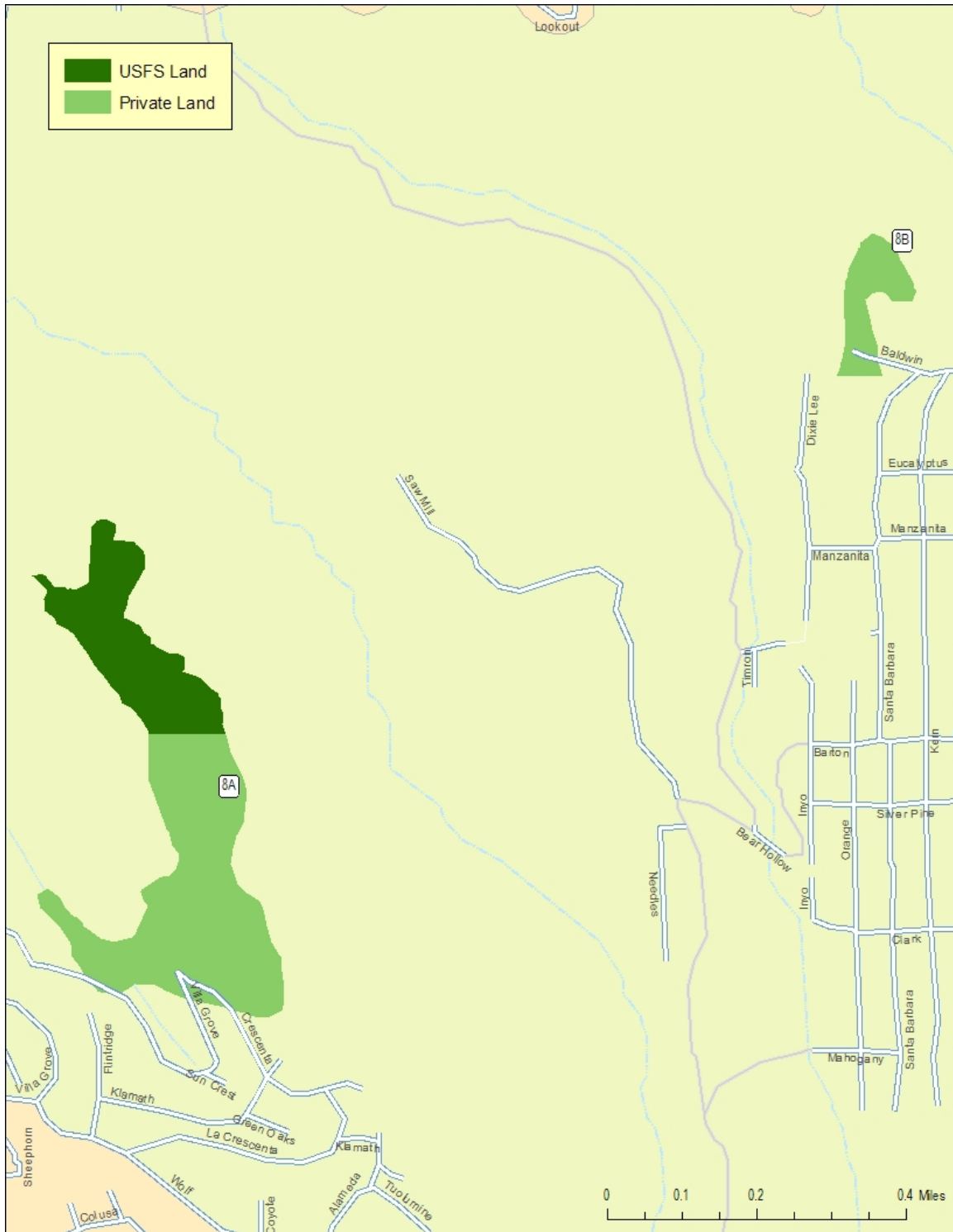


Figure ES-10: Proposed Critical Habitat Unit 9

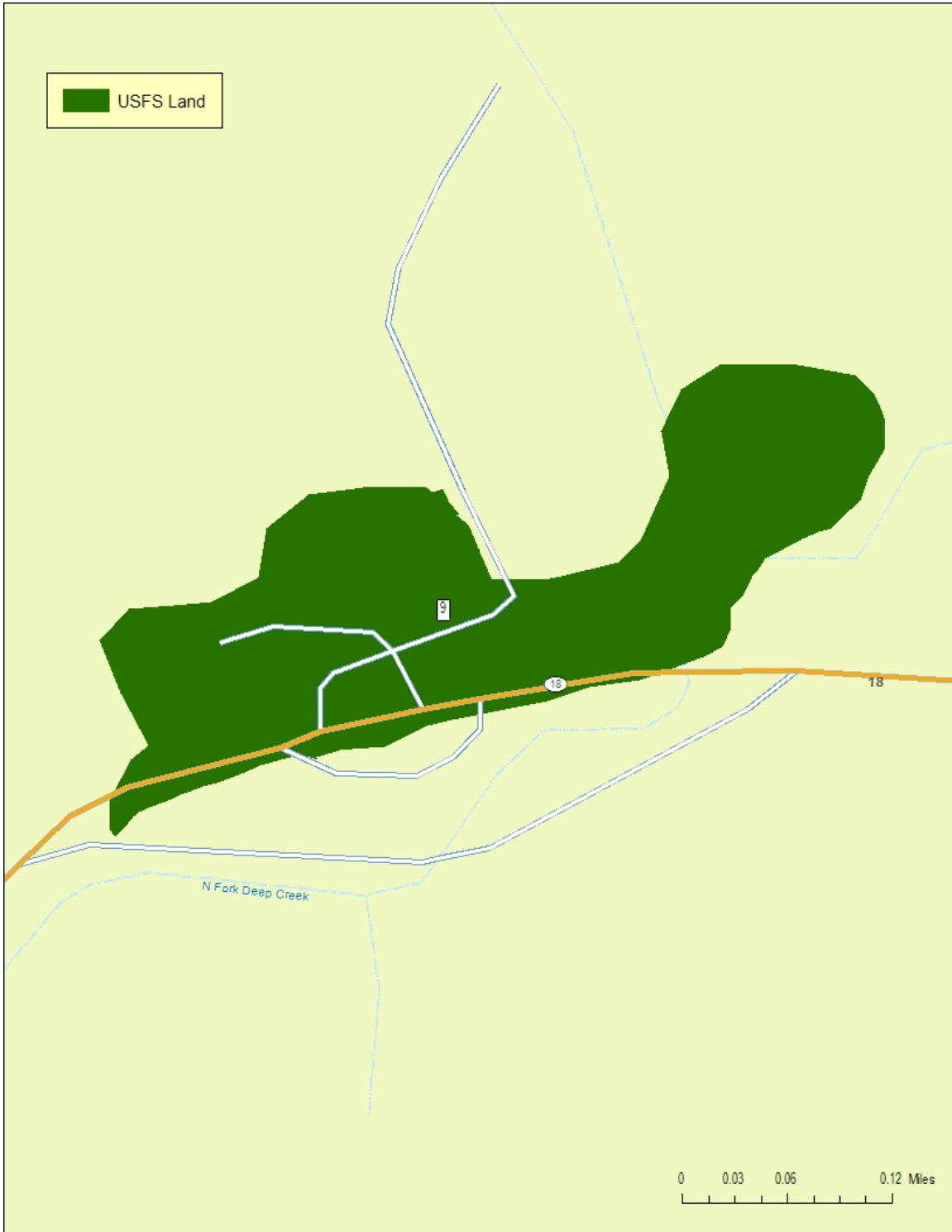


Figure ES-11: Proposed Critical Habitat Unit 10

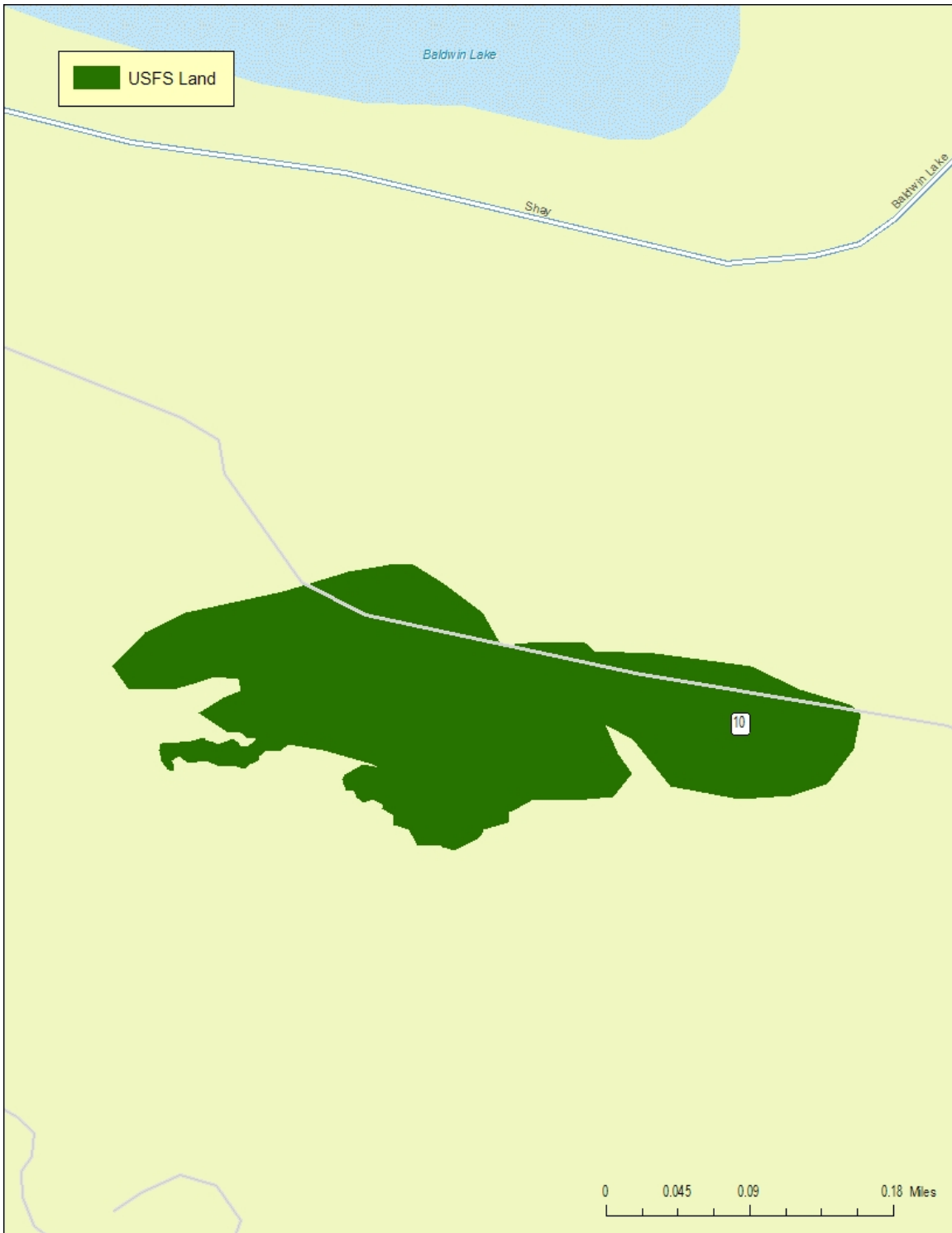
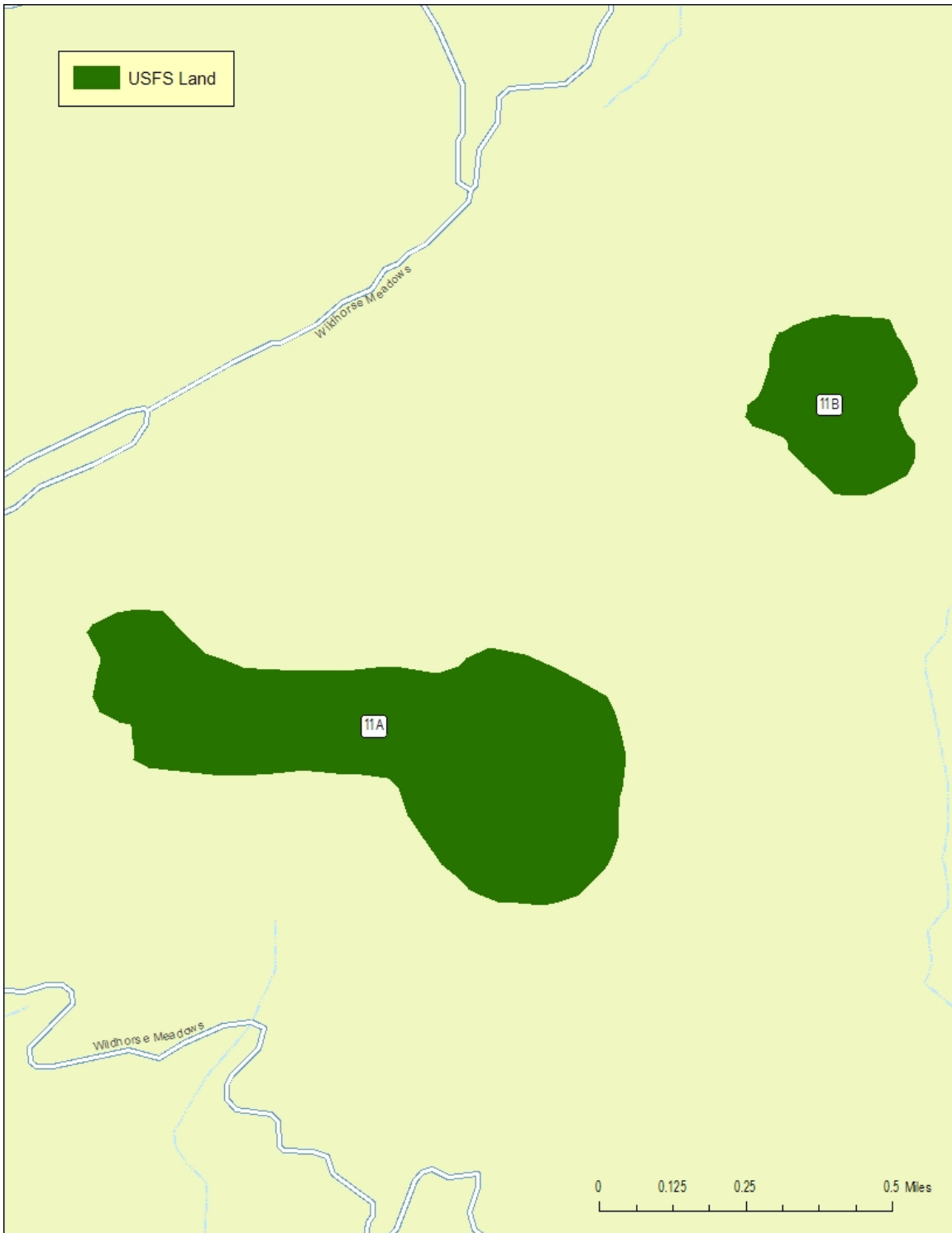


Figure ES-12: Proposed Critical Habitat Unit 11



Chapter 1: Introduction and Framework

The purpose of this report is to estimate the economic impact of actions taken to protect the federally listed Bear Valley sandwort (*Arenaria ursina*), the ash-gray Indian paintbrush (*Castilleja cinerea*), and the southern mountain wild-buckwheat (*Eriogonum kennedyi* var. *austromontanum*), referred to as the “Pebble Plains Plants” or PPP in this report, and their habitat. It attempts to quantify the economic effects associated with the proposed designation of critical habitat. It does so by taking into account the cost of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed boundaries. The analysis looks retrospectively at costs incurred since the PPP were listed, and it attempts to predict future costs likely to occur after the proposed critical habitat designation is finalized.

This information is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas.¹ In addition, this information allows the U.S. Fish and Wildlife Service (the Service) to address the requirements of Executive Orders 12866 and 13211, and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).² This report also complies with direction from the U.S. Court of Appeals for the 10th Circuit that “co-extensive” effects should be included in the economic analysis to inform decision-makers regarding which areas to designate as critical habitat.³

The chapter provides background information on the regulatory history, the species and their habitat, and the proposed designation. Next, it describes regulatory alternatives considered by the Service, and summarizes the threats to the species. Then, it describes the approach to estimating impacts and lays out the scope of the analysis. Information sources relied upon are summarized in the next section. The first chapter concludes with a description of the organization of the remainder of this report.

¹ 16 U.S.C. §1533(b)(2).

² Executive Order 12866, Regulatory Planning and Review, September 30, 1993; Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use, May 18, 2001; 5.U.S.C. §601 et seq; and Pub Law No. 104-121.

³ In 2001, the U.S. Court of Appeals for the 10th Circuit instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico cattle Growers Ass’n v. U.S.F.W.S.*, 248 F.3d. 1277 (10th Cir. 2001)).

1.1 Background

1.1.1 Regulatory History

On September 14, 1998, the Service published the final rule listing the PPP as threatened. In the final rule, the Service determined that designation of critical habitat for the plant species was not prudent. On September 13, 2004, the Center for Biological Diversity and the California Native Plant Society filed a joint lawsuit challenging the Service's failure to designate critical habitat for six California plant species, including the PPP. The Service agreed to publish a proposed rule to designate critical habitat on or before November 9, 2006, and a final rule by November 9, 2007.

1.1.2 Description of Proposed Critical Habitat and Landownership

The Service identified 1,511.2 acres of land in San Bernardino County, California, as proposed critical habitat for the PPP.⁴

For a description of the PPP and the primary constituent elements that are essential to the conservation of the species, refer to the proposed rule. Proposed critical habitat forms the study area for this analysis.

Proposed critical habitat areas are divided into eleven units, which are subdivided into a total of twenty-two subunits. Most of the land is publicly owned and managed (U.S. Forest Service (USFS) and California Department of Fish and Game (CDFG)), but some of the land is privately owned by conservation-oriented groups and other private entities.

Table 1: Landownership in PCH by Type		
Landowner	Owner Type	Total Acres
USFS	Federal	1,395.2
TWC	Private, Conservation-Oriented Organization	71
BSA	Private	6
Private	Private	35
CDFG	State	4
Total		1,511.2
Note:		
(1) USFS = U.S. Forest Service, TWC = The Wildlands Conservancy, BSA = Boy Scouts of America, CDFG = California Department of Fish and Game, Private = other private landowners		
(2) Total acreage is not rounded, as it is in the proposed rule, because rounding would omit the entire acreage of subunit 5c (0.2 acre) from the total.		
Source:		
(1) 71 FR 67720-21		

⁴ 71 FR 67720-21.

Table 1 summarizes total land ownership according to landowner type (Federal, State, or private). Table 2 indicates landownership by subunit and which of the three PPP species occur in each critical habitat subunit. For maps showing the location of each subunit, see Figures ES-1 through ES-12 above.

1.2 Regulatory Alternatives

Executive Order 12866 directs Federal Agencies to evaluate regulatory alternatives. The Service identifies twenty-two subunits for designation as critical habitat. An alternative to the proposed rule is to exclude some of these areas from critical habitat designation. Section 4(b)(2) of the Act allows the Service to exclude areas proposed for designation based on economic and other relevant impacts. Consideration of impacts at a subunit level may result in alternate combinations of potential habitat that may or may not ultimately be designated as critical habitat. As a result, the impacts of multiple combinations of potential habitat are also available to the Service.

1.3 Threats

The Service identified the following threats to PPP throughout their range in the proposed rule: development on private lands, off-highway vehicle use off of designated routes, road maintenance activities, ground disturbance that affects surface hydrology, mining activities, recreational activities, habitat fragmentation, and the invasion of nonnative *Bromus tectorum* (cheatgrass).⁵ However, the proposed rule

Table 2: Landownership in PCH for Pebble Plains Plants					
Unit	Landowner	Acres	Species		
			BVS	AGIPB	SMWB
1a	USFS	69	√	√	√
1b	USFS	229	√	√	√
2a	USFS	21	√	√	
2b	USFS	6	√	√	√
3a	USFS	58	√	√	√
3b	USFS	255	√	√	
	TWC	71			
4a	USFS	15	√	√	√
4b	USFS	24	√	√	√
4c	USFS	2		√	
5a	USFS	62	√	√	√
5b	USFS	43	√	√	√
5c	USFS	0.2		√	
6a	USFS	22	√	√	√
	BSA	6			
6b	USFS	44	√	√	√
7a	USFS	320	√	√	√
7b	CDFG	4		√	
8a	USFS	15	√	√	√
	Private	30			
8b	Private	5	√	√	√
9	USFS	26		√	
10	USFS	23	√	√	√
11a	USFS	127	√	√	
11b	USFS	34	√	√	
Total		1,511.2			
<p>Note:</p> <p>(1) BVS = Bear Valley Sandwort, AGIPB = ash-gray Indian paintbrush, SMWB = southern mountain wild-buckwheat</p> <p>(2) USFS = U.S. Forest Service, TWC = The Wildlands Conservancy, BSA = Boy Scouts of America, CDFG = California Department of Fish and Game, Private = other private landowners</p> <p>(2) Total acreage is not rounded because rounding would omit the entire acreage of subunit 5c (0.2 acre) from the total.</p> <p>Source:</p> <p>(1) 71 FR 67720-21</p>					

⁵ 71 FR 67716.

determined that special management considerations or protection measures may be needed to minimize the impacts to the primary constituent elements for the PPP associated with only three activities: vehicle use and road maintenance; recreational activities; and the presence of nonnative plant species.⁶ Through conversations with the Service it was determined that cattle and burro trespass, as well as mining activities do not require special management considerations because the likelihood of these threats occurring in pebble plain habitat is very small.⁷ Table 3 presents the threats to the PPP that may require special management within each of the proposed critical habitat subunits.

Unit	Landowner(s)	Primary Threats	Species		
			BVS	AGIPB	SMWB
1a, 1b	USFS	Unauthorized vehicle use related to woodcutting and camping activities, dispersed recreation, cheatgrass	√	√	√
2a	USFS	Trampling, soil compaction, and unauthorized vehicle use through dispersed recreation, cheatgrass	√	√	
2b	USFS	"	√	√	√
3a	USFS	Unauthorized vehicle use, cheatgrass and common knotweed	√	√	√
3b	USFS, TWC	"	√	√	
4a, 4b	USFS	Public vehicle use and OHV use outside of designated areas, cheatgrass, dispersed recreation	√	√	√
4c	USFS	Dispersed recreation, OHV use outside of designated areas, cheatgrass		√	
5a, 5b	USFS	Unauthorized vehicle use, cheatgrass, dispersed recreation	√	√	√
5c	USFS	Unauthorized access by equestrian and OHV use by adjacent private landowners, cheatgrass		√	
6a	USFS, BSA	Dispersed recreation, OHV use outside of designated areas, cheatgrass	√	√	√
6b	USFS	"	√	√	√
7a	USFS	Authorized and unauthorized vehicle use, cheatgrass and clasping pepperweed, dispersed recreation	√	√	√
7b	CDFG	"		√	
8a	USFS, Private	Authorized and unauthorized dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	√
8b	Private	"	√	√	√
9	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass		√	
10	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	√
11a, 11b	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	

Source: (1) 71 FR 67721-25

⁶ 71 FR 67719.

⁷ Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 18, 2007.

1.4 Approach to Estimating Economic Impacts

This economic analysis considers economic efficiency effects that may result from activities to protect the PPP and their habitat (hereinafter referred to collectively as “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 activities that can take place on a parcel of land are 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 under section 7 represent opportunity costs of required conservation activities.

1.4.1 Efficiency Effects

At the guidance of the Office of Management and Budget (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 PPP, 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.⁸

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, such as the U.S. Forest Service, may enter into a 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 the good or service provided 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.

Where habitat protection measures are expected to significantly impact the market, it may be necessary to estimate changes in producer and consumer surpluses. For example, a designation that precludes the development of large areas of land may shift the price and

⁸ 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, available at <http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html>.

quantity of housing supplied in the 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. For this analysis, compliance costs are estimated. Market effects are unlikely, because the costs of this proposed regulation are relatively small and borne primarily by Federal agencies.

1.4.2 Distributional and Regional Economic Impacts

The analysis also considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future conservation activities for the PPP.⁹ 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 activities on the energy industry and its customers.¹⁰

1.4.3 Calculating Present Value and Annualized Impacts

For each land use activity, this analysis compares economic impacts incurred in different time periods in present value terms. The present value represents the value of a payment or a stream of payments in common dollar terms. That is, it is the sum of a series of past or future cash flows expressed in terms of today’s dollars. Translation of economic impacts of past and future costs to present value terms requires the following information: a) past or projected future costs of conservation efforts; and b) the specific years in which these impacts have been or are expected to be incurred. With these data, the present value of the past or future stream of impacts of conservation efforts (PV_c) from year t to T is measured in today’s dollars according to the following standard

formula:¹¹
$$PV_c = \sum_t^T \frac{C_t}{(1+r)^{T-t}}$$
 Where C_t is the cost of conservation efforts in year t and r

is the discount rate.¹²

⁹ 5 U.S.C. § 601 *et. seq.*

¹⁰ Executive Order 13211, *Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, and Use*, May 18, 2001.

¹¹ To derive the present value of past conservation efforts for this analysis, t is 1998 and T is 2007; to derive the present value of future conservation efforts, t is 2007 and T is 2026.

¹² To discount and annualize costs, guidance provided by 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).

Impacts of conservation efforts for each activity in each unit are also expressed in annualized values. Annualized values are calculated to provide comparison of impacts across activities with varying forecast periods (T). For this analysis, however, all activities employ the forecast period of 20 years, 2007 through 2026. Annualized impacts of future conservation efforts (APV_c) are calculated by the following standard formula: $APV_c = PV_c \left[\frac{r}{1 - (1 + r)^{-N}} \right]$ Where N is the number of years in the forecast period (in this analysis, 20 years).

1.5 Scope of the Analysis

This analysis identifies those economic activities believed to most likely threaten the listed species and its habitat and, where possible, quantifies the economic impact to avoid, mitigate, or compensate for such threats within the boundaries, or adjacent to, proposed critical habitat. In instances where critical habitat is being proposed after a species is listed, some future impacts may be unavoidable, regardless of the final designation and exclusions under 4(b)(2). However, due to the difficulty in making a credible distinction between listing and critical habitat effects within critical habitat boundaries, this analysis considers all future conservation-related impacts to be coextensive with the designation.^{13,14}

Coextensive effects may also include impacts associated with overlapping protective measures of other Federal, State, and local laws that aid habitat conservation in the areas proposed for designation. In past instances, some of these measures have been precipitated by the listing of the species and impending designation of critical habitat. Because habitat conservation efforts affording protection to a listed species likely contribute to the efficacy of the critical habitat efforts, the impacts of these actions are considered relevant for understanding the full effect of the proposed critical habitat designation. Enforcement actions taken in response to violations of the Act, however, are not included.

¹³ In 2001, the U.S. 10th Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Assn v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001)).

¹⁴ Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service's regulation defining destruction or adverse modification of critical habitat (*Gifford Pinchot Task Force v. USFWS*), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to current national policy and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

1.5.1 Sections of the Act Relevant to the Analysis

The analysis focuses on activities that are influenced by the Service through sections 4, 7, 9, and 10 of the Act.

- Section 4 of the Act focuses on the listing and recovery of endangered and threatened species, as well as the designation of critical habitat. According to section 4, the Secretary is required to list species as endangered or threatened “solely on the basis of the best available scientific and commercial data.”¹⁵ Section 4 also requires the Secretary to designate critical habitat “on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.”¹⁶
- 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 any endangered or threatened species or result in the destruction or adverse modification of critical habitat.¹⁷
- 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.”¹⁸
- 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

¹⁵ 16 U.S.C. §1533.

¹⁶ 16 U.S.C. §1533.

¹⁷ Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service’s regulation defining destruction or adverse modification of critical habitat (*Gifford Pinchot Task Force v. USFWS*), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to current national policy and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

¹⁸ 16 U.S.C. §1532.

species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.¹⁹

Note that the Act does not prohibit ‘take’ of listed plants. Section 9 of the Act does prohibit certain actions with regard to listed plants, including removing listed plants from areas under Federal jurisdiction, and damaging or destroying listed plants in knowing violation of State law. Therefore, on private lands, unless a Federal nexus is present (e.g., a landowner requires a permit from a Federal agency to undertake an activity and therefore that agency is subject to consultation with the Service under section 7 of the Act), private landowners are not obligated to take actions to manage or minimize their impact on plants located on their property. As a result, the economic analysis estimates the costs of potential voluntary conservation efforts undertaken by private landowners, however the probability that these actions will be taken is unknown.

1.5.2 Other Relevant Protection Efforts

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.²⁰ For the purpose of this analysis, such protective efforts are considered to be co-extensive with the protection offered by critical habitat, and costs associated with these efforts are included in this report. In addition, under certain circumstances, the critical habitat designation may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State and local laws. In cases where these costs would not have been triggered absent the designation of critical habitat, they are included in this economic analysis.

1.5.3 Additional Analytic Considerations

This analysis also considers the potential for other types of economic impacts that can be related to section 7 consultations in general and critical habitat in particular, including time delay, regulatory uncertainty, and stigma impacts.

1.5.3.1 Time Delay and Regulatory Uncertainty Impacts

Time delay impacts are costs resulting from project delays associated with the consultation process or compliance with other regulations. Regulatory uncertainty costs

¹⁹ U.S. Fish and Wildlife Service, “Endangered Species Habitat Conservation Planning,” August 6, 2002, accessed at: <http://endangered.fws.gov/hcp/>.

²⁰ For example, the Sikes Improvement Act (Sikes Act) of 1997 requires Department of Defense (DoD) military installations to develop Integrated Natural Resource Management Plans (INRMPs) that provide for the conservation, protection, and management of wildlife resources (16 U.S.C. §§ 670a – 670o). These plans must integrate natural resource management with other activities, such as training exercises, taking place at the facility.

occur in anticipation of having to modify parameters (e.g., retaining outside experts or legal counsel to better understand responsibilities with regard to critical habitat). Time delays and regulatory uncertainty impacts are not anticipated in this case, because the Federal and State agencies involved in consultations are familiar with the process.

1.5.3.2 Stigma Impacts

Stigma refers to the change in economic value of a particular project or activity due to negative (or positive) perceptions of the role critical habitat will play in developing, implementing, or conducting that policy. For example, changes to private property values associated with public attitudes about the limits and costs of implementing a project in critical habitat are known as “stigma” impacts. Because the proposed designation includes little private property (approximately 112 acres), stigma effects are not quantified in this analysis.

1.5.4 Geographic Scope of the Analysis

The geographic scope of the analysis includes areas proposed for critical habitat designation. The analysis focuses on activities within or affecting these areas. No areas were proposed for exclusion under section 4(b)(2) of the Act.

Impacts are presented at the finest resolution feasible, given the available data. For this proposed critical habitat designation, impacts are reported for each subunit identified in the proposed rule. The Executive Summary presents maps showing the location of the subunits relative to major cities, national forest land, and wilderness lands.

1.5.5 Time Frame of the Analysis

The analysis estimates impacts based on activities that are “reasonably foreseeable,” including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. This analysis estimates economic impacts to activities from 1998 (year of the species’ final listing) to 2026 (20 years from the final year anticipated in 2007). Forecasts of economic conditions and other factors beyond the next 20 years would be speculative.

1.5.6 Benefits

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.²¹ OMB’s Circular A-4 distinguishes two types of economic benefits: *direct benefits* and *ancillary benefits*.

²¹ Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993.

Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking.²²

In the context of critical habitat designation, the primary purpose of the rulemaking (i.e., direct benefits) is the potential to enhance the conservation of the species. 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 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.²³ *Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.*

Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. To this end, critical habitat designation can result in maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species. That is, management actions undertaken to conserve the species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in the region. 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 direct, negative impacts to a region's economy resulting from actions to conserve the species or its habitat.

It is often difficult to evaluate the ancillary benefits of critical habitat designation. To the extent that the ancillary benefits of the rulemaking may be captured by the market through an identifiable shift in resource allocation, they are factored into the overall economic impact assessment. For example, if habitat preserves are created to protect a species, the value of existing residential property adjacent to those preserves may increase, resulting in a measurable positive impact. Ancillary benefits that affect markets are not anticipated in this case, and are therefore not quantified.

1.6 Information Sources

The primary sources of information for this report were communications with and data provided by personnel from the Service, Federal action agencies, affected private parties, and State governments within California. Specifically, the analysis relies on data collected in communication with personnel from the following entities:

²² U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at: <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

²³ *Ibid.*

- U.S. Forest Service;
- The Wildlands Conservancy;
- San Bernardino Mountains Land Trust;
- University of Redlands; and
- San Bernardino County Land Use Services Division.

In addition, this analysis relies on the Service's section 7 consultation records and the 2002 Pebble Plains Habitat Management Guide.

1.7 Sources of Uncertainty

This analysis assumes that all landowners or managers will implement management techniques similar to those used by the USFS when controlling unauthorized vehicles, nonnative plants, and dispersed recreation activities. The other landowners and managers may in fact implement different actions to control these threats, but these alternative actions are unknown. This assumption could result in either an underestimate or overestimate of the costs.

1.8 Structure of the Report

The remainder of the report is organized as follows:

- Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities;
- Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management;
- Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management;
- Appendix A: Economic Impacts on Small Businesses and Energy Production; and
- Appendix B: Past Economic Impacts.

Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities

In all proposed critical habitat subunits, unauthorized vehicle use was identified as a threat to the PPP and their habitat. The threat of unauthorized vehicle use actually encompasses many activities. For example, where mining activities are identified as a threat to the PPP it is actually the use of vehicles to access mining claims that threatens the PPP. Additionally, nonnative plant species are able to invade pebble plain habitats when the soil is disturbed; soil disturbance usually occurs through unauthorized off-road vehicles.²⁴ Therefore, unauthorized vehicle use off of designated roads or trails has been identified as a major threat to the PPP in areas of proposed critical habitat.²⁵

According to the Service's 2001 biological opinion to the USFS regarding pebble plains, off-road vehicle use should be controlled by eliminating unauthorized roads that cut through pebble plains, installing signs and barriers, repairing and maintaining fences and barriers, monitoring road closures and protection measures, increasing law enforcement patrols, and educating the public. Public use of legal roads should be allowed to continue; therefore no lost consumer surplus is anticipated.²⁶

This chapter quantifies the economic impact of controlling off-road vehicle use in proposed PPP critical habitat. The chapter is divided into discussions of the economic impacts on each landowner. Table 4 below summarizes the economic impacts of controlling unauthorized vehicle use within the PPP proposed critical habitat areas over the next twenty years. Total future impacts are estimated to be around \$0.4 million (undiscounted dollars) over twenty years (2007 – 2026).

2.1 United States Forest Service

Past Costs

The USFS has implemented measures to control off-highway vehicle (OHV) activity in pebble plain complexes since 1999, the year after the PPP were listed. Measures include installing fences, signs and barriers designed to keep vehicles on designated roads and out of pebble plains habitat, patrolling pebble plain habitat, and ticketing unauthorized vehicle use off of designated roads or trails. Economic impacts from 1999 through 2006

²⁴ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

²⁵ 71 FR 67721 - 25.

²⁶ U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, pp. 4-7.

were approximately \$18,500 per year, in real dollars, including the cost of labor overhead.^{27,28}

Future Costs

The USFS will need to maintain control of unauthorized vehicle use on an ongoing basis for an indefinite amount of time. Ongoing activities are expected to be similar to past actions. The cost per year is anticipated to be \$18,500 (undiscounted).²⁹

2.2 Private Landowners

Past Costs

Unit 8a is protected by a conservation easement.³⁰ In 2002, the Natural Heritage Foundation, which held the conservation easement for unit 8a at that time, installed fencing and signs to keep unauthorized off-road vehicles out of the pebble plain.³¹ Past costs of the installation of the fence and signs around unit 8a were approximately \$600 in 2002 dollars (\$700 in 2007 dollars),³² based on estimates of fencing and sign material costs from the USFS.³³ According to individuals familiar with PPP and their habitat, unit 8b was set aside in a conservation easement as mitigation for construction of the Big Bear High School, but the conservation easement was not formerly recorded. A fence was installed around unit 8b in the late 1980's by The Nature Conservancy and has been maintained by the local community.³⁴ Past costs of the installation of the fence around unit 8b are not included in this economic analysis because they occurred prior to the time of listing of the PPP.

²⁷ Personal communication from Scott Eliason, USFS District Botanist, May 22, 2007.

²⁸ Past cost estimates from the USFS were provided in 2007 dollars. Costs were deflated using the average national CPI (<http://www.bls.gov/cpi>) for the years 1999 – 2006.

²⁹ This estimate includes the cost of employee overhead, which is assumed to be 150% of the employee's annual salary.

³⁰ Personal communication from Tim Krantz, associate Professor, University of Redlands, April 20, 2007.

³¹ Personal communication from Peter Juris, former Director, San Bernardino Mountains Land Trust, April 20, 2007.

³² Past cost estimates from the USFS were provided in 2007 dollars. Costs were deflated using the average national CPI (<http://www.bls.gov/cpi>) for the year 2002.

³³ Personal communication from Scott Eliason, USFS District Botanist, May 22, 2007.

³⁴ Personal communication from Peter Juris, former Director, San Bernardino Mountains Land Trust, April 20, 2007.

Future Costs

Monitoring and maintenance may be required in units 8a and 8b to continue to prevent off-road vehicles from entering the PPP habitat. Economic impacts of monitoring and maintenance are based on the cost per acre provided by the USFS.³⁵ The cost to the private entities in units 8a and 8b is approximately \$500 per year in undiscounted dollars.

2.3 Other landowners: California Department of Fish and Game, the Wildlands Conservancy, and Boy Scouts of America

Past Costs

CDFG could not be reached as of the writing of this report. It is assumed that no actions have been made in the past to control off-road vehicles on CDFG lands.

According to the field manager at TWC's Pipes Canyon Preserve, TWC is not aware of the presence of PPP on its property and has not acted in the past to conserve the PPP on its land.³⁶

Boy Scouts of America could not be reached as of the writing of this report. According to USFS staff, BSA has not taken any action to conserve the PPP on Hitchcock Ranch, which encompasses the 6 acres of BSA land proposed for critical habitat designation.³⁷

Future Costs

Future economic impacts to CDFG, TWC, and BSA of controlling off-road vehicles in areas of proposed critical habitat are based on the annual cost per acre provided by the USFS. The cost to CDFG is approximately \$50 per year (undiscounted), the cost to TWC is about \$900 per year (undiscounted) and the cost to BSA is approximately \$80 per year (undiscounted).

³⁵ The annual cost per acre to the USFS of controlling off-road vehicles is approximately \$13 (\$18,500 divided by 1,395.2 acres).

³⁶ Personal communication from April Sal, Field Manager, The Wildlands Conservancy Pipes Canyon Preserve, April 23, 2007.

³⁷ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

Table 4: Impacts on Unauthorized Off-Road Vehicle Management									
		Past Costs			Future Costs: 2007-2026				
Landowner	PCH Units	Undiscounted Value	Present Value (3%)	Present Value (7%)	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$148,000	\$169,443	\$203,093	\$370,000	\$275,233	\$195,989	\$18,500	\$18,500
TWC	3b	\$0	\$0	\$0	\$18,829	\$14,006	\$9,974	\$941	\$941
BSA	6a	\$0	\$0	\$0	\$1,591	\$1,184	\$843	\$80	\$80
CDFG	7b	\$0	\$0	\$0	\$1,061	\$789	\$562	\$53	\$53
Private	8a, 8b	\$606	\$702	\$849	\$9,282	\$6,905	\$4,917	\$464	\$464
Total:		\$148,606	\$170,145	\$203,942	\$400,763	\$298,117	\$212,284	\$20,038	\$20,038

Notes:
(1) Guidance provided by the OMB specifies the use of a real discount 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).
Source:
(1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management

According to the proposed rule, invasive, nonnative plant species could out-compete the PPP for habitat in all proposed critical habitat subunits. As a result, the proposed rule indicates that special management may be needed to keep invasive, nonnative plant species from threatening PPP populations.³⁸ According to the USFS, the best way to control invasive species is to prevent occurrences of soil disturbance because soil disturbance allows invasive plant species to spread to and become established in new areas. Off-road vehicle activity is the dominant contributor to soil disturbance.³⁹ The cost of controlling off-road vehicles was addressed in Chapter 2; therefore this chapter focuses instead on monitoring and removing invasive plant species.

The Service has recommended that landowners monitor critical habitat for invasive plant species. If, through monitoring, it is found that invasive species are posing a significant threat to the PPP and their habitat, the Service recommends conducting routine removal of the nonnative plants through hand removal.⁴⁰

This chapter quantifies the economic impact of monitoring the proposed critical habitat for the growth of invasive plant species. It then identifies the potential cost of implementing an invasive plant species removal effort if such actions are found to be necessary to conserve the PPP. This section is divided into discussions of the impact on each land owner. Table 5 summarizes future impacts of invasive, nonnative plant species management. Total future impacts are estimated to be about \$1.5 million (undiscounted dollars) over twenty years.

3.1 United States Forest Service

Past Costs

In the Service's 2001 biological opinion to the USFS, it advised the USFS to continue to implement existing pest management projects to avoid significant pest damage to forests and woodlands. The biological opinion recommended inventory and eradication of invasive, nonnative plant species through the use of herbicides, prescribed burning, or direct removal. Additionally, the biological opinion recommended that the USFS "continue alien plant removal in and near pebble plains habitat to maximize long-term benefits while minimizing short term impacts to pebble plains habitat." The biological opinion noted that the only efforts made prior to 2001 to control invasive plant species

³⁸ 71 FR 67721 - 25

³⁹ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

⁴⁰ Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007 and 71 FR 67723.

had been the hand pulling of weeds such as cheatgrass.⁴¹ The USFS was unsuccessful at removing invasive nonnative plants through small scale efforts (which had negligible costs) and therefore has not implemented a monitoring and removal project.⁴²

Future Costs

This section quantifies the economic costs of monitoring the areas of critical habitat for the next twenty years for the growth and spread of invasive plant species. It also estimates the potential cost of removing invasive plant species from the areas of critical habitat through herbicides, prescribed burning, or direct hand removal.

According to the USFS, one employee monitors all of the environmentally sensitive areas of the San Bernardino National Forest for unauthorized vehicles and dispersed recreation, at an annual salary of \$40,000. This employee also gives citations and carries out other actions necessary to protect the sensitive habitats from these activities. Half of the employee's time is spent monitoring pebble plain complexes, of which 40 % have been proposed for critical habitat designation. Therefore, the approximate cost to the USFS of managing unauthorized vehicles and dispersed recreation is \$8,000 (40% of one half of \$40,000).⁴³ Including overhead costs, that figure comes to \$20,000 per year.⁴⁴

It is assumed that an additional employee would be needed to monitor the pebble plain proposed critical habitat for invasive plant species, at a cost of \$20,000 per year, including overhead. If invasive, nonnative plant species need to be removed, it is assumed that the removal effort would involve small scale hand-removal and require approximately half of one employee's time per year.⁴⁵ The potential cost of removing invasive, nonnative plant species is \$50,000 per year (undiscounted) including overhead.

3.2 Other Landowners: California Department of Fish and Game, the Wildlands Conservancy, Boy Scouts of America, and Other Private Entities

Past Costs

⁴¹ U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, pp. 18-19.

⁴² Personal communication from Scott Eliason, District Botanist, USFS, May 22, 2007.

⁴³ Personal communication from Scott Eliason, District Botanist, USFS, May 22, 2007 and June 21, 2007.

⁴⁴ Employee overhead costs are assumed to be 150% of employee's annual salary.

⁴⁵ Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.

CDFG could not be reached as of the writing of this report. It is assumed that no actions have been made in the past to control invasive nonnative plant species on CDFG lands. According to the field manager at TWC's Pipes Canyon Preserve, TWC is not aware of the presence of PPP on its property. It has not taken any action in the past to conserve the PPP on its land.⁴⁶ According to USFS staff, BSA has not acted to conserve the PPP within the Hitchcock Ranch, which encompasses the 6 acres of BSA land proposed for critical habitat designation.⁴⁷ According to individuals who are familiar with the land in units 8a and 8b, no actions to remove invasive, nonnative plants have been made in the area.⁴⁸

Future Costs

This section quantifies the economic costs of monitoring the areas of critical habitat for the next twenty years for the spread of invasive plant species. It also estimates the potential cost of removing invasive plant species from the areas of critical habitat through direct hand removal. Impacts are based on the cost per acre estimated for the USFS.⁴⁹

The total cost to the CDFG associated with monitoring the pebble plains is expected to be about \$60 per year. The potential cost of removing invasive, nonnative plant species is \$100 per year (undiscounted).

The total cost per year to TWC associated with monitoring the pebble plains is expected to be approximately \$1,000. The potential cost of removing invasive, nonnative plant species is about \$2,500 per year (undiscounted).

The total cost in each year to the BSA associated with monitoring the pebble plains is expected to be about \$90. The potential cost in each year of removing invasive, nonnative plant species is around \$200 (undiscounted).

The total cost to private landowners in units 8a and 8b associated with monitoring the pebble plains is expected to be approximately \$500 per year. The potential cost in each year of removing invasive, nonnative plant species is about \$1,300 (undiscounted).

⁴⁶ Personal communication from April Sal, Field Manager, The Wildlands Conservancy Pipes Canyon Preserve, April 23, 2007.

⁴⁷ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

⁴⁸ Personal communication from Peter Juris, former Director, San Bernardino Mountains Land Trust, April 20, 2007 and Personal communication from Tim Krantz, associate Professor, University of Redlands, April 20, 2007.

⁴⁹ Annual costs per acre to the USFS of monitoring are approximately \$14 (\$20,000 divided by 1,395.2 acres). Annual costs per acre to the USFS of removal are approximately \$36 (\$50,000 divided by 1,395.2 acres).

Table 5: Impacts of Invasive, Nonnative Plant Species Management

		Past Costs	Future Costs: 2007-2026				
Landowner	PCH Units	Undiscounted Value	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$0	\$400,000	\$297,549	\$211,880	\$20,000	\$20,000
			\$1,000,000	\$743,874	\$529,701	\$50,000	\$50,000
TWC	3b	\$0	\$20,356	\$15,142	\$10,782	\$1,018	\$1,018
			\$50,889	\$37,855	\$26,956	\$2,544	\$2,544
BSA	6a	\$0	\$1,720	\$1,280	\$911	\$86	\$86
			\$4,300	\$3,199	\$2,278	\$215	\$215
CDFG	7b	\$0	\$1,147	\$853	\$607	\$57	\$57
			\$2,867	\$2,133	\$1,519	\$143	\$143
Private	8a, 8b	\$0	\$10,034	\$7,464	\$5,315	\$502	\$502
			\$25,086	\$18,661	\$13,288	\$1,254	\$1,254
Total:		\$0	\$1,516,399	\$1,128,009	\$803,238	\$75,820	\$75,820

Notes:

(1) Two costs are presented for each landowner. The first is the cost of monitoring the spread of invasive plant species. The second is the cost of removing invasive plant species, and will be incurred only if removal is found to be necessary as a result of monitoring.

(2) Guidance provided by the OMB specifies the use of a real discount 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).

Sources:

(1) Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.

(2) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management

Dispersed recreation is a term used to refer to any camping, hiking, backpacking, equestrian use, mountain biking, and vehicle use off of developed recreation sites. These activities threaten the PPP through increased trampling, soil compaction, and soil disturbance.⁵⁰

The cost of controlling off-road vehicle use has already been addressed in the previous chapter. Therefore, this chapter quantifies the impact of controlling dispersed camping, mountain biking, equestrian activities, and hiking. According to the proposed rule, dispersed recreation activities could threaten the PPP and their habitat in all of the subunits except 3a and 3b.⁵¹

In the Service's biological opinion to the USFS in 2001, it recommended continuing to maintain and administer the existing level and distribution of dispersed recreational use, but to implement impact avoidance and minimization measures such as 1) closing off high-use undesignated camp sites and walking areas with fencing; 2) posting "Stay on Trail" signs in dispersed recreation areas; 3) channeling visitors away from pebble plains without eliminating access to recreation sites; 4) working with adjacent landowners to control land use in pebble plains; and 5) increasing awareness of pebble plains habitat through information brochures, seasonal exhibits and school programs.⁵² Because the Service's biological opinion recommends maintaining the existing level and distribution of dispersed recreation, lost consumer surplus from reduced recreation opportunities is not considered in this analysis.

This chapter quantifies the economic impact of implementing actions to protect the PPP from dispersed recreation activities.⁵³ This section is divided into discussions of the impact on each landowner. Table 6 summarizes future impacts of managing dispersed recreation activities. Total future impacts are estimated to be \$0.03 million (undiscounted dollars) over twenty years.

⁵⁰ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

⁵¹ *Ibid.*

⁵² U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, p 9-12.

⁵³ This analysis does not calculate lost surplus because the Service does not anticipate preventing recreational activities, just managing the recreational activities in a way that minimizes impacts to PPP.

4.1 United States Forest Service

Past Costs

The USFS has undertaken projects to protect the PPP from dispersed recreation activities. In unit 2, the USFS has installed fencing along trails to prevent further encroachment into the pebble plain, established alternate paths, relocated annual bicycle races to other sites, and closed the Snow Summit Ski Area.⁵⁴ In unit 5, the USFS has permanently closed roads and conducted area patrols.⁵⁵ In units 8, 9, 10, and 11, the USFS has posted signs to keep hikers out of sensitive habitat.⁵⁶ Past costs in each year to the USFS associated with controlling dispersed recreation activities are \$1,500 (undiscounted), which includes the cost of labor, overhead, and materials.⁵⁷ The pebble plains plants were listed in September of 1998 and the USFS began activities to conserve the PPP in 1999.⁵⁸

Future Costs

Future actions, including patrolling pebble plain PCH and maintaining fences, signs, and barriers, are expected to be similar to the actions taken in the past. Total future costs are also expected to be \$1,500 per year, in undiscounted terms.

4.2 Other Landowners: California Department of Fish and Game, Boy Scouts of America, and Other Private Entities

Past Costs

CDFG could not be reached as of the writing of this report. It is assumed that no actions have been made in the past to control invasive nonnative plant species on CDFG lands. According to USFS staff, BSA has not taken any action to conserve the PPP within the Hitchcock Ranch, which encompasses the 6 acres of BSA land proposed for critical habitat designation.⁵⁹ Aside from the fence that was installed around units 8a and 8b (see section 2.2 above), it is assumed that no further actions have been taken in the past to protect the pebble plains from dispersed recreation on private land.

⁵⁴ 71 FR 67722.

⁵⁵ 71 FR 67723.

⁵⁶ 71 FR 67724-25.

⁵⁷ Past cost estimates from the USFS were provided in 2007 dollars. Costs were deflated using the average national CPI (<http://www.bls.gov/cpi>) for the years 1999 – 2006.

⁵⁸ Personal communication with Scott Eliason, USFS District Botanist, May 22, 2007.

⁵⁹ Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

Future Costs

This section of the report presents the impacts to CDFG, BSA, and other private entities of implementing minimization measures. Impacts are based on the cost per acre estimated for the USFS.⁶⁰ Costs in each year associated with land managed by CDFG are estimated to be \$4 (undiscounted dollars). Costs on land owned and managed by BSA are estimated to be \$6 per year (undiscounted dollars). Total costs associated with management on private lands are estimated to be about \$40 per year (undiscounted dollars).

⁶⁰ Annual cost per acre to the USFS of controlling dispersed recreation are estimated at \$1.08 (\$1,500 divided by 1,395.2 acres).

Table 6: Impacts of Dispersed Recreation Management

		Past Costs			Future Costs: 2007-2026				
Landowner	PCH Unit	Undiscounted Value	Present Value (3%)	Present Value (7%)	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
USFS	1a, 1b, 2a, 2b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a,	\$12,000	\$13,739	\$16,467	\$30,000	\$22,316	\$15,891	\$1,500	\$1,500
BSA	6a	\$0	\$0	\$0	\$129	\$96	\$68	\$6	\$6
CDFG	7b	\$0	\$0	\$0	\$86	\$64	\$46	\$4	\$4
Private	8a, 8b	\$0	\$0	\$0	\$753	\$560	\$399	\$38	\$38
Total:		\$12,000	\$13,739	\$16,467	\$30,968	\$23,036	\$16,404	\$1,548	\$1,548

Notes:

(1) Guidance provided by the OMB specifies the use of a real discount 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).

Source:

(1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

Appendix A: Economic Impacts on Small Businesses and Energy Production

This appendix considers the extent to which the analytic results presented in the previous sections reflect potential future impacts to small entities and the energy industry. The screening analysis presented in this appendix is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) in 1996. Information for this analysis was gathered from the Small Business Administration (SBA), U.S. Census Bureau, and the Risk Management Association (RMA). The energy analysis in section A.2 is conducted pursuant to Executive Order No. 13211.

A.1 SBREFA Analysis

In accordance with SBREFA, when a Federal agency publishes as notice of rulemaking for any proposed or final rule, it must make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). No regulatory flexibility analysis is required; however, if the head of an agency certifies that the rule will not have a significant economic impact 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 impact on a substantial number of small entities.

To assist in this process, the following represents a screening level analysis of the potential for PPP conservation efforts to affect small entities. The analysis is based on the estimated impacts associated with the proposed rulemaking as described in Chapters 2 through 4 of the analysis. The analysis evaluates the potential for economic impacts related to three categories:

- Unauthorized vehicle activities;
- Invasive, nonnative plant species management; and
- Dispersed recreation activities.

The following table identifies the landowners or managers meeting SBA's definition of small entities.

Landowner	Criteria	Small (Yes / No)
USFS	Governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000	No
CDFG		No
The Wildlands Conservancy	Not-for-profit enterprise that is independently owned and operated and not dominant in its field	Yes
Boy Scouts of America	Civic and Social Organizations: \$6.5 million	No
Private Landowners	Business that is independently owned and operated and not dominant in field	No
Notes: (1) The Wildlands Conservancy is considered a small entity for the purposes of this analysis		
Sources: (1) SBA size standards for governments and not-for-profit enterprises taken from SBA, Office of Advocacy, <i>A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act</i> , May 2003, p. 12. Size standard for NAICS code 813410 taken from NAICS Association, "Small Business Size Standards - Matched to NAICS," at http://www.naics.com/sba_sizestandards.htm , May 17, 2007.		

The U.S. Forest Service, the California Department of Fish and Game, and the Boy Scouts of America are not considered small entities by the Small Business Administration. The private landowners are unlikely to be business entities. Accordingly, the small business analysis contained in this appendix focuses on economic impacts to controlling unauthorized off-highway vehicles and nonnative plant species on land owned by TWC. The following table summarizes the potential economic impact to the small entity.

TWC is a nonprofit public benefit organization with a mission to, “preserve the beauty and biodiversity of the earth, and to fund programs so that every child may know the wonder and joy of nature.”¹ TWC is currently unaware of the presence of the PPP and their habitat on its land and has not taken action so far to conserve the plants. Impacts to TWC of managing off-road vehicles and invasive nonnative plant species are based on cost per acre estimates from the USFS. Annualized impacts to TWC at a 3 percent and 7 percent discount rate are expected to be about \$4,500. The annual revenue of TWC varies, but it is typically \$2.6 million or more.²

Small Entity	Annualized Impact (3% and 7% Discount Rate)
The Wildlands Conservancy	\$4,504
Sources: (1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007. (2) Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.	

¹ The Wildlands Conservancy website at: http://www.wildlandsconservancy.org/cnt_about.asp, May 17, 2007.

² Personal communication from Accountant, The Wildlands Conservancy, June 21, 2007.

A.2 Potential Impacts to the Energy Industry

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.”³

The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may institute “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 megawatts of installed capacity;
- 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.⁴

As none of the criteria is relevant to this analysis, energy-related impacts associated with conservation efforts within the proposed critical habitat are not expected.

³ Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance for Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, <http://www.whitehouse.gov/omb/memoranda/m01-27.html>.

⁴ *Ibid.*

Appendix B: Past Economic Impacts

This appendix summarizes past economic impacts. Past costs are the costs of efforts to conserve the PPP in the areas of proposed critical habitat between the time they were listed in 1998 and the year in which final designation of critical habitat is anticipated (2007). Past costs were calculated by interviewing the affected entities within critical habitat to determine if any resources had been expended on management, consultation with the Service, or other activities intended to conserve the species. Past costs also include the value of any lost economic opportunities attributable to listing. A summary of past economic impacts are presented in the table below.

Table B-1: Summary of Estimated Past Economic Impacts				
		Past Costs		
Landowner	PCH Units	Undiscounted Value	Present Value (3%)	Present Value (7%)
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$160,000	\$183,182	\$219,560
TWC	3b	\$0	\$0	\$0
BSA	6a	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0
Private	8a, 8b	\$606	\$702	\$849
Total:		\$160,606	\$183,884	\$220,409
Notes: (1) Guidance provided by the OMB specifies the use of a real discount 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).				