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**FINAL ENVIRONMENTAL ASSESSMENT**  
**for the**  
**DESIGNATION OF CRITICAL HABITAT**  
**for the**  
**JAGUAR**



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Prepared by Mangi Environmental Group  
For the  
Department of the Interior  
U.S. Fish & Wildlife Service

1 **FINAL ENVIRONMENTAL ASSESSMENT FOR THE DESIGNATION OF CRITICAL**  
2 **HABITAT FOR THE JAGUAR**

3 January 2014

4 **Lead Agency:** U.S. Department of the Interior (USDI)—United States Fish & Wildlife Service  
5 (USFWS or Service)

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14 **SUMMARY**

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15 The purpose of this environmental assessment (EA) is to identify and disclose the environmental  
16 consequences resulting from the Proposed Action of designating critical habitat for the jaguar  
17 (*Panthera onca*), originally proposed on August 20, 2012 (77 FR 50214-50242) under the  
18 Endangered Species Act of 1973 (ESA), as amended, and revised in 2013.

19 The jaguar was listed as endangered in 1972 in accordance with the Endangered Species  
20 Conservation Act of 1969 (37 FR 6476). A final rule clarifying that endangered status for the  
21 species extended into the United States was published in 1997 (62 FR 39147). The 1997  
22 clarifying rule included a determination that designation of critical habitat for the jaguar was not  
23 prudent because of the possibility of “take” if jaguar locations were known was the most  
24 significant threat to the jaguar (62 FR 39147). Since that time, the issue of whether critical  
25 habitat should be designated for the jaguar in the United States has been the subject of ongoing  
26 litigation and subsequent findings (for a full history of previous Federal action, see the August  
27 20, 2012, proposed rule (77 FR 50215)).

28 Most recently, on March 30, 2009 the United States District Court for the District of Arizona  
29 issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07-372- TUC JMR  
30 (Lead) and *Defenders of Wildlife v. Hall*, CV08-335 TUC JMR (Consolidated) (D. Ariz., Mar.  
31 30, 2009), that set aside the Service’s previous prudence determination and required a new  
32 determination as to “whether to designate critical habitat,” i.e., whether such designation is  
33 prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
34 determination that reevaluated the previous “not prudent” finding regarding critical habitat  
35 designation for the jaguar and provided the information supporting the previous findings (75 FR  
36 1741). As a result, the Service determined that the designation of critical habitat for the jaguar  
37 would be beneficial. On October 18, 2010, the Service sent a letter to the Center for Biological  
38 Diversity and Defenders of Wildlife updating them on its process of developing a recovery plan  
39 and critical habitat for the jaguar. Additionally, the Service stated that, based on the unusual

1 situation where the best information on habitat in the United States essential to the conservation  
2 of the jaguar was being gathered through the recovery planning effort, it would postpone  
3 publishing a proposed critical habitat rule until spring 2012.

4 Three alternatives were considered: Alternative A – All Designated Areas, No Exclusions;  
5 Alternative B – Exclusion of the Tohono O’odham Nation’s (TON) tribal lands; and the No  
6 Action Alternative.

7 Alternative A would designate approximately 347,277 hectares (ha) (858,137 acres) (ac) for  
8 designation as critical habitat for the jaguar in Pima, Santa Cruz, and Cochise Counties, Arizona,  
9 and Hidalgo County, New Mexico.

10 Alternative B is similar to Alternative A, but it excludes tribal lands of the Tohono O’odham  
11 Nation and exempts Fort Huachuca lands. Under Alternative B, approximately 309,263 ha  
12 (764,207 ac) in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New  
13 Mexico would be designated as critical habitat. Benefits of excluding these tribal lands from  
14 designated critical habitat include the advancement of our Federal Indian Trust obligations, our  
15 deference to tribes to develop and implement tribal conservation and natural resource  
16 management plans for their lands and resources, which includes the jaguar, and the preservation  
17 of our cooperative partnership with the Tohono O’odham Nation.

18  
19 The U.S. Army’s Ft. Huachuca installation’s integrated natural resources management plan  
20 (INRMP) is being considered for exemption from designation, per the National Defense  
21 Authorization Act for Fiscal Year 2004 (Pub. L. 108-136), which amended the Sikes Act (16  
22 U.S.C. 670a) to limit areas eligible for designation as critical habitat. Specifically, section  
23 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The Secretary shall not  
24 designate as critical habitat any lands or other geographic areas owned or controlled by the  
25 Department of Defense, or designated for its use, that are subject to an integrated natural  
26 resources management plan [INRMP] prepared under section 101 of the Sikes Act, if the  
27 Secretary determines in writing that such plan provides a benefit to the species for which critical  
28 habitat is proposed for designation.” Fort Huachuca has a completed INRMP that includes  
29 benefits for jaguars and their habitat, as well as protects the PCEs of critical habitat. t.

30 The Service is proposing to designate six critical habitat units for the jaguar in Arizona and New  
31 Mexico as follows:

- 32 • Unit 1, Baboquivari Unit, approximately 57,142ha ( 141,200 ac) in the Baboquivari  
33 Mountains, Arizona.
- 34 • Unit 2, Atascosa Unit, approximately 58,625 ha (144,864 ac) in the Tumacacori,  
35 Atascosa, and Pajarito Mountains, Arizona.
- 36 • Unit 3, Patagonia Unit, approximately 148,364 ha (366,615 ac) in the Santa Rita,  
37 Patagonia, and Huachuca Mountains and Canelo Hills, Arizona.
- 38 • Unit 4, Whetstone Unit, approximately 38,453 ha (95,020 ac) in the Whetstone  
39 Mountains, including connections to the Santa Rita and Huachuca Mountains, Arizona.
- 40 • Unit 5, Peloncillo Unit, approximately 41,571 ha (102,723 ac) in the Peloncillo  
41 Mountains, Arizona and New Mexico.
- 42 • Unit 6, San Luis Unit, approximately 3,122 ha (7,714 ac) in the San Luis Mountains,

1 New Mexico.  
2

3 The environmental issues identified by Federal agencies and the public during the initial public  
4 comment period and during resource analysis were those raised by the types of actions taken by  
5 public and private land managers in the region, including the impacts of critical habitat  
6 designation on border enforcement activities, water resources, vegetation, wildlife, wildland fire  
7 management, livestock grazing, land management and use, recreation, development, minerals  
8 and mining extraction, and hunting.

9 The role that jaguar habitat in the United States serves is to provide areas to support some  
10 transient individual jaguars during dispersal movements by providing patches of habitat (perhaps  
11 in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of  
12 the nearest core area and breeding population in the proposed Northwestern Recovery Unit.  
13 With respect to the impacts of designation on consultations and project modifications, the  
14 following scenarios could occur:

- 15 (1) Previously completed section 7 consultations for which project effects are ongoing or still  
16 occurring will need to reevaluate their impacts to the primary constituent elements  
17 (PCEs), and, in some cases, reinstate consultation if impacts to jaguar critical habitat  
18 were not sufficiently addressed;
- 19 (2) Consultations for new actions that may affect the jaguar will need to include  
20 consideration of effects to critical habitat and individual PCEs occurring in remote,  
21 rugged areas, in particular those that potentially could result in severing connectivity  
22 within a critical habitat unit or subunit; and
- 23 (3) Potentially, Federal agencies with responsibilities in critical habitat units considered  
24 unoccupied at the time of listing will now consider consultation on jaguar critical habitat,  
25 whereas they may not have considered consulting on jaguars in the past based on  
26 occupancy status. However, such incremental consultations are considered unlikely in  
27 actuality based on the current practice of Federal land managers, which subjects all areas  
28 proposed here as critical habitat to analysis of the impacts of their actions on jaguars.

29

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# 1 *Acronyms & Abbreviations*

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|    |        |   |
|----|--------|---|
| 2  | ac     | acre  |
| 3  | ADWR   | Arizona Department of Water Resources                       |
| 4  | AGFD   | Arizona Game and Fish Department                            |
| 5  | AMA    | Active Management Area                                      |
| 6  | AMP    | Allotment Management Plan                                   |
| 7  | AUM    | Animal Unit Month   |
| 8  | AWSA   | Arizona Water Settlements Act                               |
| 9  | BIA    | U.S. Bureau of Indian Affairs                               |
| 10 | BLM    | U.S. Bureau of Land Management                              |
| 11 | BMPs   | Best Management Practices                                   |
| 12 | BO     | Biological Opinion  |
| 13 | CAP    | Central Arizona Project                                     |
| 14 | CBP    | U.S. Customs and Border Protection                          |
| 15 | CEQ    | Council on Environmental Quality                            |
| 16 | CFR    | Code of Federal Regulations                                 |
| 17 | CI     | Conservation International                                  |
| 18 | cm     | Centimeter  |
| 19 | CRBPA  | Colorado River Basin Project Act                            |
| 20 | DHS    | U.S. Department of Homeland Security                        |
| 21 | EA     | Environmental Assessment                                    |
| 22 | EIS    | Environmental Impact Statement                              |
| 23 | EPA    | Environmental Protection Agency                             |
| 24 | ESA    | Endangered Species Act                                      |
| 25 | FEMA   | Federal Emergency Management Agency                         |
| 26 | FHWA   | Federal Highway Administration                              |
| 27 | FMP    | Fire Management Plan  |
| 28 | FONSI  | Finding of No Significant Impact                            |
| 29 | FR     | Federal Register  |
| 30 | ft     | foot  |
| 31 | ha     | hectare   |
| 32 | HCP    | Habitat Conservation Plan                                   |
| 33 | in     | Inch  |
| 34 | IEc    | Industrial Economics  |
| 35 | IIRIRA | Illegal Immigration Reform and Immigrant Responsibility Act |
| 36 | INRMP  | Integrated Natural Resources Management Plan                |
| 37 | km     | kilometer   |
| 38 | LUP    | Land Use Plan   |
| 39 | m      | meter   |
| 40 | mi     | mile  |
| 41 | MRA    | Multiple Resource Area                                      |
| 42 | MSCP   | Multispecies Conservation Program                           |
| 43 | NAICS  | North American Industry Classification System               |
| 44 | NCA    | National Conservation Area                                  |

|    |           |  |
|----|-----------|--|
| 1  | NEPA      | National Environmental Policy Act                |
| 2  | NMDGF     | New Mexico Department of Game and Fish           |
| 3  | NMOSE     | New Mexico Office of the State Engineer          |
| 4  | NPS       | National Park Service                            |
| 5  | NRHP      | National Register of Historic Places             |
| 6  | NWR       | National Wildlife Refuge                         |
| 7  | OHV       | Off-highway vehicle                              |
| 8  | PBFs      | Physical or Biological Features                  |
| 9  | PCEs      | Primary Constituent Elements                     |
| 10 | RMP       | Resource Management Plan                         |
| 11 | RU        | Recovery Unit                                    |
| 12 | SBINet    | Secure Border Initiative                         |
| 13 | Secretary | Secretary of the Interior                        |
| 14 | Service   | U.S. Fish and Wildlife Service                   |
| 15 | SHA       | Safe Harbor Agreement                            |
| 16 | TES       | Threatened, Endangered, or Sensitive Species     |
| 17 | TON       | Tohono O'odham Nation                            |
| 18 | UDWR      | Utah Division of Water Rights                    |
| 19 | USACE     | U.S. Army Corps of Engineers                     |
| 20 | USAF      | U.S. Air Force                                   |
| 21 | USBR      | U.S. Bureau of Reclamation                       |
| 22 | USDA      | U.S. Department of Agriculture                   |
| 23 | USFS      | U.S. Forest Service                              |
| 24 | USFWS     | U.S. Fish & Wildlife Service                     |
| 25 | USDI      | U.S. Department of the Interior                  |
| 26 | USGS      | United States Geological Survey                  |
| 27 | USIBC     | U.S. International Boundary and Water Commission |
| 28 | WFLC      | Wildland Fires Leadership Council                |
| 29 | WSA       | Wilderness Study Area                            |
| 30 | WUI       | Wildland Urban Interface                         |

---

# 1 CHAPTER 1

## 2 PURPOSE OF AND NEED FOR ACTION

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### 3 1.1 Introduction

4 The jaguar (*Panthera onca*) was listed as endangered in 1972 in accordance with the Endangered  
5 Species Conservation Act of 1969 (37 FR 6476). A final rule clarifying that endangered status  
6 for the species extended into the United States was published in 1997 (62 FR 39147), but did not  
7 include a critical habitat designation. According to Service regulations, designation of critical  
8 habitat is not prudent when one or both of the following situations exist: (1) the species is  
9 threatened by taking or other human activity, and identification of critical habitat can be  
10 expected to increase the degree of threat to the species; or (2) such designation of critical habitat  
11 would not be beneficial to the species. The 1997 clarifying rule determined that designation of  
12 critical habitat for the jaguar was not prudent because of the possibility of “take” if jaguar  
13 locations were known was the most significant threat to the jaguar (62 FR 39147). Since that  
14 time, the issue of whether critical habitat should be designated for the jaguar in the United States  
15 has been the subject of ongoing litigation and subsequent findings (for a full history of previous  
16 Federal action, see the August 20, 2012, proposed rule (77 FR 50215)).

17 Most recently, on March 30, 2009 the United States District Court for the District of Arizona  
18 issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07-372-TUC JMR  
19 (Lead) and *Defenders of Wildlife v. Hall*, CV08-335 TUC JMR (Consolidated) (D. Ariz., Mar.  
20 30, 2009), that set aside the Service’s previous prudency determination and required a new  
21 determination as to “whether to designate critical habitat,” i.e., whether such designation is  
22 prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
23 determination that reevaluated the previous “not prudent” finding regarding critical habitat  
24 designation for the jaguar and provided the information supporting the previous findings (75 FR  
25 1741). As a result, the Service determined that the designation of critical habitat for the jaguar  
26 would be beneficial. On October 18, 2010, the Service sent a letter to the Center for Biological  
27 Diversity and Defenders of Wildlife updating them on its process of developing a recovery plan  
28 and critical habitat for the jaguar. Additionally, the Service stated that, based on the unusual  
29 situation where the best information on habitat in the United States essential to the conservation  
30 of the jaguar was being gathered through the recovery planning effort, it would postpone  
31 publishing a proposed critical habitat rule until spring 2012.

### 32 1.2 Purpose and Need of the Action

33 Preservation of the habitat of an endangered species is a crucial element for the conservation of  
34 that species. A primary purpose of the ESA is to “provide a means whereby the ecosystems  
35 upon which endangered species and threatened species depend may be conserved” (section 2[b]).  
36 The purpose of critical habitat designation as specified in the ESA is to provide protection of  
37 habitat that is essential to the conservation of listed species.

38 The purpose of this Proposed Action is to designate critical habitat for the jaguar, a species  
39 listed as endangered under the ESA. Critical habitat designation identifies geographic areas

1 that are essential for conservation of the jaguar and that may also require special management.  
2 The designation also describes the physical and biological features that constitute the primary  
3 constituent elements (PCEs) of critical habitat.  
4 The need for the action is to implement the Service’s finding, subsequent to the March 30, 2009  
5 order of the U.S. District Court for the District of Arizona, that designation of critical habitat for  
6 the jaguar would be “prudent,” pursuant to Section 4(a)(3) of the ESA, which states that critical  
7 habitat shall be designated “to the maximum extent prudent and determinable.”

### 8 **1.3 Proposed Action**

9 The Service is proposing six units as critical habitat for the jaguar. The critical habitat areas  
10 described below constitute the Service’s current best assessment of areas that meet the definition  
11 of critical habitat for the jaguar. The six units proposed as critical habitat are: (1) Baboquivari  
12 Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the Northern  
13 Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern Baboquivari  
14 Subunit (the Proposed Action considers excluding lands within the Tohono O’odham Nation  
15 and exempting Fort Huachuca); (2) Atascosa Unit, including the Pajarito, Atascosa, and  
16 Tumacacori Mountains; (3) Patagonia Unit, including the Patagonia, Santa Rita, Empire, and  
17 Huachuca Mountains and the Canelo and Grosvenor Hills; (4) Whetstone Unit, divided into  
18 subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa Rita Subunit, and (4c) Whetstone-  
19 Huachuca Subunit; (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and  
20 New Mexico; and (6) San Luis Unit, including the northern extent of the San Luis Mountains at  
21 the New Mexico-Mexico border. The revised proposed critical habitat designation includes  
22 lands under Federal (61%), state (15%), tribal (9%), and private (15%), land ownership. Much  
23 of the Federal land is managed by the U.S. Forest Service (USFS) in the Coronado National  
24 Forest.

25 The proposed areas are described in more detail in Section 2.3 (see Figure 2 on page 45) and  
26 mapped fully in the revised proposed rule, and incorporated herein by reference.

### 27 **1.4 Background**

#### 28 **1.4.1 Critical Habitat**

##### 29 **1.4.1.1 Provisions of the ESA**

30 Section 4(a)(3) of the ESA states that critical habitat shall be designated to the maximum extent  
31 prudent and determinable and that such designation may be revised periodically as appropriate.  
32 Section 4(b)(2) of the ESA requires that critical habitat designation be based on the best  
33 scientific information available and that economic, national security, and other relevant impacts  
34 be considered. In section 3(5)(A) of the ESA, critical habitat is defined as:

- 35 (i) the specific areas within the geographical area occupied by a species, at the time it is  
36 listed in accordance with the provisions of section 4 of the ESA, on which are found

1 those physical or biological features (PBFs) (1) essential to the conservation of the  
2 species and (2) which may require special management considerations or protection; and

3 (ii) specific areas outside the geographical area occupied by a species at the time it is listed in  
4 accordance with the provisions of section 4 of the Act, upon the determination by the  
5 Secretary of the Interior (Secretary) that such areas are essential for the conservation of  
6 the species. Section 3(5)(C) also states that critical habitat “shall not include the entire  
7 geographic area which can be occupied by the threatened or endangered species,” except  
8 when the Secretary of the Interior determines that the areas are essential for the  
9 conservation of the species.

#### 10 **1.4.1.2 Section 4(b)(2) Exclusion Process**

11 Section 4(b)(2) of the ESA allows the Secretary to exclude any area from the critical habitat  
12 designation after considering the economic, national security, or other relevant impacts of  
13 designating the area or if the Secretary determines that the benefit of excluding the area exceeds  
14 the benefit of designating it as critical habitat, unless the exclusion would result in the extinction  
15 of the species. After reviewing public comment on the critical habitat proposal, revised critical  
16 habitat proposal, public comments on this draft EA, and public comments on the draft economic  
17 analysis, the Secretary could determine to exclude areas other than those addressed in this EA.  
18 This is as provided for in ESA section 4(b)(2) and in implementing regulations at 50 CFR Part  
19 424.19.

#### 20 **1.4.1.3 Section 7 Consultation Process**

21 Section 7(a)(2) of the ESA requires Federal agencies to consult with the Service to “insure that  
22 any action authorized, funded, or carried out by such agency is not likely to jeopardize the  
23 continued existence of any endangered species or threatened species or result in the destruction  
24 or adverse modification of habitat of such species which is determined to be critical.” Each  
25 agency is required to use the best scientific and commercial data available. This consultation  
26 process is typically referred to as *section 7 consultation*. Section 7 of the ESA does not apply to  
27 state, local, or private land unless there is a Federal nexus (i.e., unless the action involves Federal  
28 funding, authorization, or permitting). Designation of critical habitat can help focus  
29 conservation efforts by identifying areas that are essential for the conservation of the species.  
30 Designation of critical habitat also serves to alert the public and land management agencies to  
31 the importance of an area for conservation of a listed species. As described above, critical  
32 habitat receives protection from destruction or adverse modification through required  
33 consultation under section 7 of the ESA. Aside from outcomes of consultation with the Service  
34 under section 7, the ESA does not automatically impose any restrictions on lands designated as  
35 critical habitat.

36 The section 7 consultation process begins with a determination of the effects on a listed species  
37 and designated critical habitat by a Federal action agency. If the Federal action agency  
38 determines that there would be no effect on listed species or designated critical habitat, then the  
39 section 7 process concludes at that point. If the Federal action agency determines that listed  
40 species or designated critical habitat may be affected, then consultation with the Service is  
41 initiated, and the agency and the Service may enter into informal section 7 consultation.  
42 Informal consultation is an optional process for identifying affected species and critical habitat,

1 determining potential effects, and exploring ways to modify the action to remove or reduce  
2 adverse effects on listed species or critical habitat (50 CFR Part 402.13). During this process the  
3 Service may make suggestions concerning project modifications, which then can be adopted by  
4 the action agency.

5 The informal section 7 consultation process concludes in one of two ways: (1) the Service  
6 concurs in writing that the proposed action, as modified, is not likely to adversely affect listed  
7 species or critical habitat or (2) the Service determines that adverse effects are likely to occur. If  
8 the Service determines that adverse effects on species or critical habitat are likely to occur,  
9 formal consultation is initiated (50 CFR Part 402.14). Formal consultation concludes with a  
10 Biological Opinion (BO) issued by the Service on whether the proposed Federal action is likely  
11 to jeopardize the continued existence of a listed species or to destroy or adversely modify critical  
12 habitat (50 CFR Part 402.14[h]).

13 In making a determination on whether an action will result in jeopardy, the Service begins by  
14 looking at the current status of the species, or "baseline." Added to the baseline are the various  
15 effects – direct, indirect, interrelated, and interdependent – of the proposed Federal action. The  
16 Service also examines the cumulative effects of other non-Federal actions that may occur in the  
17 action area, including state, tribal, local, or private activities that are reasonably certain to occur  
18 in the project area. The Service’s analysis is then measured against the definition of jeopardy.  
19 Under the ESA, jeopardy occurs when an action is reasonably expected, directly or indirectly, to  
20 diminish a species’ numbers, reproduction, or distribution so that the likelihood of survival and  
21 recovery in the wild is appreciably reduced. If the Service concludes that an action will result in  
22 incidental take of listed species, the Service may prepare an incidental take statement with  
23 reasonable and prudent measures to minimize take and associated, mandatory terms and  
24 conditions that describe the methods for accomplishing the reasonable and prudent measures.

25 Separate analyses are made under both the jeopardy and the adverse modification standards.  
26 While the jeopardy analysis evaluates potential impacts on the species as described above, the  
27 adverse modifications analysis specifically evaluates potential impacts on designated critical  
28 habitat.

29 The Ninth Circuit Court recently determined that there is an additional difference between the  
30 two standards. In *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, 378  
31 F.3d 1059 (9th Cir. 2004), the court held that while the jeopardy standard concerns the survival  
32 of a species or its risk of extinction, the adverse modification standard concerns the value of  
33 critical habitat for the recovery, or eventual delisting, of a species. As pointed out in the Ninth  
34 Circuit decision, survival of a species and recovery (or conservation) of a species are distinct  
35 concepts in the ESA. Implementation of the two standards, therefore, involves separate and  
36 distinct analyses based on these concepts. In light of the *Gifford Pinchot* decision, the Service no  
37 longer relies on the regulatory definition of “destruction of adverse modification” of critical  
38 habitat at 50 CFR 402.02. Instead, the Service relies on the statutory provisions of the ESA to  
39 complete the analysis with respect to critical habitat. The potential for destruction or adverse  
40 modification of critical habitat by a Federal action is assessed by determining the effects of the  
41 proposed Federal action on PBFs and PCEs of habitat qualities that are essential to the  
42 conservation of the species. These anticipated effects are then analyzed to determine how they  
43 will influence the function and conservation role of the affected critical habitat. This analysis  
44 provides the basis for determining the significance of anticipated effects of the proposed Federal

1 action on critical habitat. The threshold for destruction or adverse modification is evaluated in  
2 the context of whether the critical habitat would remain functional to serve the intended  
3 conservation role for the species. Before a destruction or adverse modification determination is  
4 reached, an activity adversely affecting critical habitat must be of such severity or intensity that  
5 the physical and biological features of critical habitat are compromised to the extent that the  
6 critical habitat can no longer meet its intended conservation function. A “non-jeopardy” or “no  
7 adverse modification” opinion concludes consultation, and the proposed action may proceed  
8 under the ESA.

9 Discretionary conservation recommendations may be included in a BO based on the effects on  
10 the species. Conservation recommendations, whether they relate to the jeopardy or adverse  
11 modification standard, are discretionary actions recommended by the Service. These  
12 recommendations may address minimizing adverse effects on listed species or critical habitat,  
13 identifying studies or monitoring, or suggesting how action agencies can assist species under  
14 their own authorities and section 7(a)(1) of the ESA.

15 There are no ESA section 9 prohibitions for critical habitat. Therefore, a BO that concludes “no  
16 destruction or adverse modification of critical habitat” may contain conservation  
17 recommendations but would not include an incidental take statement (since only species can be  
18 “taken”), reasonable and prudent measures, or other terms and conditions for designated critical  
19 habitat. In a BO that results in a jeopardy or adverse modification conclusion, the Service  
20 develops mandatory reasonable and prudent alternatives to the proposed action. Reasonable and  
21 prudent alternatives are actions that the Federal agency can take to avoid jeopardizing the  
22 continued existence of the species or adversely modifying the critical habitat. Reasonable and  
23 prudent alternatives may vary from minimal project changes to extensive redesign or relocation  
24 of the project, depending on the situations involved. Reasonable and prudent alternatives must  
25 be consistent with the intended purpose of the proposed action, and they also must be consistent  
26 with the scope of the Federal agency’s legal authority. Furthermore, the reasonable and prudent  
27 alternatives must be economically and technically feasible.

## 28 **1.4.2 Jaguar**

29 The following briefly summarizes key information about the physical and biological features  
30 (PBFs) of the jaguar and PCEs that determine its critical habitat. For more detail, and for a  
31 description of the species and information about its life history, habitat, and distribution, consult  
32 the final rule clarifying that endangered status for the species extended into the United States (62  
33 FR 39147) the August 20, 2012, proposed critical habitat designation rule (77 FR 50213-50242),  
34 and the July 1, 2013, revised proposed rule (78 FR 39237), which are herein incorporated by  
35 reference.



Figure 1. Jaguar

1.4.2.1 Physical and Biological Features for the Jaguar

In determining which areas to propose as critical habitat within the geographical area occupied at the time of listing, the Service considered the PBFs essential to the conservation of the species that may require special management considerations or protection. Five categories of PBFs are identified in 50 CFR §424.12, but the specific PBFs required for a species are derived from the studies of this species' habitat, ecology, and life history as described below in Table 1.1. The specific needs for the jaguar are described in detail in the August 20, 2012, proposed critical habitat rule (77 FR 50213-50242) and the July 1, 2013 revised proposed rule (78 FR 39237), and additional information on jaguar ecology is provided in the Recovery Outline (Service 2012a).

Table 1.1. Summary of the Physical and Biological Features Specific to the Jaguar

| PBF  | Summary of Jaguar Specific PBFs  |
|--|--|
| Space for individual and population growth and for normal behavior.                    | Jaguars have large home ranges and require a significant amount of space for individual and population growth and for normal behavior. Expansive open spaces in the United States are considered those areas of at least 100 km <sup>2</sup> (38.6 mi <sup>2</sup> ) in size. They require connectivity between such areas in the U.S. and Mexico. |
| Food, water, air, light, minerals, or other nutritional or physiological requirements. | <i>Food</i> —Areas containing adequate numbers of native prey, including deer, javelina, and medium-sized prey items (such as coatis, skunks, raccoons, or jackrabbits) are an essential component.<br><i>Water</i> — Year-round water sources within at least 20 km (12.4 mi) of each other are an essential component.                           |
| Cover or shelter.  | <i>Vegetative cover</i> —Jaguars require vegetative cover allowing them to stalk and ambush prey, as well as providing areas in which to den and rest. The Service has identified Madrean evergreen woodlands and semidesert grasslands containing from greater than 1 to 50 percent tree cover as essential for the conservation of               |

| PBF  | Summary of Jaguar Specific PBFs   |
|--|---|
|  | <p>the jaguar in the U.S.</p> <p><i>Rugged topography</i>—Rugged topography (including canyons, ridges, and some rocky hills to provide sites for resting) is an important component of jaguar habitat in the northwestern-most portion of its range. Areas of intermediately, moderately, or highly rugged terrain are essential for the conservation of the jaguar in the U.S.</p> <p><i>Elevation</i>—Areas below 2,000 m (6,562 feet (ft)) in elevation are essential for the conservation of jaguar in the U.S.</p>  |
| Sites for breeding, reproduction, or development of offspring.   | No specific PBF description for the jaguar.   |
| Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species. | Human populations can impact jaguars directly by killing individuals through hunting, poaching, or depredation control, as well as indirectly through disturbance of normal biological activities, loss of habitat, and habitat fragmentation. Human density can affect the presence or absence of the jaguar because jaguars are secretive animals and generally tend to avoid highly disturbed areas. These areas are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1 square km (0.4 square mi) area. |

1 To summarize the PBFs in a single statement, the service has determined that the following PBF  
2 is essential for the jaguar: Expansive open spaces in the southwestern United States with  
3 adequate connectivity to Mexico that contain a sufficient native prey base and available surface  
4 water, have suitable vegetative cover and rugged topography to provide sites for resting, and  
5 have minimal human impact, as further described in the August 20, 2012 proposed rule (77 FR  
6 50213-50242) and the July 1, 2013 revised proposed rule (78 FR 39237),.

7 **1.4.2.2 Primary Constituent Elements for the Jaguar**

8 Under the Act and its implementing regulations (50 CFR §424.12), the Service is required to  
9 identify the PBFs essential to the conservation of the jaguar in areas occupied at the time of  
10 listing, focusing on the features’ PCEs. The Service considers PCEs to be the elements of  
11 physical and biological features that provide for a species’ life-history processes, and are  
12 essential to the conservation of the species.

13 Based on the above needs and the Service’s current knowledge of the life history, biology, and  
14 ecology of the species, and the habitat requirements for sustaining the essential life-history  
15 functions of the species, the Service has determined that the PCEs essential to the conservation  
16 of the jaguar are: expansive open spaces in the southwestern U.S. of at least 100 square  
17 kilometers (km<sup>2</sup>) (38.6 square mi (mi<sup>2</sup>)) in size which:

- 18 (1) Provide connectivity to Mexico;
- 19 (2) Contain adequate levels of native prey species, including deer and javelina, as well as  
20 medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;
- 21 (3) Include surface water sources available within 20 km (12.4 mi) of each other;
- 22 (4) Contain from greater than 1 to 50 percent canopy cover within Madrean evergreen  
23 woodland, generally recognized by a mixture of oak, juniper, and pine trees on the  
24 landscape, or semidesert grassland vegetation communities, usually characterized by

1 *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other  
2 grasses;

3 (5) Are characterized by intermediately, moderately, or highly rugged terrain;

4 (6) Are characterized by minimal to no human population density, no major roads, or no  
5 stable nighttime lighting over any 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) area; and

6 (7) Are below 2,000 m (6,562 ft) in elevation.

7 Specific descriptions of these PCEs are found in the August 20, 2012, proposed rule (77 FR  
8 50213-50242) and July 1, 2013 revised proposed rule (78 FR 39237). Six units proposed to be  
9 designated as critical habitat may be occupied by jaguars and contain the components of the  
10 PCEs sufficient to support the life-history needs of the species. In our analysis we also evaluated  
11 the areas we consider occupied at the time of listing and determined that these same areas are  
12 also essential for the conservation of jaguars in the Northwestern Recovery Unit, and therefore,  
13 for the species as a whole. Two of these units also contain subunits that provide connectivity to  
14 Mexico and are essential to the conservation of the species.

## 15 **1.5 Permits Required for Implementation**

16 No permits are required for critical habitat designation. Designation of critical habitat occurs  
17 through a rulemaking process under the Administrative Procedures Act (5 U.S.C. §551–59, 701–  
18 06, 1305, 3105, 3344, 5372, 7521) and the ESA.

## 19 **1.6 Related Laws, Authorizations, and Plans**

20 As mentioned, section 7 of the ESA require Federal agencies to consult with the Service when  
21 there are potential effects to endangered or threatened species, independent of critical habitat.  
22 The ESA also prohibits any person from “taking” the species without a permit from the Service.  
23 Other Federal laws address various aspects of conservations of fish and wildlife and their habitat,  
24 which apply to the jaguar:

- 25 1. Federal Land Policy and Management Act. The Federal Land Policy and Management  
26 Act of 1976 requires that “. . . the public lands be managed in a manner that will protect  
27 the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric,  
28 water resource, and archeological values; that. . . will preserve and protect certain public  
29 lands in their natural condition; (and) that will provide food and habitat for fish and  
30 wildlife . . .”.
- 31 2. National Forest Management Act. The National Forest Management Act of 1976 directs  
32 that the National Forest System “...where appropriate and to the extent practicable, will  
33 preserve and enhance the diversity of plant and animal communities.” Additionally, sec.  
34 219.12(g) requires the maintenance of viable populations of native vertebrates in National  
35 Forests.
- 36 3. Convention on International Trade in Endangered Species of Wild Fauna and Flora  
37 (CITES). CITES is an international agreement between governments to ensure that  
38 international trade in specimens of wild animals and plants does not threaten their  
39 survival. The jaguar is listed under Appendix I, meaning it is considered one of the most  
40 endangered among CITES-listed animals and plants. Because Appendix I animals and

1 plants are threatened with extinction, CITES prohibits international trade in specimens of  
2 these species (with some exceptions).

- 3 4. The Lacey Act (16 USC §3371 et seq.), as amended in 1982. The Act prohibits the  
4 import, export, sale, receipt, acquisition, purchase, and engagement in interstate or  
5 foreign commerce of any species taken, possessed, or sold in violation of any law, treaty,  
6 or regulation of the United States, and Tribal law, or any law or regulation of any state.
- 7 5. Comprehensive Conservation Plans (CCP). The Service prepares a plan for each  
8 National Wildlife Refuge (NWR) which contains proposed critical habitat. These plans  
9 define the conservation goals and strategies and resulting land uses and activities within  
10 each NWR to best achieve those goals.
- 11 6. Arizona. The State of Arizona describes the jaguar as a “species of greatest conservation  
12 need” in the Arizona Game and Fish Department’s (AGFD) Wildlife Action Plan, and  
13 current penalties for unlawfully killing a jaguar are deferred to those that would apply  
14 through a violation of section 9 of the Act. However, increased penalties under State law  
15 for the unlawful killing of jaguars will apply in Arizona, if the jaguar is delisted.
- 16 7. New Mexico. The State of New Mexico describes the jaguar as a “restricted species,” the  
17 definition of which is “any listed large exotic cat species or subspecies.” Therefore, the  
18 State of New Mexico does not currently consider the jaguar as part of its native fauna,  
19 and does not manage for the species.

## 20 **1.7 Issues and Concerns from Public Comments**

21 The August 20, 2012, proposed designation was open for public comment from August 20, 2012  
22 through October 19, 2012. The July 1, 2013 revised proposed rule was open for public  
23 comments from July 1, 2013 to August 9, 2013. A third comment period opened August 29,  
24 2013, and closed September 13, 2013. Comments received from the public and interested  
25 stakeholders raised the following issues:

### 26 *Extent of Critical Habitat*

- 27 • While illegal killing of jaguars continues to be a major threat to jaguars south of the U.S.-  
28 Mexico border, it does not appear to be a significant threat within the U.S. Thus, critical  
29 habitat should be focused in Mexico.
- 30 • Maintenance of the interconnectivity of U.S. habitat with habitat in Mexico as human  
31 population, road and urban density, and habitat fragmentation continue to increase.
- 32 • Several commenters requested an increase in the range of critical habitat in the U.S.:
  - 33 ○ Concerns that there are not enough water resources located within the designated  
34 critical habitat and suggest establishing 20 km wide corridors of critical habitat in  
35 valleys that are centered on surface water sources in valleys.
  - 36 ○ The following additional mountain ranges within the current boundary of the  
37 Northwestern Recovery Unit (as described in the April 2012 Recovery Outline for the  
38 jaguar) should be designated as critical habitat: in Arizona, the Chiricahua, Dos  
39 Cabezas, Dragoon and Mule mountains, and in New Mexico the Animas and  
40 adjoining Pyramid mountains.
  - 41 ○ The following additional “sky island” mountain ranges outside of the current  
42 boundaries of the Northwestern Recovery Unit should be designated as critical

- 1 habitat: In New Mexico, the Alama Hueco, Big Hatchet, Little Hatchet, Florida, West  
 2 and East Potrillo, Cedar and Big Burro mountains; in Arizona, the Galiuro, Santa  
 3 Teresa, Pinaleno, Whitlock, Santa Catalina and Rincon mountains. Straddling both  
 4 states, the Peloncillo Mountains north of the current boundaries of the Northwestern  
 5 Recovery Unit should also be designated.
- 6 ○ The following lowland areas between mountain ranges in the Sky Islands region (both  
 7 within and outside of the current boundary of the Northwestern Recovery Unit)  
 8 should be designated as critical habitat: In Arizona, the Buenos Aires NWR, and the  
 9 upper Santa Cruz River, San Pedro River, Sulpher Springs, San Bernadino and Falcon  
 10 valleys; in New Mexico, the Animas, Playa, Hachita and Mimbres River valleys and  
 11 the Lordsburg Mesa; and in both states the Gila River Valley.
  - 12 ○ The following vast region north of the current boundary of the Northwestern  
 13 Recovery Unit should be designated as critical habitat: In Arizona, the Mogollon Rim  
 14 along with adjoining spurs and canyons; in New Mexico, the contiguous lands of the  
 15 Gila National Forest along with the Plains of San Augustin, the Zuni Plateau, the El  
 16 Malpais National Monument and National Conservation Area (NCA), and the San  
 17 Mateo, Magdalena, Chupadera, Datil, Sawtooth, Luera and Summit mountains.
  - 18 ○ The Rosemont Copper Project is located within Ce:wi Duag, which is within the  
 19 historic Papaguera of the Tohono O’odham Nation. Ce:wi Duag is a Traditional  
 20 Cultural Place used by the Tohono O’odham that is eligible for listing in the National  
 21 Register of Historic Places (NRHP). The Rosemont Copper Project would harm the  
 22 cultural and environmental resources of this area; therefore, the final critical habitat  
 23 designation should include Federal lands within Ce:wi Duag.
  - 24 ○ The PCEs of jaguar critical habitat should also include less rugged lands, extremely  
 25 rugged lands, the vegetation associated with Rocky Mountain montane conifer forest  
 26 and Great Basin conifer woodlands, and areas with human influence index of 30, if  
 27 not more.
- 28 ● Several comments requested exclusion from critical habitat.
  - 29 ● Desire to exclude Tohono O’odham Nation trust lands from critical habitat designation.
  - 30 ● Fort Huachuca is requesting exemption from critical habitat designation based on the Fort’s  
 31 INRMP, prepared under section 101 of the Sikes Act (16 U.S.C. 670a) and which currently  
 32 provides a benefit to the jaguar.

33 *Decision to Designate Critical Habitat*

- 34 ● FWS should not list the proposed area as critical habitat due to:
  - 35 ○ Not occupied.
  - 36 ○ Not prudent.
  - 37 ○ No habitat is essential in the United States.
  - 38 ○ No PBFs or PCEs in United States.
  - 39 ○ Species is already protected.
  - 40 ○ Lack of sufficient water sources.
  - 41 ○ Lack of prey density.
  - 42 ○ Lack of breeding population.
  - 43 ○ Lack of resident individuals.
  - 44 ○ Best available science was not used.

- 1           ○ Flaws in the jaguar model.
- 2           ○ National security concerns.
- 3           ○ Economic impacts.
- 4       • There was insufficient involvement of, and coordination with, local governments in the plans
- 5       to designate critical habitat.

#### 6 *Impacts of Designating Critical Habitat*

- 7       • Concerns for human health and safety from the protection of large predators.
- 8       • Prohibiting, severely restricting, delaying, or curtailing the following activities, which
- 9       contribute to Arizona's employment base and the local and Federal tax base, could potentially
- 10       result in an economic impact through loss of use of public lands:
  - 11           ○ Timber harvesting.
  - 12           ○ Quarrying or mineral extraction.
  - 13           ○ Recreation.
- 14       • The jaguar's dependence on year-round water availability within 10 km could have severe
- 15       economic impacts on agriculture and grazing; specifically, on the small family ranches and
- 16       farms that make up the bulk of New Mexico's agricultural producers
- 17       • Private land owners expressed concern about adverse effects to their livelihoods due to
- 18       ranches being included in critical habitat, including their future willingness to participate in
- 19       conservation programs from the Natural Resource Conservation Service (NRCS) where they
- 20       received NRCS funding for improvements or general conservation activities. Such adverse
- 21       effects deserve compensation.
- 22

23 **The Final Environmental Assessment addresses the issues and**  
24 **concerns submitted on the proposed rule and the revised proposed**  
25 **rule, as well as the draft of the Environmental Assessment.**

### 26 **1.8 Topics Analyzed in Detail in this Environmental Assessment**

27 Based on comments received during the public comment period, internal scoping within the  
28 Service, and a review of the previous consultation history of the species, the Service analyzed the  
29 potential impacts of critical habitat designation on the following resources:

- 30       • Land Use and Management;
- 31       • Fish, Wildlife, and Plants (including Threatened & Endangered species);
- 32       • Fire Management;
- 33       • Water Resources (including water management projects and groundwater pumping);
- 34       • Livestock Grazing;
- 35       • Construction/Development (including roads, bridges, dams, infrastructure, residential);
- 36       • Tribal Trust Resources;
- 37       • Soils;
- 38       • Recreation & Hunting;

- 1 • Socioeconomics;
- 2 • Environmental Justice;
- 3 • Mining & Minerals Extraction; and
- 4 • National Security.

### 5 **1.8.1 Topics Dismissed from Detailed Analysis**

6 Federal regulations (40 CFR §1500 et seq.) require that certain topics be addressed as part of a  
7 National Environmental Policy Act (NEPA) analysis. The Service reviewed the mandatory  
8 topics listed below and determined that the action alternatives have no or negligible potential to  
9 affect them. These topics have been dismissed from detailed analysis in this document because,  
10 as a regulatory action that does not itself mandate or authorize any specific agency actions, the  
11 designation of critical habitat for the jaguar is likely to have no or, at most, negligible effect on  
12 them.

- 13 • *Energy requirements and conservation potential (1502.16)*. Additional section 7  
14 consultations resulting from critical habitat designation of the jaguar would not require any  
15 increase in energy consumption in the form of fuel for vehicles or from other conservation  
16 actions.
- 17 • *Urban quality and design of the built environment (1502.16)*. The proposed critical habitat  
18 segments are not located in urban or other built environments and would not affect the  
19 quality of such environments.
- 20 • Important scientific, archeological, and other cultural resources, including historic properties  
21 listed in or eligible for the NRHP (1508.27). The proposed designation would not result in  
22 any ground-disturbing activities that have the potential to affect archeological or other  
23 cultural resources. As stated in the proposed rule, the proposed boundaries of critical habitat  
24 were delineated so as to avoid land covered by existing structures. There are a total of four  
25 sites listed on the NRHP that lie within proposed critical habitat:

- 26 1. Cady Hall (Patagonia, AZ—Unit 3)—This structure was built between 1901 and 1912  
27 by John H. Cady as the Patagonia Hotel. During the 1930s the building housed  
28 offices and apartments. In 1947 the Patagonia Women’s Club purchased the building  
29 and in 1957 opened a one-room library. In 1977, the complex was designated a  
30 Historic Site, and it was restored from 1989-1997.
- 31 2. Coronado National Memorial (Cochise County, AZ—Unit 3)—The Memorial,  
32 managed by the National Park Service (NPS), commemorates the first major  
33 expedition of Europeans into the American Southwest, which followed a route along  
34 the San Pedro Valley. The Valley can be overlooked at several key scenic viewing  
35 points at the Memorial. The Memorial is managed for visitor use and resource  
36 preservation under the Final General Management Plan /Environmental Impact  
37 Statement (EIS) for the Memorial.
- 38 3. James Finley House (Patagonia, AZ—Unit 3)—The Finley House is located in the  
39 ghost town of Harshaw. It was built around 1877 as the residence of the Hermosa  
40 Mine superintendent, but was later occupied by the mine’s owner, James Finley. The  
41 Finley House is significant not only as one of the few remaining buildings from  
42 Harshaw’s mining boom period, but also as a good example of early Territorial  
43 architecture.

1 4. Ruby (Santa Cruz County, AZ—Unit 2)—Ruby is a ghost town in Santa Cruz  
2 County, AZ, originally founded as a mining town and “filled with history, including  
3 lawlessness, murder, and mayhem” (Legends of America 2012). It is now available  
4 for public visitation.

5 Also of note is that Atascosa Lookout House (Nogales Ranger District of the Coronado  
6 National Forest) was burned in a June 2011 wildfire.

7 There have been no jaguar consultations on listed historic structures since the final 1997  
8 rule clarifying that endangered status for the species extended into the United States (62  
9 FR 39147), and none would be anticipated, based on the likelihood that no ground-  
10 disturbing activities would be conducted as a result of a proposed action that would cause  
11 adverse impacts to these structures. For this reason, the topic of impacts to historic  
12 cultural resources is not analyzed further in this document.

- 13 • *Ecologically critical areas, Wild and Scenic Rivers, or other unique natural resources*  
14 *(1508.27)*. There are no designated or proposed Wild and Scenic Rivers within the proposed  
15 critical habitat designation.

16 Several areas under special protection, managed by BLM, are included within the  
17 proposed designation: Guadalupe Canyon Outstanding Natural Area (an Area of Critical  
18 Environmental Concern), Coyote Mountain Wilderness, Baker Canyon Wilderness Study  
19 Area (WSA), Baboquivari Peak Wilderness, the Las Cienegas NCA, and Appleton-  
20 Whittell Area of Critical Concern.

21 Activities proposed by the Federal land managers in these areas would be expected to  
22 maintain or improve the health of these areas, and thus they would be anticipated to help  
23 recover or sustain the PCEs on these lands. Therefore no consultations would be  
24 expected, and no adverse impacts to critical habitat would be anticipated.

- 25 • *Public health and safety (1508.27)*. Foreseeable activities with potential risks to public  
26 health and safety include mining operations and activities related to fire management,  
27 particularly in the wildlife-urban interace (WUI) areas and areas where vegetation fuel  
28 loading has created conditions for catastrophic fire. These issues, along with fire  
29 management and fire-related health and safety risk reduction, are discussed in Sections 3.9  
30 Mining, and 3.4 Fire Management, respectively.

- 31 • *Climate Change*. The Jaguar Recovery Team found that “[t]he degree to which climate  
32 change will affect jaguar habitat in the United States is uncertain, but it has the potential to  
33 adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team 2012).  
34 The proposed designation rule discusses the potential for fewer frost days, warmer  
35 temperatures, greater water demand by plants, animals, and people; and an increased  
36 frequency of extreme weather events, such as heat waves, droughts, and floods (77 FR  
37 50219). It states, “The impact of future drought, which may be long-term and severe (Seager  
38 *et al.* 2007, pp. 1183-1184; Archer and Predick 2008, entire), may affect jaguar habitat in the  
39 U.S.-Mexico borderlands area, but the information currently available on the effects of global  
40 climate change and increasing temperatures does not make sufficiently precise estimates of  
41 the location and magnitude of the effects.”

42 The Council on Environmental Quality (CEQ) released draft guidance in 2010 that  
43 explains climate change impact analysis from proposed actions that create greenhouse

1 gases (CEQ 2010). A threshold of 25,000 metric tons of carbon dioxide equivalent  
2 emissions from an action was proposed as the trigger to further quantitative analysis. A  
3 designation of critical habitat does not create or develop projects that produce emissions,  
4 and therefore would not be subject to quantitative analysis.

5 The U.S. Department of the Interior (USDI) released Secretarial Order 3289 in 2010  
6 which details two additional departmental actions to mitigate climate change: (1) USDI  
7 Carbon Storage and (2) USDI Carbon Footprint (USDI 2010). The USDI Carbon Storage  
8 project was created to develop methodologies for geologic and biologic carbon  
9 sequestration. The U.S. Geological Survey (USGS) is the lead agency for research while  
10 additional agencies within the department are cooperating agencies. The USDI Carbon  
11 Footprint project has the goal of developing a unified greenhouse gas emission reduction  
12 program to mitigate climate change activities. USDI has created Climate Change  
13 Response Centers to conduct impact analysis and data collection for the program.  
14 Specific Landscape Conservation Cooperatives would work with the Centers by  
15 supplying the on-the-ground data derived from each specific locale.

16 In addition to these two projects, Secretarial Order 3289 also states that avoidance of  
17 climate change and mitigation of its effects should also be addressed by prioritizing the  
18 development of renewable energy (USDI 2010). BLM has separately published  
19 programmatic EISs for solar and wind energy development on its managed lands (BLM  
20 2005; BLM 2011a). While currently there are no plans for solar or wind energy  
21 development that overlap with proposed critical habitat units, future projects could spur  
22 section 7 consultations if they had the potential to adversely affect critical habitat.

23 The Forest Service issued a document titled “Climate Change Considerations in Project  
24 Level NEPA Analysis” in 2009, to guide the analysis of climate change for future  
25 projects (USFS 2009). It discusses the two types of effects of climate change: (1) the  
26 effect of the proposed action on climate change; and (2) the effect of climate change on  
27 the proposed action. As stated above, the designation of critical habitat units would not  
28 impact climate change as it would not initiate or implement projects that produce  
29 greenhouse gas emissions. Regarding the second type of effect, expected shifts in rainfall  
30 patterns are an example of such an effect, and would have the potential to affect jaguar  
31 critical habitat units. The Forest Service would conduct its own NEPA climate change  
32 analysis of its proposed actions, as appropriate.

33 Therefore, while the Service believes that long-term climate trends associated with a drier  
34 climate could have an overall negative effect on the available rangewide habitat for  
35 jaguars through alteration of rainfall cycles, increased frequency of wildfires carried by  
36 nonnative plants, and increased frequency and duration of drought, the designation of  
37 critical habitat itself will neither create impacts to climate change (since it does not  
38 initiate or implement projects that create emissions) nor contribute to the expected  
39 adverse impacts of climate change on critical habitat (since it would not contribute to the  
40 changes in temperature or hydrologic cycles). To the extent that designation of habitat  
41 contributes to the maintenance of jaguar PCEs, it may produce beneficial impacts by  
42 improving the resilience of PCEs to the adverse impacts of climate change.  
43

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1 **CHAPTER 2**

2 **ALTERNATIVES, INCLUDING THE NO ACTION ALTERNATIVE**

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3 This section describes the alternatives considered for critical habitat designation for the jaguar.  
4 For the purposes of this EA, alternatives provide a clear basis for choice by the decision-maker  
5 and the public for critical habitat designation, as described in Chapter 1, which can be  
6 summarized as determining which areas meet the definition of critical habitat for the jaguar. In  
7 addition, the analysis of alternatives can provide information in an evaluation if any of the  
8 proposed critical habitat units should be excluded from the final designation.

9 **2.1 Development of Alternatives**

10 A detailed discussion of the Service’s rationale for identifying and including such areas is  
11 contained in the proposed designation rule (77 FR 50228; August 20, 2012) and the revised  
12 proposed rule (78 FR 39237; July 1, 2013).

13 When determining proposed critical habitat boundaries, the Service made every effort to avoid  
14 including developed areas such as lands covered by buildings, pavement, and other structures  
15 because such lands lack the PBFs necessary for jaguars.

16 The boundaries represented in the revised proposed designation reflect changes from the original  
17 proposed designation of August 20, 2012, based on new information received by the Service,  
18 which is detailed in the accompanying Notice of Availability.

19 *Exclusions*

20 Under section 4(b)(2) of the Act, the Service considered relevant impacts, including economic  
21 impacts, impacts on national security, and other factors in weighing the costs and benefits of  
22 excluding areas from critical habitat designation. The factors considered by the Service include  
23 whether the landowners have developed any habitat conservation plans (HCP) or other  
24 management plans for the area, or whether there are conservation partnerships that would be  
25 encouraged by designation of, or exclusion from, critical habitat. In addition, the Service looked  
26 at tribal management in recognition of their capability to appropriately manage their own  
27 resources, and considered the government-to-government relationship of the United States with  
28 tribal entities. The Service also considered potential social impacts that might occur because of  
29 the designation.

30  
31 For this EA, the Service constructed an alternative in which all potential exclusions are  
32 combined within a single action alternative—Alternative B, which excludes only the Tohono  
33 O’odham Nation lands. In developing its final designation, the Service evaluates individual  
34 exclusions according to the criteria mentioned above.

1 **2.1.1 Exemptions**

2 The National Defense Authorization Act for Fiscal Year 2004 (Pub. L.108-136) amended the  
3 Endangered Species Act (Act) to limit areas eligible for designation as critical habitat.  
4 Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The  
5 Secretary shall not designate as critical habitat any lands or other geographical areas owned or  
6 controlled by the Department of Defense, or designated for its use, that are subject to an  
7 integrated natural resources management plan [INRMP] prepared under section 101 of the Sikes  
8 Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to  
9 the species for which critical habitat is proposed for designation.”

10 The Department of Defense manages habitat for the jaguar on Fort Huachuca, located in  
11 proposed Unit 3 and Subunit 4c. Fort Huachuca (Fort) is home to the U.S. Army Intelligence  
12 Center and School, Network Enterprise Technology Command, Joint-services Unmanned Aerial  
13 Vehicle Program, Joint Interoperability Test Command, the Electronic Proving Ground, and the  
14 Intelligence and Electronic Warfare Test Directorate. The Fort specializes in research,  
15 development, testing, and evaluation of intelligence, electronic warfare, and information  
16 systems. The Service will review the conservation measures contained in the Fort Huachuca  
17 INRMP to determine whether they would provide a benefit to the jaguar and evaluate if the Fort  
18 would therefore be exempt under section 4(a)(3) of the Act.

19 **2.2 No Action Alternative**

20 The No Action Alternative is defined here as no designation of critical habitat for the jaguar. An  
21 analysis of a No Action Alternative is required by NEPA and provides a baseline for analyzing  
22 effects of the action alternatives. Analysis of this alternative requires consideration of the  
23 continued consequences of listing the jaguar as endangered, without a designation of critical  
24 habitat in the United States. This alternative would not be consistent with the Service’s finding,  
25 subsequent to the March 30, 2009 order of the U.S. District Court for the District of Arizona, that  
26 designation of critical habitat for the jaguar would be “prudent,” pursuant to Section 4(a)(3) of  
27 the ESA. It is included for the purpose of comparison of potential impacts of alternative  
28 designations.

29 **2.3 Alternative A—Critical Habitat Designation with no Exclusions**

30 The Service is proposing six units as critical habitat for the jaguar. The critical habitat areas  
31 described below constitute the Service’s current best assessment of areas that meet the definition  
32 of critical habitat for the jaguar. The six units proposed as critical habitat are:

- 33 (1) Baboquivari Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the  
34 Northern Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern  
35 Baboquivari Subunit;
- 36 (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains;
- 37 (3) Patagonia Unit, including the Patagonia, Santa Rita, Empire, and Huachuca Mountains  
38 and the Canelo and Grosvenor Hills;
- 39 (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa  
40 Rita Subunit, and (4c) Whetstone-Huachuca Subunit;

- 1 (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and New Mexico;  
 2 and  
 3 (6) San Luis Unit, including the northern extent of the San Luis Mountains at the New  
 4 Mexico-Mexico border.

5 Table 2.1 lists the proposed critical habitat units.

6 **Table 2.1. Proposed Critical Habitat Units**  
 7 **(All units are in Arizona unless otherwise noted)**

| <b>Proposed Unit</b>                      |
|---|
| <b>1 Baboquivari Unit</b>                 |
| <b>1a Baboquivari-Coyote Subunit</b>      |
| Coyote Mountains                          |
| Quinlan Mountains                         |
| Saucito Mountains                         |
| Northern Baboquivari Mountains            |
| <b>1b Southern Baboquivari Subunit</b>    |
| Southern Baboquivari Mountains Connection |
| <b>2 Atascosa Unit</b>                    |
| Tumacacori Mountains                      |
| Atascosa Mountains                        |
| Pajarito Mountains                        |
| <b>3 Patagonia Unit</b>                   |
| Empire Mountains                          |
| Santa Rita Mountains                      |
| Grosvenor Hills                           |
| Patagonia Mountains                       |
| Canelo Hills                              |
| Huachuca Mountains                        |
| <b>4 Whetstone Unit</b>                   |
| <b>4a Whetstone Subunit</b>               |

| <b>Proposed Unit</b>                          |
|---|
| Whetstone Mountains                           |
| <b>4b Whetstone-Santa Rita Subunit</b>        |
| Whetstone-Santa Rita Mountains Connection     |
| <b>4c Whetstone-Huachuca Subunit</b>          |
| Whetstone-Huachuca Mountains Connection       |
| <b>5 Peloncillo Unit</b>                      |
| Peloncillo Mountains (Arizona and New Mexico) |
| <b>6 San Luis Unit</b>                        |
| San Luis Mountains (New Mexico)               |

1 **Subunit 1a: Baboquivari-Coyote Subunit**

2 Under Alternative A, Subunit 1a consists of 37,689 ha (93,130 ac) in the northern Baboquivari,  
3 Saucito, Quinlan, and Coyote Mountains in Pima County, Arizona. This subunit is generally  
4 bounded by the eastern side of the Baboquivari Valley to the west, State Highway 86 to the  
5 north, the western side of the Altar Valley to the east, and up to and including Leyvas and Bear  
6 Canyons to the south. Land ownership within the unit includes approximately 4,395 ha (10,862  
7 ac) of Federal lands; 20,764 ha (51,308 ac) of Tohono O’odham Nation lands; 9,239 ha (22,831  
8 ac) of Arizona State lands; and 3,290 ha (8,130 ac) of private lands. It contains all elements of  
9 the PBF essential to the conservation of the jaguar, except for connectivity to Mexico. The  
10 Federal land is administered by the Service and U.S. Bureau of Land Management (BLM).

11 **Subunit 1b: Southern Baboquivari Subunit**

12 Under Alternative A, Subunit 1b consists of 19,453 ha (48,070 ac) in the southern Baboquivari  
13 Mountains in Pima County, Arizona. This subunit is generally bounded by the eastern side of  
14 the Baboquivari Valley to the west, up to but not including Leyvas and Bear Canyons to the  
15 north, the western side of the Altar Valley to the east, and the U.S.-Mexico border to the south.  
16 Land ownership within the unit includes approximately 624 ha (1,543 ac) of Federal lands;  
17 10,829 ha (26,759 ac) of Tohono O’odham Nation lands; 6,157 ha (15,213 ac) of Arizona State  
18 lands; and 1,843 ha (4,555 ac) of private lands. The Federal land is administered by the Service  
19 and BLM. The Southern Baboquivari Subunit provides connectivity to Mexico and is essential  
20 to the conservation of the jaguar because it contributes to the species’ persistence by providing  
21 connectivity to occupied areas.

22 **Unit 2: Atascosa Unit**

23 Unit 2 consists of 58,625 ha (144,864 ac) in the Pajarito, Atascosa, and Tumacacori Mountains  
24 in Pima and Santa Cruz Counties, Arizona. Unit 2 is generally bounded by the eastern side of

1 San Luis Mountains (Arizona) to the west, roughly 4 km (2.5 mi) south of Arivaca Road to the  
2 north, Interstate 19 to the east, and the U.S.-Mexico border to the south. Land ownership within  
3 the unit includes approximately 53,807 ha (132,961 ac) of Federal lands; 2,296 ha (5,672 ac) of  
4 Arizona State lands; and 2,522 ha (6,231 ac) of private lands. The Federal land is administered  
5 by the Coronado National Forest. It contains all elements of the PBF essential to the  
6 conservation of the jaguar.

### 7 **Unit 3: Patagonia Unit**

8 Unit 3 consists of 148,364 ha (366,615 ac) in the Patagonia, Santa Rita, Empire, and Huachuca  
9 Mountains, as well as the Canelo and Grosvenor Hills, in Pima, Santa Cruz, and Cochise  
10 Counties, Arizona. Unit 3 is generally bounded by a line running roughly 3 km (1.9 mi) east of  
11 Interstate 19 to the west; a line running roughly 6 km (3.7 mi) south of Interstate 10 to the north;  
12 Cienega Creek and Highways 83, 90, and 92 to the east, including the eastern slopes of the  
13 Empire Mountains; and the U.S.-Mexico border to the south. Land ownership within the unit  
14 includes approximately 107,471 ha (265,566 ac) of Federal lands; 11,847 ha (29,274 ac) of  
15 Arizona State lands; and 29,046 ha (71,775 ac) of private lands. The Federal land is  
16 administered by the Coronado National Forest, BLM, and Fort Huachuca. The mountain ranges  
17 within this unit contain all elements of the PBF essential to the conservation of the jaguar.

### 18 **Subunit 4a: Whetstone Subunit**

19 Subunit 4a consists of 25,284 ha (62,478 ac) in the Whetstone Mountains in Pima, Santa Cruz,  
20 and Cochise Counties, Arizona. Subunit 4a is generally bounded by a line running roughly 4 km  
21 (2.5 mi) east of Cienega Creek to the west, a line running roughly 6 km (3.7 mi) south of  
22 Interstate 10 to the north, Highway 90 to the east, and Highway 82 to the south. Land ownership  
23 within the subunit includes approximately 16,066 ha (39,699 ac) of Federal lands; 5,445 ha  
24 (13,455 ac) of Arizona State lands; and 3,774 ha (9,325 ac) of private lands. The Federal land is  
25 administered by the Coronado National Forest and BLM. The mountain range within this  
26 subunit contains all elements of the PBF essential to the conservation of the jaguar, except for  
27 connectivity to Mexico.

### 28 **Subunit 4b: Whetstone-Santa Rita Subunit**

29 Subunit 4b consists of 5,143 ha (12,710 ac) between the Santa Rita Mountains and northern  
30 extent of the Whetstone Mountains in Pima County, Arizona. Subunit 4b is generally bounded  
31 by (but does not include): the eastern slopes of the Empire Mountains to the west, a line running  
32 roughly 6 km (3.7 mi) south of Interstate 10 to the north, the western slopes of the Whetstone  
33 Mountains to the east, and Stevenson Canyon to the south. Land ownership within the subunit  
34 includes approximately 532 ha (1,313 ac) of Federal lands; and 4,612 ha (11,396 ac) of Arizona  
35 State lands. The Whetstone-Santa Rita Subunit provides connectivity from the Whetstone  
36 Mountains to Mexico and is essential to the conservation of the jaguar because it contributes to  
37 the species' persistence by providing connectivity to occupied areas.

1 **Subunit 4c: Whetstone-Huachuca Subunit**

2 Subunit 4c consists of 8,026 ha (19,832 ac) between the Huachuca Mountains and southern  
3 extent of the Whetstone Mountains in Santa Cruz and Cochise Counties, Arizona. Subunit 4c is  
4 generally bounded by Highway 83, Elgin-Canelo Road, and Upper Elgin Road to the west;  
5 Highway 82 to the north; a line running roughly 4 km (2.5 mi) west of Highway 90 to the east;  
6 and up to but not including the Huachuca Mountains to the south. Land ownership within the  
7 subunit includes approximately 1,654 ha (4,088 ac) of Federal lands; 2,981 ha (7,366 ac) of  
8 Arizona State lands; and 3,391 ha (8,379 ac) of private lands. The Federal land is administered  
9 by the Coronado National Forest, BLM, and Fort Huachuca. The Whetstone-Huachuca Subunit  
10 provides connectivity from the Whetstone Mountains to Mexico and is essential to the  
11 conservation of the jaguar because it contributes to the species' persistence by providing  
12 connectivity to occupied areas.

13 **Unit 5: Peloncillo Unit**

14 Unit 5 consists of 41,571 ha (102,723 ac) in the Peloncillo Mountains in Cochise County,  
15 Arizona, and Hidalgo County, New Mexico. Unit 5 is generally bounded by the eastern side of  
16 the San Bernardino Valley to the west, Skeleton Canyon Road and the northern boundary of the  
17 Coronado National Forest to the north, the western side of the Animas Valley to the east, and the  
18 U.S.-Mexico border on the south. Land ownership within the unit includes approximately  
19 28,393 ha (70,160 ac) of Federal lands; 7,861 ha (19,426 ac) of Arizona State lands; and 5,317  
20 ha (13,138 ac) of private lands. The Federal land is administered by the Coronado National  
21 Forest and BLM. It contains all elements of the PBF essential to the conservation of the jaguar.

22 **Unit 6: San Luis Unit**

23 Unit 6 consists of 3,122 ha (7,714 ac) in the northern extent of the San Luis Mountains in  
24 Hidalgo County, New Mexico. Unit 6 is generally bounded by the eastern side of the Animas  
25 Valley to the west, a line running roughly 1.5 km (0.9 mi) south of Highway 79 to the north, an  
26 elevation line at approximately 1,600 m (5,249 ft) on the east side of the San Luis Mountains,  
27 and the U.S.-Mexico border to the south. Land ownership within the unit is entirely private land.  
28 Unit 6 contains almost all elements (PCEs 2–7) of the PBF essential to the conservation of the  
29 jaguar except for PCE 1 (expansive open space). This unit is included because, while by itself it  
30 does not provide at least 100 square km (38.6 square mi) of jaguar habitat in the United States,  
31 additional habitat can be found immediately adjacent south of the U.S.-Mexico border, and  
32 therefore this area represents a small portion of a much larger area of habitat.

33 **2.4 Alternative B—Critical Habitat Designation minus Exclusions**

34 The criteria considered by the Service for exclusion are described in section 2.1. The Service  
35 considers a current land management or conservation plan (HCPs as well as other types) or other  
36 conservation partnership to provide adequate management or protection if it meets the following  
37 criteria:

- 1 1. The plan is complete and provides the same or better level of protection from adverse
- 2 modification or destruction than that provided through a consultation under section 7 of
- 3 the Act;
- 4 2. There is a reasonable expectation that the conservation management strategies and
- 5 actions will be implemented for the foreseeable future, based on past practices, written
- 6 guidance, or regulations; and
- 7 3. The plan provides conservation strategies and measures consistent with currently
- 8 accepted principles of conservation biology.

9 In the case of the jaguar, the Service will consider the advancement of our Federal Indian Trust  
 10 obligations, our deference to tribes to develop and implement tribal conservation and natural  
 11 resource management for their lands and resources, which includes the jaguar, and the  
 12 preservation of our cooperative partnership with the Tohono O’odham Nation.  
 13

14 Table 2.2 shows the approximate area of each critical habitat unit. Note that the acreages for  
 15 Units 1a and 1b differ from those in Alternative A, owing to the exclusion of Tohono O’odham  
 16 Nation lands under this alternative.

17 **Table 2.2. Area of Proposed Critical Habitat Units for the Jaguar**

| Unit or subunit                 | Federal |         | State  |         | Tribal |    | Private |         | Total   |         |
|---------------------------------|---------|---------|--------|---------|--------|----|---------|---------|---------|---------|
|                                 | Ha      | Ac      | Ha     | Ac      | Ha     | Ac | Ha      | Ac      | Ha      | Ac      |
| 1a—Baboquivari-Coyote Subunit   | 4,396   | 10,862  | 9,239  | 22,831  | 0      | 0  | 3,290   | 8,130   | 37,689  | 93,130  |
| 1b—Southern Baboquivari Subunit | 624     | 1,543   | 6,157  | 15,213  | 0      | 0  | 1,843   | 4,555   | 19,453  | 48,070  |
| 2—Atascosa Unit                 | 53,807  | 132,961 | 2,296  | 5,672   | 0      | 0  | 2,522   | 6,231   | 58,625  | 144,864 |
| 3—Patagonia Unit                | 107,471 | 265,566 | 11,847 | 29,274  | 0      | 0  | 29,046  | 71,775  | 148,364 | 366,615 |
| 4a—Whetstone Subunit            | 16,066  | 39,699  | 5,445  | 13,455  | 0      | 0  | 3,774   | 9,325   | 25,284  | 62,478  |
| 4b—Whetstone-Santa Rita Subunit | 532     | 1,313   | 4,612  | 11,396  | 0      | 0  | 0       | 0       | 5,143   | 12,710  |
| 4c—Whetstone-Huachuca Subunit   | 1,654   | 4,088   | 2,981  | 7,366   | 0      | 0  | 3,391   | 8,379   | 8,026   | 19,832  |
| 5—Peloncillo Unit               | 28,393  | 70,160  | 7,861  | 19,426  | 0      | 0  | 5,317   | 13,138  | 41,571  | 102,723 |
| 6—San Luis Unit                 | 0       | 0       | 0      | 0       | 0      | 0  | 3,122   | 7,714   | 3,122   | 7,714   |
| Grand Total                     | 212,943 | 526,191 | 50,437 | 124,633 | 0      | 0  | 52,304  | 129,246 | 347,277 | 858,137 |

18 Note: Area sizes may not sum due to rounding.

## 19 2.5 Comparison of Potential Impacts of Jaguar Proposed Critical 20 Habitat Designation

21 The following table (Table 2.3) summarizes the potential effects of the alternative critical habitat  
 22 designations. Potential effects on resources are summarized from the analyses presented in  
 23 Chapter 3.

1  
2

**Table 2.3. Comparison of Potential Effects of Proposed Critical Habitat Designation for the Jaguar**

| <b>Resource</b>                | <b>No Action</b>   | <b>Alternative A—No Exclusions</b>   | <b>Alternative B—with Exclusion</b>   |
|--------------------------------|--|--|---|
| <b>Land Use and Management</b> | <ul style="list-style-type: none"> <li>No impacts beyond those resulting from the listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>                      | <ul style="list-style-type: none"> <li>Minor impacts anticipated from expansion of section 7 consultations related to land use management activities in newly designated habitat.</li> </ul>   | <ul style="list-style-type: none"> <li>Minor impacts anticipated from increase in section 7 consultations related to land use management activities in newly designated habitat.</li> </ul>   |
| <b>Fish, Wildlife, Plants</b>  | <ul style="list-style-type: none"> <li>No impact beyond those conservation measures resulting from the listing of the jaguar and associated requirements of section 7, ESA.</li> </ul> | <ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small number of reinitiated section 7 consultations.</li> <li>Addition of adverse mod analyses to section 7 consultations that would be undertaken for the species.</li> <li>Likely beneficial impacts on wildlife, especially for species that require expansive tracts of undisturbed land or connectivity to Mexico.</li> </ul> | <ul style="list-style-type: none"> <li>Minor adverse impacts similar to Alternative A, but slightly fewer consultations, given the exclusion.</li> <li>Beneficial impacts roughly equivalent to Alternative A, owing partly to participation in the jaguar recovery plan by the Tohono O’odham Nation.</li> </ul> |
| <b>Fire Management</b>         | <ul style="list-style-type: none"> <li>No impact beyond those conservation measures resulting from listing of the jaguar and associated requirements of section 7, ESA.</li> </ul>     | <ul style="list-style-type: none"> <li>Compared with No Action Alternative, a small unknown number of reinitiated section 7 consultations.</li> <li>Addition of adverse mod analyses to section 7 consultations that would be triggered by the listing of the jaguar.</li> <li>Minor impacts from delays, increased costs, or project alterations resulting from additional section 7 consultations.</li> </ul>  | <ul style="list-style-type: none"> <li>Minor adverse impacts similar to Alternative A, but fewer consultations given the exclusion.</li> </ul>  |
| <b>Water</b>                   | <ul style="list-style-type: none"> <li>No adverse effects</li> </ul>   | <ul style="list-style-type: none"> <li>Compared with No</li> </ul>   | <ul style="list-style-type: none"> <li>Moderate (less than</li> </ul>   |

| <b>Resource</b>  | <b>No Action</b>   | <b>Alternative A—No Exclusions</b>   | <b>Alternative B—with Exclusion</b>   |
|------------------|--|--|---|
| <b>Resources</b> | <p>anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</p> <ul style="list-style-type: none"> <li>• If consultations occur, no consideration of adverse modification.</li> </ul> | <p>Action Alternative, a small number of reinitiated section 7 consultations.</p> <ul style="list-style-type: none"> <li>• Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>• Minor impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations.</li> </ul> | <p>significant) adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</p> |

| <b>Resource</b>          | <b>No Action</b>  | <b>Alternative A—No Exclusions</b>  | <b>Alternative B—with Exclusion</b>   |
|--------------------------|---|---|---|
| <b>Livestock Grazing</b> | <ul style="list-style-type: none"> <li>• No adverse effects anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</li> <li>• If consultations occur, no consideration of adverse modification.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations, including on BLM and USFS land</li> <li>• Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>• Minor impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations including determining the distribution of jaguar habitat within a project area, or re-vegetating jaguar habitat loss.</li> </ul> | <ul style="list-style-type: none"> <li>• Minor adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</li> </ul> |

| <b>Resource</b>                      | <b>No Action</b>  | <b>Alternative A—No Exclusions</b>  | <b>Alternative B—with Exclusion</b>  |
|--------------------------------------|---|---|--|
| <b>Construction/D<br/>evelopment</b> | <ul style="list-style-type: none"> <li>• No adverse effects anticipated beyond any conservation measures or project modifications resulting from the listing of the jaguar and associated requirements of section 7 of the ESA.</li> <li>• If consultations occur, no consideration of adverse modification.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations, including on Coronado National Forest, BLM land, Coronado National Memorial, and Buenos Aires NWR.</li> <li>• Addition of adverse modification analyses to section 7 consultations that would be undertaken for the species.</li> <li>• Moderate (less than significant) impacts from delays, increased costs, or project alternations resulting from additional section 7 consultations, including creating permeable highways by including wildlife crossings appropriate to jaguars in the project design.</li> </ul> | <ul style="list-style-type: none"> <li>• Moderate (less than significant) adverse impacts similar to Alternative A, but fewer consultations, given the exclusion.</li> </ul>                     |
| <b>Tribal Trust<br/>Resources</b>    | <ul style="list-style-type: none"> <li>• No direct impacts on tribal resources beyond any conservation measures or project modifications resulting from the listing of the jaguar and section 7 of the ESA.</li> </ul>  | <ul style="list-style-type: none"> <li>• No adverse effects anticipated because few projects would be subject to reinitiation or expanded consultations.</li> </ul>   | <ul style="list-style-type: none"> <li>• No adverse effects anticipated because no section 7 consultations are likely to occur due to the exclusion of tribal trust resources.</li> </ul>        |
| <b>Mining</b>                        | <ul style="list-style-type: none"> <li>• No additional impacts beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> </ul>   | <ul style="list-style-type: none"> <li>• Depends on outcome of Rosemont Mine consultation.</li> <li>• Minor adverse impacts from increased number of reinitiated consultations for</li> </ul>   | <ul style="list-style-type: none"> <li>• Similar to A, but exclusions would reduce these, due to decreased number of reinitiated section 7 consultations.</li> <li>• Similar indirect</li> </ul> |

| Resource              | No Action  | Alternative A—No Exclusions   | Alternative B—with Exclusion  |
|-----------------------|--|---|---|
|                       |  | <p>ongoing projects within designated critical habitat.</p> <ul style="list-style-type: none"> <li>• Minor adverse impacts to agencies and project proponents from time and monetary costs of reinitiated consultations, including developing alternatives and/or mitigation.</li> </ul>  | <p>impacts as A, but fewer because of reduced administrative and monetary costs.</p>  |
| <b>Socioeconomics</b> | <ul style="list-style-type: none"> <li>• No additional adverse effects beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> <li>• These measures would also create minor, beneficial impacts from visual aesthetics, jaguar education, and property values.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations for actions within proposed critical habitat.</li> <li>• If Rosemont Mine goes forward: Minor adverse impacts from increased costs or addition of adverse modification analysis in section 7 consultations for newly proposed critical habitat.</li> <li>• Same beneficial socioeconomic impacts as No Action.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small increase in reinitiated section 7 consultations for actions within newly proposed critical habitat.</li> <li>• Minor impacts from increased costs or project modifications resulting from expanded section 7 consultations.</li> <li>• Same beneficial impacts as No Action and Alternative A.</li> </ul> |

| <b>Resource</b>              | <b>No Action</b>  | <b>Alternative A—No Exclusions</b>  | <b>Alternative B—with Exclusion</b>   |
|------------------------------|---|---|---|
| <b>Recreation</b>            | <ul style="list-style-type: none"> <li>• No additional adverse effects beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> <li>• Negligible to minor, indirect, adverse impacts to recreation opportunities related to such conservation measures benefiting the habitat values for the jaguar.</li> <li>• These measures would also create minor, beneficial impacts to birding, wildlife viewing, or day hiking due to increased conservation measures to help conserve PCEs.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small number of reinitiated section 7 consultations for actions within proposed critical habitat.</li> <li>• If Rosemont Mine goes forward: Minor adverse impacts from increased costs or addition of adverse modification analysis in section 7 consultations for newly proposed critical habitat.</li> <li>• Same beneficial impacts as No Action.</li> </ul> | <ul style="list-style-type: none"> <li>• Compared with No Action Alternative, a small increase in new and reinitiated section 7 consultations for actions within newly proposed critical habitat.</li> <li>• Minor impacts from increased costs or project modifications resulting from additional section 7 consultations.</li> <li>• Same beneficial impacts as No Action and Alternative A.</li> </ul> |
| <b>Environmental Justice</b> | <ul style="list-style-type: none"> <li>• No additional impacts beyond any conservation measures or project modifications resulting from listing of the jaguar.</li> </ul>   | <ul style="list-style-type: none"> <li>• Depends on outcome of Rosemont Mine consultation. If mine goes forward: Minor adverse impacts, in the context of the entire designation, because: (1) the economic impacts associated with any individual relevant projects would be relatively small; and (2) there would be only a small number of projects throughout the designation which would create such impacts.</li> </ul>                   | <ul style="list-style-type: none"> <li>• Same as A, but fewer impact-producing projects due to fewer consultations.</li> </ul>  |
| <b>National</b>              | <ul style="list-style-type: none"> <li>• No impacts beyond those resulting from</li> </ul>  | <ul style="list-style-type: none"> <li>• Minor impacts anticipated from</li> </ul>  | <ul style="list-style-type: none"> <li>• Same as A, but fewer impact-producing</li> </ul>   |

| <b>Resource</b> | <b>No Action</b>   | <b>Alternative A—No Exclusions</b>  | <b>Alternative B—with Exclusion</b>  |
|-----------------|--|---|--------------------------------------|
| <b>Security</b> | the listing of the jaguar and associated requirements of section 7, ESA. | reinitiation or expansion of section 7 consultations related to border security activities in newly designated habitat. | projects due to fewer consultations. |

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1 **CHAPTER 3**  
2 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL**  
3 **CONSEQUENCES**

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4 **3.1 Introduction**

5 This chapter is organized by resource categories that may potentially be affected by designating  
6 critical habitat for the jaguar. These resource categories were selected based on issues and  
7 concerns identified by the Service in the August 2012 proposed critical habitat rule (77 FR  
8 50212-50242), public comments submitted for the proposed rule and July 1, 2013 revised  
9 proposed rule (78 FR 39237), and a review of the consultation history for the species. Within  
10 each resource category, a description of the existing condition and threats is followed by an  
11 evaluation of potential environmental consequences resulting from the designation of critical  
12 habitat. Potential effects are evaluated for each alternative described in Chapter 2, including the  
13 No Action Alternative.

14 Under the No Action Alternative, no designation of critical habitat for the jaguar would be made.

15 **3.1.1 Methodology**

16 Descriptions of existing conditions presented in sections 3.2 through 3.13 of this document are  
17 based on a number of sources. These include:

- 18 • Published literature;  
19 • Available state and Federal agency reports and management plans;  
20 • The final 1997 rule clarifying that endangered status for the species extended into the United  
21 States (62 FR 39147);  
22 • Formal and informal section 7 consultations conducted since the species was listed;  
23 • Service-issued BOs for multispecies consultations that included the jaguar; and  
24 • The 2012 draft economic analysis for the proposed designation of critical habitat ((Industrial  
25 Economics (IEc) 2013)).

26 *Agencies and Projects Likely to Undergo Consultation*

27 A variety of Federal agencies and projects could cause adverse impacts to the species and  
28 therefore would likely go through the section 7 consultation process whether or not critical  
29 habitat is designated. These include:

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**Table 3.1. Likely Agency Consultations Regardless of Critical Habitat**

| Agency   | Project Types   |
|--|---|
| U.S. Department of Defense (Ft. Huachuca)          | Fort Huachuca INRMP, facilities development and maintenance   |
| U.S. Bureau of Land Management                     | Fire suppression, fuel reduction treatments, land resource management plans, livestock grazing and management plans, mining permits, renewable energy development             |
| U.S. Army Corps of Engineers                       | Bridge projects, stream restoration, vegetation management  |
| U.S. Department of Homeland Security               | Border security infrastructure and operations   |
| U.S. Department of Transportation                  | Highway and bridge construction and widening  |
| U.S. Fish & Wildlife Service                       | Issuance of section 10 enhancement of survival permits, HCPs, and safe harbor agreements; NWR planning; Partners for Fish and Wildlife program projects                       |
| U.S. Forest Service                                | Fire management plans, fire suppression, fuel-reduction treatments, forest plans, livestock grazing allotment management plans (AMP), mining permits, travel management plans |
| U.S. Bureau of Indian Affairs                      | Renewable energy development, road projects, utility development and upgrades   |
| Natural Resource Conservation Service              | Wildlife habitat improvements   |
| National Park Service (Coronado National Memorial) | General management plans, fire management plans, border security infrastructure, recreation management, travel management   |

2 There was one formal consultation with the U.S. Department of Agriculture (USDA) Wildlife  
 3 Services on predator control activities. Because that consultation was related to direct effects to  
 4 the species and did not affect habitat, the Service does not expect it to be reinitiated due to  
 5 critical habitat designation.

6 Because the PBF and PCEs are so closely tied to the survival of the species, the Service does not  
 7 anticipate that different or new agencies will be consulting on previously unknown activities as a  
 8 result of this proposed critical habitat designation. Therefore, the same Federal agencies listed  
 9 above are also anticipated to be the primary agencies that would consult with the Service on  
 10 jaguar critical habitat under section 7.

11 *Approach to Analyzing Impacts*

12 The jaguar’s Northwestern Recovery Unit includes the core areas of: (1) Central Sonora,  
 13 Southwestern Chihuahua, and Northeastern Sinaloa (Mexico); and (2) Central Sinaloa, Nayarit,  
 14 and the coast and coastal sierras of Jalisco (Mexico) (Service 2012a).

1 Jaguars in the United States are understood to be individuals dispersing north from Mexico,  
2 perhaps in some cases becoming resident in the United States (Service 2012a). The closest  
3 breeding population occurs about 209 km (130 mi) south of the U.S.-Mexico border in Sonora  
4 near the towns of Huasabas, Sahuaripa, and Nacori Chico (Mexico). Portions of southeastern  
5 Arizona and southwestern New Mexico are included in the Northwestern Recovery Unit because  
6 they provide areas to support some individuals during transient movements by providing patches  
7 of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion  
8 and contraction of the nearest core area and breeding population. The spatial and biological  
9 dynamics that allow this unit to function require connectivity between the northern Mexican  
10 population of jaguars in Sonora and jaguar habitat areas in the southeastern Arizona and  
11 southwestern New Mexico. Therefore, proposed critical habitat is necessary to maintain and  
12 enhance connectivity within the U.S. portion of the Northwestern Recovery Unit. The 2012  
13 Recovery Outline also finds that it would benefit the jaguar species as a whole to allow further  
14 connectivity of the Northwestern Recovery Unit with other jaguar populations elsewhere in  
15 Mexico (Service 2012a).

16 There are numerous activities within lands proposed for critical habitat that could potentially be  
17 affected by the designation. Activities that may adversely affect the PCEs could trigger section 7  
18 consultation, if there is a Federal nexus, including large-scale habitat clearing, the construction of  
19 facilities (such as border enforcement infrastructure), minerals exploration or extraction  
20 operations, or expansion of linear projects (such as widening or construction of roadways, power  
21 lines, or pipelines) that reduce the amount of habitat available. Those activities that sever  
22 essential connectivity of critical habitat between the United States and Mexico or within a given  
23 critical habitat unit could result in destruction or adverse modification of critical habitat (see  
24 below).

25 With respect to critical habitat, the purpose of section 7 consultation is to ensure that actions of  
26 Federal agencies do not destroy or adversely modify critical habitat. Individuals, organizations,  
27 local governments, states, and other non-Federal entities are potentially affected by the  
28 designation of critical habitat *only* if their actions have a connection to Federal actions, called a  
29 “nexus”; that is, only if those actions occur on Federal lands, require Federal authorization (e.g.,  
30 permit or license), or involve Federal funding. The designation of critical habitat imposes no  
31 universal rules or restrictions on land use, nor does it automatically prohibit or alter any land use  
32 or water development activity.

33 The potential for destruction or adverse modification of critical habitat by a Federal action is  
34 assessed by determining the effects of the proposed Federal action on the PBFs and PCEs of  
35 habitat that are essential to the conservation of the species. These anticipated effects are then  
36 analyzed to determine how they will influence the function and conservation role of the affected  
37 critical habitat. This section 7 consultation analysis provides the basis for determining the  
38 significance of anticipated effects of the proposed Federal action on critical habitat. The  
39 threshold for destruction or adverse modification is evaluated in the context of whether the  
40 critical habitat would remain functional to serve the intended conservation role for the species.

41 Within jaguar critical habitat, destruction or adverse modification of critical habitat could occur  
42 if the function of one or more critical habitat units is affected by, for example, the physical,  
43 linear structures across a portion of the currently open areas of vegetated, rugged terrain at the  
44 U.S.-Mexico border. This could create a situation in which connectivity between that critical

1 habitat unit and Mexico could be severed. The loss of one critical habitat unit would not  
2 constitute jeopardy to the species, but it could constitute destruction or adverse modification;  
3 therefore, any modifications the Service would recommend in these scenarios would be related to  
4 adverse modification of critical habitat, rather than jeopardy of the species.

5 Additionally, major road construction projects (such as new highways or significant widening of  
6 existing highways) or the construction of large facilities (such as large mining operations) could  
7 constitute adverse modification to jaguar critical habitat subunits if connectivity within a critical  
8 habitat unit is severed.

9 For the jaguar, the Service's classification of whether a particular area was occupied at the time  
10 of listing or not (for the purpose of determining whether it can be properly considered critical  
11 habitat) has no relevance to determining section 7 consultation outcomes and the impacts of  
12 critical habitat designation. Given the secretive and transient nature of the jaguar, Federal land  
13 managers currently take steps to protect the jaguar even without critical habitat in proposed areas  
14 that are considered by the Service to be both occupied and unoccupied at the time of listing. In  
15 our analysis of critical habitat we also evaluated the areas we consider occupied at the time of  
16 listing and determined that these same areas are also essential for the conservation of jaguars in  
17 the Northwestern Recovery Unit, and therefore, for the species as a whole. In determining  
18 whether there is a possibility that a project or action would jeopardize the species, the Service  
19 considers what impact may occur to actual members of the species. It does not matter whether  
20 the area in question was occupied at the time of listing or whether it was occupied at a later time;  
21 the key question is whether the geographical area is occupied at the time the section 7  
22 consultation is held. Therefore, because of current Federal land management practices, the  
23 Service does not anticipate that designation of critical habitat would result in consultations that  
24 would not otherwise take place for jeopardy analysis in all proposed areas.

25 In the context of an Environmental Assessment, the evaluation of the impacts of critical habitat  
26 designation focuses on outcomes of the potential increase in section 7 consultations resulting  
27 from the designation, since the designation does not itself produce or authorize direct physical  
28 impacts. Where consultations occur, impacts could include the following:

- 29 • Additional expenditures of time and money by Federal agencies (including the Service) and  
30 non-Federal proponents to complete new, re-initiated, or expanded consultations.
- 31 • Additional time and costs to implement the reasonable and prudent alternatives and  
32 (possibly) discretionary conservation recommendations specified in BOs in which adverse  
33 modification was concluded.
- 34 • Additional time and costs to implement conservation measures that are part of an agency's  
35 proposed action to minimize adverse effects to critical habitat.
- 36 • A greater probability that the PBF and PCEs identified in section 1.4.2 would be maintained,  
37 thus increasing the likelihood of species survival.
- 38 • Action agencies and project proponents may alter their proposals to reduce, minimize, or  
39 avoid impacts on PBF and PCEs. Such alterations may obviate the need for consultation. If  
40 a consultation is initiated, then the impact of critical habitat designation could be the  
41 modification of the proposal to limit the impacts on PBF and PCEs or the imposition of  
42 reasonable and prudent alternatives that would reduce impacts on PBF and PCEs.

1 *Consultation History*

2 The Service cannot predict with certainty or detail what the effects of new, expanded, or  
3 reinitiated section 7 consultations would be. However, the record of past conservation measures  
4 and consultations provides some basis for predicting what kinds of actions would be subject to  
5 consultation and the outcome of those consultations.

6 From 1995 through mid-2012, the Service completed four formal section 7 BOs (1997, 1999,  
7 2007, and 2008) and approximately 82 informal consultations for the jaguar, all within Arizona,  
8 resulting in an average of five informal (range 1-12) and <1 formal (range 0-1) each year. All of  
9 these have addressed effects to more than one species, with the exception of the 1999 BO that  
10 only addressed effects to the jaguar. The Service completed one formal consultation on effects  
11 to the jaguar and critical habitat for the jaguar (as well as other species) in October 2013 for the  
12 proposed 5,000-acre Rosemont Mine, discussed in section 3.9 (Service 2012c).

13 **3.1.2 Economic Analysis**

14 A separate analysis was conducted by Industrial Economics Incorporated (IEc 2013) to assess  
15 the potential economic impacts associated with designation of critical habitat for the jaguar.  
16 Where appropriate, information from the draft economic analysis has been incorporated into this  
17 Environmental Assessment. The draft Economic Analysis estimates the costs of conservation  
18 activities related to the jaguar, considering both the baseline costs (i.e., those impacts expected to  
19 occur absent the designation of critical habitat) and incremental costs (i.e., those impacts  
20 expected to occur as a result of critical habitat designation).

21 **3.2 Land Use and Management**

22 **3.2.1 Existing Conditions**

23 The revised proposed critical habitat designation includes lands under Federal (61%), state  
24 (15%), tribal (9%), and private (15%) land ownership. Much of the Federal land is managed by  
25 the USFS in the Coronado National Forest (see Figure 2, next page). Federal lands are managed  
26 according to the pertinent Management Plan for each Forest Service district office and BLM  
27 field office. Table 3.2 summarizes the land ownership status for the six designated critical  
28 habitat units.

29 **Table 3.2. Approximate Proposed Critical Habitat by Land Ownership and State**

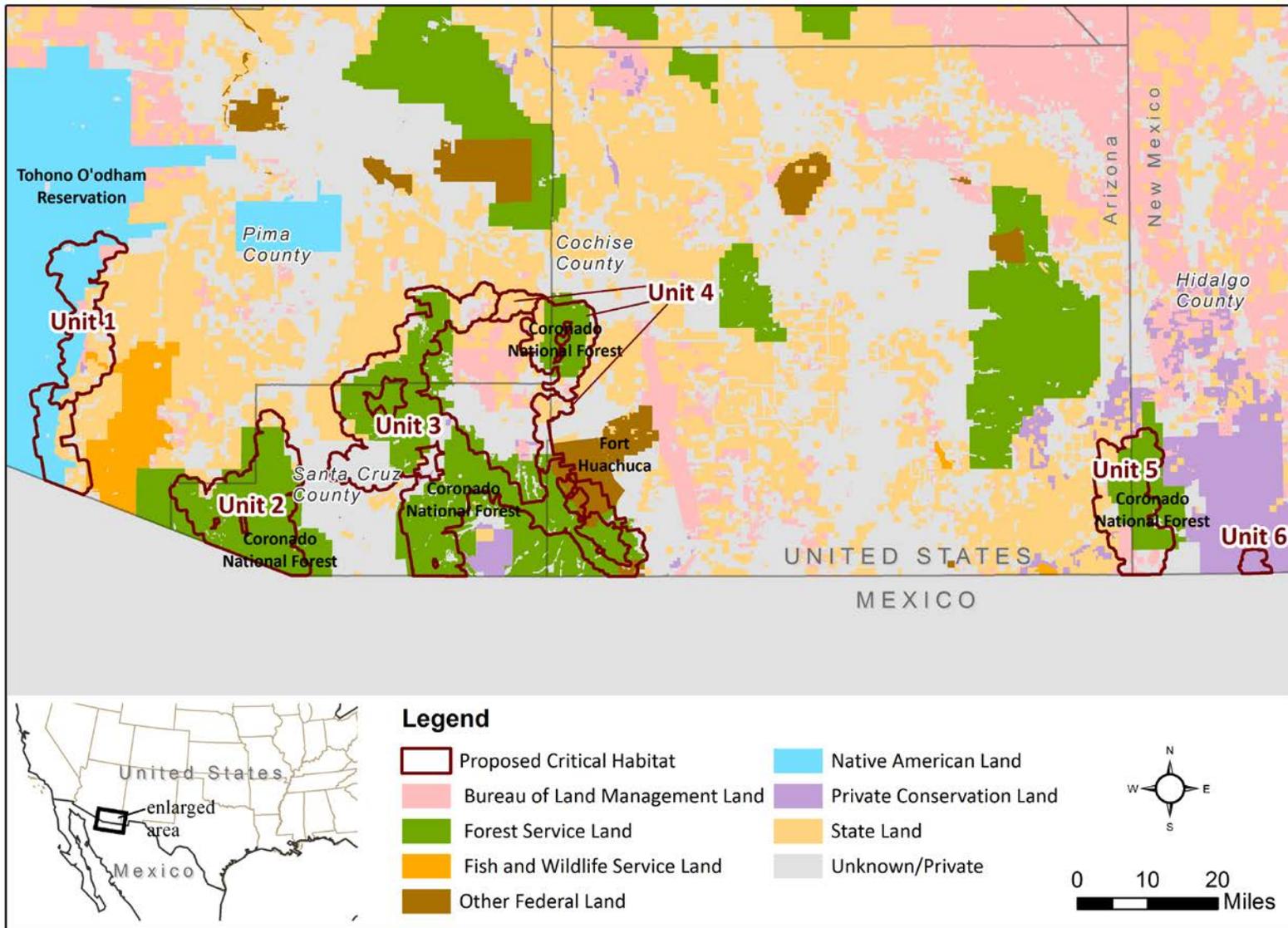
| <b>Land Owner</b> | <b>Arizona ha<br/>(ac)</b> | <b>New Mexico ha<br/>(ac)</b> | <b>Total ha<br/>(ac)</b> |
|-------------------|----------------------------|-------------------------------|--------------------------|
| Federal           | 194,648<br>(480,986)       | 18,294<br>(45,206)            | 212,943<br>(526,192)     |
| State             | 50,437<br>(124,633)        | 0<br>(0)                      | 50,437<br>(124,633)      |

| <b>Land Owner</b> | <b>Arizona ha<br/>(ac)</b>   | <b>New Mexico ha<br/>(ac)</b> | <b>Total ha<br/>(ac)</b>     |
|-------------------|------------------------------|-------------------------------|------------------------------|
| Tribal            | 31,593<br>(78,067 )          | 0<br>(0)                      | 31,593<br>(78,067 )          |
| Private           | 46,620<br>(115,200)          | 5,685<br>(14,046)             | 52,304<br>(129,246)          |
| <b>Total</b>      | <b>323,298<br/>(798,886)</b> | <b>23,979<br/>(59,253)</b>    | <b>347,275<br/>(858,137)</b> |

Note: Area sizes may not sum due to imprecision of specific land use information.

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The lands proposed as critical habitat are predominantly owned by the USFS, the Tohono O’odham Nation (tribal land), and Arizona State Trust Lands. There is a variety of land uses in proposed critical habitat units. USFS lands comprise approximately 90 percent of the Federal lands, with BLM comprising another 4 percent, Department of Defense comprising another 4 percent, and USFWS land (within the Buenos Aires NWR) and NPS lands (within the Coronado National Memorial) comprising less than 1 percent each (77 FR 50213-50242). Figure 2 (next page) shows landownership for the proposed critical habitat units.



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**Figure 2. Land Ownership of Proposed Critical Habitat Units**

1 The Forest Service manages habitat for the jaguar on the Coronado National Forest in the  
2 Douglas, Nogales, and Sierra Vista Ranger Districts in Units 2 and 3; Subunits 4a, 4b, and 4c;  
3 and Unit 5. On Forest Service lands, the principal land management activities affecting critical  
4 habitat units include fire and fuels management, livestock grazing, habitat restoration, road  
5 maintenance and construction, land acquisition, recreation management, and vegetation  
6 management. These activities and their impacts are discussed in the individual resource sections  
7 of this chapter.

8 The BLM manages habitat for the jaguar in Subunits 1a and 1b; Units 2 and 3; Subunits 4a, 4b,  
9 and 4c; and Unit 5. These lands are managed for multiple use and sustained yield, including  
10 habitat restoration, fire management, grazing, and recreation. BLM manages road development  
11 through the BLM National Travel Management Plan, which strives to address the effects that  
12 population increases, explosive growth in the use of off-highway vehicles (OHV), and the  
13 advances in technology have had on public lands. BLM's goal is to improve trails and OHV  
14 management through land use planning in order to minimize impacts to wildlife habitat resulting  
15 from the expansion of roads and trails on public lands (BLM 2012a). BLM land within jaguar  
16 critical habitat includes Guadalupe Canyon Outstanding Natural Area, Coyote Mountain  
17 Wilderness, BLM Public Lands, Baker Canyon WSA, Baboquivari Peak Wilderness, the Las  
18 Cienegas NCA (Arizona), and Appleton-Whittell Area of Critical Concern. BLM lands within  
19 proposed critical habitat are managed by the Tucson or Safford Field Offices.

20 The Coyote Mountain and Baboquivari Peak Wilderness areas are managed together under a  
21 joint management plan. Under the Wilderness Act commercial enterprise, roads, motor vehicles,  
22 motorized equipment, mechanical transport, structures, or installations are prohibited in  
23 wilderness areas. Although these activities are prohibited, the Wilderness Act and many  
24 subsequent laws designating wilderness areas contain provisions authorizing activities that do  
25 not conform to these general prohibitions. There are no special provisions within the Coyote  
26 Mountain Wilderness, and special provisions for the Baboquivari Peak Wilderness involve  
27 recreation activities (BLM 2012a).

28 The Guadalupe Canyon Outstanding Natural Area as well as the Baker Canyon WSA are areas  
29 without roads that BLM manages to maintain their wilderness character (BLM 2010a). The  
30 Whittell Area of Critical Concern is managed by the BLM to protect and prevent irreparable  
31 damage to important historical, cultural, and scenic values, fish, or wildlife resources or other  
32 natural systems or processes; or to protect human life and safety from natural hazards (BLM  
33 2011b). Major construction and development projects do not currently occur in these areas.

34 NPS land includes the Coronado National Memorial in Cochise County, Arizona, in Unit 3. The  
35 Memorial commemorates the first major expedition of Europeans into the American Southwest,  
36 which followed a route along the San Pedro Valley. The Valley can be overlooked at several key  
37 scenic viewing points at the Memorial. The Memorial is managed for visitor use and resource  
38 preservation under the Final General Management Plan /EIS for the Memorial. Land  
39 management activities at the Coronado National Memorial include livestock grazing, fire and  
40 fuels management, and recreation (NPS 2012a).

41 There is one NWR within proposed critical habitat: the Buenos Aires NWR (Refuge), in Pima  
42 County, Arizona. The overall goal of the Refuge is to provide habitat management and  
43 commitment to benefit a wide array of species. Management activities that occur at this Refuge

1 include habitat protection and restoration for endangered and non-endangered species, prescribed  
2 burning, erosion control, fence removal, the construction of water impoundments, and vegetation  
3 management (Service 2012a).

4 The proposed jaguar designation includes 52,304 (129,246 ac) of private land, which supports a  
5 variety of land uses:

- 6 • Conservation land—Lands managed by The Nature Conservancy include the Patagonia-  
7 Sonoita Creek Preserve (163 ha/4021 ac of proposed critical habitat), the Ramsey Canyon  
8 Preserve (130 ha/322 ac of proposed critical habitat), and the San Rafael Ranch Natural Area  
9 (25 ha/63 ac of proposed critical habitat). These areas are managed for preservation of  
10 natural features and species. Other Nature Conservancy areas within proposed critical  
11 habitat units include the Baboquivari and Cottonwood Springs fee lands.
- 12 • Local land trust preserve—the Malpai Borderlands Group owns a local land trust  
13 preserve/easement in the San Bernadino Valley, Peloncillo Mountains, and Animas Valley  
14 along the border of Arizona and New Mexico and the United States/Mexico border. This  
15 land is managed as natural wildlife habitat and productive ranchland (MBG 2012). Critical  
16 habitat is proposed for 3,310 ha (8,179 ac) of this area.
- 17 • Research area—the State of Arizona owns owns the 3,238 ha (8,002 ac) Santa Rita  
18 Experimental Range and leases it to the University of Arizona College of Agriculture, used  
19 for pioneer range research on the improvement and management of semiarid grasslands in  
20 the Southwest (Medina 1996). Other research land within proposed critical habitat area  
21 includes the 5 ha (14 ac) Appleton-Whittell Research Ranch, owned by the National  
22 Audubon Society. The Research Ranch is a cooperative partnership among the National  
23 Audubon Society, USF S, BLM, The Nature Conservancy, Swift Current Land & Cattle, and  
24 The Research Ranch Foundation. The Research Ranch provides three key functions:  
25 ecosystem conservation, research, and regional education and outreach (Audubon 2012).

26 Of the six designated units where critical habitat is proposed, two (Units 1 and 4) are divided into  
27 subunits:

- 28 • Subunit 1b, the Southern Baboquivari Subunit provides connectivity to Mexico through the  
29 southern extent of the Baboquivari Mountains. This subunit consists of 19,453 ha (48,070  
30 ac) in the southern Baboquivari Mountains in Pima County, Arizona. Land ownership within  
31 the unit includes approximately 624 ha (1,543 ac) of Federal lands; 10,829 ha (26,759 ac) of  
32 Tohono O’odham Nation lands; 6,157 ha (15,213 ac) of Arizona State lands; and 1,843 ha  
33 (4,555 ac) of private lands. The Federal land is administered by the Service and BLM. The  
34 primary land uses within Subunit 1b include ranching, grazing, border-related activities,  
35 Federal land management activities, and recreational activities throughout the year.
- 36 • Subunit 4b provides a northern connection between subunit 4a and Unit 3 (a unit providing  
37 connectivity to Mexico). This subunit consists of 5,143 ha (12,710 ac) between the Santa  
38 Rita Mountains and northern extent of the Whetstone Mountains in Pima County, Arizona.  
39 Land ownership within the subunit includes approximately 531 ha (1,313 ac) of Federal  
40 lands; and 4,612 ha (11,396 ac) of Arizona State lands. The primary land uses within  
41 Subunit 4b include grazing and recreational activities.
- 42 • Subunit 4c, the Whetstone-Huachuca Subunit provides a southern connection between  
43 subunit 4a and Unit 3. Subunit 4c consists of 8,026 ha (19,832 ac) between the Huachuca

1 Mountains and southern extent of the Whetstone Mountains in Santa Cruz and Cochise  
2 Counties, Arizona. Land ownership within the subunit includes approximately 1,654 ha  
3 (4,088 ac) of Federal lands; 2,981 ha (7,366 ac) of Arizona State lands; and 3,391 ha (8,379  
4 ac) of private lands. The Federal land is administered by the Coronado National Forest,  
5 BLM, and Fort Huachuca. The primary land uses within Subunit 4c include military  
6 activities associated with Fort Huachuca, as well as Federal forest management activities,  
7 grazing, and recreational activities.

## 8 **3.2.2 Environmental Consequences**

9 Land management activities on critical habitat units include livestock management; fire  
10 suppression and prescribed fire; surface-disturbance activities including road construction and  
11 widening; recreation developments and activities including off-road vehicle use; habitat  
12 restoration projects; and fence construction and removal.

### 13 **3.2.2.1 No Action Alternative**

14 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
15 section 7 consultation process would continue as presently conducted without analysis of  
16 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
17 for actions that *may affect* the jaguar. Such consultations would analyze relevant land, resource,  
18 and fire management plans (FMPs) on Federal lands currently occupied by the species. As they  
19 relate to land use and management, such consultations would likely include:

- 20 • National Park Service—for general management plan and FMP activities, border security  
21 infrastructure, recreation management, and travel management (at Coronado National  
22 Memorial);
- 23 • Natural Resource Conservation Service—for wildlife habitat improvements and for  
24 establishing technical guidelines and program criteria and priorities necessary to carry out  
25 conservation provisions of the Farm Bill in Arizona;
- 26 • U.S. Army Corps of Engineers (USACE)—for bridge projects, stream restoration, vegetation  
27 management, and urban development along the U.S.-Mexico border in Arizona and New  
28 Mexico;
- 29 • U.S. Bureau of Indian Affairs (BIA)—for renewable energy development, road projects, and  
30 utility development and upgrades (Tohono O’odham Nation);
- 31 • U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land and  
32 resource management plans, livestock grazing and management plans, recreation, mining  
33 permits, nonnative invasive species treatments, and renewable energy development (the  
34 Baboquivari Peak Wilderness, Coyote Mountains Wilderness Area, Las Cienegas NCA,  
35 Baker Canyon WSA, Guadalupe Canyon Outstanding Natural Area, Guadalupe Canyon Isa,  
36 etc.);
- 37 • U.S. Customs and Border Patrol (CBP) under the U.S. Department of Homeland Security  
38 (DHS)—for border security infrastructure and operations, particularly as related to fencing  
39 projects along the U.S.-Mexico border in Arizona and New Mexico;
- 40 • U.S. Department of Transportation—for highway and bridge construction and maintenance,  
41 particularly along the U.S.-Mexico border in Arizona and Mexico;

- 1 • U.S. Forest Service—for FMPs, fire suppression, fuel-reduction treatments, forest plans,  
2 livestock grazing AMPs, mining permits, and travel management plans (Coronado National  
3 Forest, Elgin Research Ranch, Elgin Research Natural Area, Gooding Research Natural  
4 Area, Guadalupe Canyon Zoological Area, Miller Peak Wilderness, Mt. Wrightson  
5 Wilderness, Pajarita Wilderness, Wild Chili Botanical Area); and
- 6 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival permits,  
7 HCPs, and safe harbor agreements (SHA); NWR planning; and Partners for Fish and Wildlife  
8 program projects.

9 Therefore, this alternative would not add any impacts on land use and management beyond those  
10 conservation measures or project modifications resulting from the listing of the jaguar and  
11 associated requirements of section 7 of the ESA.

### 12 **3.2.2.2 Alternative A**

13 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
14 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
15 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
16 anticipate that designation of critical habitat would result in consultations that would not  
17 otherwise take place for jeopardy analysis in all proposed areas. However, as a result of the  
18 jaguar critical habitat designation, Federal agencies will need to reevaluate ongoing projects and  
19 those that are not yet completed for their effects to PCEs, and, in some cases, may need to  
20 reinstate previously completed section 7 consultations for actions that only addressed the jaguar  
21 under the jeopardy standard (due to its listing as an endangered species) in areas proposed as  
22 critical habitat.

23 Therefore, compared to the No Action Alternative, Alternative A (which includes all proposed  
24 units, no exclusions) would result in (1) a small but unknown number of reinstated section 7  
25 consultations for land management actions based solely on the presence of designated critical  
26 habitat; and (2) the addition of an analysis of adverse modification of critical habitat to future  
27 section 7 consultations on the jaguar in critical habitat.

#### 28 *Reinstated Consultations*

29 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
30 species, activities that would require consultation for critical habitat are primarily the same  
31 activities that currently require consultation for the species, as described above. Based on  
32 previous activity in designated units, such project proponents could include the BLM, the Forest  
33 Service, the NPS, and the State of Arizona (through a Federal nexus if it receives Federal funds  
34 for conservation or restoration of state-owned lands), although specific locations of projects  
35 within these properties containing units of critical habitat are unknown at this time.

36 Reinstated consultations are consultations that have been completed for impacts to the species,  
37 but which might need to be re-opened to consider the likelihood of destruction or adverse  
38 modification to critical habitat. As it relates to land use and management, such consultations  
39 could include:

- 1 • Border security infrastructure—Department of Defense, National Park Service, U.S.  
2 Department of Homeland Security;
- 3 • Road/highway construction—U.S. Department of Transportation ;
- 4 • Mining permits—U.S. Bureau of Land Management, Forest Service; and
- 5 • Actions on recreation lands—U.S. Bureau of Land Management, Forest Service, National  
6 Park Service.

7 These potential actions triggering consultation are discussed in the individual resource sections  
8 within this chapter.

### 9 *Addition of Adverse Modification Analysis to Future Consultations*

10 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
11 in many respects and are parallel processes because the health of a species cannot be  
12 disassociated from the health of its habitat. The outcomes of these future consultations would  
13 depend on the details of project proposals and the analysis of effects, which are unknown at this  
14 time.

15 The additional consultations, and the additional time required to complete consultations that  
16 would only have considered effects on the species, would increase administrative costs to the  
17 Service and to the action agencies. Implementing conservation measures resulting from those  
18 additional consultations would also increase costs for action agencies. Outcomes of  
19 consultations for critical habitat could also include reasonable and prudent alternatives and other  
20 conservation measures designed to maintain jaguar PCEs. These outcomes cannot be predicted  
21 precisely; however, based on past consultations for the jaguar, types of additional management  
22 actions that may be required include, but are not limited to:

- 23 • Revising resource and habitat management plans;
- 24 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
25 reports;
- 26 • Limiting construction of fencing in occupied jaguar habitats or in areas where fences are  
27 likely to impact jaguar habitat;
- 28 • Limiting roadway widening and construction projects;
- 29 • Limiting the construction of new powerlines and pipelines;
- 30 • Minimizing mineral extraction and mine operation within occupied habitat; and
- 31 • Establishing burn buffers or limiting prescribed burning within closed vegetative structures  
32 offered by forests and used by jaguar and jaguar prey.

33 Major construction projects (such as new highways, significant widening of existing highways,  
34 or construction of large facilities) that could sever connectivity within these critical habitat  
35 subunits could constitute adverse modification. The most likely subunits in which these  
36 activities may occur are 4b and 4c. Such projects include the proposed Rosemont Copper Mine  
37 in Unit 3, which is described in Section 3.9 Mining.

38 In summary, the effects of critical habitat designation on land use and management are expected  
39 to be minor because (1) new consultations based solely on the presence of designated critical  
40 habitat are unlikely, and because land managers are already consulting on jaguar throughout the  
41 proposed critical habitat areas; (2) any reasonable and prudent alternatives developed under

1 jeopardy analysis would not likely be changed substantially with the addition of adverse  
2 modification analysis; and (3) very few if any additional conservation measures would be  
3 proposed to address critical habitat. As such, the incremental economic effects of designation  
4 are limited to the administrative costs of expanded or reinitiated consultation. These costs are  
5 estimated to be \$180,000 in total, or \$16,000 annualized (IEc 2013).

### 6 **3.2.2.3 Alternative B**

7 For Alternative B (all units proposed in Alternative A minus the exclusion of Tohono O’odham  
8 Nation lands), the impacts associated with the designation of critical habitat would be similar to  
9 those identified for Alternative A. The exclusion is wholly tribal land. If Tohono O’odham  
10 Nation land is excluded, designation of critical habitat affects this area only to the extent that  
11 tribal activities have effects on critical habitat may require a Federal license, permit, or funding.  
12 Therefore, this exclusion could reduce the economic impacts of designation on land management  
13 activities in this area overall, by requiring fewer consultations. This would reduce administrative  
14 costs as well for the Service. The overall impacts on land management would be less than those  
15 in Alternative A, and still characterized as minor.

## 16 **3.3 Fish, Wildlife, Plants, Threatened and Endangered Species**

### 17 **3.3.1 Existing Conditions**

18 This section describes the animals, plants, and their habitats that would be affected by the  
19 designation of critical habitat for the jaguar. The critical habitat boundaries were calculated with  
20 mapping software to include PCEs 3, 4, 5, 6, and 7: water availability, vegetation community,  
21 tree cover, ruggedness, lack of human influence, and elevation (note that data describing  
22 distribution of native prey (PCE 2) was not used, as wildlife management agencies in Arizona  
23 and New Mexico have a history of effective game management strategies resulting in prey  
24 species’ persistence within occupied areas). They are described in detail in the August 20, 2012,  
25 and revised proposed rules. The two vegetation communities included in the critical habitat units  
26 are Madrean evergreen woodland and semidesert grassland. This discussion will focus on those  
27 species that would be found within the parameters of the jaguar PCEs that were used to  
28 determine the critical habitat boundaries.

29 The Madrean evergreen woodland originates in the Sierra Madre mountain range of Mexico and  
30 extends north into southeastern Arizona and southwestern New Mexico ((Arizona Game and  
31 Fish Department (AGFD 2012)). The climate of the woodland is characterized by mild winters  
32 with some rain and occasional snow and wet, warm summers. The historically low-intensity fire  
33 regime of this community has favored the fire resistant plant species and the area is dominated  
34 by Madrean evergreen pines intermingled with patchy shrublands on most mid-elevation slopes  
35 (1500-2300 m elevation). Fires are frequent, with perhaps more crown fires than ponderosa pine  
36 woodlands, which tend to have more frequent ground fires on gentle slopes (AGFD 2012). This  
37 ecosystem has been labeled a hotspot of biological diversity by Conservation International (CI)  
38 and sustains over 120 endemic animal species and almost 4,000 endemic plant species (CI 2012).

39 The semidesert grassland community of southern Arizona and New Mexico is composed mostly  
40 of perennial grasses with some mixed shrub-succulent and dry oaks (NatureServe 2012). Some

1 areas are essentially pure stands of grass. In other places, an open savanna with grasses beneath  
2 oaks or mesquites is common. Most areas are characterized by short-grasses interspersed with a  
3 variety of low-growing trees, shrubs, and cacti. This vegetation system has adapted to a frequent  
4 fire regime (every 2.5 – 10 years), though more recently the lack of fire and pressure from  
5 grazing has converted much of the original grassland to desert scrub habitat (AGFD 2012).  
6 Originally, tree cover and shrub cover together comprised less than 10% of the area  
7 (NatureServe 2012). Currently, moderate levels of shrub invasion (10-35% cover) affect about  
8 39% of the semi-desert grassland, and the remaining 52% is dominated by shrubs or nonnative  
9 grasses, or suffers from severe erosion (AGFD 2012).

### 10 **3.3.1.1 Fish**

11 While the jaguar is not an aquatic species, water is one of the important PCEs that can determine  
12 presence or absence of jaguars, and they are not usually found farther than 10 km (6.2 mi) from a  
13 water source (Service 2012b). In general, riparian and aquatic communities in Arizona and New  
14 Mexico have experienced impacts from drought, livestock grazing, and invasive species  
15 introduction (AGFD 2012). As a result of predation and competition with nonnative species,  
16 native fish in Arizona are considered the most threatened taxa among Arizona native species  
17 (AGFD 2012). See Section 3.3.1.4 in this document for a description of threatened and  
18 endangered fish species that occur in the proposed critical habitat areas.

19 The proposed critical habitat is located within the Gila River basin, which includes a large part of  
20 Arizona and extends into New Mexico, and is part of the larger Colorado River water basin.  
21 This basin contains several sub-basins and drains rivers such as the San Pedro and Santa Cruz  
22 and their tributaries. These rivers, streams, and lakes are important ecological features in the  
23 desert. They provide habitat for native species such as the loachminnow (*Tiaroga cobitis*), desert  
24 pupfish (*Cyprinodont macularius*), Gila chub (*Gila intermedia*), razorback sucker (*Xyrauchen*  
25 *texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), gila topminnow (*Poeciliopsis*  
26 *occidentalis*), and spinedace (*Meda fulgida*) ((U.S. Bureau of Reclamation (USBR) 2009a).  
27 These native species and the aquatic community they live in have been impacted by the  
28 introduction of nonnative aquatic species such as mosquitofish (*Gambusia affinis*), smallmouth  
29 bass (*Micropterus dolomieu*), carp (*Cyprinus carpio*), American bullfrog (*Rana catesbeiana*),  
30 and crayfish (*Orconetes* spp. and *Procambarus* spp.) (USBR 2009b).

### 31 **3.3.1.2 Wildlife**

32 The Madrean vegetation community supports several species that are not found elsewhere or in  
33 only one or a few habitat types, including talussnail (*Sonorella* spp.), barking frog (*Craugastor*  
34 *augusti*), brown vine snake (*Oxybelis aeneus*), ridge-nosed rattlesnake (*Crotalus willardi*),  
35 Gould's turkey (*Megleagris gallopavo mexicana*), Montezuma quail (*Cyrtonyx montezumae*),  
36 Mexican jay (*Aphelocoma wollweberi*), bridled titmouse (*Baeolophus wollweberi*), and southern  
37 pocket gopher (*Thomomys umbrinus*) (AGFD 2012). The best-known invertebrates in the  
38 Madrean pine-oak woodlands are the approximately 160-200 butterfly species, of which about  
39 45 are native to the region. The grasslands provide habitat for the pronghorn antelope  
40 (*Antilocapra americana*), deer (*Odocoileus* spp.), prairie dogs (*cynomys* spp.), and kangaroo rats  
41 (*Dipodomys* spp). See Section 3.3.1.4 of this document for a description of threatened and  
42 endangered wildlife species that are likely to occur in the critical habitat areas.

1 Most jaguar experts believe that collared peccary (*Pecari tajacu*) and deer are mainstays in the  
2 diet of jaguars in the United States and Mexico borderlands, although other available prey,  
3 including coatis (*Nasua narica*), skunk (*Mephitis* spp., *Spilogale gracilis*), raccoon (*Procyon*  
4 *lotor*), jackrabbit (*Lepus* spp.), domestic livestock, and horses are taken as well (77 FR 50213-  
5 50242). The peccary can be found in dense scrubby vegetation, often near water, and rests in  
6 caves, rock crevices, and mine shafts during the day (NatureServe 2012). The deer species found  
7 in the southwest desert include mule deer (*Odocoileus hemionus*) and white tailed deer  
8 (*Odocoileus virginianus*). They feed on grasses and forbs in the spring and summer but are  
9 primarily browsers and consume bark, twigs, leaves, and nuts (AZGFD 2009). Mule deer are  
10 found in desert shrub, grasslands, pinon-juniper, pine, aspen-fir, and mountain meadows, while  
11 white tailed deer habitats include oak-grasslands, chaparral, and pine forests (AZGFD 2009).

### 12 **3.3.1.3 Plants**

13 The Madrean forest is dominated by Madrean pines such as Arizona pine (*Pinus arizonica*),  
14 Apache pine (*Pinus engelmannii*), Chihuahua pine (*Pinus leiophylla*), Chihuahua white pine  
15 (*Pinus strobiformis*) and evergreen oaks such as Arizona white oak (*Quercus arizonica*), Emory  
16 oak (*Quercus emoryi*), and gray oak (*Quercus grisea*) (AGFD 2012). The forest provides the  
17 vegetative cover that the jaguar needs for stalking and ambushing prey, as well as habitat for  
18 target prey species (77 FR 50213-50242). These oaks and pines intermingle with patchy  
19 shrublands on most mid-elevation slopes (1,500-2,300 m elevation). Other tree species include  
20 Arizona cypress (*Cupressus arizonica*), alligator juniper (*Juniperus deppeana*), Mexican pinyon  
21 (*Pinus cembroides*), border pinyon (*Pinus discolor*), ponderosa pine (*Pinus ponderosa*) and  
22 Douglas fir (*Pseudotsuga menziesii*). Subcanopy and shrub layers may include typical encinal  
23 and chaparral species such as yucca (*Agave* spp.), Arizona madrone (*Arbutus arizonica*),  
24 manzanitas (*Arctostaphylos* spp.), silverleaf oak (*Quercus hypoleucoides*), netleaf oak (*Quercus*  
25 *rugosa*), and Sonoran scrub oak (*Quercus turbinella*). Some stands have moderate cover of  
26 perennial grasses such as bullgrass (*Muhlenbergia emersleyi*), longtongue muhly (*Muhlenbergia*  
27 *longiligula*), kunth (*Muhlenbergia virescens*), and Texas bluestem (*Schizachyrium cirratum*).

28 The semi-desert grassland community consists of regions of open grassland and regions of open  
29 savanna with oaks (*Quercus* spp.) or mesquites (*Prosopis* spp.). These grasslands are  
30 characterized by the presence of tobosagrass (*Pleuraphis mutica*) or black grama (*Bouteloua*  
31 *eriopoda*). Though jaguars are more commonly found in dense forested regions, they have been  
32 documented in these open grasslands that have some tree cover. Semi-desert grasslands with  
33 greater than 1 to 50% tree cover were included in determining the boundaries of the proposed  
34 critical habitat (77 FR 50213-50242). Other common grass species within the semi-desert  
35 grassland include hairy grama (*B. hirsuta*), Rothrock's grama (*B. rothrockii*), sideoats grama (*B.*  
36 *curtipendula*), blue grama, plains lovegrass (*Eragrostis intermedia*), bush muhly (*Muhlenbergia*  
37 *porteri*), curlyleaf muhly (*Muhlenbergia setifolia*), James' galleta (*Pleuraphis jamesii*), and  
38 alkali sacaton (*Sporobolus airoides*) (AGFD 2012). More conspicuous species present include  
39 acacias (*Acacia* spp.), prickly-pear cactus (*Opuntia* spp.), century plant (*Selaginella* spp.), cholla  
40 (*Cylindropuntia* spp.), and yuccas (*Yucca* spp.). See Section 3.3.1.4 of this document for a  
41 description of threatened and endangered wildlife species that are likely to occur in the critical  
42 habitat areas.

1 **3.3.1.4 Threatened and Endangered Wildlife Species**

2 There are a number of endangered and threatened species inhabiting the proposed critical habitat  
 3 for the jaguar. Table 3.3 lists the federally endangered, threatened, sensitive, and candidate  
 4 species likely found in the proposed jaguar critical habitat units. Of those species listed, critical  
 5 habitat units for four species overlap with the proposed critical habitat for the jaguar and are  
 6 discussed briefly below.

7 The Chiricahua leopard frog occurs in a wide variety of habitats at a wide range of altitudes in  
 8 pine and pine-oak forests with permanent water ponds of moderate depth as well as montane  
 9 streams (NatureServe 2012). Based on the jaguar’s PCE need for water availability and use of  
 10 Madrean evergreen woodlands, there is likely overlap in jaguar and Chiricahua leopard frog  
 11 habitat use.

12 The Mexican spotted owl is a medium sized owl with ashy-chestnut brown feathers and white  
 13 and brown spots on their abdomen, back, and head (NatureServe 2012). These owls are  
 14 commonly found in old-growth or mature forests and commonly near water; therefore, they may  
 15 frequent some of the proposed critical habitat units for the jaguar. This species’ critical habitat  
 16 overlaps with sections of the proposed jaguar units 2, 3 and 4a.

17 The Sonora chub is a small (25cm) fish whose range within the United States is restricted to a  
 18 few small streams in Santa Cruz County, AZ (NatureServe 2012). These streams, including  
 19 critical habitat segments, are found within the proposed jaguar critical habitat unit 3.

20 The Huachuca water-umbel is a semi-aquatic carrot-like plant found in mid-elevation wetlands  
 21 (ciengas) in Cochise and Santa Cruz counties in Arizona (NatureServe 2012). This plant is  
 22 sensitive to disturbance and competition and has designated critical habitat that overlaps with the  
 23 proposed jaguar critical habitat unit 3.

24 **Table 3.3. Federally Endangered, Threatened, and Candidate Wildlife Species**  
 25 **within the Proposed Recovery Units for the Jaguar**

| Species  | Status     | Counties                           |
|--|------------|------------------------------------|
| <b>AMPHIBIANS</b>  |            |                                    |
| Sonora tiger salamander<br><i>Ambystoma tigrinum stebbinsi</i> | Endangered | Cochise, Santa Cruz                |
| Arizona treefrog<br><i>Hyla wrightorum</i>                     | Candidate  | Cochise, Santa Cruz                |
| Chiricahua leopard frog<br><i>Lithobates chiricahuensis</i>    | Threatened | Cochise, Hidalgo, Pima, Santa Cruz |
| <b>BIRDS</b>   |            |                                    |
| Yellow-billed cuckoo<br><i>Coccyzus americanus</i>             | Candidate  | Cochise, Pima, Santa Cruz          |
| Mexican spotted owl<br><i>Strix occidentalis lucida</i>        | Threatened | Cochise, Hidalgo, Pima, Santa Cruz |
| Southwestern willow flycatcher                                 | Endangered | Cochise, Hidalgo, Pima, Santa Cruz |

| <b>Species</b>   | <b>Status</b>                         | <b>Counties</b>                    |
|--|---------------------------------------|------------------------------------|
| <i>Empidonax trailii extimus</i>   |                                       |                                    |
| Sprague's pipit<br><i>Anthus spragueii</i>                               | Candidate                             | Cochise, Hidalgo, Santa Cruz       |
| Masked bobwhite (quail)<br><i>Colinus virginianus ridgewayi</i>          | Endangered                            | Pima                               |
| California Least tern<br><i>Sterna antillarum</i>                        | Endangered                            | Pima                               |
| <b>MAMMALS</b>   |                                       |                                    |
| Grey wolf<br><i>Canis lupis</i>  | Experimental non-essential population | Hidalgo                            |
| Sonoran pronghorn<br><i>Antilocapra americana sonoriensis</i>            | Endangered                            | Pima                               |
| Ocelot<br><i>Leopardus pardalis</i>                                      | Endangered                            | Cochise, Pima, Santa Cruz          |
| Lesser long-nosed bat<br><i>Leptonycteris curasoae yerbabuena</i>        | Endangered                            | Cochise, Hidalgo, Pima, Santa Cruz |
| Mexican long-nosed bat<br><i>Leptonycteris nivalis</i>                   | Endangered                            | Hidalgo                            |
| <b>REPTILES</b>  |                                       |                                    |
| New Mexican ridge-nosed rattlesnake<br><i>Crotalus willardi obscures</i> | Threatened                            | Cochise, Hidalgo,                  |
| Northern Mexican Garter Snake<br><i>Thamnophis eques megalops</i>        | Candidate                             | Cochise, Pima, Santa Cruz          |
| Sonoran desert tortoise<br><i>Gopherus morafkai</i>                      | Candidate                             | Pima, Santa Cruz                   |
| Sonoyta mud turtle<br><i>Kinsternon sonoriense longifemorale</i>         | Candidate                             | Pima                               |
| Tucson shovel-nosed snake<br><i>Chionactis occipitalis klauberi</i>      | Candidate                             | Pima                               |
| <b>INVERTEBRATES</b>   |                                       |                                    |
| Stephan's Riffle Beetle<br><i>Heterelmis stephani</i>                    | Candidate                             | Santa Cruz                         |
| Huachuca springsnail<br><i>Pyrgulopsis thompsoni</i>                     | Candidate                             | Cochise, Santa Cruz                |
| Rosemont talussnail<br><i>Sonorella rosemontensis</i>                    | Candidate                             | Pima                               |
| San Bernardino springsnail<br><i>Pyrgulopsis thompsoni</i>               | Endangered                            | Cochise                            |
| <b>FISH</b>  |                                       |                                    |

| Species  | Status     | Counties                           |
|--|------------|------------------------------------|
| Gila topminnow<br><i>Poeciliopsis occidentalis</i>                   | Endangered | Cochise, Hidalgo, Pima, Santa Cruz |
| Sonora chub<br><i>Gila ditaenia</i>                                  | Threatened | Santa Cruz                         |
| Gila chub<br><i>Gila intermedia</i>                                  | Endangered | Cochise, Pima, Santa Cruz          |
| Desert pupfish<br><i>Cyprinodon macularius</i>                       | Endangered | Cochise, Pima, Santa Cruz          |
| Yaqui catfish<br><i>Ictalurus pricei</i>                             | Threatened | Cochise                            |
| Yaqui chub<br><i>Gila purpurea</i>                                   | Endangered | Cochise                            |
| Loachminnow<br><i>Tiaroga cobitis</i>                                | Threatened | Cochise, Hidalgo                   |
| Beautiful shiner<br><i>Cyprinella Formosa</i>                        | Threatened | Cochise                            |
| Spikedace<br><i>Meda fulgida</i>                                     | Threatened | Cochise, Hidalgo                   |
| PLANTS   |            |                                    |
| Huachuca water-umbel<br><i>Lilaeopsis schaffneriana</i>              | Endangered | Cochise, Pima, Santa Cruz          |
| Canelo Hills ladies' tresses<br><i>Spiranthes delitescens</i>        | Endangered | Cochise, Santa Cruz                |
| Pima pineapple cactus<br><i>Coryphantha scheeri var rodustispina</i> | Endangered | Pima, Santa Cruz                   |
| Kearny's blue star<br><i>Amsonia kearneyana</i>                      | Endangered | Pima                               |
| Lemmon fleabane<br><i>Erigeron lemmonii</i>                          | Candidate  | Cochise                            |
| Cochise pincushion cactus<br><i>Coryphantha robbinsorum</i>          | Threatened | Cochise                            |

1 Source: NatureServe 2012; Service No Date

## 2 3.3.2 Environmental Consequences

### 3 3.3.2.1 No Action Alternative

4 Under the No Action Alternative, critical habitat for the jaguar would not be designated under  
5 the ESA. The section 7 consultation process would continue as presently conducted without  
6 analysis of destruction or adverse modification of habitat. Section 7 would be initiated only for  
7 *may affect* determinations of impacts on the jaguar. Such consultations would analyze relevant  
8 land management plans, grazing management plans, fire management plans, conservation plans,

1 and include both site-specific and programmatic projects within the proposed area. As they  
2 relate to vegetation and wildlife, such consultations would likely include:

- 3 • Department of Defense—such as the Fort Huachuca INRMP;
- 4 • U.S. Customs and Border Protection (CBP)—for fencing or other barriers to reduce illegal  
5 trafficking of peoples or goods;
- 6 • U.S. Army Corps of Engineers—for bridge projects, stream restoration, vegetation  
7 management, and urban development;
- 8 • U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land and  
9 resource management plans, livestock grazing and management plans, recreation, mining  
10 permits, nonnative invasive species treatments, and renewable energy development;
- 11 • U.S. Department of Transportation—for highway and bridge construction and widening;
- 12 • U.S. Fish & Wild Service—for issuance of section 10 enhancement of survival permits,  
13 HCPs, and SHAs; NWR planning; and Partners for Fish and Wildlife program projects;
- 14 • U.S. Forest Service—for FMPs, fire suppression, fuel-reduction treatments, forest plans,  
15 livestock grazing amps, mining permits, and travel management plans;
- 16 • National Park Service—for general management plans, FMPs, border security infrastructure,  
17 recreation management, and travel management; and
- 18 • Natural Resource Conservation Service—for wildlife habitat improvements.

19 Consequently, this alternative would have no impact on fish, wildlife, and plants, including  
20 candidate, proposed, or listed species, beyond those conservation measures resulting from the  
21 original listing of the jaguar and associated requirements of section 7 of the ESA.

### 22 **3.3.2.2 Alternative A**

23 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
24 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
25 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
26 anticipate that designation of critical habitat would result in consultations that would not  
27 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
28 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in (1) a  
29 small but unknown number of reinitiated section 7 consultations based solely on the presence of  
30 designated critical habitat and (2) the addition of an adverse modification of critical habitat  
31 analysis to section 7 consultations for the jaguar with in the proposed critical habitat.

#### 32 *Reinitiated Consultations*

33 Because the PCEs that make up each critical habitat units are closely tied to adverse effects to  
34 the species, activities that would require consultation for critical habitat are primarily the same  
35 activities that currently require consultation for the species. Reinitiated consultations may  
36 include fire management, land management, conservation management plans, and livestock  
37 management plans.

#### 38 *Addition of Adverse Modification Analysis to Future Consultations*

39 The consultations from the addition of adverse modification analysis, and the additional time  
40 required to complete consultations that would only have considered effects on the species, would

1 increase administrative costs to the Service and to the action agencies. Implementing  
2 conservation measures resulting from those additional consultations would also increase costs for  
3 action agencies. Outcomes of consultations for critical habitat could also include reasonable and  
4 prudent alternative alternatives and other conservation measures designed to maintain jaguar  
5 PCEs. These outcomes cannot be predicted precisely; however, based on past consultations  
6 types of additional management actions that may be required include, but are not limited to  
7 (Service 2012c):

- 8 • Revising resource management plans (RMP);
- 9 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
10 reports;
- 11 • Properly identifying animals during predator control activities to ensure jaguars were not  
12 subject to control actions;
- 13 • Maintaining jaguar habitat in major corridors to prevent fragmentation or blocking of  
14 corridors;
- 15 • Minimizing stable nighttime lighting;
- 16 • Closure and restoration of unauthorized roads;
- 17 • Minimizing vehicles and human presence in the area; and
- 18 • Investigating reports of jaguar observations.

19 Major construction projects (such as new highways, significant widening of existing highways,  
20 or construction of large facilities) that could sever connectivity within these critical habitat  
21 subunits could constitute adverse modification. The most likely subunits in which these  
22 activities may occur are 4b and 4c. Such projects include the proposed Rosemont Copper Mine  
23 in Unit 3, which is described in Section 3.9 Mining.

24 A potential outcome of section 7 consultations for critical habitat would be increased efforts to  
25 maintain and restore the jaguar PCEs through conservation measures within designated critical  
26 habitat. These project modifications include creating permeable highways with wildlife  
27 crossings, habitat restoration, eliminating stable nighttime lighting, and minimizing human  
28 presence (Service 2012c). These actions would serve to maintain habitat and habitat  
29 connectivity for the jaguar as well as reduce the perceived human presence in critical habitat  
30 areas. As a result, native fish, wildlife, and plants, including candidate, proposed, or listed  
31 species would benefit. The species most likely to benefit are migratory species that also depend  
32 on connectivity between large tracts of habitat, such as the Mexican spotted owl. In addition, the  
33 availability of natural jaguar prey species would be maintained. Native vegetation would benefit  
34 through measures to restore, enhance and protect habitat within the critical habitat units. The  
35 beneficial effects of Alternative A on fish, wildlife, and plants are expected to be minor because  
36 the outcomes of consultations for critical habitat are not likely to substantially change  
37 management practices, proposed and existing projects, or various uses of proposed critical  
38 habitat segments.

39 In summary, the effects of critical habitat designation with regards to wildlife are expected to be  
40 minor because: (1) new consultations based solely on the presence of designated critical habitat  
41 are unlikely, because land managers are already consulting on jaguar throughout the proposed  
42 critical habitat areas; (2) any reasonable and prudent alternatives developed under jeopardy  
43 analysis would not likely be changed substantially with the addition of adverse modification

1 analysis; and (3) very few, if any, additional conservation measures would be proposed to  
2 address critical habitat beyond those already proposed in jeopardy consultations.

### 3 **3.3.2.3 Alternative B**

4 Impacts associated with Alternative B (proposed units minus the exclusion of Tohono O’odham  
5 Nation lands) would be similar to those identified for Alternative A, but with fewer section 7  
6 consultations. Because the potential exclusion is tribal land, only projects requiring a Federal  
7 license, permit, or funding would be required to consult with the Service in this area. This  
8 exclusion would slightly decrease potential consultations. Therefore, these exclusions could  
9 reduce the economic impacts of designation on wildlife related activities in these areas by  
10 requiring fewer consultations overall. This would reduce administrative costs as well for the  
11 Service. Impacts to wildlife from this alternative would still be expected to be minor.

## 12 **3.4 Fire Management**

### 13 **3.4.1 Existing Conditions**

14 Current Federal fire management practices conform to the National Fire Plan, which was  
15 developed by Federal agencies in 2001 to address the causes of changing fire regimes and to  
16 guide wildland fire management (FY 2001 Interior and Related Agencies Appropriations Act  
17 [Public Law 106–291]). The implementation plan for this collaborative effort, called the 10-year  
18 Comprehensive Strategy, outlines a comprehensive approach to the management of wildland  
19 fire, hazardous fuels, and ecosystem restoration and rehabilitation on Federal and adjacent state,  
20 tribal, and private forest and range lands in the United States. The four primary goals of this  
21 strategy are to (1) improve prevention and suppression, (2) reduce hazardous fuels, (3) restore  
22 fire-adapted ecosystems, and (4) promote community assistance. Possible fire management  
23 actions depend on specific circumstances and may include:

- 24 • Reduction of hazardous fuel loads by mechanical, chemical, or biological means;
- 25 • Reduction of hazardous fuel loads or habitat restoration with prescribed fire, which is any  
26 fire ignited by management actions to meet specific objectives;
- 27 • Wildland fire use, which is the management of naturally ignited wildland fires to accomplish  
28 specifically stated resource management objectives in predefined geographic areas; and
- 29 • Wildland fire suppression.

30 Federal land in the proposed jaguar critical habitat area includes primarily National Forest land  
31 and BLM land. Fire management on the National Forest land is guided by the Coronado  
32 National Forest FMP, which was developed in accordance with the National Fire Plan (USFS  
33 2010a). It includes the goals of:

- 34 • Managing naturally-occurring fires which sustain the forest ecosystems;
- 35 • Maintaining fuel conditions for low-risk fires; and
- 36 • Improving habitat for the protection of threatened and endangered species.

37 Fire management on the land managed by BLM is guided by the Arizona Statewide Land Use  
38 Plan Amendment, Fire, Fuels, and Air Quality Management, also developed to be consistent with

1 the National Fire Plan. The amendment includes similar goals of maintaining and improving  
2 habitat, and reducing fuel loads (BLM 2004a).

3 Consistent with national policy, the focus of fire management has increasingly been on the WUI,  
4 which comprises areas where flammable wildland fuels meet or intermingle with structures and  
5 other human development. The PCEs of the proposed critical habitat are characterized by  
6 minimal-to-no human population density and no major roads, so the areas of WUI within the  
7 proposed critical habitat are minimal.

8 Section 7 consultations regarding fire management are often programmatic in nature, covering  
9 broad-based FMPs and programs, but consultations may be required for individual burn and  
10 rehabilitation plans. Emergency section 7 consultations for wildland fire suppression are  
11 typically conducted after the fact. However, since its listing, there have been no formal, and an  
12 unknown number of informal, Section 7 consultations for the jaguar regarding fire management.

### 13 **3.4.2 Environmental Consequences**

#### 14 **3.4.2.1 No Action Alternative**

15 Under the No Action Alternative, jaguar critical habitat would not be designated under the ESA.  
16 The section 7 consultation process would continue as presently conducted without analysis of  
17 destruction or adverse modification of habitat. Section 7 consultations could be triggered only  
18 for *may affect* determinations of impacts on the jaguar. Such consultations would analyze  
19 relevant land, resource and FMP on Federal lands currently occupied by the species. As they  
20 relate to fire management, such consultations would likely include:

- 21 • U.S. Bureau of Land Management—fire suppression and fuel-reduction treatments;
- 22 • U.S. Forest Service—FMPs, fire suppression, and fuel-reduction treatments in Coronado  
23 National Forest (Douglas Ranger District, Sierra Vista Ranger District, and Nogales Ranger  
24 District);
- 25 • National Park Service—general management plans and FMPs in Coronado National  
26 Memorial; and
- 27 • Therefore, this alternative would not have any impacts on fire management beyond any  
28 conservation measures or project modifications resulting from the listing of the jaguar and  
29 associated requirements of section 7 of the ESA.

#### 30 **3.4.2.2 Alternative A**

31 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
32 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
33 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
34 anticipate that designation of critical habitat would result in consultations that would not  
35 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
36 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in: (1) a  
37 small but unknown number of reinitiated consultations for fire management actions based solely  
38 on the presence of designated critical habitat, and (2) the addition of an adverse modification of  
39 critical habitat analysis to section 7 consultations for the jaguar in critical habitat. Most FMPs

1 are programmatic in nature and these plans may be required to reinitiate consultation. The  
2 additional new section 7 consultations would most likely be for new FMPs or for after-the-fact  
3 (emergency) consultations for wildland fire suppression and rehabilitation activities in those  
4 areas.

5 Fuel-management activities, either mechanical treatments or prescribed burns, reduce the risks  
6 posed by heavy fuels loads. They intend to restore the forest ecosystem by reducing the risk of  
7 catastrophic wildland fire, lessening post-fire damage, and limiting the spread of invasive species  
8 and diseases. These activities would help maintain the jaguar PCE for greater than 1 to 50  
9 percent canopy cover. Fuel-management and prescribed burning that are discountable,  
10 insignificant, or wholly beneficial to the PCEs do not require formal consultation; however, the  
11 action agency would need to confirm their finding of no adverse impact to jaguar critical habitat  
12 with the Service through informal consultation (Service 1998a). The primary impact of the  
13 additional formal or informal consultations would be increased administrative costs to the  
14 Service and action agencies.

#### 15 *Reinitiated Consultations*

16 Because the PCEs that make up each critical habitat unit are closely tied to adverse effects to the  
17 species, activities that could trigger consultation for critical habitat are primarily the same  
18 activities that currently trigger consultation for the species. Based on previous activity within  
19 designated units, such project proponents could include the Forest Service and BLM.

20 There have been no formal consultations for the jaguar regarding fire management activities, so  
21 these would be the re-opening of informal consultation and the possible need to initiate a formal  
22 consultation. As it relates to fire management, such consultations could include:

- 23 • Fire Management Plans—BLM, USFS;
- 24 • Fuels Reduction—BLM, USFS; and
- 25 • Fire Suppression—BLM, USFS.

#### 26 *Addition of Adverse Modification Analysis to Future Consultations*

27 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
28 in many respects and are parallel processes because the health of a species cannot be  
29 disassociated from the health of its habitat. The outcomes of these future consultations would  
30 depend on the details of project proposals and the analysis of effects, which are unknown at this  
31 time.

32 The additional time required to complete consultations that would only have considered effects  
33 on the species would increase administrative costs to the Service and to the action agencies.  
34 Implementing conservation measures resulting from those additional consultations would also  
35 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
36 include reasonable and prudent alternative alternatives and other conservation measures designed  
37 to maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
38 consultations, types of additional management actions that may be required include, but are not  
39 limited to:

- 1 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
2 reports;
- 3 • Implementing conservation measures for fire management activities in riparian and aquatic  
4 habitats to eliminate adverse effects to dense riparian jaguar habitats; and
- 5 • Maintaining dense, low vegetation in major riparian or xero-riparian corridors (BLM 2004b).

6 In summary, the effects of critical habitat designation on fire management activities are expected  
7 to be minor because: (1) new consultations based solely on the presence of designated critical  
8 habitat are unlikely, because land managers are already consulting on jaguar throughout the  
9 proposed critical habitat areas; (2) any reasonable and prudent alternatives developed under  
10 jeopardy analysis would not likely be changed substantially with the addition of adverse  
11 modification analysis; (3) very few, if any, additional conservation measures would be proposed  
12 to address critical habitat; and (4) many fire management activities generally are seen as  
13 negligible or beneficial to the PCEs and are likely to not trigger formal consultation.

#### 14 **3.4.2.3 Alternative B**

15 Alternative B includes the proposed units described with the exclusion of the Tohono O’odham  
16 Nation land. The impacts associated with the designation of critical habitat would be similar to  
17 those identified for Alternative A. Tohono O’odham Nation land is tribal land and consultation  
18 is only triggered for activities that require a Federal permit, license, or funding. Therefore, its  
19 exclusion may reduce consultations slightly, to the extent proposed actions would include fire  
20 management activities that impact the Nation’s land. The overall impacts to fire management  
21 would still be characterized as minor.

### 22 **3.5 Water Resources**

#### 23 **3.5.1 Existing Conditions**

24 The open, dry habitat of the southwestern United States has been characterized as marginal  
25 habitat for jaguars in terms of water availability. Jaguar studies have shown that jaguars require  
26 surface water within a reasonable distance year round. Also, jaguars are more likely to be found  
27 in areas with a water supply, although the distance to the water supply is not defined. The jaguar  
28 Recovery Team determined that water availability within 10 km (6.2 mi) year-round was one of  
29 eight factors constituting “high-quality” habitat for jaguars in the proposed Northwestern  
30 Recovery Unit (see Jaguar Recovery Team 2012, pp. 15–16). Available surface water is also  
31 listed as a physical or biological feature that is essential to the conservation of the species and  
32 which may require special management considerations or protection. Lastly, the Service listed  
33 surface water sources available within 20 km (12.4 mi) of each other as a PCE of jaguar critical  
34 habitat, meaning that high quality jaguar habitat includes a surface water source such that a  
35 jaguar will never be more than 10 km (6.2 mi) from it. Activities that can permanently affect  
36 sources of water may render an area unsuitable for jaguars (77 FR 50213-50242).

#### 37 *Watersheds (surface and groundwater)*

38 The proposed critical habitat locations are distributed between 12 different watershed drainage  
39 areas within Arizona and New Mexico. Each of the watershed drainage areas has specific

1 characteristics unique to that particular location. Table 3.4 lists the critical habitat units, the  
 2 watersheds they are located in, and the amount of land in each watershed.

3 **Table 3.4. Critical Habitat Units and Watersheds**

| <b>Critical Habitat Units</b> | <b>Watersheds</b>              | <b>Critical Habitat within Watershed Hectares (Acres)</b> |
|-------------------------------|--------------------------------|---|
| <b>Subunit 1a</b>             | Aguirre Valley Watershed       | 5,742<br>(14,188)   |
|                               | Brawley Wash Watershed         | 23,089<br>(57,053)  |
|                               | San Simon Wash Watershed       | 8,858<br>(21,889)   |
| <b>Subunit 1b</b>             | Brawley Wash Watershed         | 5,283<br>(13,056)   |
|                               | San Simon Wash Watershed       | 12,341<br>(30,495)  |
|                               | Rio De La Concepcion Watershed | 1,780<br>(4,398)  |
| <b>Unit 2</b>                 | Brawley Wash Watershed         | 7,447<br>(18,402)   |
|                               | Upper Santa Cruz Watershed     | 35,329<br>(87,299)  |
|                               | Rio De La Concepcion Watershed | 15,870 (39,216)   |
| <b>Unit 3</b>                 | Upper Santa Cruz Watershed     | 105,560<br>(260,846)                                      |
|                               | Rillito Watershed              | 19,157<br>(47,337)  |
|                               | Upper San Pedro Watershed      | 23,645<br>(58,428)  |

| <b>Critical Habitat Units</b> | <b>Watersheds</b>               | <b>Critical Habitat within Watershed Hectares (Acres)</b> |
|-------------------------------|---------------------------------|---|
| <b>Subunit 4a</b>             | Rillito Watershed               | 10,637<br>(26,284)  |
|                               | Upper San Pedro Watershed       | 14,647<br>(36,194)  |
| <b>Subunit 4b</b>             | Rillito Watershed               | 5,144<br>(12,710)   |
| <b>Subunit 4c</b>             | Upper San Pedro Watershed       | 8,026<br>(19,832)   |
| <b>Unit 5</b>                 | San Bernardino Valley Watershed | 24,700<br>(61,036)  |
|                               | San Simon Watershed             | 10,408<br>(25,718)  |
|                               | Animals Valley Watershed        | 3,251<br>(8,034)  |
|                               | Cloverdale Watershed            | 3,209<br>(7,929)  |
| <b>Unit6</b>                  | Cloverdale Watershed            | 1,617<br>(3,995)  |
|                               | Playas Lake Watershed           | 1,463<br>(3,616)  |

1 Source: USGS 2005

2 To control the overdraft of groundwater supplies from its growing economy, the Arizona Ground  
3 Water Management Code (Code) was passed in 1980. The Arizona Department of Water  
4 Resources (ADWR) set up Active Management Areas (AMAs) for areas with a heavy reliance  
5 on mined groundwater. In addition to controlling overdraft, the Code also allocates groundwater  
6 resources and increases water supply development. Surface water rights are attached to the  
7 landowner and any changes in use must be approved by the ADWR (ADWR 2011).

8 The Aguirre Valley Watershed is entirely in Arizona and drains approximately 2,033 km<sup>2</sup> (785  
9 mi<sup>2</sup>) of land (USGS 2005). A portion of proposed critical habitat in subunit 1a is found within

1 this watershed (see Table 3.2). While the majority of this watershed is within the Tohono  
2 O’odham Nation, approximately 9 percent is managed by the BLM (USGS 2011).

3 The Brawley Wash Watershed, also known as the Brawley Wash – Los Robles Wash Watershed  
4 or Altar Wash-Brawley Wash Watershed, drains approximately 3,644 km<sup>2</sup> (1,407 mi<sup>2</sup>) of land in  
5 Arizona. Portions of proposed critical habitat within subunit 1a, subunit 1b, and unit 2 are within  
6 this watershed (see Table 3.2). This area is drained by the Altar Wash, Brawley Washes, and  
7 Los Robles Wash to the confluence with the Santa Cruz River. While most of this area is owned  
8 by the State of Arizona, eleven percent is managed by the Service, ten percent is managed by  
9 BLM, eight percent is within the Tohono O’odham Nation, three percent is USFS land, and two  
10 percent is NPS land. Water quantity is a concern in this watershed due to surface water and  
11 groundwater diversion and pumping from agricultural, rangeland, and urban water uses. There  
12 are three major reservoirs in this watershed: Aguirre Lake, Arrivaca Lake, and BK Tank (NRCS  
13 et al. 2008). This watershed is part of the Tucson AMA (ADWR 2010).

14 The San Simon Wash Watershed is located entirely within the Tohono O’odham Nation in  
15 Arizona and drains an area of approximately 3,644 km<sup>2</sup> (2,300 mi<sup>2</sup>) of land. Portions of  
16 proposed critical habitat within subunit 1a and 1b are within this watershed (see Table 3.2).  
17 There are no perennial or intermittent streams, creeks, or springs in this watershed. Groundwater  
18 withdrawal is minimal (ADWR No Date) and the main surface water use is for irrigation for  
19 agricultural practices (ADWR 2010). Menegers Lake is the only reservoir in this watershed and  
20 it is primarily used for irrigation. There are no surface water diversions within this watershed  
21 (ADWR 2010).

22 The Upper Santa Cruz Watershed in Arizona drains approximately 5,747 km<sup>2</sup> (2,219 mi<sup>2</sup>) of land  
23 (USGS 2005). Portions of proposed critical habitat in unit 2 and unit 3 are within this watershed.  
24 Approximately 48 percent of this watershed is within the Coronado National Forest, while  
25 approximately one percent is BLM land, one percent is managed by the Department of Defense,  
26 and one percent is managed by NPS.

27 The Rio De La Concepcion Watershed in Arizona drains approximately 373 km<sup>2</sup> (144 mi<sup>2</sup>) of  
28 land (USGS 2005). Portions of proposed critical habitat subunit 1b and unit 2 are within this  
29 watershed. Approximately seventy-five percent of this watershed is within the Coronado  
30 National Forest and twenty percent is within the Buenos Aires NWR (USGS 2011).

31 The Rillito Watershed, also known as the Pantano Wash – Rillito River Watershed, drains  
32 approximately 2,383 km<sup>2</sup> (920 mi<sup>2</sup>) of land in Arizona. Portions of proposed critical habitat in  
33 unit 3 and subunit 4a as well as all of subunit 4b are found within this watershed. The watershed  
34 is drained by Pantano Wash to the confluence with the Santa Cruz River. Major streams in this  
35 watershed include Cienega Creek, Tanque Verde Creek, Pantano Wash, Garden Canyon Stream,  
36 Sabino Creek, Drainage Way, Rincon Creek, Agua Caliente Wash, Agua Verde Creek, and  
37 Rillito Creek. While most of this land is privately owned, twenty-nine percent is Coronado  
38 National Forest land, nine percent is NPS land, seven percent is managed by the BLM, and one  
39 percent is military land. The main water uses in this watershed are from grazing, urban, forestry,  
40 and irrigation activities. Groundwater storage in this area has severely decreased and this area  
41 receives water from effluent sources and the Central Arizona Project (CAP). There are three  
42 major reservoirs in this watershed. Two are on the Agua Verde – Pantano Wash and one is

1 located on Cienega Creek (NRCS 2007a). This watershed is part of the Tucson AMA (ADWR  
2 2010).

3 The Upper San Pedro Watershed drains approximately 4,727 km<sup>2</sup> (1,825 mi<sup>2</sup>) of land and  
4 portions of proposed critical habitat in unit 3 and subunit 4a, as well as all of subunit 4c, are  
5 within this watershed. The San Pedro River flows through this watershed and there are  
6 numerous perennial and intermittent streams throughout. While the majority of the land in this  
7 watershed is privately or state owned, approximately twelve percent is Coronado National Forest  
8 land, nine percent is managed by the BLM, seven percent is managed by the military, and less  
9 than one percent is NPS land. Ninety percent of all surface water diversion in this watershed  
10 comes from agricultural practices and over half of groundwater pumping is for municipal use  
11 (ADWR 2010).

12 The San Bernardino Watershed drains approximately 1,002 km<sup>2</sup> (387 mi<sup>2</sup>) of land in southeast  
13 Arizona. Black Draw is the only perennial stream in this watershed and it is located near the  
14 U.S.–Mexico Border. A portion of proposed critical habitat in unit 5 is found within this  
15 watershed. This watershed also includes a number of intermittent streams along the eastern  
16 boundary of the watershed. The majority of the land in this watershed is privately or state  
17 owned, though approximately seven percent is NF land, four percent is managed by the BLM,  
18 and one percent is managed by the Service. All water use in this area comes from a groundwater  
19 source for municipal use (ADWR 2010).

20 The San Simon Watershed is located along the San Simon River and drains approximately 5,827  
21 km<sup>2</sup> (2,250 mi<sup>2</sup>) of land in Arizona and New Mexico. A portion of proposed critical habitat in  
22 unit 5 is found within this watershed. Forty-one percent of this watershed is managed by the  
23 BLM and 13 percent is Coronado National Forest land. Groundwater levels have been declining  
24 in this watershed and the main water uses in this area consist of municipal use and irrigation for  
25 agricultural practices. There are four major reservoirs in this watershed: the Hot Well Draw and  
26 Gold Gulch #1, #2, and #3 (NRCS 2007b).

27 The Cloverdale and Animas Valley Watersheds drain approximately 407 km<sup>2</sup> (157 mi<sup>2</sup>) and  
28 5,786 km<sup>2</sup> (2,234 mi<sup>2</sup>) of land, respectively (USGS 2005). Portions of proposed critical habitat  
29 in unit 5 are found within these two watersheds. A portion of proposed critical habitat in unit 6  
30 is also found within the Cloverdale Watershed. The primary land uses that require water use in  
31 these watersheds are rangeland and irrigation for agricultural purposes (NRCS 2008). While the  
32 majority of land within the Cloverdale Watershed is privately owned, approximately one percent  
33 is managed by the BLM and twenty percent is managed by the USFS. Approximately forty three  
34 percent of Animas Valley Watershed is managed by the BLM and eight percent by the USFS  
35 (USGS 2011).

36 The Playas Lake Watershed in New Mexico drains approximately 4,462 km<sup>2</sup> (1,723 mi<sup>2</sup>) of land  
37 (USGS 2005). A portion of proposed critical habitat in unit 6 is found within this watershed.  
38 The primary land uses that divert water in this watershed are rangelands and irrigation for  
39 agricultural purposes (NRCS No Date). While approximately seventy percent of the land in this  
40 watershed is managed by BLM, the remaining thirty percent is privately or state-owned (USGS  
41 2011).

1 *Water Rights*

2 Surface and groundwater rights in New Mexico and Arizona follow the doctrine of prior  
3 appropriation: first in time, first in right. Prior appropriations are typically based on date of  
4 appropriation and beneficial use. The state entities responsible for managing surface and ground  
5 water management in these states are the New Mexico Office of the State Engineer (NMOSE)  
6 and the Arizona Department of Water Resources. These state agencies also oversee dam projects  
7 and other water projects in their respective states, as well as review and grant permits for new  
8 and changed water rights (ADWR 2011; NMOSE 2011).

9 Because available water sources within 20 km (12.4 mi) of each other is listed as a PCE for  
10 jaguar habitat, water rights that reduce the flow of water within streams and rivers within or near  
11 critical habitat could trigger section 7 consultation. A major water right that could affect water  
12 availability within critical habitat, including the San Pedro River, is the CAP.

13 In 1952, Arizona sued California over water supplied by the Colorado River. The dispute grew  
14 to include the settlement of water rights of and between New Mexico and Arizona on the Gila  
15 River system. In 1964, the U.S. Supreme Court (*Arizona v. California*) allocated water to  
16 California and Arizona based on future growth projections, but limited New Mexico's allocation  
17 to its "present use" developed as of 1957. New Mexico protested this allocation, and its State  
18 Engineer entered into negotiations with Arizona to improve its position. The State Engineer saw  
19 an opportunity to secure water for New Mexico as part of the CAP.

20 The Colorado River Basin Project Act of 1968 (CRBPA) authorized the CAP. The CAP delivers  
21 water from the Colorado River near Lake Havasu across Arizona through Phoenix and Tucson to  
22 several counties, including Pima County, which contains proposed critical habitat units 1, 2, 3,  
23 and subunits 4a and 4b. CAP "provides water for irrigation, municipal and industrial use,  
24 hydropower, flood control, recreation, environmental enhancement, and sediment control" (BLM  
25 2001).

26 The Arizona Water Settlements Act (AWSA) of 2004, in addition to settling several outstanding  
27 Indian water claims, authorizes water exchanges between the Gila River Indian Community and  
28 various parties in the State of Arizona, including the San Xavier and Shuck Toak Districts of the  
29 Tohono O'odham Nation, mining companies, and several municipalities in Arizona. Section  
30 212(d) of the AWSA modified Section 304(f) of the CRBPA to allow the Secretary of the  
31 Interior to contract with New Mexico water users or the State of New Mexico, with the approval  
32 of its Interstate Stream Commission, for water from the Gila River, its tributaries, and  
33 underground water sources in amounts that will permit consumptive use of water in New Mexico  
34 not to exceed an annual average in any period of 10 consecutive years of 14,000 acre-feet, over  
35 and above the consumptive uses provided for by Article IV of the decree of the U.S. Supreme  
36 Court in *Arizona v. California*. Such increased consumptive uses shall continue only so long as  
37 delivery of Colorado River water to downstream Gila River users in Arizona is being  
38 accomplished in accordance with the AWSA, in quantities sufficient to replace any diminution of  
39 their supply resulting from such diversion from the Gila River, its tributaries, and underground  
40 water sources.

41 Title I Section 107 and Title II Section 212 of the AWSA (Public Law 108-451) provides  
42 between \$66 and \$128 million in non-reimbursable funds for New Mexico to develop water

1 supply alternatives, including a New Mexico Unit of the CAP if desired to accomplish the  
2 exchange. Funds will be deposited into the New Mexico Unit Fund, a State of New Mexico  
3 Fund established and administered by the New Mexico Interstate Stream Commission.  
4 Beginning in 2012, \$66 million, indexed to reflect changes since 2004 in the construction cost  
5 indices, will be deposited into the New Mexico Unit Fund in 10 equal annual payments.  
6 Following notification by December 31, 2014 that the State of New Mexico intends to have the  
7 New Mexico Unit constructed or developed, an additional \$34 to \$62 million may be available.  
8 A Record of Decision is to be issued in the *Federal Register* (FR) by the Secretary of the Interior  
9 no later than the end of 2019 (unless extended by the Secretary for reasons outside the control of  
10 the State of New Mexico) regarding the decision.

#### 11 *Recent Consultations*

12 Though there have been four formal section 7 consultations involving the jaguar that resulted in  
13 a BO since 1995 in Arizona, none of these involved water-related projects.

### 14 **3.5.2 Environmental Consequences**

15 Activities that occur on critical habitat units could affect water resources if they resulted in:  
16 channel alteration; prescribed fires; alterations of watersheds and floodplains; release of  
17 chemical or biological pollutants; release of effluents into the surface or groundwater at a point-  
18 source or non-point source; livestock waste pollution; aerial pesticide application; and fire  
19 retardant application. Actions that would alter the water quality or quantity so that sufficient  
20 water sources are not available within 20 km (12.4 mi) of each other within a critical habitat unit  
21 could affect a PCE for the jaguar and trigger a section 7 consultation. These activities include:  
22 water diversions; groundwater pumping; and construction, operation, or destruction of dams or  
23 impoundments.

#### 24 **3.5.2.1 No Action**

25 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
26 section 7 consultation process would continue as presently conducted. Section 7 consultations  
27 would be initiated only for *may affect* determinations of impacts to the jaguar. These  
28 consultations would analyze relevant land, resource, and FMPs proposed for Federal lands  
29 occupied by the jaguar. As they relate to water resources, such consultations would likely  
30 include:

- 31 • U.S. Fish and Wildlife Service—issuance of section 10 enhancement of survival permits,  
32 HCPs, SHAs; Buenos Aires NWR planning; and Partners for Fish and Wildlife projects.
- 33 • U.S. Army Corps of Engineers—stream restoration, vegetation management, and urban  
34 development.
- 35 • U.S. Bureau of Land Management—fire suppression, fuel-reduction treatments, land and  
36 resource management plans, mining permits, nonnative invasive species treatment, and  
37 renewable energy developments.
- 38 • Department of Defense—Fort Huachuca INRMP, facilities development and maintenance.
- 39 • National Park Service—general management plans, FMPs, and infrastructure management  
40 for the Coronado National Memorial.

- 1 • U.S. Bureau of Indian Affairs— utility development and upgrades and renewable energy  
2 development.
- 3 • U.S. Forest Service—FMPs, fire suppression, fuel-reduction treatments, forest plans, and  
4 mining permits in Coronado National Forest (Service 2012).

5 Therefore, this alternative would not have any impacts on water resource management beyond  
6 any conservation measures or project modifications resulting from the listing of the jaguar and  
7 associated requirements of section 7 of the ESA.

### 8 **3.5.2.2 Alternative A**

9 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
10 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
11 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
12 anticipate that designation of critical habitat would result in consultations that would not  
13 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
14 Action Alternative, Alternative A (all proposed units, no exclusions) would result in the  
15 following: (1) a small but unknown number of reinitiated section 7 consultations for proposed  
16 actions based solely on the presence of designated critical habitat; and (2) the addition of an  
17 analysis of adverse modification of critical habitat to future section 7 consultations on the jaguar  
18 within critical habitat. All proposed actions that could trigger section 7 consultation are required  
19 to also take into consideration habitat (both riparian and aquatic) protection measures that would  
20 ensure compliance with the Clean Water Act.

#### 21 *Reinitiated Consultations*

22 As a result of jaguar critical habitat designation, Federal agencies would need to reevaluate  
23 ongoing projects and those that are not yet completed for their effects to PCEs. Because the  
24 PCEs that make up each critical habitat units are closely tied to adverse effects to the species,  
25 activities that could trigger consultation for critical habitat are primarily the same activities that  
26 currently require consultation for the species. With respect to water resources, the relevant PCE  
27 is the availability of surface water sources within 20 km (12.4 mi) of each other within a critical  
28 habitat unit. The designation of critical habitat may require evaluation of water resource impacts  
29 beyond formerly analyzed locations.

30 Reinitiated consultations would increase administrative costs to the Service, the action agencies,  
31 and any project proponent involved in the consultation process. As it relates to water resource  
32 management, reinitiated consultations could be triggered by the same projects as those listed  
33 under the No Action Alternative.

#### 34 *Addition of Adverse Modification Analysis to Future Consultations*

35 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
36 in many respects and are parallel processes because the health of a species cannot be  
37 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
38 standard for determining jeopardy concerns only survival of the species, while the standard for  
39 determining adverse modification must also take into account habitat values essential for the  
40 recovery of the species. Adverse modification is considered a higher standard of preventing  
41 substantial loss of the conservation value of the critical habitat segment to allow for jaguar

1 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
2 instances where a proposed Federal action could result in adverse modification without resulting  
3 in jeopardy. This could result in additional or more restrictive conservation measures than those  
4 that would be otherwise applied.

5 The outcomes of these future consultations would depend on the details of project proposals and  
6 the analysis of effects, which are unknown at this time. The additional consultations, and the  
7 additional time required to complete consultations that would only have considered effects on the  
8 species, would increase administrative costs to the Service and to the action agencies.

9 Implementing conservation measures resulting from those additional consultations would also  
10 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
11 include reasonable and prudent alternatives and other conservation measures designed to  
12 maintain jaguar PCEs.

13 These outcomes cannot be predicted precisely; however, based on past consultations, types of  
14 additional management actions that may be required include, but are not limited to:

- 15 • Reducing the footprint of large facilities to the maximum extent practicable;
- 16 • Providing conservation measures to restore, enhance, and protect habitat within the critical  
17 habitat units;
- 18 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency  
19 actions with habitat that is permanently protected, including adequate funding to ensure the  
20 habitat is managed permanently for the protection of the species; and
- 21 • Providing resources to assess the effects of the action on jaguar habitat connectivity and  
22 function (Service 2012).

23 In summary, the effects of critical habitat designation on water resources are expected to be  
24 negligible because there have been no previous consultations on water management actions in  
25 the proposed critical habitat areas, and none are currently anticipated.

### 26 **3.5.2.3 Alternative B**

27 For Alternative B (proposed units minus the exclusion of Tohono O’odham Nation lands), the  
28 impacts associated with the designation of critical habitat would be similar to those identified for  
29 Alternative A. However, Tohono O’odham Nation lands would be excluded from critical habitat  
30 designation. If these areas are included, designation of critical habitat affects them only to the  
31 extent that activities that affect critical habitat may require a Federal license, permit or funding.  
32 Therefore, these exclusions could reduce the economic impacts of designation on water resource  
33 management activities in these areas overall, by requiring fewer consultations overall, although  
34 none are currently anticipated. This would reduce administrative costs as well for the Service.  
35 The overall impacts to water resource projects would still be characterized as minor.

## 1 3.6 Livestock Grazing

### 2 3.6.1 Existing Conditions

3 The more open, dry habitat of the southwestern United States is characterized as marginal habitat  
4 for jaguars in terms of cover and prey densities (77 FR 50213-50242). Livestock grazing and  
5 associated activities can impact jaguar critical habitat by clearing habitat, destroying riparian  
6 areas, and fragmenting or blocking of corridors due to fencing, which may subsequently prevent  
7 jaguars from recolonizing previously inhabited areas (Service 1997). The proposed rule states  
8 that the Service does not anticipate that grazing would have an adverse effect to jaguar critical  
9 habitat, nor therefore do they anticipate that grazing could constitute adverse modification.

10 Federal lands within the proposed designation consist of approximately 212,943 ha (526,191 ac)  
11 (61 percent of the revised proposed jaguar critical habitat), and livestock grazing occurs on both  
12 BLM and Coronado National Forest lands. Currently there are over 35,000 head of cattle  
13 permitted on almost 200 grazing allotments on the Coronado National Forest overall. The USFS  
14 manages these allotments under the Coronado National Forest Land and Resource Management  
15 Plan (USFS No Date). Revised proposed critical habitat for the jaguar occurs in BLM's Tucson  
16 and Safford districts in Arizona and the Las Cruces district in New Mexico. BLM administers  
17 288 grazing allotments in the Tucson and Safford districts across more than 1.5 million acres  
18 (Service 1997). Both BLM and USFS administer grazing allotments within revised proposed  
19 critical habitat (BLM 2010b; USFS 2010b).

20 Livestock grazing in general has been in decline on BLM- and Forest Service-managed lands in  
21 the Southwest. Before the late 19<sup>th</sup> century, lands in this region were often overgrazed,  
22 degrading watersheds and altering fire regimes (BLM 2012b). To address overgrazing, Federal  
23 grazing permits were established on USFS and BLM lands in the early 20<sup>th</sup> century. The USFS  
24 established a system of range regulation between 1906 and 1907 that included limits on herd  
25 sizes, grazing seasons, areas of use and grazing fees (Lester 2002). The BLM established  
26 grazing permits in 1934 under the Taylor Grazing Act of 1934 (BLM 2011c).

27 While livestock grazing historically occurred on the National Park Service's Coronado National  
28 Memorial in Arizona and the U.S. Army's Fort Huachuca Military Reservation in Arizona,  
29 grazing was prohibited from the Memorial in 2004 under the National Memorial Final General  
30 Management Plan / EIS and from the Fort in 1930 because it was deemed not compatible with  
31 military activities (NPS 2004). Before the USFWS established the Buenos Aires NWR,  
32 livestock grazing also occurred on these Federal lands. With the establishment of the Refuge,  
33 livestock was prohibited (Service 2012a).

#### 34 *Recent Consultations*

35 There have been a total of four formal section 7 consultations involving the jaguar that resulted  
36 in a BO since 1995 in Arizona, each of which resulted in a *no jeopardy* determination. Two of  
37 these consultations involved BLM and its livestock grazing program in southeastern Arizona.  
38 BLM initiated consultation in 1997 and reinitiated consultation in 2009 on the Effects of the  
39 Stafford/Tucson Field Offices' Livestock Grazing Program on the jaguar (this reinitiation is an  
40 addition to the four formal consultations noted above). In 2009, the Service agreed with their  
41 1997 conclusion in regard to no jeopardy from the grazing program (Service 2009).

1 In 1997, the Service stated that the grazing program would have two overall effects to the jaguar:  
2 (1) loss of jaguar habitat and (2) take of jaguar from predator control activities. Grazing could  
3 adversely affect jaguar habitat by:

- 4 • Clearing vegetation, reducing understory and bank line vegetation;
- 5 • Destroying riparian areas and fragmenting or blocking corridors ,which could subsequently  
6 prevent jaguars from recolonizing previously inhabited areas (e.g., from fences and roads,  
7 and perhaps other range improvements);
- 8 • Increasing soil erosion, soil compaction, hydrologic and microclimate changes; and
- 9 • Changing plant community structure and function.

10 Mitigation measures proposed by the BLM to reduce adverse effects on jaguar habitat included:

- 11 • Jaguars will not be subjected to any predator control activities, by any entity, associated with  
12 the projects;
- 13 • Landowner education and outreach, so that permittees will be informed by the BLM of the  
14 status of the jaguar and the specifics of its protection under the Act;
- 15 • All appropriate permits will be obtained prior to any predator control activities associated  
16 with the project;
- 17 • Maintaining jaguar habitat in identified locations, including dense, low vegetation (mesquite,  
18 saltcedar, cottonwood, willow, etc.) in major riparian or xero-riparian corridors on Federal  
19 lands south of Interstate 10 and Highway 86; and
- 20 • Investigating reports of any and all observations of jaguars or their sign in the project area,  
21 and providing the Service with a report of such investigations.

22 Because of these mitigation measures, the Service determined that effects from grazing would  
23 not likely jeopardize the continued existence of the jaguar. The Service also recommended  
24 additional mitigation measures, including that BLM fund and/or carry out research to: (1)  
25 determine the distribution of jaguar habitat within the project area, (2) determine the possible or  
26 actual distribution of jaguars within that habitat, and (3) determine means by which jaguar  
27 habitat in the protected area can be maintained and protected (Service 1997).

28 In 1999, the USDAs Animal and Plant Health Inspection Service (APHIS) initiated section 7  
29 consultation with the Service on effects to the jaguar from APHIS' animal damage control  
30 activities undertaken as part of their Wildlife Services (WS) program. Specific actions under this  
31 program include the use of hounds, snares (lethal or live capture), foot snares, foot-holds, cage  
32 traps, shooting, or aerial hunting. While the Service found that the WS activities would not  
33 jeopardize the continued existence of the jaguar, they required the following reasonable and  
34 prudent measures:

- 35 • Within the occupied range of the jaguar all animal damage control activities should be  
36 conducted in a manner so as to minimize any risk to the jaguar. This includes:
  - 37 ○ Identification of the target animal to species before control activities are carried out.  
38 If the identified animal is a jaguar, it shall not be subjected to any control actions, and  
39 the Service and appropriate State wildlife agency should be contacted immediately.
  - 40 ○ Restricting lethal traps to rubber-padded traps with a jaw spread equivalent to a #3  
41 Victor or smaller.

- 1           ○ Conducting trapping on a limited, case-by-case basis, and notify the Service prior to
- 2           the use of traps.
- 3           ○ Using dogs when appropriate for mountain lion or black bear control.
- 4           ○ Calling dogs off immediately if jaguars are inadvertently chased and/or treed.
- 5           ○ Notifying the Service prior to using foot snares and restricting foot snare use to a
- 6           case-by-case basis, only at confirmed lion or bear kills at fresh prey remains.
- 7           ○ Checking foot snares dialing and requiring that the agent checking the snares carry
- 8           appropriate equipment to release a jaguar unharmed.
- 9           ○ Immediately contacting the Service when a jaguar is confirmed within the vicinity (50
- 10          miles) of on-going or planned animal control activities.
- 11          ○ Contacting the Service and appropriate State wildlife agency if any animal control
- 12          activity results in the capture, injury, or death of a jaguar. WS activities using similar
- 13          capture methods must be immediately stopped while consultation with the Service is
- 14          reinitiated.
  
- 15          • Informing all project cooperators within the occupied range of the jaguar of the status of the
- 16          jaguar and the specifics of its protection under the Act.
- 17          • Provide the Service with results of investigative reports of any and all observation of jaguars
- 18          or signs of jaguar presence in the general vicinity (50 miles) of an active animal control
- 19          activity which may affect the jaguar, in cooperation with the appropriate State wildlife
- 20          agency and Jaguar Conservation team.
- 21          • Provide and require that all employees that may be expected to conduct activities which may
- 22          affect jaguars receive adequate training.

23 In addition, the Service recommended that WS carry out the following conservation  
24 recommendations:

- 25          • Carry out and/or fund research in cooperation with the Jaguar Conservation Team to: (1)
- 26          determine the distribution of jaguar habitat within the southwestern United States, and (2)
- 27          determine the possible or actual distribution of jaguars within that habitat;
- 28          • Continue active participation on the Jaguar Conservation Team; and
- 29          • Seek opportunities to promote conservation of the jaguar through dissemination of education
- 30          materials for WS agents, management agencies, and the public (Service 1999).

31 Because this consultation was related to direct effects to the species and did not affect habitat,  
32 the Service does not expect it to be reinitiated.

### 33 **3.6.2 Environmental Consequences**

34 Livestock activities that occur on and may affect critical habitat units include, but are not limited  
35 to, clearing of vegetation, which can degrade habitat by increasing soil erosion and compaction.

#### 36 **3.6.2.1 No Action**

37 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
38 section 7 consultation process would continue as presently conducted. Section 7 consultations  
39 would be initiated only for *may affect* determinations of impacts to the jaguar. These  
40 consultations would analyze relevant land, resource, and grazing plans proposed for Federal

1 lands occupied by the jaguar. As they relate to livestock grazing and hunting, such consultations  
2 would likely include:

- 3 • Department of Defense—Fort Huachuca INRMP;
- 4 • U.S. Fish and Wildlife Service—issuance of section 10 enhancement of survival permits,  
5 HCPs, SHAs; NWR planning; and Partners for Fish and Wildlife projects;
- 6 • U.S. Bureau of Land Management—land and resource management plans and livestock  
7 grazing AMPs; and
- 8 • U.S. Forest Service—forest plans and livestock grazing AMPs (Service 2012).

9 Therefore, this alternative would not have any impacts on livestock grazing beyond any  
10 conservation measures or project modifications resulting from the listing of the jaguar and  
11 associated requirements of section 7 of the ESA.

### 12 **3.6.2.2 Alternative A**

13 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
14 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
15 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
16 anticipate that designation of critical habitat would result in consultations that would not  
17 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
18 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in the  
19 following: (1) a small but unknown number of reinitiated section 7 consultations for proposed  
20 actions based solely on the presence of designated critical habitat; and (2) the addition of an  
21 analysis of adverse modification of critical habitat to future section 7 consultations on the jaguar  
22 in critical habitat.

#### 23 *Reinitiated Consultations*

24 As a result of jaguar critical habitat designation, Federal agencies would need to reevaluate  
25 ongoing projects and those that are not yet completed for their effects to PCEs. Because the  
26 PCEs that make up each critical habitat unit are closely tied to adverse effects to the species,  
27 activities that could trigger consultation for critical habitat are primarily the same activities that  
28 currently require consultation for the species. As it relates to livestock grazing, the PCEs that  
29 could be adversely affected are: (1) availability of adequate levels of native prey species,  
30 including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or  
31 jackrabbits; and (2) areas with greater than 1 to 50 percent canopy cover within Madrean  
32 evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the  
33 landscape, or semidesert grassland vegetation communities, usually characterized by tobosagrass  
34 or black grama along with other grasses.

35 Reinitiated consultations would increase administrative costs to the Service, the action agencies,  
36 and any project proponent involved in the consultation process. As it relates to livestock  
37 grazing, new and reinitiated consultations for adverse modification could be triggered by the  
38 same projects as those listed under the No Action Alternative.

1 *Addition of Adverse Modification Analysis to Future Consultations*

2 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
3 in many respects and are parallel processes because the health of a species cannot be  
4 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
5 standard for determining jeopardy concerns only survival of the species, while the standard for  
6 determining adverse modification must also take into account habitat values essential for the  
7 recovery of the species. Adverse modification is considered a higher standard of preventing  
8 substantial loss of the conservation value of the critical habitat segment to allow for jaguar  
9 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
10 instances where a proposed Federal action could result in adverse modification without resulting  
11 in jeopardy. This could result in additional or more restrictive conservation measures than those  
12 that would be otherwise applied.

13 The outcomes of these future consultations would depend on the details of project proposals and  
14 the analysis of effects, which are unknown at this time. The additional consultations, and the  
15 additional time required to complete consultations that would only have considered effects on the  
16 species, would increase administrative costs to the Service and to the action agencies.  
17 Implementing conservation measures resulting from those additional consultations would also  
18 increase costs for action agencies.

19 These outcomes cannot be predicted precisely; however, based on past consultations, types of  
20 additional management actions that may be required include, but are not limited to:

- 21 • Maintaining jaguar habitat in identified locations including major riparian or xero-riparian  
22 corridors;
- 23 • Obtaining all appropriate permits (Federal, State, or other);
- 24 • Researching and investigating reports of jaguar habitat and occurrence in the project area;  
25 and
- 26 • Properly identifying animals during predator control activities to ensure jaguars were not  
27 subject to control activities (Service 2012; Service 1999).

28 Outcomes of consultations for critical habitat could also include reasonable and prudent  
29 alternatives and other conservation measures designed to maintain jaguar PCEs. The most  
30 prominent possible project modifications that may be sought to avoid adverse modification from  
31 livestock grazing are:

- 32 • Re-vegetating and restoring areas of large-scale habitat removal to a condition such that it  
33 would provide the PCEs required by the jaguar;
- 34 • Minimizing the amount or extent of human presence, vehicles, and/or traffic in a given areas;
- 35 • Conservation measures to restore, enhance, and protect habitat within the critical habitat  
36 units;
- 37 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency  
38 actions within habitat that is permanently protected, including adequate funding to ensure the  
39 habitat is managed permanently for the protection of the species;
- 40 • Providing resources to assess the effects of the action on jaguar habitat connectivity and  
41 function;
- 42 • Determining the distribution of jaguar habitat within the project area;

- 1 • Determining the possible or actual distribution of jaguars within habitat within the project  
2 area; and
- 3 • Determining means by which habitat in the project area can be maintained and protected  
4 (Service 2012).

5 In addition, public comments submitted in response to publication of the August 20, 2012,  
6 proposed critical habitat designation suggest that the possibility that some ranchers may  
7 withdraw applications for National Resource Conservation Service (NRCS) funding following  
8 jaguar critical habitat in order to avoid any potential obligations to consult with the Service. If  
9 this occurred, it could weaken overall conservation activities on private ranches within  
10 designated habitat and produce economic impacts to ranchers who chose to forego NRCS  
11 funding.

12 In summary, the effects of critical habitat designation on livestock grazing are expected to be  
13 minor because (1) new consultations based solely on the presence of designated critical habitat  
14 are unlikely, because land managers are already consulting on jaguar throughout the proposed  
15 critical habitat areas; (2) any reasonable and prudent alternatives developed under jeopardy  
16 analysis would not likely be changed substantially with the addition of adverse modification  
17 analysis; (3) few additional conservation measures could be proposed to address critical habitat,  
18 beyond those already proposed in jeopardy consultations; and (4) it is unlikely that livestock  
19 grazing would be excluded on Federal land due to the presence of critical habitat. The  
20 incremental administrative costs of considering critical habitat in future grazing related  
21 consultations is projected to be \$24,000 in total, or \$2,100 annualized (IEc 2013).

### 22 **3.6.2.3 Alternative B**

23 For Alternative B (proposed units minus Tohono O’odham tribal lands), the impacts associated  
24 with the designation of critical habitat would be similar to those identified for Alternative A.  
25 However Tohono O’odham tribal lands would be excluded from critical habitat designation. If  
26 these areas are included, designation of critical habitat affects them only to the extent that  
27 activities that affect critical habitat may require a Federal license, permit or funding. Therefore,  
28 these exclusions could reduce the economic impacts of designation on grazing overall, by  
29 requiring fewer consultations overall. This would reduce administrative costs as well for the  
30 Service. The overall impacts to livestock grazing would still be characterized as minor.

## 31 **3.7 Construction/Development—Roads, Bridges, Dams,** 32 **Infrastructure, Residential**

### 33 **3.7.1 Existing Conditions**

34 The proposed rule lists construction and widening of roads, power lines, pipelines and  
35 construction or expansion of human development as a threat to jaguar critical habitat (77 FR  
36 50213-50242). The proposed rule also states that critical habitat does not include any manmade  
37 structures already in place at the time of listing (such as buildings, aqueducts, runways, roads,  
38 and other paved areas) and the land on which they are located. Widening or construction of  
39 roadways, power lines, or pipelines (all of which usually include maintenance roads) and  
40 construction or expansion of human developments can alter habitat characteristics, increase

1 human presence in otherwise remote locations, and may sever connectivity to Mexico or within a  
2 critical habitat unit such that movement of jaguars between habitat in the United States and  
3 Mexico is impeded or eliminated.

4 Areas proposed for jaguar critical habitat are characterized by minimal- to-no human population  
5 density and no major roads. As a PCE of jaguar critical habitat, connectivity to Mexico is  
6 considered essential to the recovery of the species (77 FR 50213-50242). At this time the  
7 Service is unaware of any major construction projects planned within proposed critical habitat  
8 (Service 2012). Special management considerations or protections could be needed within the  
9 unit to address increased human disturbances in remote locations through widening or  
10 construction of roadways, power lines, or pipelines, or other construction or development  
11 projects to ensure all PCEs remain intact.

12 While several Federal agencies manage land within jaguar critical habitat, major construction  
13 and development projects would be inconsistent with many of the Federal management plans and  
14 goals.

15 The Forest Service manages habitat for the jaguar on the Coronado National Forest in the  
16 Douglas, Nogales, and Sierra Vista Ranger Districts in Units 2 and 3; Subunits 4a, 4b, and 4c;  
17 and Unit 5. The current Land and Resource Management Plan for the CNF includes Standards  
18 and Guidelines that could minimize effects from construction and development projects within  
19 jaguar critical habitat. These Standards and Guidelines include:

- 20 • Low total miles of roads and low road density;
- 21 • Closing and reseeded temporary logging roads;
- 22 • Establishing tolerance levels for state- and federally-listed threatened and endangered species  
23 for new road construction throughout the forest;
- 24 • Prohibition of cross-country travel in vehicles;
- 25 • Placing utility lines underground when necessary unless it is not feasible because of  
26 overriding environmental concerns, costs and technical considerations;
- 27 • Placing existing utility lines underground that do not meet the visual quality objective when  
28 reconstruction becomes necessary; and
- 29 • Restricting the clearing of vegetation for utility lines to areas which pose a hazard to facilities  
30 and operational efficiency (Service 2012; USFS 1988).

31 The Department of Defense manages habitat for the jaguar on Fort Huachuca, located in Unit 3  
32 and Subunit 4c. Although construction and development projects have occurred on the Fort,  
33 public activities on lands owned and managed by the Fort are limited (Service 2012).

34 The BLM manages habitat for the jaguar in Subunits 1a and 1b; Units 2 and 3; Subunits 4a, 4b,  
35 and 4c; and Unit 5. BLM manages road development through the BLM National Travel  
36 Management Plan, which strives to address the effects that population increases, explosive  
37 growth in the use of OHVs, and the advances in technology have had on public lands. BLM's  
38 goal is to improve trails and OHV management through land use planning in order to minimize  
39 impacts to wildlife habitat resulting from the expansion of roads and trails on public lands (BLM  
40 2012a). BLM land within jaguar critical habitat includes Guadalupe Canyon Wilderness Study  
41 Area (WSA) and Outstanding Natural Area, Coyote Mountain Wilderness, BLM Public Lands,

1 Baker Canyon WSA, Baboquivari Peak Wilderness, and Appleton-Whittell Area of Critical  
2 Concern. These are discussed in section 3.2 on Land Management and Land Use.

3 The Guadalupe Canyon WSA and Outstanding Natural Area as well as the Baker Canyon WSA  
4 are roadless areas that BLM manages to maintain their wilderness character (BLM 2010a). The  
5 Whittell Area of Critical Concern is managed by the BLM to protect and prevent irreparable  
6 damage to important historical, cultural, and scenic values, fish, or wildlife resources or other  
7 natural systems or processes; or to protect human life and safety from natural hazards (BLM  
8 2011b). Major construction and development projects do not currently occur in these areas.

9 The NPS manages habitat for the jaguar in Unit 3 on the Coronado National Memorial. The  
10 purpose of the memorial is to preserve and interpret the natural and human history of the area.  
11 Park facilities and trails were proposed under the Final General Management Plan/EIS (Service  
12 2012; NPS 2004).

13 The Buenos Aires N WR manages habitat for the jaguar in Subunits 1a and 1b. Large and major  
14 construction and development projects do not currently occur on the Refuge (Service 2012).

15 Unit 3 contains Salero Ranch, an area of approximately 8,100 ha (20,000 ac) that is under  
16 development for residential use, in parcels of 36 acres or more. Water infrastructure will consist  
17 of private wells and individual septic systems, permitted by the Arizona Department of Water  
18 Resources, which regulates all groundwater in the state. Further, Arizona has been granted  
19 authority by the USEPA to issue National Pollutant Discharge Elimination System (NPDES)  
20 permits under Clean Water Act Section 402 (b) and 40 CFR Part 123. For these reasons, there is  
21 unlikely to be any Federal nexus for activities associated with this residential development.  
22 Therefore, it would not trigger consultations for adverse modification of critical habitat (although  
23 section 9 take prohibitions would apply to the jaguar).

#### 24 *Recent Consultations*

25 There have been four formal section 7 consultations involving the jaguar that resulted in a BO  
26 since 1995 in Arizona, each of which resulted in a *no jeopardy* determination. Formal  
27 consultation to analyze effects on jaguar from construction activities has been conducted by the  
28 CBP on the Secure Border Initiative (SBInet) Tucson West Tower Project. The SBInet Tucson  
29 West Tower Project included the construction of 56 communication and sensor towers;  
30 construction of 29 new road segments; and repairing 19 roads. CBP species-specific  
31 conservation Best Management Practices (BMPs) for the jaguar included:

- 32 • Designing roads to minimize animal collisions and fragmentation of jaguar habitat;
- 33 • Developing a road closure/restoration plan that:
  - 34 ○ Identifies and maps new roads where barriers would be placed to prevent public
  - 35 access,
  - 36 ○ Identifies and maps unauthorized roads near potential jaguar movement corridors,
  - 37 ○ Specifies that USFWS would use jaguar monitoring results to assist CBP in
  - 38 determining which unauthorized roads to close, and
  - 39 ○ Specifies potential road closure methods, and includes a schedule and content of
  - 40 annual report;

- 1 • Funding a road closure/restoration plan, in coordination with landowners and/or management
- 2 agencies and FWS; and
- 3 • CBP will complete an annual report until all Conservation BMPs for jaguars are completed
- 4 summarizing the implementation of the proposed actions, number of miles closed and/or
- 5 restored.

6 The Service determined that the proposed action could result in degradation of jaguar habitat due  
7 to construction and widening of roads, construction and maintenance of towers, and ground  
8 sensors, as well as from patrol activities. These activities would result in removal, destruction,  
9 and degradation of vegetation that may provide cover to jaguar and their prey. Though the  
10 Service found that the proposed project may result in degradation of jaguar habitat, the Service  
11 concluded that conservation measure included in the project description would minimize and  
12 help offset disturbance to jaguars and degradation of their habitat (Service 1998b).

### 13 **3.7.2 Environmental Consequences**

14 Construction and widening of roads, power lines, pipelines and construction or expansion of  
15 human development can have the effect of altering habitat characteristics and increasing human  
16 presence in otherwise remote locations. . actions that could destroy or adversely modify jaguar  
17 critical habitat include those that would permanently sever connectivity to Mexico or within a  
18 critical habitat unit such that movement of jaguars between habitat in the United States and  
19 Mexico is eliminated. In general, such activities could include building impermeable fences  
20 (such as pedestrian fences discussed in *Special Management Considerations or Protection*,  
21 above) in areas of vegetated rugged terrain, or major road construction projects (such as new  
22 highways or significant widening of existing highways). Activities that may adversely affect the  
23 PCEs (such as permanently displacing native prey species, increasing the distance to water to  
24 more than 10 km (6.2 mi), removing tree cover, altering rugged terrain, or appreciably increasing  
25 human presence on the landscape), but may not destroy or adversely modify critical habitat could  
26 include habitat clearing, the construction of facilities, or expansion of linear projects (such as  
27 power lines or pipelines) that reduce the amount of habitat available but that do not permanently  
28 sever essential movement between the United States and Mexico or within a given critical habitat  
29 unit.3.7.2.1 No Action

30 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
31 section 7 consultation process would continue as presently conducted without analysis of  
32 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
33 for *may affect* determinations of impacts to the jaguar. These consultations would analyze  
34 relevant land, resource, and other management projects proposed for Federal lands occupied by  
35 the jaguar. As they relate to roads, power lines, pipelines and construction or expansion of  
36 human development, such consultations would likely include:

- 37 • Department of Defense—Fort Huachuca facilities development and maintenance;
- 38 • National Park Service—general management plans, border security infrastructure, and travel
- 39 management plans;
- 40 • U.S. Army Corps of Engineers—bridge projects and urban development;
- 41 • U.S. Bureau of Indian Affairs—renewable energy development, road projects, and utility
- 42 development and upgrades;

- 1 • U.S. Bureau of Land Management—land and resource management plans, mining permits,  
2 and renewable energy development;
- 3 • U.S. Department of Homeland Security—border security infrastructure;
- 4 • U.S. Department of Transportation—highway and bridge construction and widening;
- 5 • U.S. Forest Service—forest plans, mining permits, and travel management plans; and
- 6 • U.S. Fish and Wildlife Service—NWR planning.

7 Therefore, this alternative would not have any impacts on construction and widening of roads,  
8 power lines, pipelines and construction or expansion of human development beyond any  
9 conservation measures or project modifications resulting from the listing of jaguar and associated  
10 requirements of section 7 of the ESA.

### 11 **3.7.2.2 Alternative A**

12 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
13 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
14 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
15 anticipate that designation of critical habitat would result in consultations that would not  
16 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
17 Action Alternative, Alternative A (all proposed units, no exclusions) would result in a small but  
18 unknown number of reinitiated section 7 consultations for land management actions based solely  
19 on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
20 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

#### 21 *Reinitiated Consultations*

22 As it relates to construction and development projects, reinitiated consultations could be  
23 triggered by the same projects as those listed under the No Action Alternative. The additional  
24 consultations would increase administrative costs to the Service, the action agencies, and any  
25 project proponent involved in the consultation process.

#### 26 *Addition of Adverse Modification Analysis to Future Consultations*

27 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
28 in many respects and are parallel processes because the health of a species cannot be  
29 disassociated from the health of its habitat. The analyses are distinct, however, in that the  
30 standard for determining jeopardy concerns only survival of the species, while the standard for  
31 determining adverse modification must also take into account habitat values essential for the  
32 recovery of the species. Adverse modification is considered a higher standard of preventing  
33 substantial loss of the conservation value of the critical habitat segment to allow for jaguar  
34 recovery goals to be met in a given critical habitat unit. As a result, there could be some limited  
35 instances where a proposed Federal action could result in adverse modification without resulting  
36 in jeopardy. This could result in additional or more restrictive conservation measures than those  
37 that would be otherwise applied.

38 The outcomes of these future consultations would depend on the details of project proposals and  
39 the analysis of effects, which are unknown at this time. The additional consultations, and the  
40 additional time required to complete consultations that would only have considered effects on the

1 species, would increase administrative costs to the Service and to the action agencies.  
2 Implementing conservation measures resulting from those additional consultations would also  
3 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
4 include reasonable and prudent alternative alternatives and other conservation measures designed  
5 to maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
6 consultations, types of additional management actions that may be required include, but are not  
7 limited to:

- 8 • Designing roads to minimize animal collisions and fragmentation of jaguar habitat;
- 9 • Developing a road closure/restoration plan ;
- 10 • Funding road closure/restoration plan, in coordination with landowners and/or management  
11 agencies and FWS;
- 12 • Creating permeable highways by including wildlife crossings appropriate to jaguars in the  
13 project design;
- 14 • Re-vegetating and restoring areas of large-scale habitat removal to a condition such that it  
15 would provide the PCEs required by the jaguar;
- 16 • Modifying or eliminating the presence of stable nighttime lighting;
- 17 • Reducing the footprint of large facilities to the maximum extent practicable;
- 18 • Minimizing the amount or extent of human presence, vehicles, and/or traffic in a given area;
- 19 • Providing conservation measures to restore, enhance, and protect habitat within the critical  
20 habitat units;
- 21 • Offsetting permanent habitat loss, modification, or fragmentation resulting from agency  
22 actions with habitat that is permanently protected, including adequate funding to ensure the  
23 habitat is managed permanently for the protection of the species; and
- 24 • Providing resources to assess the effects of the action on jaguar habitat connectivity and  
25 function (Service 2012; Service 1998).

26 Major construction projects (such as new highways, significant widening of existing highways,  
27 or construction of large facilities) that could sever connectivity within these critical habitat  
28 subunits could constitute adverse modification. The most likely subunits in which these  
29 activities may occur are 4b and 4c, although no projects of this kind are currently proposed.

30 In summary, the effects of critical habitat designation on construction and development are  
31 expected to be minimal because: (1) new consultations based solely on the presence of  
32 designated critical habitat are unlikely, because land managers are already consulting on jaguar  
33 throughout the proposed critical habitat areas ; and (2) while reasonable and prudent alternatives  
34 may be developed under an adverse modification analysis rather than a jeopardy analysis, no  
35 projects are proposed in the foreseeable future. The incremental administrative costs of  
36 considering potential critical habitat impacts in future construction and development  
37 consultations are projected to be \$5,900 total, or \$520 annualized (IEc 2013).

### 38 **3.7.2.3 Alternative B**

39 For Alternative B (proposed units minus Tohono O’odham tribal lands), the impacts associated  
40 with the designation of critical habitat would be similar to those identified for Alternative A;  
41 however, Tohono O’odham tribal lands would be excluded from critical habitat designation.  
42 These exclusions could reduce the economic impacts of designation on construction and

1 development activities in these areas by requiring fewer consultations overall. This would  
 2 reduce administrative costs as well for the Service. The overall impacts would still be  
 3 characterized as moderate.

### 4 **3.8 Tribal Trust Resources**

#### 5 **3.8.1 Existing Conditions**

6 Tribal trust resources are natural resources retained by or reserved for Indian tribes through  
 7 treaties, statutes, judicial decisions, and executive orders. Indian lands are not Federal public  
 8 lands or part of the public domain, and thus are not subject to Federal public land laws. Indian  
 9 tribes manage Indian land in accordance with tribal goals and objectives, within the framework  
 10 of applicable laws; however, the U.S. holds most Tribal land and resources produced from tribal  
 11 land in trust for the benefit of Indian tribes.

12 The Tohono O'odham Nation (TON) is a Federally-recognized, sovereign tribe in the Sonoran  
 13 Desert of southeastern Arizona and northwest Mexico. "Tohono O'odham" means "Desert  
 14 People." Important uses of tribal lands include economic activities such as timber harvest,  
 15 livestock grazing, fuel-wood collection, recreation, and commercial and residential development.

16 Approximately nine percent, or 31,593 ha (78,067 ac), of the approximately 347,277 ha (858,137  
 17 ac) of land proposed as critical habitat occurs on a portion of the Tohono O'odham Nation in  
 18 Pima County, Arizona. Proposed critical habitat occurs in both the Baboquivari-Coyote Subunit  
 19 (1a) and the Southern Baboquivari Subunit (1b). Critical habitat represents 20,764 ha (51,308  
 20 ac) of Tohono O'odham Nation lands in Subunit 1a; and 10,829 ha (26,759 ac) in Subunit 1b (see  
 21 revised proposed rule).

22 Table 3.5 shows socioeconomic information for the main portion of the Tohono O'odham Nation  
 23 in Pima County that would be affected by jaguar critical habitat designation.

24

25 **Table 3.5. Socioeconomic Profile of Tohono O'odham Nation – Pima County**

| Location              | Population Density (persons/sq. mile, 2010) | Population (2010) | % of Statewide Population (2010) | % Change (2000-2010) | Per Capita Income (2010 dollars)* | Poverty Rate (2010) |
|-----------------------|---|-------------------|----------------------------------|----------------------|-----------------------------------|---------------------|
| Arizona               | 56.3  | 6,392,017         | 100%                             | 24.6%                | \$25,680                          | 15.3%               |
| Pima County           | 106.7                                       | 980,263           | 15.3%                            | 16.2%                | \$25,093                          | 16.4%               |
| Tohono O'odham Nation | 1.65  | 7,174             | 0.1%                             | -14.4%               | \$9,298                           | 45.2%               |

26 Source: U.S. Census Bureau, 2010 Census and American Community Survey

27 The Tohono O'odham Nation gains most of its income from its three Desert Diamond casinos.  
 28 Major sources of employment for its citizens include tribal and government services, cattle  
 29 ranching, and farming, as well as self-employed artisans (TON 2004). Small business is a vital

1 component in the Tohono O'odham Nation's private sector economy, providing jobs and  
2 developing career-related opportunities for its members (TON 2012).

3 Secretarial Order #3206 outlines the responsibilities of the USFWS when actions taken under the  
4 authority of the Act may affect Indian lands and tribal trust resources. The agency's  
5 responsibilities include ensuring that Indian tribes do not bear a disproportionate burden for the  
6 conservation of listed species.

7 The 2012 Baboquivari Peak Wilderness and Coyote Mountains Wilderness Draft Wilderness  
8 Management Plan and Environmental Assessment provides conservation measures for the  
9 jaguar, and objectives to coordinate with the BLM, the Tohono O'odham Nation, Buenos Aires  
10 NWR and interested public and adjacent private landowners (BLM 2012c). Baboquivari Peak,  
11 located on the Baboquivari Peak Wilderness, has been called "the physical and spiritual center of  
12 the Tohono O'odham universe" (BLM 2012c). According to a Tohono O'odham elder, his  
13 people "have always had the greatest respect for the jaguar and seldom hunted it. If a man killed  
14 a jaguar, he risked contracting a sickness and would have to undergo an all-day ceremony. In  
15 this ceremony the medicine man or shaman used jaguar parts, including the skin and tail (Mahler  
16 2009)." Cultural uses of the land by tribal members may include ceremonial uses of specific  
17 sites and other traditional practices. The jaguar has been integrated into cultural beliefs and  
18 rituals of the Tohono O'odham.

### 19 *Previous Consultations*

20 In 2007 the CBP requested formal consultation on the jaguar for a pedestrian fence proposed  
21 along the U.S. and Mexico border. As it relates to the Tohono O'odham Nation, the BO  
22 stipulated conservation measures to develop survey and monitoring methods and conservation  
23 and recovery measures through coordination with Arizona Game and Fish Department, and the  
24 Tohono O'odham Nation (Service 2007b).

25 In 2008 the CBP requested formal consultation on the jaguar for the SBInet Tucson West Tower  
26 Project. The 1.5 mile segment along the U.S-Mexico border on the Tohono O'odham Nation  
27 included an unauthorized road – a direct result of illegal traffic being funneled from fencing to  
28 the east and west (Service 2008).

29 Both BOs concluded the pedestrian fence is not likely to jeopardize the continued existence of  
30 the jaguar. Conservation recommendations for CBP included assistance with the implementation  
31 of the Jaguar Conservation Framework and participation on the Jaguar Conservation Team (a  
32 team which has not met since February 2009) (Service 2007b; Service 2008).

### 33 **3.8.2 Environmental Consequences**

34 Tribal activities on critical habitat units 1a and 1b include economic development; livestock  
35 management; fire suppression and prescribed fire; surface disturbance construction activities  
36 including road construction and widening; habitat restoration projects; and fence removal.

1 **3.8.2.1 No Action Alternative**

2 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
3 section 7 consultation process would continue as presently conducted without analysis of  
4 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
5 for *may affect* determinations of impacts to the jaguar. Such consultations would analyze  
6 relevant land use, natural resource, economic development, and FMPs on Federal lands currently  
7 occupied by the species. As they relate to tribal resources, such consultations, to the extent that  
8 they could cause impacts to the nearby Tohono O’odham Nation, would likely include:

- 9 • U.S. Bureau of Indian Affairs—for renewable energy development, road projects, utility  
10 development and upgrades;
- 11 • U.S. Bureau of Land Management—for fire suppression, fuel-reduction treatments, land and  
12 resource management plans (Baboquivari Peak Wilderness and Coyote Mountains  
13 Wilderness Draft Wilderness Management Plan and Environmental Assessment), livestock  
14 grazing and management plans, recreation, mining permits, nonnative invasive species  
15 treatments, and renewable energy development;
- 16 • U.S. Department of Homeland Security—for border security infrastructure and operations;
- 17 • U.S. Department of Transportation—for highway and bridge construction and widening; and
- 18 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival permits,  
19 HCPs, and SHAs; NWR planning; Partners for Fish and Wildlife program projects.

20 This alternative would not have any direct impacts on tribal resources beyond any conservation  
21 measures or project modifications resulting from the listing of the jaguar and section 7 of the  
22 ESA.

23 **3.8.2.2 Alternative A**

24 The lands proposed as critical habitat for the jaguar are located near two Tohono O’odham  
25 Nation communities: the Fresnal Canyon Community is approximately 1.5 miles outside of  
26 proposed critical habitat, and the Pan Tak community is only half a mile outside of the proposed  
27 critical habitat boundary. The Tohono O’odham Nation has expressed concern that activities in  
28 these communities could be affected by the designation of critical habitat. Activities on Tribal  
29 lands that may be affected by the designation of critical habitat include developments and road  
30 construction associated with CBP; and land disturbance associated with the Kitt Peak National  
31 Observatory, which is located on land leased by the Tohono O’odham Nation. Ranching also  
32 occurs in limited areas throughout the Tohono O’odham Nation.

33 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
34 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
35 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
36 anticipate that designation of critical habitat would result in consultations that would not  
37 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
38 Action Alternative, Alternative A (all proposed units, no exclusions) would result in a small but  
39 unknown number of reinitiated section 7 consultations for land management actions based solely  
40 on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
41 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

1 *Reinitiated Consultations*

2 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
3 species, current activities and activities that would trigger consultation for critical habitat are  
4 largely the same.

5 Reinitiated consultations are consultations that have been completed for impacts to the species,  
6 but which might need to be re-opened to consider the likelihood of destruction or adverse  
7 modification to critical habitat. As it relates to tribal resources, such consultations could include:

- 8 • Border security infrastructure—U.S. Department of Homeland Security;
- 9 • Road/highway construction—U.S. Department of Transportation; and
- 10 • Actions on recreation lands—U.S. Bureau of Land Management and the State of Arizona if it  
11 receives Federal funds for conservation or restoration of state-owned lands.

12 Indirect, potentially adverse impacts that could result from critical habitat designation on the  
13 Tohono O’odham Nation lands would include: (1) increased Federal control and involvement in  
14 tribal land management of land containing critical habitat; and (2) decreased control or ability by  
15 the Tohono O’odham to manage their lands for their own benefit.

16 Activities that currently occur or are anticipated to occur on Tohono O’odham Nation lands  
17 within critical habitat for the jaguar include, but are not limited to, the following:

- 18 • Hunting;
- 19 • Cultural uses;
- 20 • Development (housing, roads, infrastructure);
- 21 • Vegetation management (invasive plant removal and prescribed burns);
- 22 • Wildlife conservation activities;
- 23 • Riparian restoration activities;
- 24 • Agricultural and water use;
- 25 • Livestock grazing; and
- 26 • Flood control-related infrastructure and activities.

27 Although the proposed Rosemont Copper Mine (see Chapter 5) does not fall within Tohono  
28 O’odham Nation lands, the mine is located within the Papaguera region, which was historically  
29 inhabited by the Tribe. According to the public comment submitted by the Tribe, this area “has  
30 been used by tribes and their ancestors for at least 5,000 years. For hundreds of years, the  
31 Tohono O’odham specifically have used [this area] for living, hunting, gathering of medicinal  
32 plants and plants for food, gathering of materials for making baskets, and for the creation of  
33 sacred shrines.” The Nation is therefore concerned that the Rosemont Mine may threaten these  
34 cultural resources, absent the designation of critical habitat (IEc 2013).

35  
36 Additionally, the Tohono O’odham Nation’s economy is poorer than the regional economy,  
37 making it particularly vulnerable to economic impacts associated with increased regulatory  
38 burden, where such burden truly exists. Future impacts resulting from jaguar conservation  
39 efforts on Tohono O’odham Nation’s lands include administrative costs of section 7  
40 consultations, surveys and monitoring of habitat, development and implementation of jaguar  
41 management plans, modifications to development activities, and potential additional costs in  
42 time and money to implement project modifications to restoration activities and water projects.

1 The Service’s draft Economic Analysis projects that the incremental economic impacts of critical  
2 habitat designation for the jaguar on activities conducted on the Tohono O’odham Nation’s lands  
3 is estimated at \$3,500, the attributed cost of an incremental consultation (IEc 2013).

4 *Addition of Adverse Modification Analysis to Future Consultations*

5 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
6 in many respects and are parallel processes because the health of a species cannot be  
7 disassociated from the health of its habitat. The outcomes of these future consultations would  
8 depend on the details of project proposals and the analysis of effects, which are unknown at this  
9 time.

10 The additional time needed to complete consultations that would have only considered effects on  
11 the species would increase administrative costs to the Service and to the action agencies.  
12 Implementing conservation measures resulting from those additional consultations could also  
13 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
14 include reasonable and prudent alternatives and other conservation measures designed to  
15 maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past  
16 consultations, types of additional management actions that may be recommended include, but are  
17 not limited to:

- 18 • Revising/drafting resource and habitat management plans;
- 19 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
20 reports;
- 21 • Limiting construction of fencing in occupied jaguar habitats or in areas where fencing are  
22 likely to impact jaguar habitat;
- 23 • Limiting roadway widening and construction projects;
- 24 • Limiting the construction of new powerlines and pipelines;
- 25 • Establishing burn buffers or limiting prescribed burning within areas that could easily burn  
26 and are used by jaguar and jaguar prey;
- 27 • Limiting predator control activities, including snares for mountain lions, which pose a  
28 potential threat to jaguars; and
- 29 • Maintenance of water sources and dense riparian areas.

30 In summary, the effects of critical habitat designation on tribal resources are expected to be  
31 negligible because (1) new consultations based solely on the presence of designated critical  
32 habitat are unlikely, because land managers are already consulting on jaguar throughout the  
33 proposed critical habitat areas; and (2) tribal-related activities that currently occur or are  
34 anticipated to occur are not likely to require reasonable and prudent alternatives developed to  
35 avoid adverse modification.

36 **3.8.2.3 Alternative B**

37 Alternative B includes the proposed units, but excludes Tohono O’odham Nation lands. Since  
38 the exclusion is wholly tribal land the impacts associated with the designation of critical habitat  
39 would disappear, although to the extent the designation affects the Rosemont mine (see next  
40 section), it may positively impact lands historically inhabited, and still culturally valued by, the

1 Tribe. The overall impacts on tribal resources would be expected to be the same as those under  
2 the No Action Alternative.

### 3 **3.9 Mining**

#### 4 **3.9.1 Existing Conditions**

5 Lands proposed for mining are located within proposed critical habitat Unit 3 (Patagonia Unit)  
6 (Service 2012b). A 2,023 ha (5,000 ac) open-pit copper mine (the Rosemont Mine) has been  
7 proposed in the northeastern portion of the Santa Rita Mountains, Pima County, Arizona. The  
8 mine extends onto 1,485 ha (3,670 ac) of Coronado National Forest, managed by the U.S. Forest  
9 Service, within the footprint of Unit 3. The proposed Rosemont mine Plan of Operations is for  
10 construction and operation of an open-pit mine to extract locatable materials such as copper,  
11 molybdenum, and silver (Rosemont 2007). A final EIS was published for this project by the  
12 Forest Service in November 2013. Formal consultation with the Service was completed in  
13 October 2013. The Service's biological opinion concluded that the proposed mine would not  
14 adversely modify or destroy jaguar critical habitat.

15 The Oracle Ridge Mine, located on private property in Unit 3 adjacent to the Coronado National  
16 Forest, is currently inactive but is in the permitting and detailed design stage of resuming copper  
17 mining operations that ceased in 1996 (Forest Service 2012).

18 The following proposed exploratory drilling projects also lie within Unit 3 on the Coronado  
19 National Forest (Forest Service 2012):

- 20 • Wildcat Silver has submitted a proposed Plan of Operations for exploratory drilling as part of  
21 the proposed Hermosa mine in the Sierra Vista Ranger District. This proposed project is  
22 currently in the NEPA process and Endangered Species Act section 7 consultation phase.
- 23 • A proposed Plan of Operations has been submitted for the OZ Minerals Providencia minerals  
24 exploration project in the Sierra Vista Ranger District. The U.S. Fish and Wildlife Service  
25 has concurred with the Forest Service's determination that this copper exploration project is  
26 not likely to adversely affect the jaguar (Service 2012d).
- 27 • The Arizona Copper Corporation has submitted a proposed Plan of Operations to drill holes  
28 at five locations in the Huachuca Mountains of the Sierra Vista Ranger District to explore for  
29 copper mineralization. This proposal is under review by the Forest Service.
- 30 • Blue Fire Gem Company has submitted a proposed Plan of Operations to hand-drill shallow  
31 3.5-foot deep holes to fracture rock for sampling/assay on its unpatented mining claim to  
32 obtain evidence of mineralization. This activity would occur in the Nogales Ranger District  
33 of the Coronado National Forest, and is under analysis by the Forest Service.
- 34 • Quartz Dreams has submitted a proposed Plan of Operation for short-term minerals  
35 exploration in the Nogales Ranger District that would involve fracturing rock within  
36 previously mined areas to expose the resource. This proposal is under analysis by the Forest  
37 Service.
- 38 • The Forest Service has proposed to approve a Plan of Operations that would authorize  
39 Sunnyside Exploratory Drilling to drill five exploratory holes to obtain evidence of

- 1 mineralization in Humbolt Canyon on the Coronado National Forest in the Sierra Vista  
2 Ranger District. As of this writing, this proposal is on hold.
- 3 • The Forest Service has proposed to approve a Plan of Operations that would authorize Dice  
4 #8 to conduct a placer exploration on the Coronado National Forest in the Sierra Vista  
5 Ranger District. As of this writing, this proposal is on hold.
  - 6 • Other proposed or existing sites for mineral exploration in Unit 3 include God’s Claim,  
7 Moore and Moore, Dice #1, Patagonia Jewel, Red Mountain, Galiuro, Old Lemon, Alpha  
8 Calcit, Big Nugget, Margarita, Red Mountain, and Imerys.

9 *Recent Consultations*

10 There have been a total of four formal section 7 consultations involving the jaguar that resulted  
11 in a BO since 1995 in Arizona and New Mexico, each of which resulted in a *no jeopardy*  
12 determination. In December 2013 a formal consultation for the proposed 2,023 ha (5,000 ac)  
13 Rosemont Mine was completed (not included in the four referenced above). The Service  
14 determined that the mine would not jeopardize the continued existence of the jaguar or result in  
15 the destruction or adverse modification of critical habitat.

16 **3.9.2 Environmental Consequences**

17 Mining-related activities that either currently occur or would occur if proposed exploratory  
18 projects were approved within Unit 3 include, but are not limited to, construction and use of  
19 access roads, road improvements, clearing vegetation, drilling and blasting, and creation of mud  
20 pits or sumps. Activities associated with mining projects such as the Rosemont Mine include,  
21 but are not limited to, construction and use of access roads, road improvements, clearing  
22 vegetation, drilling and blasting, construction and operation of the mine pit, waste rock, and  
23 leach facilities. These activities can cause additional risk to public health and safety by affecting  
24 roadways, air quality, and noise levels and by changing geological conditions. Some fencing  
25 could be installed to prohibit the public from accessing the mine property (Rosemont 2007).

26 The magnitude of the resulting effects of the proposed mining activities on the jaguar are part of  
27 consultation, but impacts may include changes in human activity level and an increased number  
28 and level of usage of access roads. Fences may also be installed in association with future  
29 mining activity. Jaguars typically require dense vegetative cover, connectivity, and low levels of  
30 human activity, development, and infrastructure (77 FR 50213-50242). The proposed Rosemont  
31 open-pit copper mine could decrease connectivity with the construction of infrastructure and  
32 roads and fences associated with the mining operation, increase human activity and development,  
33 reduce prey availability, and remove vegetation, making the introduction of new mining into  
34 proposed critical habitat for the jaguar a potentially significant threat. The Service determined  
35 that the mine would not jeopardize the continued existence of the jaguar or result in the  
36 destruction or adverse modification of critical habitat.

37

38 **3.9.2.1 No Action**

39 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
40 section 7 consultation process would continue as presently conducted, but without analysis of

1 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
2 for *may affect* determinations of impacts to the jaguar. These consultations would analyze  
3 relevant land, resource, and other management plans for their potential to jeopardize the survival  
4 of the jaguar. As mentioned, mineral exploration activities are occurring in remote rugged areas  
5 that are resulting in informal consultation on effects to the jaguar, with more exploration  
6 activities planned for the future. Depending on the results of these explorations and the potential  
7 for future mining activities, both formal and informal section 7 consultations could occur to  
8 address effects to the jaguar.

9 Jeopardy consultation with the U.S. Forest Service related to the Rosemont mine is currently  
10 underway for all areas proposed as critical habitat. The consultation includes possible  
11 conservation measures that could be recommended for the mine construction and operation.  
12 Recommended conservation measures could include measures such as:

- 13 • Development of an HCP for actions on private lands that could result in incidental take of
- 14 Federally listed species;
- 15 • Limiting tree and tree limb removal;
- 16 • Minimizing nighttime lighting at work sites; and
- 17 • Avoiding or limiting activities that sever connectivity.

18 Therefore, this alternative would not have any impacts on mining beyond any conservation  
19 measures or project modifications resulting from the listing of the jaguar and associated  
20 requirements of section 7 of the ESA.

### 21 **3.9.2.2 Alternative A**

22 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
23 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
24 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
25 anticipate that designation of critical habitat would result in consultations that would not  
26 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
27 Action Alternative, Alternative A (all proposed units, no exclusions) would result in: (1) a small  
28 but unknown number of reinitiated section 7 consultations for land management actions based  
29 solely on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
30 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

#### 31 *Addition of Adverse Modification Analysis to Future Consultations*

32 Mining activities proposed in critical habitat units are within Unit 3. Consultations on proposed  
33 activities are already occurring for proposed areas in this unit, so there would be no new  
34 consultations. Such consultations will analyze whether or not these effects lead to destruction or  
35 adverse modification of critical habitat in the form of severing connectivity with Mexico or  
36 within a critical habitat unit, or degrading any PCEs to the point of adverse modification.

37 The additional consultations to include adverse modification, and the additional time required to  
38 complete consultations that would only have analyzed jeopardy to the species, would increase  
39 administrative costs to the Service and to the action agencies for mining activities in Unit 3.  
40 Consultation to determine effects to all PCEs and potential adverse modification to critical

1 habitat for all of these mining operations would be an incremental effect of the designation.  
2 Implementing conservation measures resulting from those additional consultations would also  
3 increase costs for action agencies. Outcomes of consultations could also include reasonable and  
4 prudent alternatives and other conservation measures designed to maintain jaguar PCEs, without  
5 increasing the potential impacts to public health or safety from mining operations. These  
6 specific outcomes (mitigation measures and modifications) cannot be predicted precisely, but  
7 they would likely be very similar to those recommended to avoid jeopardy to the species.

8 Conservation measures recommended to avoid destruction or adverse modification of critical  
9 habitat, however, would likely be similar in nature to those resulting from consultations for  
10 jeopardy to listed species.

11 If the mining projects were to go forward, the incremental administrative costs of considering  
12 critical habitat in consultations for the planned mining and mineral exploration projects are  
13 projected to be \$22,000 in total, or \$1,700 annualized (IEc 2013).

### 14 **3.9.2.3 Alternative B**

15 For Alternative B (proposed units minus exclusions), the impacts associated with the designation  
16 of critical habitat would be the same as those identified for Alternative A. The exclusions are  
17 solely for tribal land associated with the Tohono O’odham Nation, which are not subject to  
18 existing or proposed mining activities. Units in the vicinity of existing and proposed mining  
19 operations discussed within this section are thus not proposed for exclusion, so the overall  
20 impacts related to mining would still be characterized as minor.

## 21 **3.10 Socioeconomics**

22 A separate economic analysis of critical habitat designation for the jaguar has been conducted  
23 (IEc 2013) in response to the revised proposed rule. The purpose of the economic analysis is to  
24 evaluate the potential economic impacts associated with the designation of critical habitat for the  
25 jaguar. This analysis characterizes all projected impacts as either baseline costs (i.e., those  
26 impacts expected to occur absent the designation of critical habitat) or incremental impacts (i.e.,  
27 those impacts expected to occur as a result of critical habitat designation). This analysis assigns  
28 costs to the baseline or incremental scenarios based on current management and changes in  
29 economic activity likely to occur with the proposed critical habitat designation.

### 30 **3.10.1 Existing Conditions**

31 The proposed critical habitat designation consists entirely of rural lands, in variously low levels  
32 of development and population density. All the units are in counties with population densities  
33 lower than their statewide average, with the exception of Pima County, which includes the city  
34 of Tucson.

1 **Table 3.6. Socioeconomic Profile of Counties Containing Critical Habitat for Jaguar**

| State             | County             | Population Density (persons/sq. mile, 2010) | Population (2010) | % of Statewide Population (2010) | % Change (2000-2010) | Per Capita Income (2010 dollars)* | Poverty Rate (2010) |
|-------------------|--------------------|---|-------------------|----------------------------------|----------------------|-----------------------------------|---------------------|
| <b>Arizona</b>    | <b>State Total</b> | <b>56.3</b>                                 | <b>6,392,017</b>  | <b>100%</b>                      | <b>24.6%</b>         | <b>\$25,680</b>                   | <b>15.3%</b>        |
|                   | Pima               | 106.7                                       | 980,263           | 15.3%                            | 16.2%                | \$25,093                          | 16.4%               |
|                   | Santa Cruz         | 38.3  | 47,420            | 0.74%                            | 23.6%                | \$16,209                          | 25.2%               |
|                   | Cochise            | 21.3  | 131,346           | 2.1%                             | 11.5%                | \$23,010                          | 15.7%               |
| <b>New Mexico</b> | <b>State Total</b> | <b>17.0</b>                                 | <b>2,059,179</b>  | <b>100%</b>                      | <b>13.2</b>          | <b>\$22,966</b>                   | <b>18.4%</b>        |
|                   | Hidalgo            | 1.4   | 4,894             | 0.24%                            | -17.5%               | \$17,451                          | 22.6%               |

2 Source: U.S. Census Bureau, Census 2010 and State & County QuickFacts

3 \* In 2010 inflation-adjusted dollars

4 Table 3.7 provides an overview of the key economic sectors in the counties that comprise the  
5 designation, as measured by number of enterprises and number of employees.

6 **Table 3.7. Economic Activity in Counties Containing Proposed Jaguar Critical Habitat**

| Number of Employees and Establishments by industry (2010) |                |               |                   |              |                |              |                |               |
|---|----------------|---------------|-------------------|--------------|----------------|--------------|----------------|---------------|
| Industry  | ARIZONA        |               |                   |              |                |              | NEW MEXICO     |               |
|   | Pima County    |               | Santa Cruz County |              | Cochise County |              | Hidalgo County |               |
|   | EMP.           | EST.          | EMP.              | EST.         | EMP.           | EST.         | EMP.           | EST.          |
| Agriculture, Forestry, Fishing, and Hunting               | c              | 23            | B                 | 5            | 28             | 7            | 376            | 35            |
| Mining, quarrying, and oil and gas extraction             | G              | 33            | A                 | 2            | C              | 11           | 2,767          | 46            |
| Utilities   | G              | 25            | B                 | 3            | 467            | 19           | 3,065          | 47            |
| Construction  | 17,434         | 1,757         | 441               | 65           | 1,603          | 233          | 19,478         | 2,055         |
| Manufacturing   | 27,401         | 651           | 399               | 32           | 447            | 50           | 28,247         | 733           |
| Wholesale Trade   | 7,178          | 787           | 1,856             | 208          | 406            | 66           | 9,440          | 1061          |
| Retail Trade  | 46,309         | 2,855         | 2,402             | 231          | 5,435          | 423          | 54,146         | 3509          |
| Transportation & Warehousing                              | 7,446          | 380           | 1,376             | 144          | 584            | 73           | 9,406          | 597           |
| Information   | 6,474          | 289           | 92                | 10           | 383            | 34           | 6,949          | 333           |
| Finance and Insurance                                     | 12,318         | 1,240         | 221               | 42           | 544            | 109          | 13,083         | 1,391         |
| Real Estate and rental leasing                            | 6,403          | 1,254         | 204               | 42           | 472            | 121          | 7,079          | 1,417         |
| Professional, scientific, & technical services            | 15,837         | 2,635         | 147               | 63           | 5,806          | 228          | 21,790         | 2,926         |
| Management of companies and enterprises                   | 4,090          | 119           | A                 | 5            | C              | 8            | 4,358          | 132           |
| Administrative & Support & Waste Management & Remediation | 23,300         | 1,246         | 535               | 36           | 1,886          | 107          | 25,721         | 1,389         |
| Educational Services                                      | 6,294          | 341           | 82                | 12           | 511            | 36           | 6,887          | 389           |
| Health Care and Social Assistance                         | 56,098         | 2,778         | 1,020             | 75           | 4,788          | 282          | 61,906         | 3,135         |
| Arts, entertainment, and recreation                       | 6,964          | 290           | b                 | 11           | 316            | 38           | 7,379          | 339           |
| Accommodation and food services                           | 39,456         | 1,737         | 1,312             | 97           | 4,063          | 280          | 44,831         | 2,114         |
| Other services (except public administration)             | 14,062         | 1,830         | 273               | 63           | 1,067          | 240          | 15,402         | 2,133         |
| Industries not classified                                 | B              | 49            | a                 | 3            | a              | 4            | 137            | 56            |
| <b>Total for all sectors</b>                              | <b>301,151</b> | <b>20,319</b> | <b>10,484</b>     | <b>1,149</b> | <b>29,052</b>  | <b>2,369</b> | <b>342,447</b> | <b>23,837</b> |

1 Source: U.S. Census Bureau, 2010 County Business Patterns North American Industry Classification System  
2 (NAICS)  
3 A: 0-19 employees  
4 B: 20-99 employees  
5 C: 100-249 employees  
6 E: 250-499 employees  
7 F: 500-999 employees  
8 G: 1,000-2,499 employees  
9 H: 2,500-4,999 employees  
10 I: 5,000-9999 employees  
11 J: 10,000-24,999 employees  
12 K: 25,000-49,999 employees  
13 L: 50,000-99,999 employees  
14 M: 100,000 or more  
15 S: Withheld because estimate did not meet public standards  
16 D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals  
17

18 In the counties that contain designated habitat, those sectors providing principal sources of  
19 employment are health care, retail trade, and tourism (respectively). Within this context of  
20 overall economic activity, specific economic sectors that could be impacted by the designation of  
21 critical habitat are discussed below.

## 22 **3.10.2 Environmental Consequences**

### 23 **3.10.2.1 No Action**

24 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
25 section 7 consultation process would continue as presently conducted for proposed actions with a  
26 Federal nexus, but without consideration of PCEs. Those actions that could have impacts on  
27 socioeconomic resources include land use management, border protection, mining, transportation  
28 construction & development, and other activities, including grazing, recreation, and tribal  
29 activities. Such consultations would analyze relevant travel, economic, and recreation  
30 management plans on Federal lands currently occupied by the species. As they relate to  
31 socioeconomic resources, such consultations would likely include:

- 32 • U.S. Army Corps of Engineers—for bridge projects, stream restoration, urban development;
- 33 • U.S. Bureau of Indian Affairs—for renewable energy development, road projects, utility  
34 development and upgrades;
- 35 • U.S. Bureau of Land Management—for land and resource management plans, livestock  
36 grazing and management plans, recreation, mining permits, and renewable energy  
37 development;
- 38 • U.S. Department of Homeland Security—for border security infrastructure and operations;
- 39 • U.S. Department of Transportation—for highway and bridge construction and widening;
- 40 • U.S. Forest Service—for travel and forest plans, livestock grazing AMPs, and mining  
41 permits; and
- 42 • U.S. Fish and Wildlife Service—for issuance of section 10 enhancement of survival permits,  
43 HCPs, and SHAs; NWR planning; Partners for Fish and Wildlife program projects.

1 The outcomes of these consultations can include conservation measures that serve to limit the  
2 natural resource impacts, as described elsewhere throughout this document. These conservation  
3 measures may include specific modifications to mining operations, construction practices, or  
4 resource development activities, which may increase operational and/or administrative costs to  
5 action agencies or private parties applying for permits. These impacts of the No Action  
6 Alternative would continue to be minor, based on the consultation history for typical actions.

### 7 **3.10.2.2 Alternative A**

8 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
9 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
10 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
11 anticipate that designation of critical habitat would result in consultations that would not  
12 otherwise take place for jeopardy analysis in all proposed areas. However, compared to the No  
13 Action Alternative, Alternative A (all proposed units, no exclusions) would result in: (1) a small  
14 but unknown number of reinitiated section 7 consultations for land management actions based  
15 solely on the presence of designated critical habitat; and (2) the addition of an analysis of adverse  
16 modification of critical habitat to future section 7 consultations on the jaguar in critical habitat.

17 Indirect socioeconomic impacts faced by project proponents, land managers and landowners  
18 could include the following:

- 19 • **Time Delays**—Both public and private entities may experience incremental time delays for  
20 projects and other activities due to requirements associated with the need to reinitiate the  
21 section 7 consultation process and/or compliance with other laws triggered by the  
22 designation. To the extent that delays result from the designation, they are considered  
23 indirect, incremental impacts of the designation.
- 24 • **Regulatory Uncertainty**—The Service conducts each section 7 consultation on a case-by-  
25 case basis and issues a BO on formal consultations based on species- and site-specific  
26 information. As a result, government agencies and affiliated private parties who consult with  
27 the Service under section 7 may face uncertainty concerning whether project modifications  
28 will be recommended by the Service and what the nature of these modifications will be. This  
29 uncertainty may diminish as consultations are completed and additional information becomes  
30 available on the effects of critical habitat on specific activities. Where information suggests  
31 that this type of regulatory uncertainty stemming from the designation may affect a project or  
32 economic behavior, associated impacts are considered indirect, incremental impacts of the  
33 designation.
- 34 • **Stigma**—In some cases, the public may perceive that critical habitat designation may result  
35 in limitations on private property uses above and beyond those associated with anticipated  
36 project modifications and regulatory uncertainty described above. Public attitudes about the  
37 limits or restrictions that critical habitat may impose can cause real economic effects to  
38 property owners, regardless of whether such limits are actually imposed. All else being  
39 equal, a property that is designated as critical habitat may have a lower market value than an  
40 identical property that is not within the boundaries of critical habitat due to perceived  
41 limitations or restrictions. As the public becomes aware of the true regulatory burden  
42 imposed by critical habitat, the impact of the designation on property markets may decrease.

1 To the extent that potential stigma effects on markets are probable and identifiable, these  
2 impacts are considered indirect, incremental impacts of the designation.

3 Table 3.8 below summarizes the potential economic impacts of the proposed designation by  
4 category of activity (IEc 2013). The present value of potential economic impacts (using a 7%  
5 discount rate) is estimated at \$360,000 over a 20-year time period, or \$31,000 annually. This  
6 estimate does not include an assumption on the outcome of ongoing consultations regarding the  
7 Rosemont mine.

8 **Table 3.8. Summary of Forecast Incremental Economic Impacts by Activity**  
9 **(2013 Dollars, Seven Percent Discount Rate)**

| Activity                       | Present Value | Annualized | Percent of Total Impacts |
|--------------------------------|---------------|------------|--------------------------|
| <b>Federal land management</b> | \$180,000     | \$16,000   | 52.0%                    |
| <b>Border protection</b>       | \$17,000      | \$1,500    | 4.8%                     |
| <b>Mining (1)</b>              | \$22,000      | \$1,900    | 6.2%                     |
| <b>Transportation (2)</b>      | \$5,900       | \$520      | 1.7%                     |
| <b>Development</b>             | \$0           | \$0        | 0%                       |
| <b>Military</b>                | \$20,000      | \$1,700    | 5.5%                     |
| <b>Grazing (3)</b>             | \$24,000      | \$2,100    | 6.8%                     |
| <b>Other</b>                   | \$82,000      | \$7,300    | 23.0%                    |
| <b>Tribal</b>                  | \$0           | \$0        | 0%                       |
| <b>Total:</b>                  | \$360,000     | \$31,000   | 100%                     |

- 10 (1) If mining plans move forward and an adverse modification decision is made, potential impacts on  
11 operations at Rosemont or Hermosa mine could result.  
12 (2) If mining plans move forward, incremental changes to planned road improvements could occur.  
13 (3) It is possible that some ranchers may withdraw applications for NRCS funding following jaguar  
14 critical habitat in order to avoid any potential obligations to consult with the Service.

15 This impact can be considered minor overall, although individual proponents or affected entities  
16 could experience project-specific impacts that could be considered moderate but not significant,  
17 as shown in Table 3.9.

18 In addition to potentially adverse economic impacts, the draft Economic Analysis identifies  
19 potential social and economic benefits from measures aimed at maintaining or improving habitat  
20 PCEs. While difficult to quantify in monetary terms, these benefits could include:

- 21 • **Aesthetic benefits**—Social welfare gains may be associated with enhanced aesthetic quality  
22 of habitat;  
23 • **Educational benefits**—Surveying and monitoring activities for the jaguar add to the  
24 knowledge base about the species and could help better direct future conservation efforts;  
25 and

- 1 • **Property value benefits**—Open space preservation or decreased density of development  
2 may increase nearby property values.

### 3 *Impacts to Small Entities*

4 The draft Economic Analysis includes an analysis of the distributional impacts of the proposed  
5 critical designation on small entities and the energy industry. Table 3.9 (next page) presents the  
6 results of the threshold analysis developed to support the Service’s determination regarding  
7 whether the proposed rule will have a significant economic impact on a substantial number of  
8 small entities, as required by the Regulatory Flexibility Act (RFA), as amended by the Small  
9 Business Regulatory Enforcement Fairness Act (SBREFA). This analysis is intended to improve  
10 the Service's understanding of the potential effects of the proposed rule on small entities and to  
11 identify opportunities to minimize these impacts in the final rulemaking.

12  
13 Estimated incremental costs that may be borne by small entities consist of administrative impacts  
14 of section 7 consultations related to mining, transportation development, and agriculture and  
15 grazing. These are summarized in Table 3.9 below. Refer to the Economic Analysis for a full  
16 discussion of the assumptions and results of the study.

### 17 **3.10.2.3 Alternative B**

18 For Alternative B (proposed units minus Tohono O’odham lands), the impacts associated with  
19 the designation of critical habitat would be similar to those identified for Alternative A.  
20 Exclusion of the Tohono O’odham lands could reduce the economic impacts of designation by  
21 keeping future consultations focused on jeopardy to the species. The overall socioeconomic  
22 impacts of designation under Alternative B would be still characterized as minor and both  
23 beneficial and adverse.

## 24 **3.11 Recreation**

### 25 **3.11.1 Existing Conditions**

26 Recreational areas in the proposed critical habitat exist on tribal lands (Tohono O’odham  
27 Nation); Federally- and state-owned lands, including Coronado National Forest (US Forest  
28 Service), BLM lands, Buenos Aires NWR (USFWS), Coronado National Memorial (NPS land),  
29 and Arizona State lands.

30 Several types of recreational activities take place in or near proposed critical habitat areas for the  
31 jaguar. Recreational opportunities include hiking, hunting, boating, swimming, birding, wildlife  
32 viewing, photography, sight-seeing, pleasure-driving, angling, camping, horseback riding, and  
33 OHV use. Level of use and type of activity vary by site characteristics, landownership,  
34 management policy, and accessibility.

**Table 3.9. Summary of Upper-Bound Potential Impacts on Small Entities**

| Activity                | Industry  | Small Entity Size Standard (Millions of Dollars) | Total Number of Entities | Number of Small Entities | Number of Affected Small Entities <sup>1</sup> (Percent of Total Small Entities) | Incremental Economic Impacts To Small Businesses <sup>2</sup> | Impacts as % of Annual Revenues <sup>3</sup> |
|-------------------------|---|--|--------------------------|--------------------------|--|---|--|
| Transportation          | Highway, Street and Bridge Construction                   | 33.5   | 120                      | 110                      | 9 (7%)   | \$875 to \$7,875 <sup>4</sup>                                 | 0.09%  |
|                         | Other Heavy and Civil Engineering Construction            | 33.5   | 30                       | 28                       |  |   |  |
| Agriculture and Grazing | Beef Cattle Ranching and Farming                          | 0.75   | 80                       | 74                       | 0 (0%)   | \$0 per entity <sup>5</sup>                                   | 0%   |
|                         | Cotton Farming  | 0.75   | 3                        | 1                        |  |   |  |
| Mining                  | Iron Ore Mining   | 500 employees                                    | 0                        | 0                        | 4 (13%)  | \$875 to \$2,625 <sup>6</sup>                                 | -  |
|                         | Gold Ore Mining   | 500 employees                                    | 6                        | 6                        |  |   |  |
|                         | Silver Ore Mining   | 500 employees                                    | 1                        | 1                        |  |   |  |
|                         | Lead Ore and Zinc Ore Mining                              | 500 employees                                    | 6                        | 6                        |  |   |  |
|                         | Copper Ore and Nickel Ore Mining                          | 500 employees                                    | 33                       | 8                        |  |   |  |
|                         | Uranium-Radium-Vanadium Ore Mining                        | 500 employees                                    | 0                        | 0                        |  |   |  |
|                         | All Other Metal Ore Mining                                | 500 employees                                    | 0                        | 0                        |  |   |  |
|                         | Support Activities for Metal Mining                       | 7  | 9                        | 8                        |  |   |  |
|                         | Support Activities for Nonmetallic Minerals, except fuels | 7  | 3                        | 3                        |  |   |  |

Notes:

1. To estimate the number of affected small entities, this analysis assumes one small entity per forecast section 7 consultation. For Agriculture and Grazing, this assumes one small entity per NRCS funding instance.
2. For these activities, we conservatively estimate that all administrative costs of consultation will be incurred by a small entity in a single year. Therefore, we use the total, undiscounted third party incremental costs of a formal consultation.
3. Annual revenues are estimated using Risk Management Association (RMA), *Annual Statement Studies: Financial Ratio Benchmarks 2012 to 2013*, 2012. For each North American Industry Classification System (NAICS) code, RMA provides the net sales and the number of entities falling within several sales categories: \$0 to \$1 million, \$1 to 3 million, \$3 to \$5 million, \$5 to 10 million, or \$10 to \$25 million. Based on the number of entities and total net sales falling within each sales category, we developed an estimate of the weighted average net sales (revenues) per small entity: for transportation related firms, annual revenues were estimated to be approximately \$9 million; for companies involved in agriculture and grazing, revenues are estimated at \$430,000 annually; for mining firms, annual revenue information was not available, but due to the highly capitalized nature of the mining industry, mining firms are assumed to have high annual revenues such that per entity impacts of \$2,625 resulting from the designation of critical habitat are likely to be insignificant.
4. We are uncertain in what year consultations on transportation activities will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately nine consultations over 20 years, or less than one consultation per year. However, if we assume that a single small entity participates in multiple consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual tax revenues (e.g., nine consultations x \$875/\$9,000,000 = 0.09 percent of annual revenues).
5. Potential impacts related to NRCS funding are not quantified.
6. We are uncertain in what year consultations on mining will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately 4 consultations over 20 years, one of which will be associated with the Hermosa Project and will involve Wildcat Silver Corporation. However, if we assume that a single small entity participates in multiple consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual revenues. Although data on annual revenues for mining companies were unavailable, due to the highly capitalized nature of the mining industry companies involved in mining operations are likely to produce revenues large enough that the cost of undertaking three consultations in a single year would likely be less than one percent of annual revenues (e.g., 3 consultations x \$875 = \$2,625. \$2,625 represents one percent of annual revenues of \$262,500. Mining companies are likely to produce revenues of greater than \$262,500 annually).

**Source:** Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifiers," on January 3, 2013.

1 Table 3.10 below lists critical habitat units that are at least partly within or adjacent to Federal  
 2 recreational sites.

3 **Table 3.10. Critical Habitat Units Within or Adjacent to Federal Recreation Sites**

| <b>Federal Property</b>            | <b>Critical Habitat Unit/Subunit</b> | <b>Recreational Area within or adjacent to unit</b>  |
|------------------------------------|--------------------------------------|--|
| Coronado NF                        | 2                                    | Nogales Recreation Area                              |
| Coronado NF                        | 2                                    | Atascosa Mountains                                   |
| Coronado NF                        | 2                                    | Pajarito Mountains                                   |
| Coronado NF                        | 2                                    | Tumacacori Mountains                                 |
| Coronado NF                        | 3                                    | Santa Rita Mountains                                 |
| Coronado NF                        | 3                                    | Sierra Vista Recreation Area                         |
| Coronado NF                        | 3                                    | Huachuca Mountains                                   |
| Coronado NF                        | 3                                    | Canello Hills – Sierra Vista Ranger District         |
| Coronado National Memorial (NPS)   | 3                                    | Montezuma Pass; Joe’s Canyon; and Yaqui Trail        |
| Coronado NF                        | 2                                    | Sycamore Canyon Hiking Trail and Border Hiking Trail |
| Coronado NF                        | 5                                    | Whitmire Canyon Wilderness Study Area                |
| Buenos Aires NWR (FWS)             | 1a/1b                                | Refuge area (2 campsites)                            |
| Baboquivari-Coyote Wilderness Area | 1a                                   | Baboquivari Peak                                     |

4  
 5 The U.S. Forest Service manages 192,975 ha (476,851 ac) of habitat for the jaguar on the  
 6 Coronado National Forest (CNF) in the Douglas, Nogales, and Sierra Vista Ranger Districts in  
 7 Units 2 and 3; Subunits 4a, 4b, and 4c; and Unit 5.

8 The National Visitor Use Monitoring program provides estimates of the volume and  
 9 characteristics of recreation visitation to the National Forest System. A National Forest Visit is  
 10 defined as the entry of one person upon a national forest to participate in recreation activities for  
 11 an unspecified period of time. The most recent annual visitation data is presented in Table 3.11  
 12 below.

13 **Table 3.11. Annual Coronado National Forest Visitation Estimates**

| <b>Visit Type</b>                      | <b>Visits</b> |
|--|---------------|
| Total Estimated Site Visits            | 2,793         |
| Day Use Developed Site Visits          | 758           |
| Overnight Use Developed Site Visits    | 439           |
| General Forest Area Visits             | 1,108         |
| Designated Wilderness Visits           | 488           |
| Total Estimated National Forest Visits | 2,453         |
| Special Events and Organized Camp Use  | 74            |

14 Source: USFS 2007.

1 The activity most likely to be impacted by the designation of critical habitat is OHV use. OHV  
2 use is authorized on certain roads that pass near proposed critical habitat in Coronado National  
3 Forest, especially in units 2, 3, and 5. As displayed in the above Table 3.10, all of the Coronado  
4 NF recreational areas are within or adjacent to units 2, 3, and 5. Most of the proposed habitat  
5 segments receive relatively low-level recreational use because of their remoteness and/or  
6 difficult terrain. Many of these roads are used primarily to access dispersed camping (USFS  
7 2011).

8 There have been no previous consultations on Travel Management Plan actions involving the  
9 jaguar in Coronado National Forest, although changes to these plans are among actions that  
10 could trigger future consultations, regardless of whether critical habitat is designated. The U.S.  
11 Forest Service actively manages for the jaguar, and its designation of roads and trails is done  
12 within the context of its efforts to protect sensitive habitat (Service 2005).

13 On the single NWR within proposed critical habitat (the Buenos Aires NWR, in Pima County,  
14 AZ), popular recreation activities include camping, picnicking, mountain biking, horseback  
15 riding, hiking, and backpacking. Motorized vehicles are restricted to roadways. Hunting is  
16 permitted on approximately 90 percent of the refuge and is subject to both Refuge and Arizona  
17 State Hunting Regulations. Recreational uses in the NWR will likely increase with population  
18 growth in southern Arizona and in light of the stated goal of the 2003 Comprehensive  
19 Conservation Plan (CCP) to provide safe, accessible, high-quality wildlife-dependent  
20 recreational opportunities. Specific objectives in the CCP include:

- 21 • Implement Brown Canyon Visitor Center improvements to serve 2,000 existing visitors and  
22 2,000 new visitors and meet watchable wildlife, photography, and public recreation  
23 interpretation objective levels.
- 24 • Provide 12 volunteer/research facilities on the Refuge to attract qualified and competent  
25 volunteers/researchers important to carrying out various Refuge programs.
- 26 • Provide a shuttle service for approximately 16 persons into Brown Canyon to preserve the  
27 uniqueness of the area and maintain the wildland/wildlife experience for visitors.
- 28 • Improve the Brown Canyon road for public and administrative access.
- 29 • Improve the Refuge Visitor Center facilities and roads to more efficiently meet the needs of  
30 35,000 existing visitors and 20,000 new visitors annually (Service 2002).

31 The NPS manages the Coronado National Memorial in the southeast section of Unit 3.  
32 Recreational activities at the 1,922-ha (4,750 ac) Coronado National Memorial include auto  
33 touring, birding, caving, hiking, picnicking, and wildlife viewing. The scenic overlook,  
34 Montezuma Pass, is a three-mile drive from the visitor center. Visitors can hike from the  
35 Montezuma Pass to Coronado Peak (1.6 km/1 mi round trip). Additional trails include Joe's  
36 Canyon (5 km/3.1 mi each way) and Yaqui Trail (6.4 km/4 mi round trip). History and nature  
37 programs and tours of Coronado Cave are available, as are picnic sites. No hunting is allowed in  
38 this park (NPS 2012). In 2010, there were 136,284 total recreation visitors to the Coronado  
39 National Memorial (NPS 2010).

40 BLM lands include the Baboquivari and Coyote Wilderness areas in Subunit 1a (Service 2012c).  
41 The 2012 Draft Baboquivari-Coyote Wilderness Area Management Plan proposes to “provide  
42 for dispersed recreation use and wilderness preservation by maintaining appropriate signage, trail

1 maintenance, and regular BLM, or other authorized, wilderness patrol” as a primary objective.  
2 Currently, legal public access to the wilderness areas has not been obtained.

### 3 *Hunting*

4 Maintaining an adequate supply of prey species is an important component of jaguar habitat and  
5 contributes to its recovery. Maintaining adequate levels of native prey species, including deer  
6 and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits, is  
7 listed as a PCE of jaguar critical habitat. Home ranges of the jaguar need to provide available  
8 prey and sites for resting that are removed from the impacts of human activity and influence (77  
9 FR 50213-50242). Illegal hunting activities that decrease native prey species for the jaguar  
10 could adversely affect critical habitat. Hunting is not allowed on the NPS’s Coronado National  
11 Memorial, but it is allowed at Fort Huachuca, and on BLM land, USFS land, and the Buenos  
12 Aires NWR. While hunting activities on BLM land, Coronado National Forest, Fort Huachuca,  
13 and Buenos Aires NWR could be subjected to additional regulation to protect the jaguar critical  
14 habitat PCE of containing adequate levels of native prey species, it is not anticipated that this  
15 will occur because wildlife management agencies in Arizona and New Mexico have a history of  
16 effective game management strategies resulting in prey species’ persistence within these areas  
17 (77 FR 50228).

18 All individuals hunting on Fort Huachuca must obtain all licenses, stamps, and tags required by  
19 the AGFD, as well as have a hunting permit from the Fort. All hunters on the Fort must review  
20 jaguar identification guidelines and follow all state and Federal laws (U.S. Army 2009).

21 Hunting is allowed on all Federal lands managed by the BLM and the USFS in New Mexico and  
22 Arizona, unless specifically prohibited. There are three main types of hunting available in New  
23 Mexico, upland game bird, small game, and big game (for example, deer, antelope, and elk).  
24 Varmint (non-game) hunting is also allowed. Big game hunting for mule deer, wild turkey,  
25 pronghorn, and bighorn sheep occurs each year in Arizona. All regulations set by the New  
26 Mexico’s Department of Game and Fish and AGFD must be followed (BLM 2011d; BLM  
27 2011e).

28 Hunting is allowed on approximately 90 percent of the Buenos Aires NWR. In addition to all  
29 Arizona State Hunting Regulations, there are several Refuge-specific regulations that are in  
30 effect and must be followed (Service 2013). In the Baboquivari and Coyote Wilderness areas in  
31 Arizona, hunting is regulated by the AGFD, whose regulations include a special provision  
32 allowing the use of hunting dogs in these areas (BLM 2012c).

### 33 *Previous Consultations*

34 The Biological and Conference Opinion on the Continued Implementation of the Land and  
35 Resource Management Plans for the Eleven National Forests and National Grasslands of the  
36 Southwestern Region concludes that continued implementation of the Standards & Guidelines  
37 (S&G) within the Coronado NF, as amended, may affect, but is not likely to adversely affect, the  
38 jaguar. Among those reasons:

- 39 • Low total miles and a low road density standard, which is beneficial to large carnivores such  
40 as the jaguar.

- 1 • The Coronado NF is a long standing member of the Jaguar Conservation Team (although this  
2 team has not met since February 2009), and the Coronado NF participates in the jaguar  
3 survey and monitoring project along the International Border with Mexico (Service 2005).  
4 The 2002 BO for implementation of the Buenos Aires NWR CCP concurs with the Refuge's  
5 determination that the CCP may affect, but is not likely to adversely affect, jaguar (Service  
6 2002).

### 7 **3.11.2 Environmental Consequences**

#### 8 **3.11.2.1 No Action Alternative**

9 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
10 section 7 consultation process would continue as presently conducted for proposed actions with a  
11 Federal nexus, but without analysis of destruction or adverse modification of habitat. Those  
12 actions that could have impacts on recreational resources include hunting and OHV use, and  
13 residential, commercial, and road development, respectively. Such consultations would analyze  
14 relevant travel, economic, and recreation management plans on Federal lands currently occupied  
15 by the species. As they relate to recreational resources, such consultations would likely include:

- 16 • National Park Service—for general management plan, recreation management, travel  
17 management;  
18 • U.S. Bureau of Land Management—for land and resource management plans, recreation  
19 development;  
20 • U.S. Forest Service—for travel and forest plans; and  
21 • U.S. Fish and Wildlife Service—NWR planning.

22 The conservation measures implemented as a result of section 7 consultations on survival of the  
23 species under the No Action Alternative may prompt specific modifications to recreation  
24 opportunities. However, this alternative would not add any recreational impacts beyond those  
25 conservation measures or project modifications resulting from the listing of the jaguar and  
26 associated requirements of section 7 of the ESA.

#### 27 **3.11.2.2 Alternative A**

28 Given the secretive and transient nature of the jaguar, Federal land managers currently take steps  
29 to protect the jaguar even without critical habitat in proposed areas considered by the Service to  
30 be both occupied and unoccupied at the time of listing. Therefore, the Service does not  
31 anticipate that designation of critical habitat would result in consultations that would not  
32 otherwise take place for jeopardy analysis in all proposed areas. However, compared to No  
33 Action Alternative, the Alternative A (all proposed units, no exclusions) would result in (1) a  
34 small but unknown number of reinitiated consultations for actions potentially affecting  
35 recreation, based solely on the presence of designated critical habitat and (2) the addition of an  
36 adverse modification of critical habitat analysis to section 7 consultations for the jaguar in  
37 critical habitat.

1 *Reinitiated Consultations*

2 Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the  
3 species, current activities and activities that would trigger consultation for critical habitat are  
4 largely the same. Based on previous activity within designated units, such project proponents  
5 could include the BLM and the State of Arizona if it receives Federal funds for conservation or  
6 restoration of state-owned lands.

7 As it relates to recreational resources, reinitiated consultations could include:

- 8 • Road/highway construction—U.S. Department of Transportation;
- 9 • Actions on recreation lands—U.S. Bureau of Land Management; U.S. Fish & Wildlife  
10 Service; and
- 11 • Mining—U.S. Forest Service.

12 Consultations for critical habitat may also result in the establishment of reasonable and prudent  
13 alternatives and other conservation measures designed to maintain the jaguar PCEs.  
14 Conservation measures may adversely affect recreational opportunities where they overlap with  
15 critical habitat, primarily by limiting the activities such as OHV use in the Coronado National  
16 Forest and hunting in the Buenos Aires NWR. Conservation measures may also include  
17 restrictions on constructing recreational facilities in or near critical habitat to reduce impacts  
18 from construction, maintenance, and use by recreationists. A potential benefit of increasing  
19 section 7 consultations for recreation-related activities would be maintenance of jaguar PCEs  
20 through conservation measures within designated critical habitat. The conservation of habitat  
21 values that would result may benefit such recreational activities as birding, wildlife viewing,  
22 photography, and day hiking.

23 *Addition of Adverse Modification Analysis to Future Consultations*

24 The consultation analyses for effects on a listed species and effects on critical habitat are similar  
25 in many respects and are parallel processes because the health of a species cannot be  
26 disassociated from the health of its habitat. The outcomes of these future consultations would  
27 depend on the details of project proposals and the analysis of effects, which are unknown at this  
28 time.

29 While hunting activities on BLM land, Coronado National Forest, Fort Huachuca, and Buenos  
30 Aires NWR could be subjected to additional regulation to protect the jaguar critical habitat PCE  
31 of containing adequate levels of native prey species, including deer and javelina, as well as  
32 medium-sized prey such as coatis, skunks, raccoons, or jackrabbits, it is not anticipated that this  
33 will occur because wildlife management agencies in Arizona and New Mexico have a history of  
34 effective game management strategies resulting in prey species' persistence within these areas  
35 (77 FR 50228).

36 The additional time needed to complete consultations that would have only considered effects on  
37 the species, would increase administrative costs to the Service and to the action agencies.  
38 Implementing conservation measures resulting from those additional consultations would also  
39 increase costs for action agencies. Outcomes of consultations for critical habitat could also  
40 include reasonable and prudent alternatives and other conservation measures designed to  
41 maintain jaguar PCEs. These outcomes cannot be predicted precisely; however, based on past

1 consultations, types of additional management actions that may be triggered include, but are not  
2 limited to:

- 3 • Revising/drafting resource and habitat management plans;
- 4 • Mapping, surveying, and monitoring jaguar habitat and preparing survey and monitoring  
5 reports;
- 6 • Limiting construction of fencing in jaguar habitats or in areas where fences are likely to  
7 impact jaguar habitat;
- 8 • Limiting roadway widening and construction projects;
- 9 • Limiting the construction of new powerlines and pipelines;
- 10 • Limit predator control activities, including snares for mountain lions, which pose a potential  
11 threat to jaguars; and
- 12 • Maintenance of water sources and dense riparian areas.

13 Based on previous conservation measures that have addressed recreational opportunities on BLM  
14 land, Coronado National Forest, Fort Huachuca, and Buenos Aires NWR (see Previous  
15 Consultations above), there could potentially be minor adverse impacts from critical habitat  
16 designation on some recreational opportunities and activities within designated critical habitat  
17 (e.g., OHV use) from the limitations and restrictions imposed on recreational activities to  
18 preserve PCEs. However, other recreational activities and opportunities would be enhanced, and  
19 could benefit from critical habitat designation (e.g., birdwatching, wildlife viewing, day hiking),  
20 because of increased habitat conservation.

21 Both the adverse and beneficial effects of critical habitat designation on recreation-related  
22 activities are expected to be minor because recreational use of most critical habitat areas is light  
23 and (1) new consultations based solely on the presence of designated critical habitat are unlikely,  
24 because land managers are already consulting on jaguar throughout the proposed critical habitat  
25 areas; and (2) the likelihood that reasonable and prudent alternatives developed under the  
26 jeopardy standard would be changed substantially with the addition of critical habitat designation  
27 and application of the adverse modification standard is small.

### 28 **3.11.2.3 Alternative B**

29 For Alternative B (proposed units minus Tohono O’odham lands), the impacts associated with  
30 the designation of critical habitat would be similar to those identified for Alternative A.  
31 Exclusion of the Tohono O’odham lands could reduce the impacts to recreation from of  
32 designation by triggering fewer consultations and therefore reducing administrative costs. The  
33 overall impacts would be still characterized as minor and both beneficial and adverse.

## 34 **3.12 Environmental Justice**

35 As required by Executive Order 12898, an agency action must be evaluated to determine if any  
36 disproportionately high and adverse health or environmental effects would occur on minority or  
37 low-income populations from implementation of the Proposed Action or alternatives.

1 **3.12.1 Existing Conditions**

2 Table 3.12 displays the minority and poverty level populations in counties with proposed critical  
 3 habitat, in comparison to their state levels overall. All four counties containing designated  
 4 habitat have higher concentrations of Hispanics than their respective states overall. Both  
 5 Arizona and New Mexico have slightly higher poverty rates within the counties containing  
 6 designated critical habitat than the state average overall.

7 **Table 3.12. Summary of Minority Populations and Income Statistics in Counties and**  
 8 **States Containing Proposed Critical Habitat for the Jaguar**

| Location          | Total Pop. (2010) | Minority (%) | American Indian and Alaska Native (%) | Black/African American (%) | Asian (%)  | Hispanic or Latino (%) | Median HH Income (2010 dollars) | Poverty Rate (2010) |
|-------------------|-------------------|--------------|---------------------------------------|----------------------------|------------|------------------------|---------------------------------|---------------------|
| <b>Arizona</b>    | <b>6,392,017</b>  | <b>41.3</b>  | <b>4.6</b>                            | <b>4.1</b>                 | <b>2.8</b> | <b>29.6</b>            | <b>\$50,448</b>                 | <b>15.3</b>         |
| Cochise           | 131,346           | 40.0         | 1.2                                   | 4.2                        | 1.9        | 32.4                   | \$44,876                        | 15.7                |
| Pima County       | 980,263           | 44.2         | 3.3                                   | 3.5                        | 2.6        | 34.6                   | \$45,521                        | 16.4                |
| Santa Cruz        | 47,420            | 84.4         | 0.7                                   | 0.4                        | 0.5        | 82.8                   | \$36,519                        | 25.2                |
| <b>New Mexico</b> | <b>2,059,179</b>  | <b>59.3</b>  | <b>9.4</b>                            | <b>2.1</b>                 | <b>1.4</b> | <b>46.3</b>            | <b>\$43,820</b>                 | <b>18.4</b>         |
| Hidalgo           | 4,894             | 58.5         | 0.8                                   | 0.6                        | 0.5        | 56.6                   | \$36,733                        | 22.6                |

9 Sources: U.S. Census Bureau State and County Quickfacts, 2010.

10 **3.12.2 Environmental Consequences**

11 Wherever a Federal agency action may have particular consequences for socioeconomic  
 12 resources or human health and safety, a potential for environmental justice impact could exist.  
 13 As it relates to environmental justice impacts, such actions could involve consultations on:

- 14 • Mining permits and operations;
- 15 • Water Resources development;
- 16 • Recreation Planning (OHV limitations);
- 17 • Border infrastructure and operations;
- 18 • Habitat restoration—stream restoration, vegetation management;
- 19 • Grazing and livestock management; and
- 20 • Construction/development activities—bridges, roads, pipelines.

21 Any environmental justice impacts of such actions would be localized in nature and could be  
 22 addressed by the action agency more effectively at the site-specific level. The potential for  
 23 differential and disproportionate impacts to minority populations or low-income populations  
 24 would increase in those areas where proposed actions are located near individual residential  
 25 communities in which populations of concern for environmental justice effects are found in  
 26 greater numbers. Given the low human populations in designated habitats, and the fact that the  
 27 Service has specifically chosen to avoid designation in developed areas, there would likely be  
 28 few instances where disproportionate natural resource impacts could be created. However, if the

1 Rosemont Copper Mine were to be delayed or terminated, its employment and economic impact  
2 would likely be felt on environmental justice communities within Pima County, which has  
3 34.6% Hispanic population, higher than the Arizona state average of 29.6%.

4 Since no specific projects are mandated or authorized by this designation of critical habitat, and  
5 the designation does not directly restrict land use or land management activities, it is not possible  
6 to predict whether such impacts will in fact occur. However, it is likely that any such impacts  
7 would be at most moderate, in the context of the entire designation, because: (1) the economic  
8 impacts associated with individual relevant projects or actions would of moderate size; and (2)  
9 there would be only a small number of projects throughout the designation which would create  
10 such impacts.

### 11 **3.13 National Security**

#### 12 **3.13.1 Existing Conditions**

13 Five out of six units of proposed critical habitat include areas along the U.S.-Mexico border, all  
14 of which the Service considers to be occupied for the jaguar, except Subunit 1b. Critical habitat  
15 includes nearly 39 miles of U.S.-Mexico border. Border security activities occur in all of these  
16 units (77 FR 50213-50242); however, infrastructure construction is not present throughout these  
17 areas. The border from the Tohono O’odham Nation, Arizona, to southwestern New Mexico has  
18 a mix of pedestrian fence (not permeable to jaguars), vehicle fence (fence designed to prevent  
19 vehicle but not pedestrian entry; it is generally permeable enough to allow for the passage of  
20 jaguars), legacy (older) pedestrian and vehicle fence, and unfenced segments (primarily in  
21 rugged, mountainous areas).

22

23

24 Conservation efforts expected under the baseline are anticipated to occur for jaguar, both as  
25 recommended through section 7 consultation, and otherwise under CBP’s existing best practices  
26 guidelines. Such conservation efforts are likely to include monitoring for jaguars, directing night-  
27 time lighting, limiting public access to new roads, closing old roads, and closing or restoring  
28 unauthorized roads in or near jaguar movement corridors to help offset increase in improved or  
29 new roads at a ratio of 2:1.

30

31

#### 32 *Recent Consultations*

33 There have been two formal consultations for the jaguar since listing pertaining to actions  
34 proposed by the CBP, both of which resulted in a determination of *no jeopardy*. One of these  
35 consultations was the Tucson West Tower Project (part of CBP’s SBInet, with actions proposed  
36 to occur in the Areas of Operations of the Ajo, Tucson, Casa Grande, Nogales, and Sonoita  
37 Stations of the U.S. Border Patrol, Tucson Sector, Arizona (Service 2008). This BO focused on

1 the proposed construction, retrofitting, operation, and maintenance of 56 communication and  
2 sensor towers; the construction of 29 new road segments and repair of 19 roads; the use of  
3 mobile surveillance systems; and the deployment of unattended ground sensors. The other  
4 consultation focused on 31.4 miles of pedestrian fence proposed by the CBP along the U.S.-  
5 Mexico border near Sasabe, Pima County; Nogales, Santa Cruz County; and near Naco and  
6 Douglas, Cochise County (Service 2007b).

### 7 **3.13.2 Environmental Consequences**

8 Actions that could destroy or adversely modify jaguar critical habitat include those that would  
9 permanently sever connectivity to Mexico or within a critical habitat unit such that movement of  
10 jaguars between habitat in the United States and Mexico is eliminated, or those that might reduce  
11 the ability of the habitat to maintain its role as essential to the recovery of the species. In  
12 general, such activities could include building impermeable fences (such as pedestrian fences) in  
13 areas of vegetated rugged terrain, or major road construction projects (such as new highways or  
14 significant widening of existing highways) (77 FR 50213-50242). Under section 102 of the  
15 Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), the Secretary of the  
16 DHS is authorized to waive laws where the Secretary of DHS deems it necessary to ensure the  
17 expeditious construction of border infrastructure in areas of high illegal entry.

18

#### 19 **3.13.2.1 No Action**

20 Under the No Action Alternative, no critical habitat would be designated for the jaguar. The  
21 section 7 consultation process would continue as presently conducted, but without analysis of  
22 destruction or adverse modification of habitat. Section 7 consultations would be initiated only  
23 for actions that *may affect* survival of the jaguar. If DHS chooses to work with the Service to  
24 assess or minimize impacts for activities covered by a waiver, special management  
25 considerations or actions would be applied on a voluntary basis. DHS has taken this approach in  
26 past instances where the Secretary of DHS has utilized the IIRIRA waiver authority. However,  
27 there

28 Therefore, this alternative would not have any impacts on border security activities beyond any  
29 conservation measures or project modifications resulting from the listing of the jaguar and  
30 associated requirements of section 7 of the ESA.

#### 31 **3.13.2.2 Alternative A**

32 There are no known plans to construct additional security fences in the proposed critical habitat  
33 at this time (77 FR 50213-50242). However, if future national security issues require additional  
34 measures and the Secretary of DHS invokes the IIRIRA waiver, the section 7 consultation  
35 process would not be conducted. If CBP chooses to consult with the Service on activities  
36 covered by a waiver, special management considerations could apply on a voluntary basis (77  
37 FR 50213-50242). The introduction of new fencing, other infrastructure, and an increased level  
38 of border security activities within proposed critical habitat for the jaguar could pose a  
39 potentially significant threat to mobility of the species within its range. Such measures may

1 result in changes in human activity level and an increased amount of impermeable fencing.  
2 Jaguars typically require low levels of human activity, development, and infrastructure, and a  
3 high degree of connectivity (77 FR 50213-50242).

4 If CBP chooses to consult with the Service on activities covered by a waiver of the IIRIRA,  
5 Alternative A (all proposed units, no exclusions) could result in (1) a small but unknown number  
6 of reinitiated consultations for fire management actions based solely on the presence of  
7 designated critical habitat and (2) the addition of an adverse modification of critical habitat  
8 analysis to section 7 consultations for the jaguar in critical habitat.

#### 9 *Reinitiated Consultations*

10 Two previous formal consultations for border security activities could be subject to reinitiation  
11 due to the designation of critical habitat. Consideration would be given to whether proposed  
12 actions could constitute adverse modification by severing connectivity to Mexico or within  
13 critical habitat units affected by border security activities, meaning that conservation measures  
14 recommended to avoid destruction or adverse modification of critical habitat may be different  
15 than those resulting from the previous consultations for jeopardy to listed species.

#### 16 *Addition of Adverse Modification Analysis to Future Consultations*

17 The additional consultations to include adverse modification, and the additional time required to  
18 complete consultations that would only have analyzed jeopardy to the species, would increase  
19 administrative costs to the Service and to the action agencies. Implementing conservation  
20 measures resulting from those additional consultations would also increase costs for action  
21 agencies. Outcomes of consultations could also include reasonable and prudent alternatives and  
22 other conservation measures designed to maintain jaguar PCEs. These outcomes cannot be  
23 predicted precisely. However, the two BOs described previously in this section can be used as a  
24 reference to anticipate the likely conservation measures that may be mandated as a result of  
25 future consultations.

26 As described in the 2008 BO on the SBInet Tucson West Tower Project, the CBP offered to  
27 close or restore unauthorized roads to help offset the border-related increase of improved or new  
28 roads at a ratio of 2:1—that is, 2 miles of road closed and/or restored for every 1 mile of road  
29 created or repaired. CBP is currently behind schedule on implementing this conservation  
30 measure for the jaguar.

31 Other conservation measures proposed for implementation in the BOs for the jaguar included  
32 (Service 2007b; Service 2008):

- 33 • Support USFWS in jaguar survey and monitoring efforts and conservation and recovery  
34 measures. Monitoring of jaguars may include a combination of satellite telemetry and  
35 camera survey techniques. Multiple techniques may be used to monitor jaguar habitat;  
36 however, one component of monitoring would likely include an assessment of indirect  
37 effects to jaguar movements and habitat from border traffic in areas where no fence is  
38 installed.
- 39 • Provide information to the USFWS on jaguar sightings obtained through remote video  
40 surveillance (or any other means like direct observation) along the border.

- 1 • Use security lighting for on-ground facilities and equipment that is down-shielded to keep  
2 light within the boundaries of the site.
- 3 • Site, design, and construct towers and related facilities to avoid or minimize habitat loss  
4 within and adjacent to the tower “footprint.” Minimize road access and fencing to reduce or  
5 prevent habitat fragmentation and disturbance.
- 6 • Remove new structures within 12 months of cessation of use. Restore footprint of towers  
7 and associated facilities to natural habitat.
- 8 • Use disturbed areas or areas that will be used later in the construction period for staging,  
9 parking, and equipment storage.
- 10 • Give particular importance to proper design and locating roads such that the potential for  
11 entrapment of surface flows within the roadbed due to grading will be avoided or minimized.  
12 Depth of any pits created will be minimized so animals do not become trapped.
- 13 • Within the designated disturbance area, limit removal of trees and brush in Federally listed  
14 species habitats to the smallest amount needed to meet the objectives of the project.

15 In summary, the effects of critical habitat designation on border security activities are expected  
16 to be minor. The jaguar has been listed since 1972 (37 FR 6476; March 30, 1972), with the final  
17 clarification rule describing the species’ full range published on July 22, 1997 (62 FR 39147);  
18 thus, Federal border security activities have considered the jaguar since its listing. The  
19 incremental administrative costs of considering critical habitat in border security-related  
20 consultations are projected to be \$17,000 in total, or \$1,500 annually (IEc 2013).

21 While conservation measures recommended to avoid destruction or adverse modification of  
22 critical habitat may be different than those resulting from consultations for jeopardy to listed  
23 species, they are unlikely to be necessary based on current and anticipated future activities.

### 24 **3.13.2.3 Alternative B**

25 For Alternative B (proposed units minus exclusions), the impacts associated with the designation  
26 of critical habitat would be the same as those identified for Alternative A. The exclusions are  
27 solely for tribal land associated with the Tohono O’odham Nation. Unit 1 is on the border, so the  
28 TON experiences border security operations within the area that would be excluded under this  
29 alternative. The overall impacts related to border security activities would still be characterized  
30 as minor.

## 31 **Cumulative Impacts**

32 The CEQ regulations define cumulative effects as “the impact on the environment which results  
33 from the incremental impact of the proposed action when added to other past, present, and  
34 reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or  
35 person undertakes such other actions” (40 CFR §1508.7).

36 The following species have critical habitat that overlaps with the jaguar:

- 37 • Chiricahua leopard frog in Units 2, 3, and 5;
- 38 • Sonora chub in Unit 2;
- 39 • Huachuca water-umbel in Unit 3; and

- 1 • Mexican spotted owl in Units 2, 3, and 4a.

2 In the context of critical habitat, cumulative impacts could be created if critical habitat  
3 designations for multiple species affect the same natural and human resources. Actions that  
4 could have cumulative impacts would include: (1) section 7 consultation outcomes and  
5 subsequent effects on other species; (2) the effects of designated critical habitat for other species;  
6 and (3) the effects of land management plans.

7 *Land Use*—The designation of critical habitat would likely result in reinitiated and expanded  
8 consultations, project modifications, and conservation measures based on critical habitat alone.  
9 Critical habitat is designated for other species throughout several of the units proposed as critical  
10 habitat for the jaguar. Chiricahua leopard frog critical habitat occurs in Units 2, 3, and 5, while  
11 critical habitat for the Sonora chub occurs in Unit 2, for the Huachuca water-umbel in Unit 3,  
12 and for the Mexican spotted owl in Units 2, 3, and 4a. All of these units are already being  
13 included in consultations on activities that may adversely impact jaguar, so there would be no  
14 new consultations. However, while some of these areas may have undergone some section 7  
15 consultation for the jaguar, the fact they are now being proposed as critical habitat will require  
16 reevaluation of effects to PCEs for ongoing or not yet completed Federal actions, which then  
17 may require reinitiating consultation. Such consultations will analyze whether or not these  
18 effects lead to destruction or adverse modification of critical habitat. No past species  
19 consultations related to land management projects have resulted in “adverse modification”  
20 findings for jaguar. Based on this consultation history, the Service anticipates that future  
21 consultations for critical habitat would likely result in minor project modifications. Therefore,  
22 when considering other present and future consultations and land management plans, this critical  
23 habitat designation will likely contribute minor cumulative impacts, given the number and nature  
24 of additional project modifications anticipated.

25 *Fish, Wildlife, and Plants*—The designation of critical habitat would result in reinitiated and  
26 expanded consultations, with a limited increase in project modifications and conservation  
27 measures. Based on previous consultation outcomes, additional project modifications would  
28 likely be minor, because habitat issues have been considered in species consultations and  
29 because all proposed units are already being included in consultations on activities that may  
30 adversely impact jaguar. Further, any such modifications or conservation measures to protect  
31 PCEs in critical habitat are likely to benefit native wildlife and vegetation, beyond their direct  
32 benefits to the jaguar. In addition to the protections from other species critical habitat and  
33 consultations, the designation of critical habitat would be expected to produce minor beneficial  
34 cumulative impacts to natural resources.

35 *Fire Management*— Because there are other threatened and endangered species and critical  
36 habitat in the area, Federal FMPs are already required to consult with the Service under the ESA.  
37 Past consultations in the area regarding FMPs included the BLM Arizona Statewide Land Use  
38 Plan Amendment for Fire, Fuels, and Air Quality Management. Designation of critical habitat  
39 would result in some reinitiated and expanded consultations. It is likely that any future  
40 modifications requested on behalf of the proposed critical habitat would have already occurred  
41 based on the presence of critical habitat for species such as the Chiricahua leopard frog,  
42 Sonora chub, Huachuca water-umbel, and the Mexican spotted owl. No previous species  
43 consultations on Federal lands have resulted in determinations of adverse modification,

1 especially because fire management is beneficial to the jaguar. No reasonable or prudent  
2 alternatives have been required for FMPs or activities, though projects have incorporated actions  
3 that help prevent impacts, such as implementing conservation measures for fire management  
4 activities in riparian and aquatic habitats, including maintaining dense, low vegetation in major  
5 riparian or zero-riparian corridors in areas with dense riparian habitats where jaguars may occur.  
6 Such project modifications resulting from the proposed critical habitat designation would not  
7 likely impede the ability of any FMP to achieve its goals. On private and state land, designation  
8 of critical habitat does not limit fire management programs, except where a Federal license,  
9 permit, or funding may be sought or required or collaboration with state and local fire agencies  
10 occur. Therefore, when considered along with past consultation outcomes, this critical habitat  
11 designation would therefore contribute only minor cumulative impacts, given the small number  
12 and limited nature of additional project modifications.

13 *Water Resources*—As stated above in Section 3.5, past BOs on the jaguar have not been  
14 conducted for water-related projects. Future projects that could produce impacts to water  
15 resources would be conducted by agencies with responsibility for collecting, storing, and  
16 transporting water, habitat management, development, and fire management. With the expected  
17 project modifications, these projects are expected to have no more than moderate impacts on  
18 water resources. Therefore, when considering other present and future consultations and land  
19 management plans, this critical habitat designation will likely contribute at most moderate  
20 cumulative impacts, given the relatively small number and limited nature of additional project  
21 modifications anticipated.

22 *Livestock Grazing*—Because there are other threatened and endangered species and critical  
23 habitat in the area, livestock grazing actions with a Federal nexus could trigger consultations for  
24 those species with the Service under the ESA. Past species consultations on Federal land have  
25 resulted in project modifications that have not eliminated or fundamentally changed livestock  
26 grazing, as described above. Future consultations with potential impacts to grazing within  
27 critical habitat areas could be conducted by Federal land managers who grant grazing permits,  
28 and could result in minor project modifications to livestock grazing, as described above and  
29 producing only minor impacts.

30 The Service is aware there may be concerns from private ranchers about the cumulative impact  
31 of this designation on ranching activities. Public comments submitted in response to publication  
32 of the proposed critical habitat designation suggest that the possibility that some ranchers may  
33 withdraw applications for NRCS funding following jaguar critical habitat in order to avoid any  
34 potential obligations to consult with the Service. If this occurred, it could weaken overall  
35 conservation activities on private ranches within designated habitat and produce economic  
36 impacts to ranchers who chose to forego NRCS funding.

37 On some grazing allotments on Federal land, re-vegetating and restoring areas of large-scale  
38 habitat removal or offsetting habitat loss, modification, or fragmentation from agency livestock  
39 grazing actions may be required within habitat that is permanently protected, potentially  
40 impacting private ranchers who hold Federal grazing permits. Recommendations by Federal  
41 agencies to change the permitted or authorized AUMs in jaguar critical habitat areas could result  
42 from multiple considerations, including the jaguar, other endangered species, other regulatory  
43 considerations, current prey availability, general health of the riparian corridor, and weather  
44 conditions. On private land, designation of critical habitat does not limit livestock grazing,

1 except where a Federal license, permit, or funding may be sought or required. Therefore, when  
2 considering future consultations on livestock grazing, this designation will contribute only minor  
3 cumulative impacts given the small number and limited nature of additional project  
4 modifications anticipated and implementation of avoidance measures by the USFS and BLM.

5 *Construction/Development*—Several species have critical habitat that overlaps with the jaguar.  
6 Past species consultations on Federal lands have resulted in project modifications that have not  
7 eliminated or fundamentally changed construction projects. Designation of critical habitat could  
8 result in a small number of new and reinitiated consultations, with project modifications or  
9 conservation measures for construction projects, based on newly proposed critical habitat alone.

10 Therefore, when considering past, present and foreseeable future activities, this critical habitat  
11 designation will contribute only minor cumulative impacts to construction and development  
12 given the limited nature of additional project modifications anticipated.

13 *Tribal Trust Resources*—Cumulative impacts to tribal resources would not occur from adding  
14 the jaguar designation to overlapping critical habitat, as no other critical habitat exists on tribal  
15 lands in Unit 1.

16 *Socioeconomics*—Cumulative socioeconomic impacts could occur from overlapping critical  
17 habitat designations for the Chiricahua Leopard Frog in Units 2,3,and 5; the Sonora chub in Unit  
18 2; the Mexican spotted owl in Units 2,3, and 4a; and the Huachuca water-umbel in Unit 3. These  
19 consist of the accumulated administrative costs of considering additional species in consultations  
20 within these units. Cumulative impacts would be slightly less adverse under Alternative B, due  
21 to the exclusion of tribal lands and associated reduced administrative costs to the Service. The  
22 only major economic activity at potential risk from designation is the Rosemont Copper Mine,  
23 which is the subject of an ongoing section 7 consultation.

24 *Recreation*—The proposed designation could result in additional, minor restrictions to areas  
25 where these previous designations may have already led to limitations on recreational uses.  
26 These cumulative impacts are likely to be negligible, however, because any modifications or  
27 conservation measures recommended for the jaguar in these units would likely already be  
28 recommended to avoid adverse species impacts.

29 *Environmental Justice*—It is likely that any environmental justice impacts would be at most  
30 moderate because the economic impacts associated with individual projects or actions (e.g.,  
31 Rosemont Copper Mine) would be themselves moderate, and there would be only a small  
32 number of projects throughout the designation that would create such impacts. Given that  
33 incremental impact from the proposed designation would likely be moderate, the cumulative  
34 impacts, when considering past, present, and reasonably foreseeable future actions, would  
35 likewise be expected to be moderate, at most. If the Rosemont mine goes forward, the  
36 environmental justice impact of this designation, and thus its cumulative impact, will be  
37 negligible.

38 *Mining*—Mining activities proposed in critical habitat units are within Unit 3, and are or will be  
39 subject to consultation on the jaguar regardless of designation. A formal consultation has been  
40 completed for the proposed Rosemont Mine, planned in Unit 3. This section 7  
41 consultation evaluated effects to the jaguar (and other species) and jaguar critical habitat,. Such

1 consultations would analyze whether or not these effects lead to destruction or adverse  
2 modification of critical habitat in the form of severing connectivity with Mexico or within a  
3 critical habitat unit or degrading any PCEs to the point of causing adverse modification.  
4 Additionally, Unit 3 contains designated critical habitat for several other species: the Chiricahua  
5 leopard frog, the Huachuca water-umbel, and the Mexican spotted owl. The critical habitat  
6 designation for the jaguar will likely contribute only minor cumulative impacts, given the small  
7 number and limited nature of additional project modifications anticipated.

8 *National Security*—The designation of critical habitat could likely result in reinitiated and  
9 expanded consultations, project modifications, and conservation measures based on critical  
10 habitat alone. Additionally, critical habitat is designated for other species throughout several of  
11 the units proposed as critical habitat for the jaguar. Chiricahua leopard frog critical habitat  
12 occurs in Units 2, 3, and 5, while critical habitat for the Sonora chub occurs in Unit 2, for the  
13 Huachuca water-umbel in Unit 3, and for the Mexican spotted owl in Units 2, 3, and 4a. All  
14 proposed critical habitat units include areas, which provide connectivity to Mexico and thus are  
15 subject to potential border-related activities (particularly in Units 3, 5, and 6). Based on this  
16 consultation history, the Service anticipates that future consultations for critical habitat would  
17 likely result in minor project modifications. Therefore, when considering other present and  
18 future consultations and land management plans, this critical habitat designation will likely  
19 contribute minor cumulative impacts, given the number and nature of additional project  
20 modifications anticipated.

## 21 **Relationship Between Short-Term and Long-Term Productivity**

22 Proposed designation of critical habitat is a programmatic action that would not impact short-  
23 term or long-term productivity.

## 24 **Irreversible and Irretrievable Commitment of Resources**

25 NEPA requires a review of irreversible and irretrievable effects that result from the Proposed  
26 Action. Irretrievable effects apply to losses of use, production, or commitment of non-renewable  
27 natural resources caused by the action. Irreversible effects apply primarily to the use of non-  
28 renewable resources, such as minerals or cultural resources, or to those resources that are only  
29 renewable over long periods of time, such as soil productivity and forest health. Irreversible  
30 effects can also include the loss of future opportunities in the area of impact. The types of  
31 impacts caused by the designation of critical habitat for the jaguar—new, reinitiated, and  
32 expanded consultations, additional conservation measures, and potential project modifications—  
33 would not result in lost production or use of non-renewable natural resources. There would be  
34 no loss of future opportunities resulting from designation of critical habitat, because designation  
35 does not limit activities on private land that are not authorized, funded, or permitted by a Federal  
36 agency.

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1 **CHAPTER 4**  
2 **ANALYSIS OF SIGNIFICANCE**

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3 The primary purpose of preparing an EA under NEPA is to determine whether a proposed action  
4 would have significant impacts on the human environment. If significant impacts may result  
5 from a proposed action, then an environmental impact statement is required (40 CFR §1502.3).  
6 Whether a proposed action exceeds a threshold of significance is determined by analyzing the  
7 *context* and the *intensity* of the proposed action (40 CFR §1508.27).

8 Context refers to the setting of the proposed action and potential impacts of that action. The  
9 context of a significance determination may be society as a whole (human, national), the affected  
10 region, the affected interests, or the locality. Intensity refers to the severity of the impacts.

11 Under regulations of the Council of Environmental Quality (CEQ), which is responsible for  
12 ensuring compliance with NEPA, intensity is determined by considering 10 criteria (CFR 40  
13 §1508.27[b]): (1) beneficial and adverse impacts; (2) the degree of impacts on health and safety;  
14 (3) impacts on the unique characteristics of the area; (4) the degree to which the impacts would  
15 likely be highly controversial; (5) the degree to which the proposed action would impose unique,  
16 unknown, or uncertain risks; (6) the degree to which the proposed action might establish a  
17 precedent for future actions with significant effects or represent a decision in principle about a  
18 future consideration; (7) whether the proposed action is related to other actions, which  
19 cumulatively could produce significant impacts; (8) the degree to which the proposed action  
20 might adversely affect locales, objects, or structures eligible for listing in the NRHP; (9) the  
21 degree to which the proposed action might adversely affect an endangered or threatened species  
22 or its habitat, as determined to be critical under the ESA of 1973; and (10) whether the proposed  
23 action threatens a violation of Federal, state, or local law.

24 The context of short- and long-term impacts of the proposed designation of jaguar critical  
25 habitat includes areas that encompass parts of three counties within Arizona and one in New  
26 Mexico. Impacts of critical habitat designation at these scales would be minor.

- 27 1. *Potential impacts to environmental resources, both beneficial and adverse, would be*  
28 *minor or moderate in all cases.* Analyses of impacts of critical habitat designation on  
29 sensitive resources within areas proposed as jaguar critical habitat were conducted and  
30 discussed in Chapter 3 of this EA, and it was concluded that designation of critical habitat  
31 would have both adverse and/or beneficial impacts on those resources. None of the  
32 specific resource or activity analyses found that the adverse impacts of critical habitat  
33 designation would be significant.
- 34 2. *There would be no or negligible impacts to public health or safety from the proposed*  
35 *designation of critical habitat.* Impacts of wildland fire on public health and safety were  
36 determined to be minor, as wildland fire suppression and wildland fire management  
37 within WUI areas would not be significantly impeded by the designation of critical  
38 habitat. The designation would not create or lead to additional mining operations, or the  
39 deposition of pollutants to the air or water. Border enforcement activities would still be  
40 conducted within proposed critical habitat, pursuant to section 102 of the IIRIRA, under  
41 which the Secretary of the DHS is authorized to waive laws where the Secretary of DHS

1 deems it necessary to ensure the expeditious construction of border infrastructure in areas  
2 of high illegal entry.

3 3. *Impacts on unique characteristics of the area would be negligible.* There are no  
4 designated Wild and Scenic River segments within the proposed critical habitat  
5 designation. There are designated Wilderness Areas within the proposed units; activities  
6 proposed by the Federal land managers in these areas would only be those specifically  
7 intended to improve the health of these ecosystems, and thus they would be anticipated to  
8 help recover or sustain the PCEs along these segments. Therefore any adverse impacts to  
9 critical habitat would be negligible at most.

10 4. *Potential impacts to the quality of the environment are not likely to be highly*  
11 *controversial.* Impacts are not likely to be highly controversial because, as the analysis  
12 of impacts of critical habitat designation has concluded, the quality of the environment  
13 would not be significantly modified from current conditions. This analysis was based  
14 on past consultations, past impacts of jaguar conservation on activities within the jaguar  
15 recovery area, and the likely future impacts from jaguar conservation. Past section 7  
16 consultations within designated critical habitat would likely be re-initiated. New  
17 activities could result in section 7 consultations. New consultations in unoccupied  
18 jaguar territories could be triggered. A number of activities, including wildland fire, fire  
19 management, and recreation could have jaguar conservation-related constraints or  
20 limitations imposed on them, although such measures would likely be the same as those  
21 under jeopardy consultations for the species.

22 Impacts to water management and resource activities are not expected to be  
23 controversial because, as discussed in the analysis of impacts on water resources, the  
24 constraints on current water management activities are expected to be limited.

25 It is also noted here, however, that designation of critical habitat for the jaguar has been  
26 historically subject to controversy, as described in Section 1.1. Most recently, on March  
27 30, 2009 the United States District Court for the District of Arizona issued an opinion  
28 that set aside the Service's previous prudency determination and required a new  
29 determination as to "whether to designate critical habitat," i.e., whether such designation  
30 is prudent, by January 8, 2010. On January 13, 2010, the Service published a notice of  
31 determination that reevaluated the previous "not prudent" finding regarding critical  
32 habitat designation for the jaguar and provided the information supporting the previous  
33 findings (75 FR 1741). As a result, the Service determined that the designation of critical  
34 habitat for the jaguar would be beneficial. On October 18, 2010, the Service sent a letter  
35 to the Center for Biological Diversity and Defenders of Wildlife updating them on its  
36 process of developing a recovery plan and critical habitat for the jaguar.

37 The Service believes that, based on the analysis in this Environmental Assessment, the  
38 likely impacts of the proposed designation would not be highly controversial. The  
39 Service understands that, given the prior history of designation, some level of controversy  
40 may result, especially if the outcome of the Service's consultation on the Rosemont  
41 Copper Mine leads to significant delays, re-evaluation, or termination of the project.

42 5. *The impacts do not pose any uncertain, unique, or unknown risks.* Past section 7  
43 consultations within proposed designated critical habitat would likely be reinitiated. New  
44 activities in unoccupied areas would result in section 7 consultations. Conservation

1 constraints or limitations related to proposed designated critical habitat would be similar  
2 to those imposed from species-related constraints.

3 6. *The designation of critical habitat by the Service for the conservation of endangered*  
4 *species is not a precedent-setting action with significant effects.* The agency has  
5 designated critical habitat for numerous other species.

6 7. *There would not be any significant cumulative impacts* because, as described above in  
7 Section 3, the cumulative impacts would be limited to section 7 consultation  
8 outcomes and subsequent effects on other species, the effects of designated critical  
9 habitat for other species, and the effects of land management plans.

10 8. *This critical habitat designation is not likely to affect sites, objects, or structures of*  
11 *historical, scientific, or cultural significance.* The proposed designation would not  
12 result in any ground-disturbing activities that have the potential to affect archeological or  
13 other cultural resources. There are several NRHP-listed historical sites within, or within  
14 close range of, critical habitat units, but they are human-built structures which the  
15 proposed designation specifically avoids. Potential conservation measures or project  
16 modifications to protect critical habitat PCEs would not modify or pose risk of harm to  
17 any historic properties listed in or eligible for the NRHP.

18 9. *The proposed designation of critical habitat for jaguar would have long-term, beneficial*  
19 *effects for this endangered subspecies.* The purpose of the Proposed Action is to  
20 designate critical habitat for the jaguar, listed as endangered under the ESA. Critical  
21 habitat designation would have long-term, beneficial, conservation-related impacts on  
22 jaguar survival and recovery through maintenance of PCEs.

23 10. *Proposed critical habitat designation would not violate any Federal, state, or local laws.*  
24 This designation of critical habitat was agreed to pursuant to a Court opinion that the  
25 Service needed to reevaluate the previous “not prudent” finding regarding critical habitat  
26 designation.

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1 **CHAPTER 5**  
2 **PREPARERS AND CONTRIBUTORS**

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3 This EA was prepared by Mangi Environmental Group under contract to the U.S. Fish and  
4 Wildlife Service, Region 2. The economic analysis was prepared by Industrial Economics, Inc.,  
5 under contract to U.S. Fish and Wildlife Service, Washington Office.

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