

**U.S. FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS FISH AND WILDLIFE OFFICE**

**ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR
124 OAHU SPECIES**



Trematolobelia singularis

Draft – February 2012

TABLE OF CONTENTS

INTRODUCTION AND REPORT ORGANIZATION	5
PART I ECONOMIC ANALYSIS OF PROPOSED CRITICAL HABITAT DESIGNATION FOR 123 OAHU SPECIES	6
CHAPTER 1 BACKGROUND	6
CHAPTER 2 FRAMEWORK	6
CHAPTER 3 PREVIOUS ECONOMIC ANALYSES OF CRITICAL HABITAT DESIGNATIONS ON OAHU	7
3(a): Methodology	7
3(b): Water Resources Considerations	7
CHAPTER 4 OAHU ELEPAIO CRITICAL HABITAT RULE	8
4(a): Proposed Critical Habitat	8
4(b): Draft Economic Analysis	8
4(c): Economic Analysis Addendum	10
4(d): Critical Habitat Designation	11
CHAPTER 5 2003 CRITICAL HABITAT DESIGNATION FOR 99 OAHU PLANTS	11
5(a): Proposed Critical Habitat	11
5(b): Draft Economic Analysis	11
5(c): Economic Analysis Addendum	13
5(d): Critical Habitat Designation	14
CHAPTER 6 12 HAWAIIAN PICTURE-WING FLY SPECIES CRITICAL HABITAT	15
6(a): Proposed Critical Habitat	15
6(b): Draft Economic Analysis	15
6(c): Final Economic Analysis	16
6(d): Critical Habitat Designation	17
6(e): Economic Analysis Addendum	17
CHAPTER 7 ECONOMIC IMPACT IN OVERLAP AREAS	17
7(a): Percent Overlap	17
7(b): Primary Constituent Elements, Part I	18
CHAPTER 8 PREVIOUSLY PREDICTED ECONOMIC IMPACTS	19
8(a): Section 7 Consultation Costs	19
8(a)(i): Formal Section 7 Consultations on Critical Habitat	19
8(a)(ii): Informal Consultations on Critical Habitat	20

	8(b): Land Reclassification	20
	8(c): Preservation and Watershed Management	21
CHAPTER 9	ECONOMIC IMPACTS IN NON-OVERLAP AREAS	22
	9(a): Land Classification and Development Potential	22
	9(b): Section 7 Consultation History	25
CHAPTER 10	OAHU WATER RESOURCE USE AND CRITICAL HABITAT	25
	10(a): Proposed Damselfly Critical Habitat	26
	10(b): Water Management Structures and Their Regulation	27
	10(b)(i): Waiahole Ditch Irrigation System	28
	10(b)(ii): Waimanalo Irrigation System	28
	10(b)(iii): Waihawa Irrigation System	28
	10(c): Previous Analyses of Water Resources and Critical Habitat	31
	10(c)(i): Newcomb's Snail	32
	10(c)(ii): 83 Kauai Plants	32
	10(c)(iii): 48 Species on Kauai	33
CHAPTER 11	SUMMARY OF ECONOMIC IMPACTS OF THE PROPOSED DESIGNATION OR REVISION OF CRITICAL HABITAT FOR 123 SPECIES ON OAHU	33
	11(a): Economic Impacts in Terrestrial Habitat	33
	11(b): Economic Impacts in Aquatic Habitat	34
CHAPTER 12	COSTS RELATED TO CONSULTATIONS FOR PITTMAN ROBERSON ACT FUNDING	35
CHAPTER 13	COSTS TO SMALL ENTITIES	35
	14(a): Regulatory Flexibility Analysis	35
REFERENCES	REFERENCES CITED – PART I	108
PART II	ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR 24 SPECIES AT KALAELOA, OAHU	38
EXECUTIVE SUMMARY		40
CHAPTER 1	BACKGROUND	43
CHAPTER 2	ANALYTICAL FRAMEWORK	43
	2.1: Overview	43
	2.2: Categories of Economic Effects	43

	2.2.1 Economic Efficiency Effects	43
	2.2.2 Distributional Effects	44
	2.2.3 Analytical Framework Followed to Estimate Economic Impacts	45
	2.3: Federal Nexus	47
	2.4: Other Existing Statutes and Programs	48
	2.4.1 Hawaii Revised Statute 195.D	48
	2.5: Kalaeloa Consultation History	48
	2.6: Threats to Critical Habitat and Special Management Considerations	51
	2.6.1 Commonly Recommended Conservation Measures	51
	2.7: Identifying Reasonably Foreseeable Future Land Uses	52
	2.7.1 Data Sources	52
	2.7.1.1 Honolulu Land Information System	52
	2.7.1.2 Kalaeloa Master Plan for Barber's Point	54
	2.7.1.3 Kapolei Area Long Range Master Plan	54
CHAPTER 3	CRITICAL HABITAT DESCRIPTION	56
	3.1: Coastal Unit 13	58
	3.2: Coastal Unit 14	59
	3.3: Lowland Dry Unit 8	61
	3.4: Lowland Dry Unit 9 and Coastal Unit 15	64
	3.5: Lowland Dry Unit 10	67
	3.6: Lowland Dry Unit 11	70
CHAPTER 4	ECONOMIC IMPACTS OF PROPOSED CRITICAL HABITAT DESIGNATION	70
	4.1: Occupied Critical Habitat Units	70
	4.1.1 Administrative Costs	71
	4.1.2 Economic Effects Associated with Future Conservation Measures	73
	4.2: Unoccupied Critical Habitat Units	74
	4.2.1 Administrative Costs	74
	4.2.2 Economic Effects Associated with Future Conservation Measures	76
	4.2.3 Economic Cost of Development Restrictions	77
CHAPTER 5	ECONOMIC BENEFITS	80
APPENDIX	INCREMENTAL EFFECTS MEMO	82
APPENDIX	COSTS TO SMALL ENTITIES	99
APPENDIX	LIST OF OAHU PLANTS IN PROPOSED RULE	110

INTRODUCTION AND REPORT ORGANIZATION

We published a proposed rule to list 23 species as endangered and designate or revise critical habitat for 124 species in the *Federal Register* on August 2, 2011 (76 FR 46362). In that rule, we are proposing to list 20 plants and 3 damselflies endemic to the island of Oahu as endangered. The plants proposed for listing are: *Bidens amplexans* (kookoolau), *Cyanea calycina* (haha), *Cyanea lanceolata* (haha), *Cyanea purpurellifolia* (haha), *Cyrtandra gracilis* (haiwale), *Cyrtandra kaulantha* (haiwale), *Cyrtandra sessilis* (haiwale), *Cyrtandra waiolani* (haiwale), *Doryopteris takeuchii* (no common name (NCN)), *Korthalsella degeneri* (hulumoa), *Melicope christophersenii* (alani), *Melicope hiiakae* (alani), *Melicope makahae* (alani), *Platydesma cornuta* var. *cornuta* (NCN), *Platydesma cornuta* var. *decurrens* (NCN), *Pleomele forbesii* (hala pepe), *Psychotria hexandra* ssp. *oahuensis* (kopiko), *Pteralyxia macrocarpa* (kaulu), *Tetraplasandra lydgatei* (ohe), and *Zanthoxylum oahuense* (ae). The damselflies proposed for listing include the blackline, crimson, and oceanic Hawaiian damselflies (*Megalagrion nigrohamatum nigrolineatum*, *Megalagrion leptodemas*, and *Megalagrion oceanicum*). We also propose to designate critical habitat for these 23 species, to designate critical habitat for 2 plant species that are already listed as endangered, and to revise critical habitat for 99 plant species that are already listed as endangered or threatened (see Appendix). The proposed rule provides additional information regarding the critical habitat designation under consideration.

The proposed critical habitat designation totals 43,491 acres (ac) (17,603 hectares (ha)). Approximately 93 percent (40,447 ac (16,341 ha)) of the proposed designation overlaps with critical habitat previously designated for the Oahu elepaio, 99 plants, and 6 Hawaiian picture-wing fly species on the island of Oahu; 3,044 ac (1,230 ha) do not overlap. Of the 3,044 ac (1,230 ha) that do not overlap with previously designated critical habitat, 2,478 ac (1,001 ha) are largely unsuitable for development and most economic activities because of their rugged mountain terrain, lack of access, and remote location. Existing land-use controls also limit development and most other activities in the mountainous areas of Oahu, including these 2,478 ac (1,001 ha) proposed as critical habitat. The remaining 566 ac (229 ha) of non-overlapping proposed critical habitat are on Oahu's southwestern coast, at Kalaeloa (Barber's Point). Currently the Kalaeloa area consists of heavily industrialized areas interspersed with open areas, an airport, a harbor, and other commercial enterprises. For the most part, the proposed area is largely undeveloped, however with the closure of the Naval Air Station Barber's Point, Kalaeloa is slated for future development under the Kalaeloa Master Plan for Barber's Point Area and the Kapolei Area Long Range Master Plan. Therefore, we conducted a separate and more detailed economic analysis for proposed critical habitat in this area because of community, public and private interests in the redevelopment of Kalaeloa.

This report is composed of two parts: Part I is the economic analysis of the proposed critical habitat designation or revision for 123 Oahu species on Oahu, excluding the 566 ac (229 ha) at Kalaeloa. Part II is the economic analysis of the proposed critical habitat designation for 24 Oahu plant species over the 566 ac (229 ha) at Kalaeloa. This report is available by mail from the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, 300 Ala Moana Boulevard, Room 3-122, Box 50088, Honolulu, HI 96850, and on the internet at <http://www.fws.gov/pacificislands/species.html>, and on <http://www.regulations.gov>.

PART I
ECONOMIC ANALYSIS OF PROPOSED CRITICAL HABITAT DESIGNATION
FOR 123 OAHU SPECIES

1 BACKGROUND

Each of the areas proposed to be designated that are occupied by one or more of the 123 species provides the physical or biological features essential to the conservation of the species that occur there, by providing for the successful functioning of the ecosystem on which the species depend. The proposed designation also takes into account any species-specific conservation needs. For example, the presence of a perennial stream is essential for the conservation of the blackline Hawaiian damselfly because of its life history requirements, but is not a requirement shared by all species (e.g., most plant species) within the same ecosystem. The areas believed to be unoccupied are proposed for designation because we believe they are essential for the conservation of the species by providing space for population expansion and recovery.

2 FRAMEWORK

The purpose of this analysis is to estimate the economic impact of this proposed designation of critical habitat. The U.S. Office of Management and Budget's (OMB) guidelines for conducting economic analysis of regulations direct Federal agencies to measure the costs of a regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action." In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation or revision of critical habitat. Impacts that are incremental to that baseline (i.e., occurring over and above existing constraints) would be attributable to the proposed critical habitat designation. Incremental effects of critical habitat designation are determined using the Service's December 9, 2004, interim guidance on "Application of the Destruction or Adverse Modification Standard Under Section 7(a)(2) of the Endangered Species Act" (Act) and information from the Service regarding what potential consultations and project modifications may be imposed as a result of critical habitat designation over and above those associated with listing of a species as endangered or threatened under the Act. The analysis of the potential economic impact of the proposed critical habitat designation is separate from, and cannot be considered in a proposed listing rule, since economics are not a factor considered under section 4(a)(1) of the Endangered Species Act. Economic impacts will be taken into account in determining the final critical habitat designation, in accordance with section 4(b)(2) of the Act.

Three detailed economic analyses of previously proposed critical habitat rules on Oahu have been developed, and three other economic analyses evaluated potential impacts to water resources on other Hawaiian islands, which is an issue being considered in this analysis. Each of these analyses are described below, and were previously made available for public comment. Because of the 93 percent overlap between the proposed critical habitat and the past economic analyses, and the similar nature of potential water resource economic impacts that we believe merit consideration, this analysis draws heavily on the previous economic analyses. Those

studies present economic information and context regarding the regulatory and socio-economic baseline, against which the potential incremental impacts of the proposed designation will be evaluated.

3 PREVIOUS ECONOMIC ANALYSES OF CRITICAL HABITAT DESIGNATIONS ON OAHU

3(a) Methodology

Between 2001 and 2008, critical habitat was designated on Oahu for a bird species, the Oahu elepaio (*Chasiempis sandwichensis ibidis*) (66 FR 63752), 99 plant species (68 FR 35950), and 6 Hawaiian picture-wing fly species (73 FR 73794) (Table 1). An economic analysis was prepared for each of these designations. This analysis:

- summarizes each of the above proposed rules;
- identifies the economic analysis timeframe for the above actions;
- describes land ownership patterns and characteristics considered;
- describes revisions between the draft and final economic analyses and the relevant rationale;
- identifies any 4(b)(2) exclusions and their rationale;
- identifies the types of activities evaluated under each analysis;
- identifies the critical habitat overlap areas for each final rule;
- identifies the special management considerations or protection requirements for each rule; and
- summarizes the final critical habitat designation for each rule.

The previous economic analyses employed different methodologies, costs were projected over different timeframes, and the analysis for the Oahu elepaio used a more qualitative approach than the other studies. In addition, it has been 10 years since the Oahu elepaio analysis was finalized, 8 years since the 99 Oahu plants analysis was finalized, and 3 years since the 6 Hawaiian picture-wing species analysis was finalized. Each of these factors has been taken into account for purposes of this analysis, as have indications that the previous economic analyses appear to have overstated the potential economic impacts for each of the proposed critical habitat designations, since we have no information that many of the potential impacts actually occurred. However, we believe the previous analyses to establish a reasonable framework for estimating probable or reasonably foreseeable economic impacts for purposes of this rule, since approximately 93 percent of the proposed designation overlaps areas previously analyzed. The previous proposed and final critical habitat designations and their related economic analyses are summarized below. The Draft Economic Analyses (DEA) summaries provide the background information, which is followed by a discussion of the Final Economic Analyses (Addendums). The Addendums identify revisions to the DEA based on public comments and other information received during the comment period.

3(b) Water Resources Considerations

The proposed rule includes the designation of critical habitat for three damselfly species (blackline, crimson, and oceanic Hawaiian), each of which requires stream habitat to meet their

life cycle needs. The proposed designation of critical habitat for the damselflies could conceivably affect water diversions, wells, withdrawals, and similar activities. Some stream diversion systems are extensive on Oahu, such as the Waiahole Ditch constructed in the early 1900s. This feature diverts water from 37 streams within the ranges of the damselflies on the windward side of Oahu to the dry plains on the leeward side of the island by way of a tunnel through the Koolau mountain range. The prior analyses did not comprehensively evaluate potential economic impacts to water use, and there is limited information available on the potential direct or indirect costs of critical habitat designation in aquatic areas on Oahu. In order to fully consider probable or reasonably foreseeable economic impacts to water users that could potentially result from the designation, we are seeking public input to ensure the best available scientific and commercial information is considered.

Table 1. Summary of Previous Economic Analyses of Oahu Critical Habitat Designations			
Document	Date Available	Time Frame Evaluated	Acres Evaluated
Oahu elepaio Addendum	September 2001	10 years	65,880
99 Oahu Plants Addendum	March 2003	10 years	55,040
12 Picture-wing Flies Addendum	January 2009	20 years	1,159 (Oahu Units Only)
TOTAL:			122,079

4 OAHU ELEPAIO CRITICAL HABITAT RULE

4(a) Proposed Critical Habitat

On June 6, 2001, we published a proposed rule to designate critical habitat for the Oahu elepaio (a small forest-dwelling bird endemic to Oahu) on 66,354 ac (26,853 ha) (66 FR 30372). Approximately 11,242 ac (4,549 ha) were owned by the Federal government, 25,095 ac (10,156 ha) were owned by the State of Hawaii, 26,030 ac (10,534 ha) were privately-owned, and 3,987 ac (1,613 ha) were owned by the City and County of Honolulu.

4(b) Draft Economic Analysis

On August 6, 2001, we published a Notice in the *Federal Register* announcing the availability of the DEA for the proposed designation (66 FR 40960). The DEA covered a 10-year timeframe, and primarily addressed potential section 7 consultation costs and total costs attributable to critical habitat. Most potential impacts were described qualitatively.

The incremental costs (costs attributable to the designation of critical habitat alone), were primarily related to military lands. For example, the DEA states that anticipated costs related to critical habitat designation would include: (1) expansion in the scope of section 7 consultations to consider impacts of military activities to Oahu elepaio habitat in areas that are not currently occupied, and (2) possible expanded efforts at rodent and fire control within specific areas

including Kawailoa Training Area, Schofield Barracks East Range, and Fort Shafter. Efforts to control threats so the Oahu elepaio could expand into unoccupied areas were expected to be less than \$270,000 per year. The DEA states that the designation would be likely to have little or no impact on live-fire and maneuver training, helicopter training, storage of munitions or any other military activities or operations, assuming adequate wildfire control efforts are implemented (DEA ES-14). The DEA estimates a potential (though unlikely) cost of \$4,000, related to private landowners who may choose to investigate the legal ramifications of their property being designated as critical habitat. The DEA also addresses the differences between costs already attributable to management of elepaio habitat, and those which may be solely attributable to the designation of critical habitat.

The Service provides funding to the Hawaii Department of Land and Natural Resources (DLNR) through the Federal Aid in Wildlife Restoration Act or Pittman-Robertson Act (PRA) programs, which support game and non-game species management activities. Assuming DLNR makes no changes in management to increase game-mammal populations on Oahu, the DEA concludes that the designation of critical habitat for the Oahu elepaio would be expected to have no significant impact related to: (1) the number of consultations with the Service regarding the management of game-mammals, (2) the nature of the consultations, (3) DLNR's game management program, (4) allowable hunting activities, (5) economic activity related to game hunting, (6) the value of game hunting to hunters, (7) the amount of PRA funding provided to the State for wildlife management projects, or (8) wildlife-management projects that are partially funded under the PRA.

The DEA identifies several existing water structures in proposed critical habitat areas, including gauging stations, wells, pumps, and intake systems that divert water from streams, pipelines, and major irrigation ditches. The Waiahole Ditch, which is the largest and most extensive water diversion system on Oahu, was included in the analysis. The Waiahole Ditch and other structures are components of water systems that deliver potable water to homes in many areas of Honolulu, and irrigation water to farms on the north side of Oahu, central Oahu, and Waimanalo, on the northeastern end of Oahu (DEA 2001, p.7-22). While many of the structures are located within proposed critical habitat, the DEA states that the operation and periodic maintenance of these structures would not be subject to section 7 consultation because these actions are funded entirely by the State, City and County of Honolulu, and/or private organizations, and do not have a Federal nexus that would trigger consultation. Therefore, the proposed critical habitat designation likely would have no impact on the operation and maintenance of existing water structures (DEA 2001, p. 7-22). The DEA concludes that any project modifications associated with rebuilding a portion of an existing water system were likely to be modest, in view of the fact that water structures exist in areas having high densities of the Oahu elepaio (DEA 2001, p. 7-23).

The DEA also states future improvements or new construction could be subject to section 7 consultation if there was Federal involvement. Examples could include funding from the US Department of Agriculture (USDA) to share in the cost of rebuilding an irrigation ditch system, or Federal permits under the Clean Water Act for projects that affect streams. The DEA considers the approval of a new ditch system or the expansion of an existing system unlikely, due to the environmental impacts associated with reducing stream flow. Nevertheless, the DEA

predicts that for new water improvements in occupied habitat that have a Federal nexus, section 7 consultations beyond those attributable to listing would not be required. In unoccupied habitat where there are no other listed species, the designation could require consultations to address whether the improvements would impact the primary constituent elements essential to the recovery of the Oahu elepaio (DEA 2001, p. 7-23).

The DEA concludes that the incremental cost of a consultation in unoccupied habitat was expected to range from \$1,000 to \$6,000 for the Service; \$1,300 to \$6,100 for the Federal action agency; and \$1,200 to \$4,100 for a non-Federal applicant (if any) (DEA 2001, p. 7-4).

4(c) Economic Analysis Addendum

The September 2001 Addendum to the Economic Analysis (Addendum), was updated to delete costs related to units or portions of units excluded or modified for biological reasons; 474 ac (192 ha) were removed from the final designation based on new information indicating the areas did not contain the primary constituent elements used to define critical habitat areas. No proposed critical habitat areas were excluded under section 4(b)(2) based on economic impacts.

In the Addendum, the methodology was revised to allow an analysis of the economic impacts (including economic benefits) attributable to the critical habitat designation alone, and those attributable to both listing and the critical habitat designation.

The Addendum concluded that no significant economic impacts were expected from the designation of critical habitat. Few new developments, land uses, or other activities were anticipated because of the mountainous terrain, poor access, and existing zoning restrictions. Further, since there was no Federal nexus for most existing or reasonably foreseeable projects, those activities would not be affected by critical habitat designation. The primary economic impact was predicted to be a small cost associated with an increased number of section 7 consultations in areas that are not currently occupied by the Oahu elepaio, and the time required for their completion. The Addendum identifies a modest economic impact on lands owned or controlled by the Department of Defense related to fire protection, the cost of rodent control, and programmatic consultation costs. If the risk of fire cannot be controlled sufficiently, mitigation may be required, possibly including rodent control (Addendum 2001, p. 7).

The Addendum concludes that the operation and periodic maintenance of existing water structures would not be subject to section 7 consultation, since these activities are funded entirely by the State, City and County of Honolulu, and/or private entities. No consultation or project modification costs were estimated since there would likely be no Federal involvement for the operation, maintenance, or improvements to these manmade facilities (Addendum 2001, p. 13).

The Addendum estimated coextensive costs (those related to both listing and critical habitat designation) of \$365,000 over 10-years for (1) military activities (section 7 consultations, rodent control mitigation, fire control), and (2) \$60,000 for property owner investigations related to the implications of critical habitat on their land. Approximately \$102,000 of the total for military activities, and \$60,000 for property owner investigations was attributable to critical habitat designation (Addendum 2001, pp. 12-14).

4(d) Critical Habitat Designation

On December 10, 2001, we published a final rule designating approximately 65,880 ac (26,661 ha) as critical habitat for the Oahu elepaio (66 FR 63752). Of the lands designated, 10,489 ac (4,245 ha) were owned by the Federal government, 24,821 ac (10,045 ha) were owned by the State of Hawaii, 26,594 ac (10,762 ha) were privately owned, and 3,975 ac (1,609 ha) were owned by the City and County of Honolulu. Approximately 31,527 ac (12,759 ha) (48 percent) of the lands designated for the Oahu elepaio overlaps lands proposed as critical habitat for the 122 Oahu species.

The Oahu elepaio final rule (66 FR 63752; December 10, 2001) addresses comments received related to possible economic impacts to private landowners, and requests for exclusion of particular areas. Although the DEA states that the economic impact of the proposed designation would be minimal in most areas, it did acknowledge moderate impacts in a few areas related to section 7 consultation and military activities. We also received one comment related to the effect of the designation on agricultural resources, particularly the water catchment and distribution facilities of the Waiahole Ditch (which is located within the boundaries of Unit 3). Because the ditch is the sole source of irrigation water for several thousand acres of agricultural land in south-central Oahu, and would require periodic maintenance, the commenter recommended that a corridor be established around the ditch excluding it from critical habitat designation.

Existing man-made features and structures within the boundaries of the critical habitat, such as the Waiahole Ditch, were not included in the designation because they lack the primary constituent elements needed by the Oahu elepaio. In addition, the maintenance of man-made features and structures would only be affected by the critical habitat designation if section 7 consultation were to be triggered and the action may affect the primary constituent elements. After considering all available information, no areas were excluded from critical habitat designation under section 4(b)(2) of the Act, based on economic impacts.

5 99 OAHU PLANTS CRITICAL HABITAT DESIGNATION

5(a) Proposed Critical Habitat

On May 28, 2002, we published a proposed rule to designate critical habitat for 99 plant species on 111,364 ac (45,068 ha) on Oahu (67 FR 37108). Approximately 39,421 ac (15,953 ha) were owned by the State of Hawaii and the City and County of Honolulu, 56,345 ac (22,802 ha) were privately owned, and 15,598 ac (6,312 ha) were owned by the Federal government. Approximately 70 percent of the proposed lands were managed for conservation and/or watershed protection, and 50 percent of the proposed lands overlapped critical habitat designated for the Oahu elepaio.

5(b) Draft Economic Analysis

On December 26, 2002, we published a Notice in the *Federal Register* announcing the

availability of the DEA for the proposed designation of critical habitat for 99 Oahu plant species (67 FR 78763). The DEA evaluated the potential direct and indirect economic impacts associated with the proposed critical habitat designation from 2002 to 2012. Most of the direct impacts estimated relate to consultations under section 7 of the Act and project modifications. Indirect impacts considered included potential effects to property values, potential land reclassification from agriculture or urban uses to conservation use, and economic/social benefits related to ecological improvements.

Categories of potential direct and indirect costs considered were related to: (1) section 7 consultations, including ongoing consultations and technical assistance; (2) modifications to projects, activities, or land uses resulting from the section 7 consultations; and (3) uncertainty and public perceptions resulting from the designation of critical habitat (effects on property values, loss of hunting opportunities, and the interaction of State and local laws). The DEA also considered economic benefits related to critical habitat such as public education. The DEA concludes that the most likely economic effects of the designation would be to activities funded, authorized, or carried out by a Federal agency (direct section 7-related costs).

The DEA stated that for most of the proposed designation and for most activities, the implementation of section 7 would result in minor economic impacts. Most of the proposed lands are unsuitable for development due to the rugged mountainous terrain, lack of access, remote locations, and existing land-use regulations limit new development. Very little new development was anticipated, other than some communication facilities, and possibly a few other small projects.

The few ongoing activities within the proposed critical habitat areas involve the operation and maintenance of man-made features and structures that do not contain the primary constituent elements and accordingly, are not subject to section 7 consultation. Any ongoing and planned projects within the proposed lands that lack Federal involvement would not be affected by the designation; those with Federal involvement were anticipated to be primarily conservation projects subject to a minimal level of informal section 7 consultation effort. The DEA concluded that most anticipated economic impacts would relate to U.S. military project modifications, including the implementation of improved fire and weed control actions to protect critical habitat for the listed plants. The DEA estimated that approximately 15 to 20 percent of total expenditures for fire and weed control actions would be related to critical habitat designation (DEA pp. VI 47-51).

The DEA also presented cost estimates for activities including game management, watershed conservation projects, communications facilities, ranching, and irrigation ditch systems. The DEA estimated total direct costs for section 7 consultations and project modifications over a 10-year period for the plant species listings and critical habitat combined to range between \$1.1 million to \$2.3 million. The DEA estimated direct costs ranging from \$308,000 to \$1.1 million attributable to the critical habitat designation.

The DEA identified a small probability that the designation of critical habitat could result in a reduction in the amount of land available for public hunting and a loss of benefits to hunters, if the State decides to reduce bag limits or changes game management practices. The DEA

stated any closure of hunting lands would only shift how and where funding is spent, and would not represent a loss of funding.

The DEA stated in past section 7 consultations regarding PRA funding, that the Service determined the projects as proposed or with slight modifications were not likely to adversely affect listed species. In the 2001 statewide consultation, the State DLNR withdrew two projects proposed for PRA funding and used non-Federal funds to avoid formal consultation. As a result, section 7 project-modification costs were expected to be modest (DEA 2002, p VI-10). The DEA concluded the probability of a major change in game management on Oahu due to critical habitat designation is low, and the proposed critical habitat designation would be expected to have minor economic impacts related to management of game mammals and DLNR's game mammal hunting program.

The DEA stated the operation and maintenance of existing irrigation ditch systems would not be subject to section 7 consultations because they are man-made features (DEA 2002, pp. VI 33-34). Some existing systems within the proposed critical habitat could undergo major improvements within the next 10 years (e.g., improving a diversion dam, or replacing a high-maintenance flume that crosses a stream with a pipe siphon that is anchored on each side of the stream, etc.). Permits could be required under the Clean Water Act for projects that affected streams, and the State may use Federal USDA funds to repair the Waiahole Ditch. The DEA estimated total ongoing section 7 consultation costs for existing irrigation ditch systems ranging from \$0 to \$39,000, based on 0 to 2 consultations in the following 10 years, which includes costs for two biological surveys over approximately 100 acres (40 ha) (DEA 2002, p. VI 34). Anticipated project modifications and costs were predicted to be minor, and limited to activities in existing irrigation ditch systems. The DEA concluded that as long as projects were planned to avoid impacts to forests and streams (which was likely to be the case), the proposed critical habitat designation would have little or no economic impact (DEA 2002, p. VI-35). For new water improvements, the DEA stated it is highly unlikely that new or expanded ditch systems would be proposed or approved because of direct or indirect stream flow reductions, which would be a major environmental concern (DEA 2002, p. VI-34).

The DEA concluded there was a small probability that critical habitat could result in the loss of communication facilities that could compromise military training, civilian communications, or commercial broadcasting (DEA p. ES-3). It also anticipated there may be some section 7 consultation costs associated with ranching activities for operations that involve grants from the NRCS, loans from the Federal Farm Service Agency (FSA) or other USDA programs, or FSA emergency funding. The DEA stated there may also be minor project modification costs (DEA pp. VI 32-33).

5(c) Economic Analysis Addendum

The March 2003 economic analysis addendum (Addendum) eliminated costs in the DEA related to certain areas in the proposed critical habitat rule that either did not contain the primary constituent elements for the plants, or were not essential for the conservation of the species. The total area was reduced from 111,364 ac (45,067 ha) to 55,040 ac (22,270 ha), a decrease of

56,324 ac (22,974 ha) (49 percent) (Addendum 2003, pp. 1-2). No proposed critical habitat was excluded or modified in the final designation for economic reasons.

For comparative purposes the analysis in the DEA identified two economic scenarios. The first addressed the impact of the proposed critical habitat designation attributable solely to the listing of the species; the second addressed the incremental impact of the proposed designation. Because of the uncertainty about the benefits and economic costs resulting solely from critical habitat designations, the Addendum estimated the economic impacts of the designation by applying only the first scenario.

The analysis in the DEA incorporated two baselines; one that addressed the impact of the proposed critical habitat designation that may be attributable coextensively to the listing of the species, and one that addressed the incremental impact of the proposed designation. The Addendum utilized only the first of the two baselines (DEA Addendum, p. 2). The Addendum estimated that over the next 10 years, the designation (co-occurring with listing in some instances) may result in approximately \$8.3 to \$20.3 million in direct coextensive costs from section 7 consultations and project modifications. This represented an increase over the range of \$1.1 to \$2.4 million in the DEA, primarily due to revised estimates associated with section 7 consultations and project modifications on Army lands. All other direct costs were the same or decreased, due primarily to the removal of several proposed units from the final designation, and the significant reduction in size of several proposed units. Overall, the greatest economic impact would have been to U.S. Army lands proposed as critical habitat; however these lands were removed from the final designation. Accordingly, the direct cost of designating critical habitat for the 99 plant species was considerably less than the costs estimated in the Addendum.

The Addendum included an evaluation of potential indirect costs, which were often unquantifiable and discussed in qualitative terms. Most costs were also predicted to have a low probability of occurrence. The Addendum stated the probability of occurrence would be moderate to high that some, but not all lands within the Urban and Agricultural Districts (UAD) would be reclassified as Conservation lands. It also stated critical habitat designation alone would not prompt the State to propose redistricting, and a number of other factors would be considered, such as the quality of the native habitat, the value of the land as watershed, slopes, wetlands, special streams, scenic and open areas (Addendum 2003, p. 14). No significant economic impacts were anticipated, since the areas that would most likely be reclassified were those with high conservation value and low economic value (not suitable for development). Economic benefits were also described qualitatively because of the lack of quantitative information on the economic benefits of endangered species preservation and ecosystem improvements.

5(d) Critical Habitat Designation

On June 17, 2003, we published a final rule designating 55,040 ac (22,274 ha) as critical habitat for 99 Oahu plant species (68 FR 35950). Of the lands designated, 22,326 ac (9,035 ha) were owned by the State of Hawaii and the City and County of Honolulu, 21,143 ac (8,556 ha) were privately-owned, 5,571 ac (2,255 ha) were owned by the Federal government, and 6,000 ac (2,428 ha) were of unknown ownership. Approximately 37,830 ac (15,309 ha) or 68.7 percent of

the area designated for the 99 Oahu plants overlap lands proposed for critical habitat for the 122 Oahu species.

We received two substantive comments during the public comment period regarding potential effects of the designation on the State Water Code. The commentors were specifically concerned with water rights and the possible impact on existing water diversions or future water diversions. The rule responded the designation would not affect the operation or maintenance of existing irrigation and potable water systems. The rule also acknowledged some economic impacts could occur to future diversion activities; however, future stream diversions would be unlikely because of environmental impacts associated with those activities. The rule also responded to several nonspecific economic comments. After considering all available information, no areas were excluded from critical habitat designation under section 4(b)(2) of the Act based on economic impacts.

6 12 HAWAIIAN PICTURE-WING FLY SPECIES CRITICAL HABITAT

6(a) Proposed Critical Habitat

On November 28, 2007, we published a revised proposed rule to designate critical habitat for 12 Hawaiian picture-wing flies, on the islands of Kauai, Oahu, Maui, Molokai, and Hawaii (72 FR 67248). On Oahu, 1,159 ac (469 ha) was proposed as critical habitat. Of the lands proposed for designation on Oahu, 181 ac (73 ha) were owned by the State of Hawaii, 850 ac (344 ha) were privately owned, and 128 ac (52 ha) were owned by the City and County of Honolulu.

6(b) Draft Economic Analysis

On August 12, 2008, we published a Notice in the *Federal Register* announcing the availability of the DEA for the proposed designation (73 FR 46860). The DEA covers the timeframe from 2009 to 2028, and characterizes the total section 7 cost and the cost attributable to critical habitat (*i.e.*, incremental cost). The DEA evaluated pre-designation baseline impacts, post-designation baseline impacts, and post-designation incremental impacts. Incremental costs identified for Oahu included section 7 consultations for preservation and watershed management activities, game management activities, and the purchase of Honouliuli Preserve. The DEA acknowledged considerable uncertainty related to section 7 consultations for projects affecting individual critical habitat units (which units would be affected, the number of consultations within each unit, and the timing of consultations). Uncertainties were addressed by assuming from zero to two project-related consultations depending on the level of land management, spread evenly over time. Uncertainties related to game management project modifications were addressed by projecting the history of previous section 7 consultations for these activities over the analysis timeframe. Post-designation incremental costs (at present value) for the Oahu critical habitat units were estimated to be \$84,250, at a 3 percent discount rate and \$67,630 at a 7 percent discount rate over the analysis timeframe (10-years). Post-designation incremental costs (at annualized value) were estimated to be \$5,493, at a 3 percent discount rate to \$5,968 at a 7 percent discount rate (DEA, Table ES-7). Discount rate is the interest rate used to calculate the

present value of expected yearly benefits or costs in future dollars (e.g., benefits or costs are worth more if they are experienced sooner).

6(c) Final Economic Analysis

The October 2008 final economic analysis (FEA) addressed direct and indirect costs that could result from the proposed designation, divided into two periods: (1) pre-designation, covering the time period from the date the Hawaiian picture-wing fly species were listed under the Act (May 9, 2006; 71 FR 26835), to the date the final critical habitat designation was anticipated to become effective (about year-end 2008), and (2) post-designation timeframe from 2009 to 2028.

For the designation of critical habitat on Oahu, the FEA quantified economic impacts associated primarily with the following activities: (1) preservation and watershed management (a small increase in the existing preservation and watershed management costs in order to control threats to the picture-wing flies); (2) game management and hunting in units where land is owned by the State; and (3) section 7 consultation administrative costs.

The total pre-designation baseline costs during the period from 2006 to 2008 in the area proposed for critical habitat designation on Oahu was estimated to range from \$109,780, using a 3 percent discount rate to \$118,220, using a 7 percent discount rate. The analysis states that these costs were related to preservation and watershed management activities, and all or nearly all of the pre-designation baseline costs would be borne by Federal and State agencies.

The annualized post-designation baseline costs during the period 2009 to 2028 for preservation and water management activities on Oahu were estimated to range from \$32,700, using a 3 percent discount rate, to \$33,677, using a 7 percent discount rate. The analysis estimated that all or nearly all of the post-designation baseline costs would be borne by Federal and State agencies, although a portion of the preservation and watershed management costs would be borne by a few private landowners. The combined post-designation baseline cost for these conservation activities on Oahu was estimated to be \$516,230, at a 3 percent discount rate, and \$382,500, at a 7 percent discount rate.

The FEA estimated the annualized post-designation incremental costs for preservation and watershed management activities during the period 2009 to 2028 may range from \$44,733, using a 3 percent discount rate, to \$46,916, using a 7 percent discount rate. These costs include Oahu, but reflect the total cost for all islands included in the Hawaiian picture-wing fly critical habitat rule. The activity having the highest incremental cost ranking is preservation and watershed management, with an annualized value of approximately \$23,969, using a 3 percent discount rate, to \$25,568, using a 7 percent discount rate. Table 2 identifies the portion of incremental costs on Oahu.

Table 2. Post-designation Incremental Impacts 2009-2028 (FEA pp. 35, 37, 41)				
Section 7 Consultation Activity	Present Value at:		Annualized Value at:	
	3%	7%	3%	7%
Preservation and	\$59,930	\$46,350	\$3,662	\$4,090

Water Management				
Honouliuli Purchase	\$1,870	\$1,740	\$122	\$153
Game Management	\$3,870	\$3,250	\$253	\$287
Total	\$65,670	\$51,340	\$3,997	\$4,350

The analysis estimated that all or nearly all of the post-designation incremental costs (like the baseline costs) would be borne by Federal and State agencies, although a portion of the preservation and watershed management costs would be borne by a few private landowners.

The FEA addressed potential impacts to game mammal hunting if the State were to change game management regulations in areas within and immediately surrounding proposed Hawaiian picture-wing fly critical habitat. The FEA concludes that the overall economic impact of the designation to game management would be very small, due to the limited size of the critical habitat areas in relation to the area available for game mammal hunting on each island.

The FEA estimated there would be three informal section 7 consultations related to Federal grants that would need to be reinitiated in 2009 to address Hawaiian picture-wing fly critical habitat. The FEA also indicated that since these consultations would be for preservation and watershed management activities, no or minimal project modifications would be anticipated.

6(d) Critical Habitat Designation

On December 4, 2008, we published a final rule designating 1,159 ac (469 ha) as critical habitat, in 7 critical habitat units for the 6 Oahu picture-wing fly species (73 FR 73794). Of the lands designated, 181 ac (73 ha) were owned by the State of Hawaii, 850 ac (344 ha) were privately-owned, and 128 ac (52 ha) were owned by the City and County of Honolulu. There were no exclusions based upon potential economic impacts, under section 4(b)(2) of the Act on any of the five islands where critical habitat was designated, and on Oahu, all of the lands proposed as critical habitat were included in the final designation. Approximately 1,135 ac (459 ha) or 98 percent of the lands designated for the 6 Hawaiian picture-wing fly species on Oahu overlap proposed critical habitat for the 122 Oahu species for which critical habitat has been proposed.

6(e) Economic Analysis Addendum

Approximately 450 privately-owned ac (182 ha) on the island of Maui were excluded in the final critical habitat designation because of ongoing conservation activities. With the removal of this area, the Addendum estimated that the designation of critical habitat could result in potential direct economic effects ranging from approximately \$665,568 (using a 3 percent discount rate) to \$515,824 (using a 7 percent discount rate) applied across all islands.

7 ECONOMIC IMPACT IN OVERLAP AREAS

7(a) Percent Overlap for Part I Areas

We are proposing to designate 43,491 ac (17,603 ha) on Oahu as critical habitat for 123 species. Approximately 93 percent (40,446 ac (16,371 ha)) of the proposed designation overlaps

with critical habitat previously designated for other species (the Oahu elepaio, 99 plants, and 6 Hawaiian picture-wing fly species), while 2,478 ac (1,001 ha) do not overlap (Table 2).

Final Rule	Acres (ha) Designated	Acres (ha) Overlapping with Proposed Critical Habitat for 123 Species	Acres (ha) Not Overlapping with Proposed Critical Habitat for 123 Species
Critical Habitat Designation for Oahu Elepaio	65,880 (26,616)	31,527 (48%) (12,737)	34,353 (52%) (13,879)
Critical Habitat Designation for 99 Plants on Oahu	55,040 (22,236)	37,830 (69%) (15,283)	17,210 (31%) (6,953)
Critical Habitat Designation for 12 Picture-wing Flies	1,159* (486)	1,135 ac (98%) (459)	24 (2%) (10)

* Oahu units only

The previously-analyzed costs for the Oahu elepaio, 99 plants, and 6 Hawaiian picture-wing fly species are applicable to the overlapping lands currently proposed for critical habitat for the 123 species. Thirty-six of the 59 units proposed for critical habitat for the 123 species completely overlap previously designated critical habitat, although portions of 23 units do not overlap. The economic analyses for the above designations did not identify any significant economic costs relative to areas outside of the footprint of the critical habitat areas being evaluated by the Service for the current proposal, although the Oahu 99 plant draft economic analysis included substantially more area than is being proposed in the current rule. The Oahu 99 plants final rule excluded certain areas because they did not contain the primary constituent elements or weren't essential to the conservation of the species. No areas were excluded based on economic impacts in any of the above actions.

7(b) Primary Constituent Elements, Part I

The primary constituent elements described in the 2001, 2003, and 2008 final critical habitat rules and the physical or biological features described in the proposed rule for the 124 species are similar (e.g., associated native species, elevation). Accordingly, few, if any incremental costs are anticipated for the 40,350 ac (17,754 ha) of proposed critical habitat that overlap critical habitat designated in 2001, 2003, and 2008, beyond those identified in the previous economic analyses. Any management actions that may be necessary to avoid adverse modification of the existing critical habitat and the physical or biological features in the 40,350 overlapping ac (16,301 ha) would likely be adequate to avoid adverse modification of critical habitat proposed for the 123 Oahu species. Other than potential impacts related to water issues (discussed below), we are unaware of any new potential impacts in these overlap areas that were not considered in our previous economic analyses. We are requesting updated information from

the public on potential impacts regarding water use or any other activities that were not considered in the previous economic analyses, to ensure that our final determination is based on the best available scientific and commercial information.

8 PREVIOUSLY PREDICTED ECONOMIC IMPACTS

8(a) Section 7 Consultation Costs

Subsequent to critical habitat being designated on Oahu for the Oahu elepaio (December, 2001), the 99 Oahu plants (June, 2003), and for the 6 Hawaiian picture-wing fly species on Oahu (December 2008), few of the predicted economic costs have occurred. The most probable direct cost predicted was an increase in the number of section 7 consultations; a review of our consultation history does not indicate that to be the case. Since 2003 we have conducted 28 formal consultations and 137 informal consultations on Oahu. Of these, 13 formal consultations and 34 informal consultations were consultations for Federal permits to Service employees to implement conservation actions for listed species. The remaining 15 formal consultations and 103 informal consultations were requested by numerous government agencies including the military, the USDA, Hawaii Department of Transportation, and the University of Hawaii. The majority of the formal consultations were related to project effects on seabird flyways and on endangered waterbird nesting areas; effects of human disturbance such as fire from military training exercises on listed species and their habitat, and approval of research permits for projects on listed species and/or their habitat. The majority of informal consultations were related to project effects within seabird flyways and on endangered waterbird nesting areas. Approximately 25 percent of the informal consultations were conducted with the USDA-Natural Resources Conservation Service related to funding for habitat restoration projects under the Wildlife Habitat Incentives Program.

The Addendum for the critical habitat designation for the 99 Oahu plants estimated that between 2002 and 2012, the designation (co-occurring with listing in some instances) would result in potential direct economic effects ranging from approximately \$8.3 million to \$20.3 million from implementation of section 7 of the Act. Most of the estimated costs were for consultations between the Service and the Army regarding military training activities and preservation and watershed management activities on Army lands proposed as critical habitat. These lands were removed from the final designation. Accordingly, other than the formal and informal consultations discussed below, many of the potential economic impacts did not occur.

8(a)(i) Formal Section 7 Consultations on Critical Habitat

Of the 28 formal consultations that were conducted, 7 involved critical habitat. In each case we concurred with the Federal agency's determination that the action as proposed was not likely to destroy or adversely modify critical habitat, and no project modifications were recommended. One consultation involved the Navy in upper Halawa Valley, one involved the Army for routine military training and transformation of the 2nd Brigade 25th Infantry (Light) at six Army installations, and five involved the Army for routine military training at Makua Military Reservation (which is ongoing). The Navy consultation involved the retrieval of human remains from a remote area crash site in designated plant critical habitat. Although the activity

was carried out in an area proposed for critical habitat in this rule, it was a one-time event and is not an ongoing activity. The training at six Army installations on Oahu is being implemented on lands that are subject to integrated natural resource management plans. These lands have not been proposed as critical habitat based on section 4(a)(3)(B)(i) of the Act.

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action.

8(a)(ii) Informal Consultations on Critical Habitat

Of the 103 informal consultations conducted, 16 involved critical habitat. In each consultation, we concurred with the Federal agency's determination that the project as proposed was not likely to destroy or adversely modify critical habitat, and no project modifications were requested.

8(b) Land Reclassification

The Addendum on Critical Habitat Designation for 99 Oahu Plants concluded that there was a moderate to high probability that some private land within the Urban and Agricultural districts would be reclassified to Conservation District. As outlined in the DEA on Proposed Critical Habitat for 99 Oahu Plants, the potential loss in land value as a result of reclassification could vary widely between remote, privately owned agricultural land (estimated at \$1,000 per ac; \$2,500 per ha), to privately-owned urban land near existing infrastructure (estimated at \$40,000 per ac; \$100,000 per ha). Additionally, the DEA estimated an average cost of \$50,000 for landowners that may choose to contest the potential reclassification of their property.

Under State law, State departments or agencies, counties, and any person with a property interest in the land to petition the State Land Use Commission (LUC) to change the boundary of a district (HRS section 205-4). The Hawaii Department of Business, Economic Development and Tourism's (DBEDT) Office of Planning also conducts a periodic review of district boundaries, taking into account current land uses, environmental concerns and other factors. The DBEDT may subsequently propose changes to the LUC.

The LUC determines whether changes proposed by the Department of Land and Natural Resources, DBEDT, other State agencies, counties or landowners should be enacted. In doing so, the LUC must take into account specific criteria set forth at HRS 205-17., which includes consideration of the impact on the preservation or maintenance of important natural systems or habitats. The LUC is also specifically directed to consider five other impacts in its decision: (1) maintenance of valued cultural, historical, or natural resources; (2) maintenance of other natural resources relevant to Hawaii's economy; (3) commitment of state funds and

resources; (4) provision for employment opportunities and economic development; and (5) provision for housing opportunities for all income groups (HRS 205.17). An approval of land use reclassification requires six affirmative votes from the nine commissioners, based on a clear preponderance of the evidence that the proposed boundary is reasonable (HRS 205-4 and HRS 205-18).

As a result, even if critical habitat is petitioned for reclassification, the likelihood of an area being reclassified will vary. While the LUC may reclassify some parcels, it is unlikely that lands with a high economic value to the community, such as lands with significant State investments, prime agricultural land, land planned for the economic and community development, and land planned for the provision of housing, would be reclassified (LUC, in litt. 2010). While concern has been expressed that a third party would challenge a decision by the LUC not to reclassify a critical habitat parcel in State court, State courts have been deferential to the LUC decisions if they are supported by the record, consistent with statutory provisions, and not affected by errors.

In summary, although it is possible that the designation of critical habitat could trigger a petition to reclassify Agricultural or Urban lands designated as critical habitat to Conservation use, the likelihood of reclassification is low. To date, no petition has been received, nor has reclassification of private land (or any land) to the Conservation District occurred due to a critical habitat designation (LUC, in litt. 2010). Therefore, the economic impact of the reclassifying Agricultural or Urban lands to Conservation because of critical habitat designation is not considered reasonably foreseeable.

8(c) Preservation and Watershed Management

The FEA for the critical habitat designation for the 12 Hawaiian picture-wing fly species predicted the most likely economic impact would be a small increase to existing preservation and watershed management costs to control threats to the species. The FEA estimated the post-designation incremental impacts during the period from 2009 to 2028 may range from \$84,160, using a 3 percent discount rate to \$67,630, using a 7 percent discount rate. The activity estimated to have the highest incremental cost was preservation and watershed management, with an annualized value of approximately \$5,493, using a 3 percent discount rate to \$5,968, using a 7 percent discount rate. Additionally, the FEA estimated there would be three project-level informal consultations related to Federal grants that would need to be reinitiated in 2009 to address Hawaiian picture-wing fly critical habitat.

According to our section 7 consultation records, there have been no post-designation incremental costs for additional preservation and watershed management activities resulting from the designation of critical habitat for the 6 Hawaiian picture-wing fly species on Oahu. In addition, no formal or informal consultations have been conducted to date for Hawaiian picture-wing fly critical habitat on Oahu. Therefore, within the overlapping lands, (the 95% overlap between previously designated Oahu critical habitat and the currently proposed designation), the projected economic impacts related to additional preservation and watershed management activities for the Oahu elepaio, 99 plants, and 6 Hawaiian picture-wing fly species on Oahu did not occur.

9 ECONOMIC IMPACTS IN NON-OVERLAP AREAS

9(a) Land Classification and Development Potential

We are proposing to designate over approximately 2,478 ac (1,001 ha) within portions of 23 separate units that do not overlap existing critical habitat (Figure 1). Approximately 95 percent (2,354 ac (951 ha)) of these lands are within the Conservation District, and include State Forest Reserves, Natural Area Reserves, Seabird Sanctuaries, or Parks (see Figures 2, 3, 4). For the most part, these lands are managed for the conservation and protection of their natural resources, making them unlikely to be developed. The remaining 5 percent (124 ac (50 ha)) of these non-overlapping lands are within the Urban or Agricultural districts; however 82.5 ac (33.4 ha) of the 124 ac are also within the State's Forest Reserves, Natural Area Reserves, Seabird Sanctuaries, or Parks, making them unlikely to be developed. Approximately 7.7 ac (3.1 ha) are on the U.S. Navy's Naval Radar Transmitting Facility at Lualualei, and are unlikely to be developed. The remaining 33.8 ac (15.7 ha) are lands of unknown use.

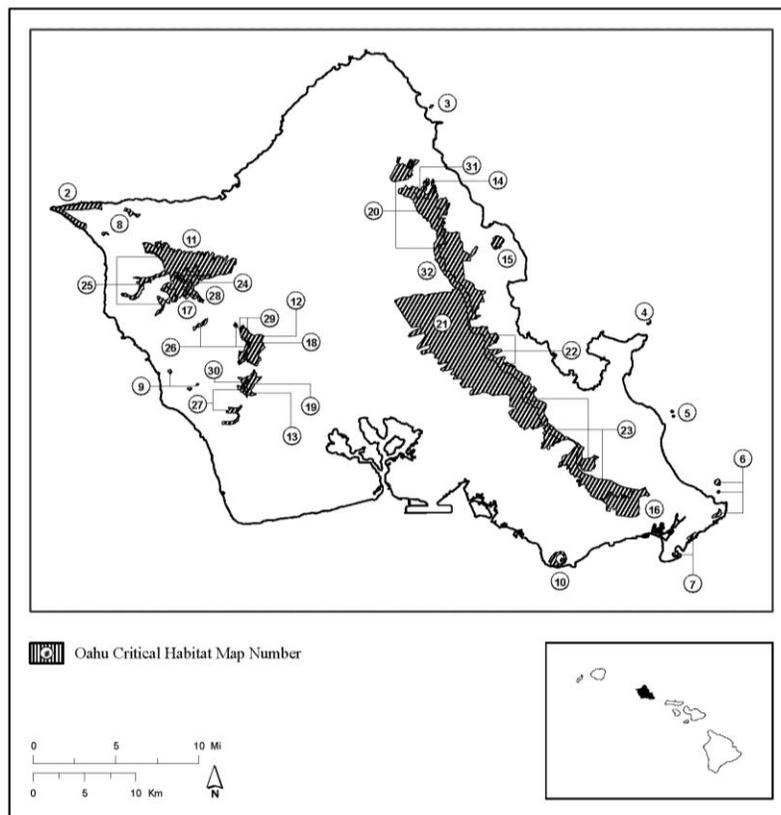


Figure 2. Part I Proposed Critical Habitat Designation, Part I

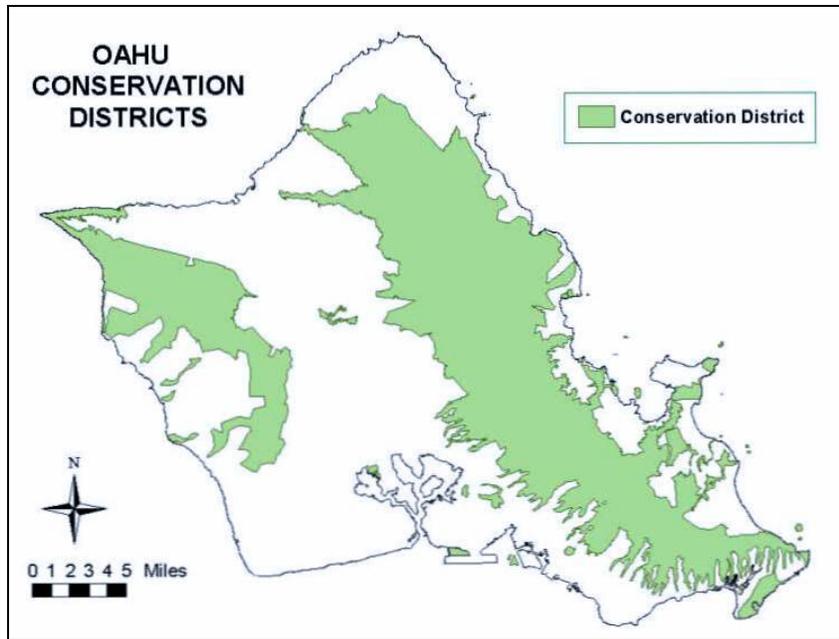


Figure 3. Conservation District Land Zoning

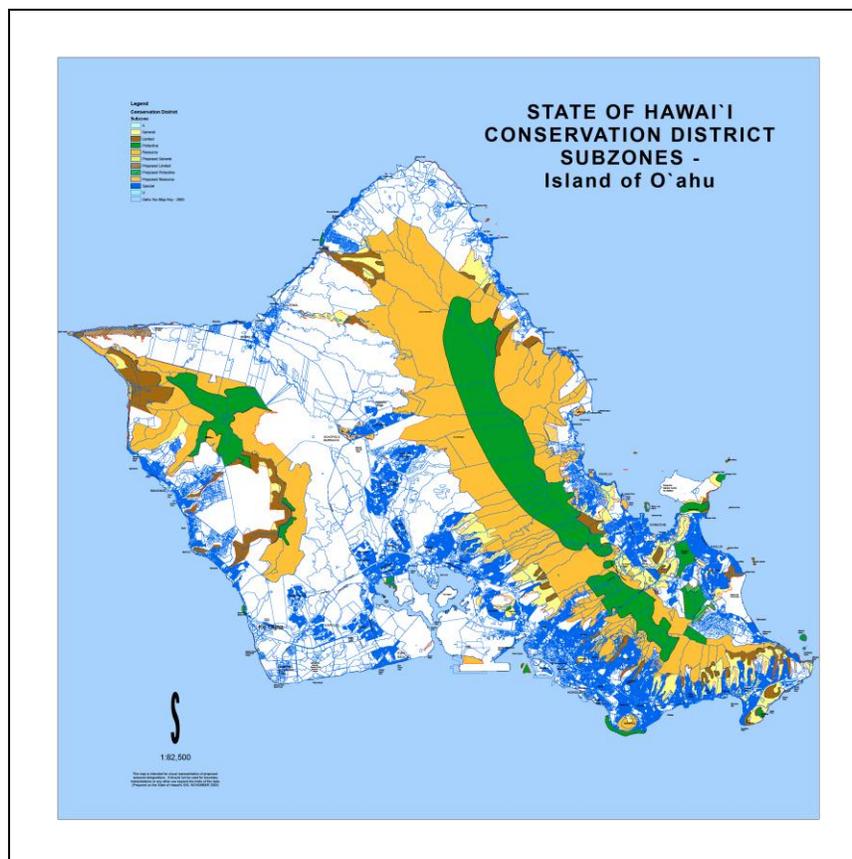


Figure 4. Conservation District Subzones

KEY	Zoning	Subzone Objectives (Chapter 13-5 HAR)*
Orange	Resource	Develop with proper management to ensure sustained use of natural resources. This subzone encompasses (1) lands necessary for providing future parkland and lands presently used for national, state, county, or private parks; (2) lands suitable for growing and harvesting of commercial timber or other forest products; (3) lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking; (4) offshore islands of the State of Hawaii; and (5) lands and state marine waters seaward of the upper reaches of the wash of the waves, usually evidenced by the edge of vegetation or by the debris left by the wash of waves on shore to the extent of the State's jurisdiction, unless placed in a Protective or Limited subzone.
Green	Protective	Protection of valuable resources in designated areas such as restricted watersheds, marine, plant, and wildlife sanctuaries, significant historic, archaeological, geological, and volcanological features and sites, and other designated unique areas. This subzone encompasses lands and waters necessary for protecting (1) watersheds, water sources, and water supplies; (2) lands and waters necessary for the preservation and enhancement of designated historic or archaeological sites and designated sites of unique physiographic significance; (3) areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered; and (4) all land encompassing the Northwestern Hawaiian islands except Midway island.
Light Brown	Proposed Limited	See "Limited".
Dark Brown	Limited	Limit use where natural conditions suggest constraints on human activities. The limited subzone encompasses (1) lands susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective action by the county, state, or Federal governments; and (3) lands necessary for the protection of the health, safety, and welfare of the public by reason of the land's susceptibility to inundation by

		tsunami, flooding, volcanic activity or landslides, or which have a general slope of forty percent or more.
Yellow	General	Designate open space where specific conservation uses may not be defined, but where urban use would be premature. The general subzone encompasses (1) lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural, or agricultural use; and (2) lands suitable for farming, flower gardening, operation of nurseries or orchards, grazing, including facilities accessory to these uses when the facilities are compatible with the natural physical environment.
Blue	Special	Provide for areas possessing unique developable qualities which complement the natural resources of the area. Special subzone designations include (1) Hawaii Loa college for educational purposes (Oahu); (2) Haka site for cemetery purposes (Oahu); (3) Kapakahi Ridge for nursing or convalescent home purposes (Oahu); (4) Sea Life park for recreational, educational, commercial purposes (Oahu); (5) Milolii-Hoopuloa fishing village for fishing activities, residential, educational, cultural and recreational uses (Hawaii); (6) Hale O Hooponopono for educational purposes (Hawaii); and (7) Limahuli Valley for educational, recreational and research purposes (Kauai).

* Additional information available at <http://hawaii.gov/dlnr/occl/documents-forms/rules/13-5.pdf/view>

9(b) Section 7 Consultation History

A review of our records indicates that no section 7 consultations have been conducted on the non-overlapping areas, and we are not aware of any planned activities in any of these areas that would require section 7 consultation. Any additional costs associated with future Federal actions requiring consultation, such as Federal grants to assist the State in managing its lands for listed plant species, would likely be minimal. However, we are seeking public comment on the potential costs of critical habitat designation in these areas to ensure the final determination is based on the best available scientific and commercial information.

10 OAHU WATER RESOURCE USE AND CRITICAL HABITAT

10(a) Proposed Damselfly Critical Habitat

Our proposed rule to list 23 species and designate or revise critical habitat for 122 Oahu species includes the proposed listing of three Hawaiian damselflies as endangered (blackline Hawaiian damselfly (*Megalagrion nigrohamatum nigrolineatum*), crimson Hawaiian damselfly (*Megalagrion leptodemas*), oceanic Hawaiian damselfly (*Megalagrion oceanicum*)) and the proposed designation of critical habitat for these species. The aquatic life history stages of these species may use open water areas, slow sections or pools, or stream riffle areas, and adults perch on streamside vegetation and patrol along stream corridors (Table 4). Altogether, 15 occupied critical habitat units are proposed for one or more of the damselfly species, each of which overlaps units proposed for one or more of the 119 plants species.

Species (physical or biological features)	Ecosystem						
	Coastal	Lowland Dry	Lowland Mesic	Lowland Wet	Montane Wet	Dry Cliff	Wet Cliff
blackline Hawaiian damselfly (perennial stream, slow reaches of streams or pools)				X			
crimson Hawaiian damselfly (perennial stream, slow reaches of streams or pools)				X			X
oceanic Hawaiian damselfly (perennial stream, swift flowing sections and riffles of streams)			X	X			X

10(b) Water Management Structures and their Regulation

There are at least 36 water management structures in 3 of the 15 critical habitat units proposed as critical habitat for the damselflies. The majority are stream intake diversions that remove water from the streambed. Several of these structures are inoperable due to clogged intakes or damaged components, and some streams currently lack water (although it is unclear if this condition includes the reaches upstream or downstream from the associated intake diversion). While it is reasonable to assume that future repairs and other possible modifications

to these structures are likely, the cost and timing of potential future repairs and other modifications to these stream structures is unknown.

10(b)(i) Waiahole Ditch Irrigation System

The Waiahole Ditch Irrigation System (WDIS), started in 1913 by the Waiahole Water Company, developed surface water and high-level groundwater sources in the eastern (windward) valleys of Oahu for sugarcane irrigation in the leeward part of the island (Figure 4). Additions to the system were made from 1925 to 1933, and again in 1964 (HDOA 2002, p. 6). The WDIS consists primarily of tunnels from the source to central Oahu, where water is then transported by way of concrete-lined ditches and inverted siphons (HDOA 2004, pp. 77-88). Conflict over the WDIS began when Oahu Sugar announced in 1993 that it would be closing their sugar plantation in 1995. Since the company would no longer need the water from the WDIS, several parties applied to use the water for different purposes. Parties from the windward side of the island wanted the water returned to windward streams from which it was diverted for several reasons, including restoration of Waiahole stream, environmental protection, preservation of native Hawaiian culture and gathering rights, recharge Kaneohe Bay fishery, and to revive taro farming in windward valleys. Parties from the leeward side wanted the water to sustain and develop diversified agriculture, to use the water for other purposes, and to reserve a portion of the water for unused, future purposes. Appeals and cross appeals were subsequently filed to the Supreme Court of the State of Hawaii, which issued its ruling on August 22, 2000, remanding the case to the Commission on Water Resource Management (CWRM). The Supreme Court advised the CWRM to strongly consider the preservation of natural resources as dictated by the public trust doctrine, and several other issues. The CWRM issued a final decision ordering specified water allocations to the various parties, which was subsequently appealed (HDOA 2002, pp. 7-9). On July 13, 2006, the CWRM issued their findings of fact, conclusions of law, and decision and order in the second remand proceedings “In the Matter of Water Use Permit Applications, Petitions, for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiahole Ditch Combined Contested Case Hearing (CCH-OA95-1).”

The WDIS currently delivers about 10 million gallons per day (GPD) to support diversified agriculture. It is estimated that approximately 80 agribusinesses in central Oahu subscribe to WDIS water, generating employment to approximately 2,000 individuals. The combined value of agricultural production by these enterprises is estimated at approximately \$95 million annually. This value accounts for 51 percent of total crops, livestock and aquacultural sales recorded in the City and County of Honolulu in 2000 (HDOA 2002, pp. 12-13). In terms of system upkeep, total capital improvement costs were estimated to be \$10,668,000, which includes overhead, contingency, profit, taxes, construction management, contract administration, environmental permitting and clearances, and design engineering ((Hawaii Department of Agriculture 2004, p 83). The total maintenance costs were estimated to be \$681,000, which include inspection and repair costs, design engineering, and environmental permitting and clearance. Annual maintenance expenditures for fiscal years 2002-2003 reflected a budget of \$250,000. Approximately \$150,000 of the projected costs for WDIS capital improvement and maintenance activities are related to environmental permitting and clearances.

10(b)(ii) Waimanalo Ditch Irrigation System

The Waimanalo Ditch Irrigation System is a State-owned system managed by the Hawaii Department of Agriculture (HDOA). The system's water source is located in the Maunawili Valley watershed, with intakes located on Maunawili, Ainoni, and Makawao streams (Figure 5). The collection system is composed mainly of open unlined ditches, pipe siphons, and tunnels, which are susceptible to heavy siltation, tree root invasion, and heavy vegetative growth due to high rainfall (approximately 100 inches per year). The system is in fairly good condition and is presently undergoing improvements based on the Waimanalo Watershed Plan (HDOA 2004, pp. 115-121). The original ditch distribution system was replaced with ductile Iron pipe and water meters, however many of the system's distribution laterals are inactive due to family farm closures. In 2003, the Waimanalo Ditch Irrigation System had 164 accounts with an annual water use of approximately 146 MGD, over 1,170 ac (474 ha) (HDOA 2004 p. 116). In terms of system upkeep, total capital improvement costs were estimated to be \$5,492,000, which includes overhead, contingency, profit, taxes, construction management, contract administration, environmental permitting and clearances, design engineering, and easements acquisition (HDOA 2004, p 118). The total maintenance costs were estimated to be \$1,345,000, which include design engineering and environmental permitting and clearance. Approximately \$2,000,000 of the projected costs for capital and maintenance activities are related to environmental permitting and clearances.

10(b)(iii) Wahiawa Irrigation System

The Wahiawa Irrigation System (WIS) provides water for agricultural production in the Wahiawa-Waiialua-Haleiwa area on Oahu. The system was constructed in 1906 and originally had a 50 million gallon per day (GPD) irrigation capacity, servicing 12,000 ac (4,856 ha) of sugarcane fields and 5,000 ac (2,023 ha) of pineapple fields (Figure 6). The system most recently provides approximately 10,000 GPD to service approximately 6,400 ac (2,590 ha) of diversified crops and pineapple (HDOA 2008, p. ii). In 2007, the WIS contributed approximately \$37.7 million in farm production, indirect and induced effects of farm operations contributed approximately \$47.5 million in goods and services produced and sold. Adding the initial impacts from farm production to the indirect and induced effects, it was estimated that the WIS contributed approximately \$85.2 million of goods and services produced and sold in total across industries in Hawaii's economy, employing 980 individuals (HDOA 2008, p. ii). In terms of system upkeep, the WIS is in need of \$4.2 million in immediate repairs and will need \$2.98 million in future repairs, according to a recent study commissioned by the State. Annual operation and maintenance costs were reported to be approximately \$765,000 per year (Honolulu Advertiser, 2007). Additional maintenance may be necessary to repair the Wahiawa dam on the Kaukonahua stream (constructed in 1906), which was classified as a high hazard in a 2006 Corps of Engineers (COE) dam safety inspection report. The COE report found no immediate threat to the dam structure, although a partial slope failure on the downstream slope was identified as being in need of immediate repair (before the next rainy season), and surface runoff from adjacent property on the left abutment needs to be safely channeled through the downstream slope and toe area (COE 2006, pp. 2, 6).

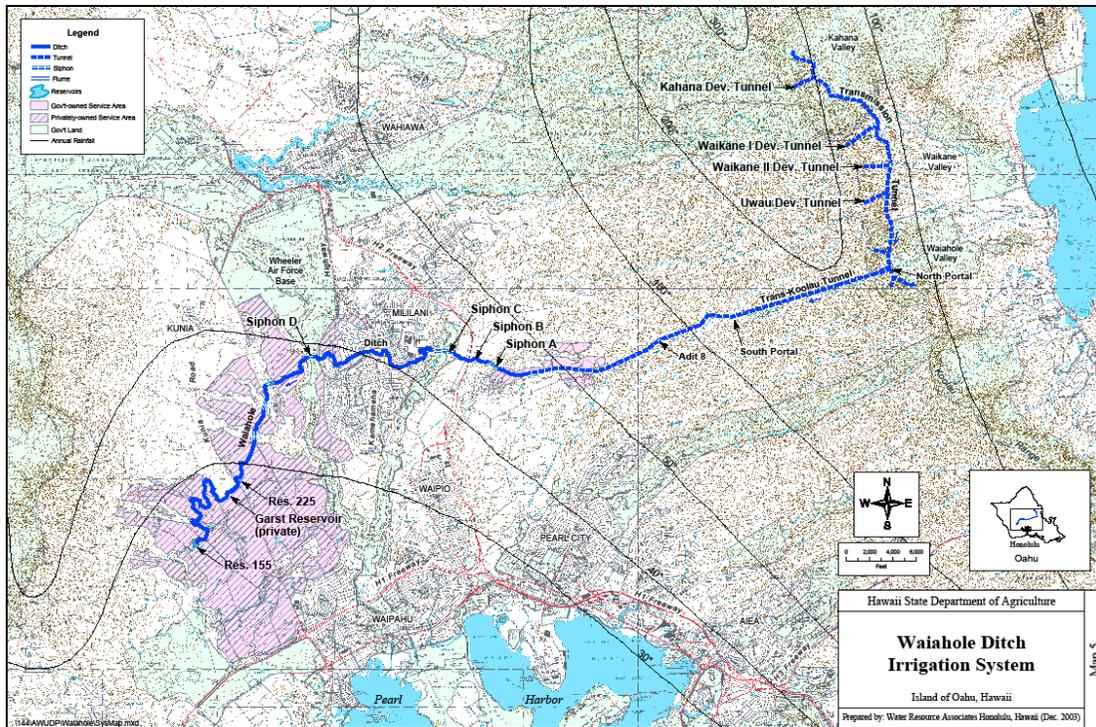


Figure 4. Waiahole Ditch Irrigation System

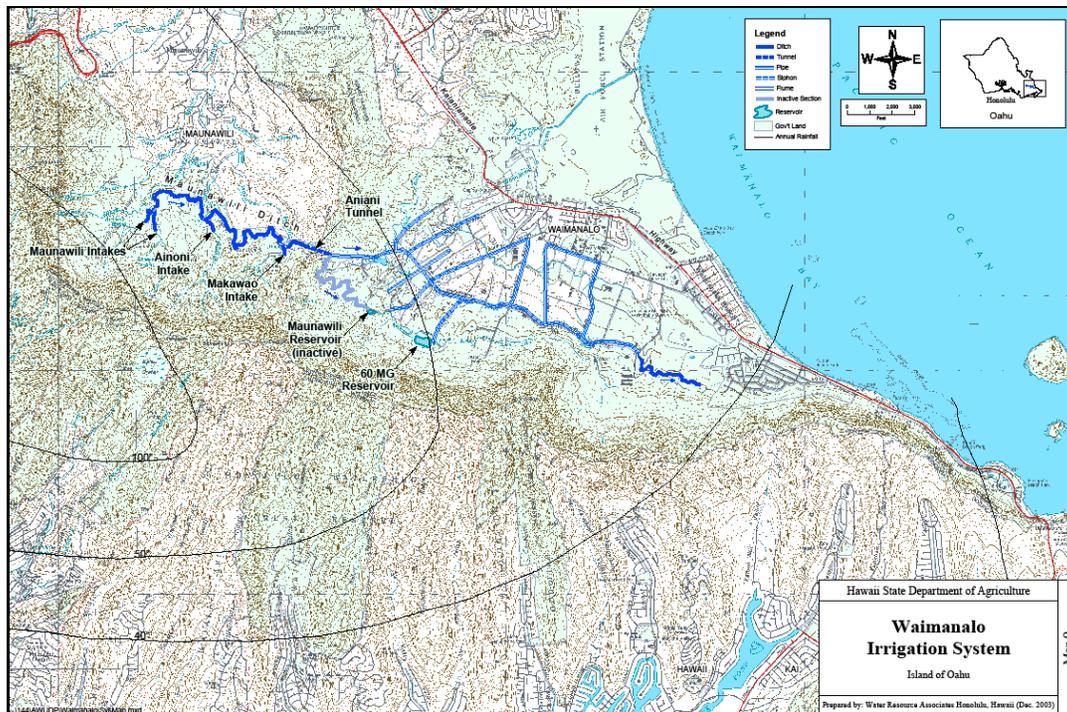


Figure 5. Waimanalo Irrigation System

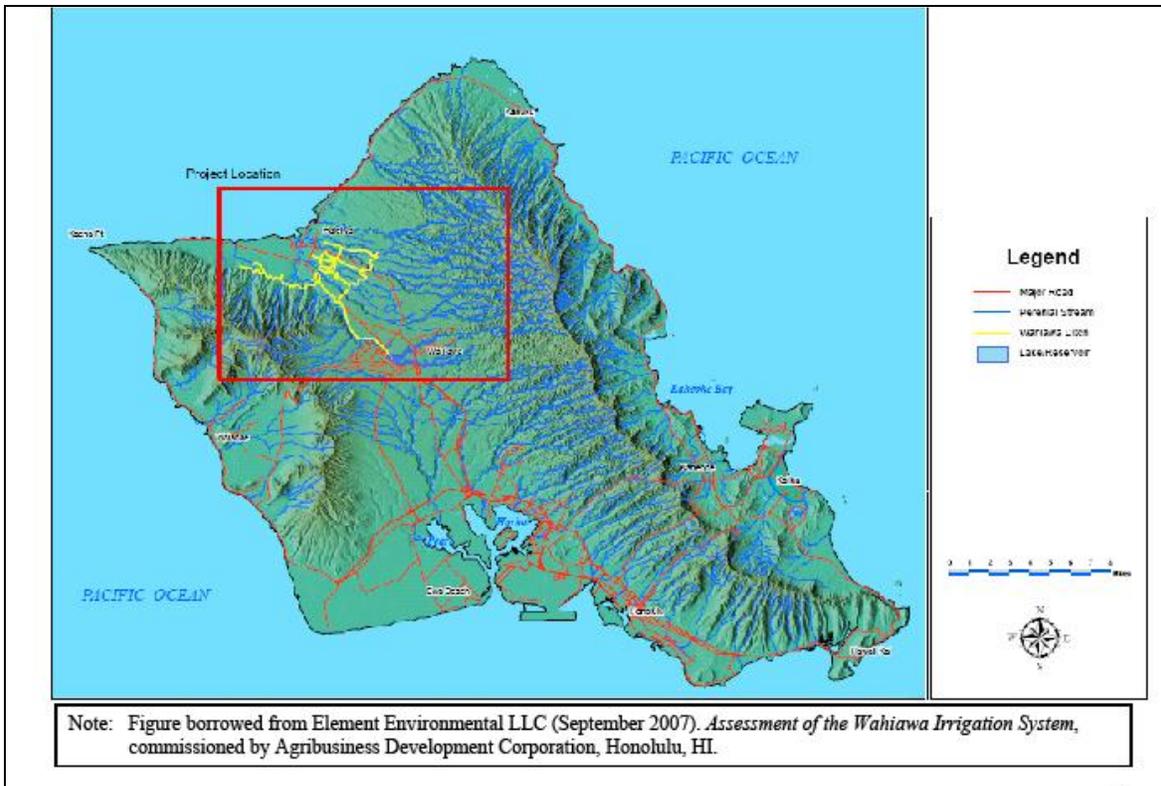


Figure 6. Waihawa Irrigation System (HDOA 2008)

The State water code authorizes the CWRM to regulate water use by designating areas for water management in accordance with sections 174C/41-63. In designated water management areas, the CWRM regulates all water uses (including agricultural use) from withdrawal, diversion, or impoundment other than domestic consumption by individual users. As a result of the Supreme Court ruling in the Waiahole Case (Waiahole, 94, Haw., 9 P.3d 409 (2000)), the CWRM must consider the public trust doctrine in weighing competing instream and offstream uses (including agricultural use) in issuing water use permits. Currently, the WDIS is the only system on Oahu located in a designated water management area subject to water use regulations. The CWRM regulates stream channel alterations, stream diversion works, well constructions, and pump installations whether in a designated water area or not though permits. Information on the existing regulatory requirements are further described at the CRWM webpage: http://hawaii.gov/dlnr/cwrmm/planning/wrpp2008update/FINAL_WRPP_AppB.pdf. Irrigation system repairs that do not involve the construction of new or expanded diversion works or flume supports in stream channels are generally not regulated. The CWRM also has the authority and obligation to set instream flow standards (HDOA 2004, pp. 147-149).

On March 17, 2006, the Hawaii Department of Land and Natural Resources sent a letter to all owners of dams or reservoirs stating they would need to immediately inspect and report back to the DLNR regarding the nature and condition of their dams, including all recent maintenance, operation and inspection activities. They were also instructed to update their emergency preparedness plans, including evaluation of potential downstream impacts should the dam or reservoir breach or partially breach. Owners were advised that alteration or abandonment of a dam or reservoir could trigger the need for CWRM stream channel alteration permits under

HRS 174C-93 and 95, and that it would be necessary to obtain all necessary Federal, State, and County approvals for projects and abide by all conditions of approval (HDNLR 2006). Additional information on the 2006 inspections conducted for each of the 16 Oahu reservoirs is available at the DLNR webpage: <http://www6.hawaii.gov/dlnr/reports/dam-inspections/>.

Whether or not the capital improvement or maintenance actions described for the above irrigation systems would require Federal authorization or funding is uncertain. For example, under Section 404(f)(1)(C) of the Clean Water Act (CWA) and 40 CFR 232(c)(3), discharges of dredged or fill material associated with construction or maintenance of irrigation ditches, or the maintenance (but not construction) of drainage ditches, are not prohibited by or otherwise subject to regulation under Section 404 of the CWA (i.e., these activities are exempt from the need to obtain a Section 404 permit from the COE). Discharges of dredged or fill material associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant to and functionally related to irrigation ditches are included in the exemption for irrigation ditches (COE, 2007). Although it appears that in most cases, COE permits would not be required for these types of activities, other Federal funding or authorizations may be involved. For example, Federal funding was provided for the Waimanalo Irrigation System Drainage Improvements project under Capital Project No. HA0001, as authorized by Act 91, SLH 1999, Item A-5 and amended by Act 281, SLH 2000, Item A-5. The Federal portion of funding to repair the Waimanalo Outlet Channel was appropriated by the U.S. Congress in PL 83-566 as part of the Watershed Protection Act (HDOA 2001), although this area is not within the area proposed as critical habitat.

To ensure our final determination is based on the best available scientific and commercial information, we are seeking information from the public on the potential cost of irrigation-related activities, their schedule and likely source of funding, Federal permit requirements, and the extent or scale of repairs or modifications required. Only projects (including water structure repairs) involving Federal actions that may affect the critical habitat primary constituent elements would require section 7 consultations, as determined by the Federal action agency involved. Since all but five of the proposed damselfly units are occupied by either the damselflies or listed plants, it is likely that most, if not all potential future section 7 consultation costs or project modifications costs would result from the listing of the damselflies, the presence of already listed plants, or both, and would represent baseline costs. These costs would not be incremental to the critical habitat designation. In addition, critical habitat does not include manmade structures existing on the effective date of a final critical habitat rule that do not contain one or more of the physical and biological features identified in the critical habitat designation.

10(c) Previous Analyses of Water Resources and Critical Habitat

The information below identifies water-resource issues that have been evaluated or otherwise addressed in previous economic analyses, as they relate to critical habitat designations in Hawaii. These issues may also be relevant to the proposed critical habitat designation for the three damselfly species.

10(c)(i) Newcomb's Snail

On March 29, 2002, we published a Notice in the *Federal Register* announcing the availability of the DEA for the proposed designation of 5,209 ac (2,108 ha), of critical habitat for the Newcomb's snail on the island of Kauai (67 FR 15159). The proposed units were located in the mountainous upper regions of nine stream and river systems in the northern and eastern portions of the island of Kauai (DEA 2002, Figure ES-1). The DEA evaluates economic impacts associated with the maintenance of two existing water diversions: (1) a water diversion structure and a portion of the Waiaki-Ililula North Waialua Ditch located within the North Fork Wailua River critical habitat unit; and (2) a water diversion structure and portion of the Kealia Ditch in the Waipahee Stream critical habitat unit (unit I-4). The DEA stated the operation and maintenance of existing facilities is funded entirely by the State and private organizations, and no section 7 consultations or project modifications would be required since there was no Federal involvement. Additionally, the DEA concluded existing man-made features lacked the primary constituent elements and would not be subject to the critical habitat provisions of section 7.

The June 2002 Addendum acknowledged a number of comments raising concerns that the proposed critical habitat could somehow reduce or eliminate the volume of water diverted from streams to drive hydropower plants and irrigate farm lands. Because of the modification in habitat boundaries, the diversions of concern were no longer within the area designated as critical habitat in the final rule, and would not be affected (Addendum 2002, Add-3). Accordingly, a final determination regarding the probability of and economic costs related to this potential impact was no longer relevant to the designation. Some commentors raised the concern that the proposed critical habitat could reduce the probability of additional hydropower development in the Wainiha Valley, thereby reducing property values (Addendum 2002, Add-4). At the time the DEA and Addendum were developed, there were no known plans to construct or augment water diversion facilities in or upstream of the proposed critical habitat units. Accordingly, those activities were not considered to be probable or reasonably foreseeable, and were not analyzed.

On August 20, 2002, we published a final rule designating 4,479 ac (1,811 ha) as critical habitat for Newcomb's snail (67 FR 54026). The designation included eight stream segments and associated tributaries, springs and seeps, and adjacent riparian areas. The final designation reduced the critical habitat described in the proposed rule by 737 ac (298 ha), or 14.1 percent, to reflect the removal of one unit and portions of two units that had water diversion structures present. These revisions were made under section 4(b)(2) of the Act for reasons unrelated to economics.

10(c)(ii) 83 Kauai Plants

On May 28, 2002, we published a Notice in the *Federal Register* announcing the availability of the DEA for the proposed designation of 99,903 ac (40,429 ha) of critical habitat for 83 Kauai plants (67 FR 36851). The DEA covered a 10-year timeframe (2002 to 2012), and characterized both the total section 7 costs and the costs attributable to critical habitat (DEA 2002, VI-1). The DEA stated that over the 10-year timeframe, the Kokee Ditch water system would be the most likely water system in need of repair within the proposed critical habitat, and

the repairs could include partial funding by the USDA. The total section 7 cost estimated for this activity ranged from \$16,600 to \$27,100. This was attributed entirely to the critical habitat designation, since there had been no prior consultations between the Service and the USDA regarding impacts to listed species and water system improvements on Kauai (DEA 2002, VI-23, 24; Table Add-27).

10(c)(iii) 48 Species on Kauai

In October 2008, we completed an Economic Impact Analysis (EIA) on the proposed designation of critical habitat for 47 species on the island of Kauai (73 FR 62592), which relied on information from previous economic analyses developed for critical habitat rules on the island of Kauai. We concluded that the direct section 7 consultation costs (\$16,600 to \$27,100) associated with the Kokee Ditch water system described in the 2002 Kauai DEA would be an incremental effect of the critical habitat designation being considered for the 47 Kauai species.

11 SUMMARY OF ECONOMIC IMPACTS OF THE PROPOSED DESIGNATION OR REVISION OF CRITICAL HABITAT FOR 123 SPECIES ON OAHU (PART I)

11(a) Economic Impacts in Terrestrial Habitat

The terrestrial areas being proposed as critical habitat are remote and lack development potential. In addition, approximately 93 percent of the area proposed as critical habitat completely overlaps critical habitat that is already designated. Our previous economic analyses of critical habitat designations for the Oahu elepaio and 99 Oahu plants evaluated potential economic costs over a 10-year timeframe (2002-2012), and the previous economic analysis for the Hawaiian picture-wing fly species evaluated potential economic costs over a 20-year timeframe (2008-2028). We believe these analyses are still valid within the 93 percent overlap area, since the potential activities and conservation measures considered in those studies are similar to those that would be applicable under the current proposal. We are aware of only a small number of section 7 consultations that have been conducted within the 93 percent overlap area, because these areas lack development potential. In addition, the physical or biological features described within the overlap areas under the existing and proposed designations are similar (e.g., 99 Oahu plants (ecosystem type, elevation (68 FR 36392; June 17, 2003)); Oahu elepaio (ecosystem type, associated native species, rainfall, elevation, (66 FR 63776; December 10, 2003)), Hawaiian picture-wing fly (ecosystem type, elevation, host plants (73 FR 73888; December 4, 2008)). Therefore, we anticipate few, if any incremental costs attributable to the proposed critical habitat designation in the 93 percent overlap area, and do not anticipate section 7 consultation costs to be significantly different than those identified in our previous economic analyses. Within the 93 percent overlap area, any conservation measures needed to protect the physical or biological features in occupied habitat areas would be identified during section 7 consultation based on occupancy by the species. Those measures would coincidentally benefit unoccupied habitat since those areas entirely overlap.

Of the remaining 6 percent (2,478 ac (1,001 ha)) that does not overlap existing critical habitat, 95 percent (2,354 ac (951 ha)) is classified as conservation, and 5 percent (124 ac (50 ha)) is within Urban or Agricultural districts. However, 74 percent (92 ac (37 ha)) of the non-

conservation district lands are within State forest reserves, parks, seabird sanctuaries, or natural area reserves, and are unlikely to be developed. The remaining lands (32 ac (13 ha)) are on the Naval Radar Transmitting Facility at Lualualei that are unlikely to be developed, or lands of unknown use. These unknown use lands are likely roads and existing man-made structures, which do not contain the physical or biological features, or are not essential to the conservation of the species. No section 7 consultations have been conducted in these areas to date. Accordingly, with the possible exception of presently unknown costs associated with the proposed damselfly critical habitat (as discussed below), we do not believe the proposed designation of critical habitat in the non-overlap areas would result in any appreciable economic impacts. This is primarily reflective of the lack of development potential for these areas.

11(b) Economic Impacts in Aquatic Habitat

For species like these damselflies, which are at risk because of loss of habitat, an action could jeopardize the continued existence of a listed species through alteration of its habitat, regardless of whether that habitat has been designated as critical habitat (51 FR 19927; June 3, 1986). Since Federal agencies would need to consider damselfly habitat impacts in occupied areas during section 7 consultation regardless of a critical habitat designation, any conservation measures needed to avoid jeopardy would, in most cases, be sufficient to avoid adversely modifying critical habitat (i.e., the outcome of a section 7 consultation under the jeopardy standard and adverse modification standards would be similar). Accordingly, we do not anticipate the need for project modifications or measures to address effects to critical habitat beyond those that would result from the jeopardy analysis. We acknowledge there could be a difference between consulting on effects for some species and their critical habitat, depending on the particular circumstances of the Federal action being proposed. In addition, some level of incremental economic impact may accrue in unoccupied critical habitat areas, since they would not otherwise be subject to section 7 consultation. Critical habitat could also trigger incremental economic impacts if an occupied area were to become unoccupied as a result of a stochastic or other catastrophic event. In this situation, a Federal agency would still have a section 7 consultation responsibility based on the critical habitat designation, even though the species is no longer present. Conservation recommendations under this scenario could target management actions to reintroduce the species into the vacated critical habitat area. There have been few section 7 consultations in the areas being proposed as Hawaiian damselfly critical habitat, and we are generally unaware of any future development plans. In addition, there is very little information available on potential direct or indirect costs related to critical habitat designation in aquatic areas on Oahu or elsewhere in the Hawaiian Islands. Although future Federal actions that could affect either the damselflies or their critical habitat are unpredictable, the areas generally lack development potential because of their topography and remote locations. We are seeking information from the public during the comment period on the potential cost of water management activities, their timing, likely source of funding, and the extent or scale of necessary repairs or modifications to ensure the final determination is based on the best available scientific and commercial information.

Most of the damselfly primary constituent elements (PCEs) are related to elevation, annual precipitation, substrate, and associated native vegetation, which are comparable to those identified for the plant species. However, the damselfly PCEs also have an aquatic habitat

component (e.g., slow reaches of streams, pools, etc.), which would be considered during section 7 consultation on a Federal action. Each of the units proposed as critical habitat are occupied by one or more of the damselfly species. Accordingly, it is likely that most, if not all potential future section 7 consultation costs or project modifications costs would result from the listing of the damselflies, and would represent baseline costs. However, there is very little information available on potential direct or indirect costs related to critical habitat designation in aquatic areas on Oahu or elsewhere in the Hawaiian Islands. In this regard, we are seeking information from the public during the comment period on the potential cost of activities involving water structures, their timing and likely source of funding, and the extent or scale of necessary repairs or modifications, if any, to ensure the final determination is based on the best available scientific and commercial information. We will fully consider all comments related to future water management activities, economic concerns, Federal involvement, or other regulatory requirements to ensure the final determination is based on the best scientific data available.

12 COSTS RELATED TO CONSULTATIONS FOR PITTMAN-ROBERSON ACT FUNDING

Some of the proposed critical habitat units overlap or are near State Hunting Units on Oahu, which are managed for game birds, wild pigs, and wild goats. Statewide section 7 consultations between the Hawaii Department of Lands and Natural Resources (HDLNR) and the Service on Pittman Roberson Act (PRA) funding occur every 5 years. Section 7 consultations generally involve staff that are familiar with PRA management issues, although the proposed critical habitat designation would likely increase the scope of section 7 consultations in game management units, and may require reinitiating the most recent section 7 consultation. In 2003, the PRA game management program consultation cost without critical habitat over through 2013 was estimated to be \$4,600 to \$6,900; including the designation of critical habitat in the consultation was estimated to increase the consultation costs to \$6,440 to \$12,650 (DEA 2002, p. VI-10).

Section 7 consultation would only be required for game management actions that use Federal funding (such as PRA), or require Federal authorization. Management activities that do not have a Federal nexus (e.g., those funded entirely by the State) would not be subject to section 7 consultation requirements, since no Federal action agency would be involved. Future section 7 consultations regarding the impact of PRA funding for the State DLNR's game management program on listed species and critical habitat would be evaluated on a case-by-case basis. However, since the specific nature of those actions and the presence of a Federal nexus are uncertain, the potential effects to critical habitat cannot be reliably predicted. Accordingly, we believe the 2003 baseline and incremental cost estimates are fairly representative of future section 7 consultation costs relative to PRA funding.

13 COSTS TO SMALL ENTITIES – Part I Assessment

SMALL BUSINESS ANALYSIS AND ENERGY IMPACTS ANALYSIS

This analysis considers the potential distributional economic effects that the proposed critical habitat designation could have on small businesses and upon the energy industry. Specifically, these considerations are required through the Regulatory Flexibility Act (RFA) as amended by

the Small Business Regulatory Enforcement Fairness Act (SBREFA) and Executive Order 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use.”¹

A.1 Impacts to Small Entities

The RFA identifies three types of small entities:

- **Small Business** - Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The SBA has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm’s parent company and all affiliates as a single entity.
- **Small Governmental Jurisdiction** - Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
- **Small Organization** - Section 601(4) defines a small organization as any not-for profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc.

The courts have held that the RFA/SBREFA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC)*, FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The generating utilities that expected to be regulated were large businesses; however, their customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting

¹ Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164 (codified at 5 U.S.C. § 601). Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, 110 Stat. 857 (codified at 5 U.S.C. § 601 et seq). E.O. No. 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” May 18, 2001.

and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.²

Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.³ The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of state plans that incorporated the standards. The court found that, while EPA imposed regulation on states, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.

The SBA in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.⁴ “If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the Federal agency to some other governing body.”⁵

The regulatory mechanism through which critical habitat protections are enforced is section 7 of the Act, which directly regulates only those activities carried out, funded, or permitted by a Federal agency. By definition, Federal agencies are not considered small entities, although the activities they may fund or permit may be proposed or carried out by small entities. Given the SBA guidance described above, this analysis considers the extent to which this designation could potentially affect small entities, regardless of whether these entities would be directly regulated by the Service through the proposed rule or by a delegation of impact from the directly regulated entity. Although businesses affected indirectly are considered, this analysis considers only those entities for which impact would not be measurably diluted.

Designation of critical habitat only affects activities carried out, funded, or permitted by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. If there is a Federal nexus, Federal agencies will be required to consult with us under section 7 of the Act on activities they fund, permit, or carry out that may affect critical habitat. If we conclude, in a biological opinion, that a proposed

² 773 F. 2d 327 (D.C. Cir. 1985).

³ 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

⁴ Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act, pg. 20.

⁵ *Ibid.*, pg. 21.

action is likely to destroy or adversely modify critical habitat, we can offer “reasonable and prudent alternatives.” Reasonable and prudent alternatives are alternative actions that can be implemented in a manner consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that would avoid destroying or adversely modifying critical habitat. A Federal agency and an applicant may elect to implement a reasonable and prudent alternative, associated with a biological opinion that has found adverse modification of critical habitat. An agency or applicant could alternatively choose to seek an exemption from the requirements of the Act or proceed without implementing the reasonable and prudent alternative. However, unless an exemption were obtained, the Federal agency or applicant would be at risk of violating section 7(a)(2) of the Act if it chose to proceed without implementing a reasonable and prudent alternative. We may also identify discretionary conservation recommendations designed to minimize or avoid the adverse effects of a proposed action on critical habitat, help implement recovery plans, or to develop information that would contribute to the recovery of the species.

Within the proposed critical habitat designation, the types of actions or authorized activities that we have identified as potential concerns that would be subject to consultation under section 7 of the Act if there is a Federal nexus include:

1. Activities that might degrade or destroy the physical or biological features for the species including, but not limited to, the following: grazing; maintaining or increasing feral ungulate levels; clearing or cutting native live trees and shrubs (e.g., woodcutting, bulldozing, construction, road building, mining, herbicide application); and taking actions that pose a risk of fire;
2. Activities that may alter watershed characteristics in ways that would reduce groundwater recharge or alter natural, wetland, aquatic, or vegetative communities. Such activities include new water diversion or impoundment, groundwater pumping, and manipulation of vegetation through activities such as the ones mentioned above;
3. Recreational activities that may degrade vegetation;
4. Mining sand or other minerals;
5. Introducing or encouraging the spread of non-native plant species; and
6. Importing non-native species for research, agriculture, and aquaculture, and releasing biological control agents.

None of the proposed critical habitat units considered in Part I of the economic analysis contains significant residential, commercial, industrial, or agricultural development or operations, and few projects are anticipated within the proposed critical habitat. This situation reflects the fact that:

1. Most of the land is unsuitable for development, farming, or other economic activities due to the rugged mountain terrain, lack of access, and remote locations; and
2. Existing land-use controls severely limit development and most other economic activities in the mountainous interior of Oahu.

Although some existing and continuing activities involve the operation and maintenance of existing manmade features and structures in certain areas, these areas do not contain the primary constituent elements for the species, and would not be impacted by the designation. Any existing and planned projects, land uses, and activities that could affect the proposed critical

habitat that have no Federal involvement would not require section 7 consultation and would not be restricted by the requirements of the Act. Finally, many of the anticipated projects and activities with Federal involvement are conservation efforts that would be expected to trigger formal section 7 consultations. If formal consultation were to be required, we anticipate that a project proponent could modify the project or take measures to protect the affected species or critical habitat, such as establishing conservation set-asides, management of competing non-native species, restoration of degraded habitat, and regular monitoring. The Service has been involved with these types of projects for many years throughout the Hawaiian Islands. We are unaware of instances where these types of activities have resulted in any significant economic impacts to the individuals or agencies involved.

In the 2001, 2002, and 2008 economic analyses for the designation of critical habitat for the Oahu elepaio, 99 species of Oahu plants, and 12 Hawaiian picture-wing flies, we evaluated the potential economic effects on small business entities resulting from the protection of these species and their habitats related to the proposed designation of critical habitat, and determined that it would not have a significant economic impact on a substantial number of small entities. The RFA/SBREFEA defines “small governmental jurisdiction” as the government of a city, county, town, school district, or special district with a population of less than 50,000. By this definition, Honolulu County is not a small governmental jurisdiction because its population was 876,156 residents in 2000 and it remains a larger county. Certain State agencies and federally-funded activities on State lands may be affected by the proposed critical habitat designation, such as the Hawaii DLNR, which receives Federal funds through the PRA for game management, including the public game mammal hunting program, as well as for management of non-game species. However, for the purposes of the RFA, State governments are considered independent sovereigns, not small governments. There is significant overlap between the current critical habitat proposal and the critical habitat designations for the Oahu elepaio, the 99 Oahu plant species, and the Hawaiian picture-wing flies. This area generally lacks development potential, there have been few section 7 consultations, and we have no information which would indicate the existing critical habitat designations have imposed any significant incremental economic effects to any individuals, businesses, organizations, or agencies. Collectively, these observations provide further evidence that this proposal will not have a significant economic impact on a substantial number of small entities.

We have made an initial RFA finding that the proposed designation of critical habitat for the 122 Oahu species covered by Part I of the economic analysis will not have a significant effect on a substantial number of small entities, for the reasons described above. However, we will defer making a final RFA finding in order to allow the public an opportunity to comment on potential economic consequences of this critical habitat proposal.

ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR 24 SPECIES AT KALAELOA, OAHU

Executive Summary – Economic Analysis - Part II

Part II assesses the potential economic impacts associated with the proposed critical habitat designation at Kalaeloa, Oahu for *Achyranthes splendens* var. *rotundata* (Ewa hinahina), *Chamaesyce skottsbergii* var. *skottsbergii* (Ewa plains akoko), *Achyranthes splendens* var. *rotundata*, *Bidens amplexans*, *Bonamia menziesii*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Cyperus trachysanthos*, *Euphorbia haeleeleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendron pyrifolium*, *Marsilea villosa*, *Melanthera tenuifolia*, *Neraudia angulata* var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Sesbania tomentosa*, *Spermolepis hawaiiensis*, and *Vigna o-wahuensis*). Only two of these plants, *Achyranthes splendens* var. *rotundata* (Ewa hinahina) and *Chamaesyce skottsbergii* var. *skottsbergii* (Ewa plains akoko) currently occur at Kalaeloa.⁶

The Service is proposing to designate seven critical habitat units totaling approximately 566 acres (ac) (229 ha) at Kalaeloa. Six of the proposed units are currently occupied by the Ewa hinahina or the Ewa plains akoko, and provide unoccupied critical habitat that is essential to the conservation of other plant species that were historically present. One proposed unit (Lowland Dry 8) is not occupied by any of the above species. The occupied critical habitat units are not expected to incur any appreciable economic impact related to additional conservation measures or recommendations. This is because Federal actions in occupied areas already undergo section 7 consultation, and the need to incorporate additional conservation recommendations related to critical habitat designation would generally not be anticipated for the reasons discussed herein.

We acknowledge there could be a difference between consulting on effects to the species and effects to critical habitat depending on the particular circumstances of the Federal action being proposed, but are unable to quantify that difference based on our consultation history to date. In addition, because future Federal actions in these areas are unknown at this time, we are unable to reasonably predict their future impacts on the species and the proposed critical habitat areas. We are therefore seeking public comments on future Federal actions and the reasonably foreseeable or probable economic impacts those actions would incur as a result of the proposed critical habitat designation.

To the extent that a future activity would involve a section 7 consultation, the Service and its consulting partners may realize a small increase in administration effort to address a proposed action's effects on critical habitat. The single unit that is not currently occupied by the species potentially could have greater economic impacts. However, there is great uncertainty in this assessment because in Hawaii, the Service rarely consults on private property development activities because there is generally no Federal nexus that requires section 7 consultation. Thus,

⁶ 76 FR 46362, August 2, 2011.

there is very little definitive data or other information to inform estimates of economic impacts that might result as a consequence of consultation.

In the absence of definitive data or other economic information, this analysis presents a range of economic effects. The lower-bound estimate of effects is that the landowners would incur no economic impact from the designation of critical habitat. The upper-bound estimate of effects is that each parcel owner would participate in section 7 consultation with the Service before initiating their action, and the Service, Federal action agency, and/or the parcel owner would incur additional administrative costs. The Service can not at this time make any conclusive statements concerning future conservation measures or recommendations because they depend on project specifics that are currently unknown. Accordingly, we estimated the upper-bound economic impacts of conservation measures or recommendations as a percentage of a land parcels current market value.

The results of this analysis are summarized in table ES-1. Table ES-2 provides an expanded summary of how economic impacts are distributed. The remainder of this report provides additional detail about the specific land parcels proposed for designation and their planned future uses.

Table ES-1: Total Economic Impacts		
Ewa plains akoko and Ewa hinahina Proposed Critical Habitat Designation		
	Lower-Bound	Upper-Bound
0.07 Discount Rate		
Net Present Value	\$ 0* -	\$56,028,264
Annualized	\$ 0* -	\$5,292,780
0.03 Discount Rate		
Net Present Value	\$ 0* -	\$56,096,708
Annualized	\$ 0* -	\$5,292,780

* Assumes no Federal nexus

Table ES-2

Upper-Bound Estimate of Administrative Economic Costs –(\$2011)					
	Service	Federal Action Agency	Third Party	Biological Assessment	Total Costs
Administrative Costs					
Occupied Critical Habitat					
Total Costs	\$28,980	\$32,550	\$18,375	\$25,200	\$105,000
NPV (.07 discount rate)	\$14,953	\$16,795	\$9,481	\$13,003	\$54,178
NPV (.03 discount rate)	\$21,273	\$23,893	\$13,488	\$18,498	\$77,075
Annualized Cost	\$1,380	\$1,550	\$875	\$1,200	\$5,000
Unoccupied Critical Habitat					
Total Costs	\$71,500	\$80,600	\$45,500	\$62,400	\$260,000
NPV (.07 discount rate)	\$45,967	\$51,817	\$29,252	\$40,117	\$167,153
NPV (.03 discount rate)	\$58,492	\$65,937	\$37,222	\$51,048	\$212,699
Annualized Cost	\$5,500	\$6,200	\$3,500	\$4,800	\$20,000
Combined					
Total Costs	\$100,480	\$113,150	\$63,875	\$87,600	\$365,000
NPV (.07 discount rate)	\$60,920	\$68,613	\$38,733	\$53,119	\$221,331
NPV (.03 discount rate)	\$79,765	\$89,830	\$50,710	\$69,546	\$289,774
Annualized Cost	\$6,880	\$7,750	\$4,375	\$6,000	\$25,000
Property Value Loss (discounted)					\$55,806,934
Annualized Cost (.03 discount rate)					\$1,674,208
Annualized Cost (.07 discount rate)					\$3,906,485
Notes: Assumes one consultation per year for a single occupied and unoccupied parcel. Annualized administrative costs are not affected by discount rate. Property value loss is based on current market value. Net present value calculation is unaffected by discount rate. Annualized property value losses calculated based on losses carrying out into perpetuity.					

CHAPTER 1 - Background

Each of the specific geographic areas proposed as occupied critical habitat for Ewa hinahina or Ewa plains akoko contain the physical or biological features essential to their conservation by providing for the successful functioning of the ecosystem on which the species depend. The proposed designation also takes into account any species-specific conservation needs. For example, coral rock outcrop is essential for the conservation of the Ewa plains akoko, but is not a requirement shared by all species (e.g., most plant species) within the same ecosystem. The areas believed to be unoccupied are proposed for designation because they are essential for the conservation of the species by providing space for population expansion and recovery.

CHAPTER 2 - Analytical Framework

2.1 Overview

Section 4(b)(2) of the Endangered Species Act (Act) directs the Secretary to designate critical habitat for listed species based on the best scientific data available after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. The Act allows the Secretary to exclude any area from critical habitat if he determines that the benefits of exclusion outweigh the benefits of inclusion as long as the exclusion does not result in the extinction of the species. The purpose of this analysis, therefore, is to highlight the potential economic effects resulting from the designation of critical habitat so the Secretary may consider such information in the context of making a final critical habitat determination.

2.2 Categories of Economic Effects

This analysis considers both the economic efficiency and distributional effects that may result from the designation of critical habitat. These concepts are further explained, below.

2.2.1 Economic Efficiency Effects

Executive Order 12866 “Regulatory Planning and Review” directs Federal agencies to assess both the costs and benefits of its regulations and to only adopt those upon a reasoned determination that the benefits of the intended regulation justifies its costs.⁷ Subsequently, the Office of Management and Budget issued guidance to the Federal agencies regarding the best practices that agencies should follow in determining both the benefits and costs of its

⁷ Executive Order 12866, Regulatory Planning and Review, September 30, 1993, as amended by Executive Order 13563, Improving Regulation and Regulatory Review, January 18, 2011.

http://www.whitehouse.gov/omb/international_regulatory_cooperation

regulations.⁸ Specifically, the guidance instructs the agencies that the appropriate concept for valuing both benefits and costs is by measuring or understanding the “opportunity costs” imposed by the regulation. Opportunity costs are commonly defined as what individuals forego in order to attain a certain level of chosen goods or services. In the context of regulations that protect these species’ habitat, these economic effects reflect the additional resources required to conserve the species (economic costs) and the gains in social welfare resulting from the change in resource reallocation (consumer surplus).

In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, if the set of activities that may take place on a parcel of land is limited as a result of the designation or the presence of the species, and thus the market value of the land is reduced, this reduction in value represents one measure of an opportunity cost. Similarly, the costs incurred by a Federal action agency to consult with the Service under section 7 of the Act represent opportunity costs of conservation efforts for the species.

For example, a Federal land manager such as the U.S. Army Corp of Engineers (USACE) may enter into a consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation is an economic opportunity cost because the landowner or manager’s time and effort would have been spent in an alternative activity had the parcel not been included in the designation. Similarly, the Service also experiences opportunity costs when staff are engaged in a section 7 consultation.

When compliance activity is not expected to significantly affect markets – that is, not result in a shift in the quantity of a good or service demanded given a change in price – the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

2.2.2 Distributional Effects

Measurements of changes in economic efficiency focus on the net impact of conservation efforts, without consideration of how certain economic sectors or groups of people are affected. Thus, a discussion of efficiency effects alone may miss important distributional considerations. OMB encourages Federal agencies to consider distributional effects separately from efficiency effects.⁹ This analysis considers two types of distributional effects, including impacts on small entities and impacts on energy supply, distribution, and use.¹⁰ It is important to note that these

⁸ U.S. Office of Management and Budget, “Circular A-4,” September 17, 2003 and “Regulatory Impact Analysis: A Primer,” August 15, 2011. http://www.whitehouse.gov/omb/inforeg_regpol_agency_review

⁹ Ibid.

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

are fundamentally different measures of economic impact than efficiency effects, and thus cannot be added or compared with estimates of changes in economic efficiency.

2.2.3 Analytical Framework Followed to Estimate Economic Impacts

Section 7 of the Act requires Federal agencies to consult with the Service on any actions authorized, funded, or carried out to insure that such action is not likely to jeopardize the continued existence of the listed species or adversely modify its critical habitat.¹¹ There are no requirements for non-Federal entities to consult with the Service regarding the effect of their actions on designated critical habitat. Consequently, this analysis focuses only on those conservation efforts and resulting economic effects that would be associated with Federal actions. Conservation actions and related economic effects associated with other parts of the Act or associated with State or local conservation requirements are treated as baseline costs, because such actions would be required regardless of the designation.

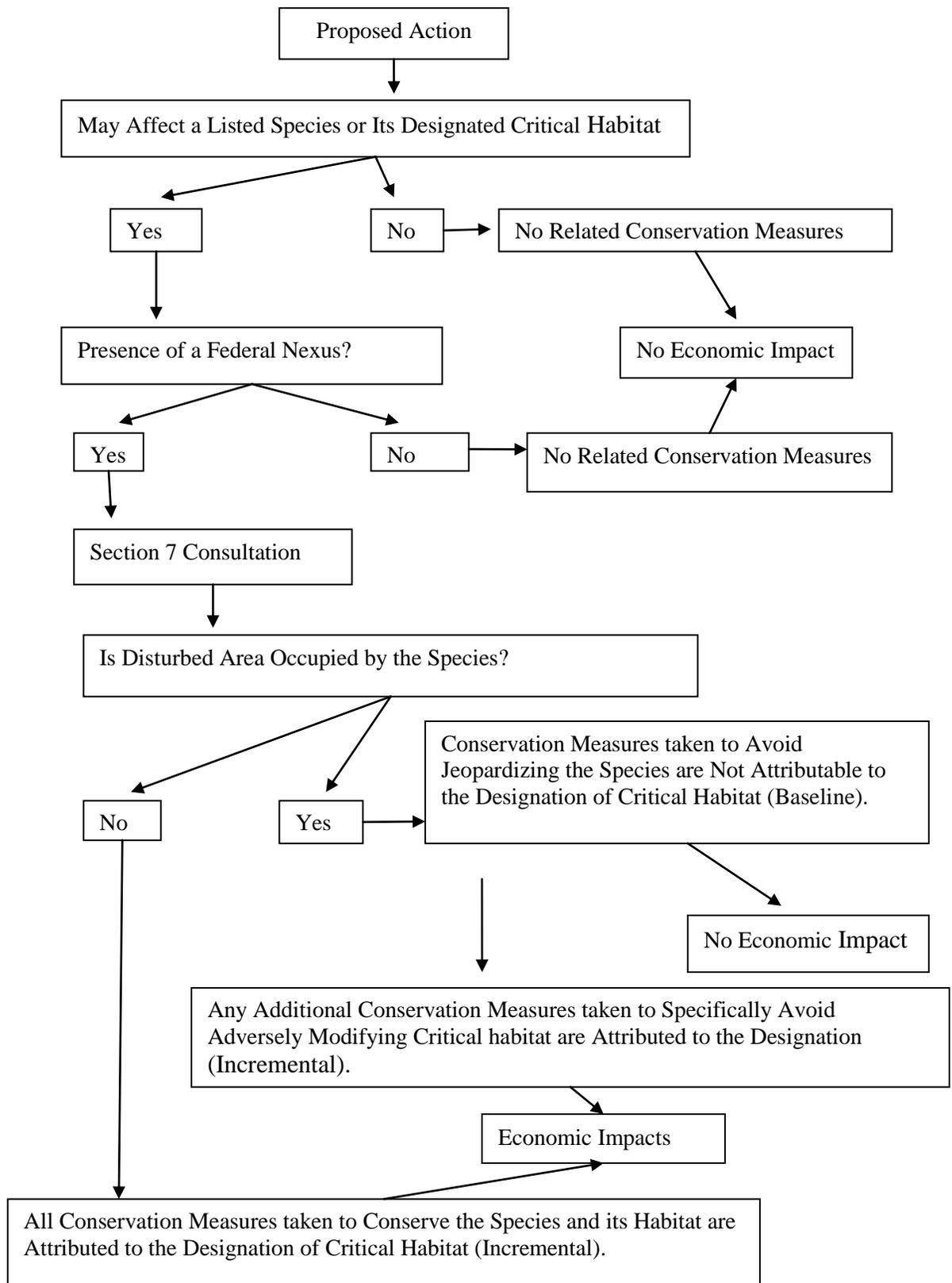
An assessment of economic impacts first begins with an assessment of conservation measures that are associated with a section 7 consultation and those measures that are expressly attributable to the designation of critical habitat. Importantly, section 7 conservation measures could still occur within critical habitat areas and not be associated with the designation of critical habitat. This would most likely occur within critical habitat areas that are occupied by the species and where conservation measures taken to avoid jeopardizing a species as part of a section 7 consultation process are also sufficient to avoid adversely modifying critical habitat. In these cases there is normally only a minor administrative burden incurred by the Service and partners with regard to the designation of critical habitat.

To date, critical habitat designations appear to have the most significant economic impact within areas that are not occupied by the species. In these cases, actions that do not jeopardize a species (e.g., because the species is absent from the impact area) may adversely modify critical habitat unless actions are taken to avoid, modify, or mitigate the project's adverse impacts to the habitat. In fact, absent a designation of critical habitat for unoccupied areas, it is very unlikely that any project would result in a section 7 consultation with the Service.

Figure 2.1 presents a schematical overview of the process followed to estimate economic impacts for this proposed designation. For the most part, this analysis attempts to follow this framework for each of the 34 parcels of property that underly proposed critical habitat.

¹¹ Endangered Species Act, Section 7(a)(2)

Figure 2.1: Framework Used to Identify Economic Impacts of Proposed Critical Habitat Designation (non-administrative)



2.3 Federal Nexus

By definition, critical habitat economic impacts must be associated with a Federal nexus. As previously discussed, section 7 of the Act requires only the Federal government to ensure that its actions avoid either jeopardizing a listed species or adversely modifying its critical habitat. Projects lacking a Federal nexus do not have to undergo the section 7 consultation process. The Act defines a Federal action as any activity that is either permitted, funded, or carried out by the Federal government. Consequently, privately funded projects could still be subject to a consultation with the Service if the project must obtain Federal funding or a permit. Common examples are permits issued by the Army Corp of Engineers for the modification of wetlands that may be necessary before commencing with a real estate development project or State highway projects that are partially funded with monies from the Federal Highway Administration. Table 2.1, below highlights some of the more common types of activities that the Service has consulted on in the past.

Table 2.1 - Potential Section 7 Consultations and Federal Nexus		
Federal Agency	Types of Activities	Federal Nexus
Federal Highways Administration	Roads and Infrastructure Development and Improvements	Funding
Environmental Protection Agency	Trash to Power Facilities	Permitting - Clean Air Act
Department of Housing and Urban Development – Community Planning Development	Real Estate Development	Block Grant Funding below:
U.S. Coast Guard	Federal Actions	Federal Property
U.S. Navy	Federal Actions	Federal Property
U.S. Department of Energy	Energy development projects	Funding - Energy Efficiency and Renewable Energy
U.S. Army Corps of Engineers	CWA dredge, fill	Permitting- Section 404 Permits
U.S. Fish and Wildlife Services	Pearl Harbor National Wildlife Refuge Complex- endangered species management	Federal Property
Federal Emergency Management Agency	Disaster relief	Funding

Often the Service ends up consulting with itself over the effects of its own actions on listed species and habitat. For example, the Service has provided funding to implement

conservation agreements on private property for activities such as ungulate fencing. The Service also provides funding to conservation groups to assist them in their conservation activities (e.g., controlling for invasive species). In such instances when these activities may affect a listed species or its habitat, the Service must conduct an intra-agency section 7 consultation to determine whether the effects of its actions could either jeopardize a listed species or adversely affect its critical habitat.

Previous economic analyses regarding critical habitat designations predicted, in some cases, that the designation of critical habitat would result in a significant increase in the number of section 7 consultations and correspondingly an increase in the types and level of conservation measures needed to avoid adversely modifying critical habitat. However, a review of the section 7 consultation records for the previous critical habitat designations on the island of Oahu indicates that contrary to predictions, the designation of critical habitat has had little effect on either the number of consultations or the type and level of conservation measures agreed upon to avoid adversely modifying critical habitat.

2.4 Other Existing Statutes and Programs

2.4.1 Hawaii Statute 195D

Hawaii statute 195D is entitled the Conservation of Aquatic Life, Wildlife, and Land Plants.¹² This statute makes it unlawful for any person to take any species within the State that has been determined by the State to be endangered. In defining State endangered species, the State automatically includes any species listed under the Federal Endangered Species Act. Similar to the Federal law, the State requires any person seeking an incidental take permit for an otherwise lawful activity to first consult with the State to develop a habitat conservation plan, which, among other things, requires the applicant to develop a plan that to the maximum extent practicable minimizes and mitigates the impact of take.

2.5 Kalaeloa Consultation History

This analysis considers the likelihood and economic costs associated with informal and formal section 7 consultations, and technical assistance efforts. Technical assistances provided by the Service essentially are responses for requests for information either from other Federal agencies or third parties, and may take a variety of forms, including a species list provided by the Service, information on listed, proposed, and candidate species, and contacts having information on other sensitive species or State listed species. The Service may also alert State or tribal agencies, or other Service offices of a project. At times the Service may recommend that the action agency conduct additional studies on species' distribution in the area.

An informal consultation is an optional process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation to determine whether a proposed Federal action may affect listed species or critical habitat. If it is determined that a proposed Federal action may

¹² HRS Chapter 195D, <http://www.hawaii.edu/ohelo/statutes/HRS195D/HRS195D.htm>.

affect a listed species or its critical habitat, the Service conducts a formal consultation on the activity with its Federal action agency partner unless the Federal action agency determines and FWS concurs that the proposed action is not likely to adversely affect a listed species or critical habitat. A formal section 7 consultation begins with a Federal agency's written request and submittal of a complete initiation package, which may include a biological assessment. The Service then determines whether the proposed action is likely to jeopardize the continued existence of the listed species or destroy or adversely modify its designated critical habitat. A formal consultation is concluded with the issuance of a biological opinion.

If the Service determines that the action may jeopardize the species or destroy/adversely modify critical habitat, the Service will include reasonable and prudent alternatives that it believes may avoid this result, if any. Reasonable and prudent alternatives are defined by the ESA implementing regulations as alternatives that can be implemented in a manner consistent with the intended purpose of the action, are consistent with the scope of Federal agency's legal authority and jurisdiction, and are technologically and economically feasible (50 C.F.R. § 402.02).

Since 1982, when the Ewa plains akoko was listed as endangered (47 Federal Register (FR), 36846; August 24, 1982), the Service has conducted five formal consultations and six informal consultations on this species and the Ewa hinahina, and we have provided technical assistance on over 60 proposed projects. Of the five formal consultations, four were consultations were with the Navy regarding decontamination of 35 ac (14.4 ha) of Navy lands formerly used as a trap and skeet range/target practice, and conveyance of other Navy lands to Federal or State entities. One consultation was related to dredging and construction of the deep draft harbor at Barbers Point with the Army Corps of Engineers. Of the six informal consultations, one was for Federal permitting by the Environmental Protection Agency for a waste to energy processing operation, one was for granting of Federal funds under Section 6 of the ESA/Act to the State of Hawaii, one was for Service funding of predator-proof fencing and habitat restoration (not within Kaleloa), one was for the transfer of three former Navy parcels at Point/Kalaeloa, and two were for transfer of Navy lands to non-Federal recipients.

Table 2.2 - Most Recent Consultation History for Ewa plains akoko and Ewa hinahina					
Ewa plains akoko					
Year	Technical Assistance	Informal Consultation	Formal Consultation	Federal Action Agencies	Activities
2007	0	2	0	FWS	Grant funding; Fencing
2008	5	0	0	HI, DOD, FWS, FAA, FS	Property assessment; Biological assessment; Review of Pesticide Use; Air Tour Operations; Fuels Mapping
2009	10	1	0	FS; EPA; DOD, HI; DOA; FS; DOD; EPA; Other	Fuels mapping and planning; waste water facility permitting; INRMP; Master Planning; Biological survey; Development
2010	7	0	0	HI; FAA; HI; Other	Development Planning; Grading Project; Funding proposal
Ewa hinahina					
Year	Technical Assistance	Informal Consultation	Formal Consultation		
2007	2	1	0	GSA; FCC; Other	Land transfer; Cell tower placement; Reservoir
2008	5	0	0	HI; DOD; FWS; FAA; FS	Property; BRAC review; Pesticide use; Air tour operations; Fuels mapping
2009	7	1	0	FS; EPA; DOD; DOA; Other	Fuels mapping; Power plant permitting; Land disposal; Planning; INRMP; Funding proposal; Development
2010	8	1	0	DOD; HI; FAA; Other	Grading Project; Transit rail planning; Harbor expansion; Land acquisition; Fuels mapping; Land transfers; BRAC review; Development

2.6 Threats to Critical Habitat and Special Management Considerations

Section 7 (a)(2) of the Act requires that Federal agencies consult with the Service to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of critical habitat. Threats to the physical or biological features in occupied areas, or to unoccupied areas determined to be essential to the conservation of these species, include habitat destruction and modification, competition with nonnative species, hurricanes, flooding, fire, drought, and climate change. All proposed critical habitat units would benefit from the implementation of conservation measures or conservation recommendations to address the ongoing degradation and loss of native habitat caused by nonnative plants, and new alien plant species. Particular attention may be required during nonnative plant control efforts to avoid disturbances that may facilitate the further introduction and establishment of invasive plant seeds, and to avoid trampling listed plant species in the course of management activities.

2.6.1 Commonly Recommended Conservation Measures

Conservation measures are defined as actions to benefit or promote the recovery of listed species that are included by the Federal agency as an integral part of the proposed action (U.S. Fish and Wildlife Service and National Marine Fisheries Service, 1998, p. xii). These actions are taken by the Federal agency or applicant, and serve to minimize or compensate for, project effects on the species under review. These may include actions taken prior to the initiation of consultation, or actions which the Federal agency or applicant have committed to complete in a biological assessment or similar document.

Conservation Recommendations are the Services' non-binding suggestions resulting from formal or informal consultation that: (1) identify discretionary measures a Federal agency can take to minimize or avoid the adverse effects of a proposed action on listed or proposed species, or designated or proposed critical habitat; (2) identify studies, monitoring, or research to develop new information on listed or proposed species, or designated or proposed critical habitat; and (3) include suggestions on how an action agency can assist species conservation as part of their action and in furtherance of their authorities under section 7(a)(1) of the Act [50 CFR § 402.02] (USFWS and NMFS 1998, p. xii).

There are several common types of conservation measures or conservation recommendations the Service may request or suggest during section 7 consultations for projects that may affect critical habitat for the listed plant species at Kalaeloa:

1. Installation of silt fencing to control erosion on construction sites;
2. Containment of construction site surface runoff to avoid contamination of native plants;
3. Establishment of buffer zones around fenced plant project where plants are located;
4. Cleaning procedures to reduce the introduction of non-native plants;
5. No importation of earthen soil from off-site to reduce the introduction of non-native seeds.

2.7 Identifying Reasonably Foreseeable Future Land Uses

There are 34 parcels of property underlying proposed critical habitat at Kalaeloa. For the most part, these parcels are all largely undeveloped and include some of the important natural features necessary for the species' survival and recovery (the principle primary purpose for designating critical habitat). Identifying the likely future uses for these parcels, however, is difficult. For the purposes of this analysis, future uses must be reasonably foreseeable in order to assess economic impacts. For the purposes of this analysis a reasonably foreseeable future use would include:

1. Future development that has already been permitted;
2. Future uses consistent with current zoning
3. Community approved or finalized Master Plans that indicate future land uses.

While this analysis is forward looking, in reality it can not look forward into perpetuity regarding future land uses. Even if it could, through the process of discounting, future impacts would be negligible when converting lost future uses into current dollars.¹³ This analysis relies on the latest most readily available information from State and local authorities to determine future land uses for parcels proposed as critical habitat.

2.7.1 Data Sources

This analysis relies on readily available, public information as its main source of data regarding current and future land use. The three main sources of information used for this analysis are:

1. Honolulu Land Information System (HoLIS);
2. Kalaelo Master Plan for Barberts Point Area; and
3. Kapolei Area Long Range Master Plan.

Each of these data sources is discussed in greater detail, below.

2.7.1.1 Honolulu Land Information System

The Honolulu Land Information System (HoLIS) is an interactive GIS web map and data service provided by the City and County of Honolulu's Department of Planning and Permitting. Importantly, one can search this on-line data base by a parcel's unique identifier Tax Map Key (TMK) for characteristics such as current assessment, ownership, and current zoning designation. There are 35 different zoning districts that were established by the City and County of Honolulu so that land use could be regulated in a manner that would encourage orderly development in accordance with adopted land use policies, including the Oahu general plan and development plans an to promote and protect the public health, safety, and welfare. Table 2.3 lists the zoning codes developed by the City and County government.

¹³ Add discussion or reference in appendix that expands on discounting.

Table 2.3: City and County of Honolulu Zoning Codes and Description	
Zoning Code	Description
A-1	A-1 Apartment Low-density
A-2	A-2 Apartment Medium-density
A-3	A-3 Apartment High-density
AG-1	AG-1 Restricted Agriculture
AG-2	AG-2 General Agriculture
Aloha	Aloha Tower Project
AMX-1	AMX-1 Apartment Mixed Use Low-density
AMX-2	AMX-2 Apartment Mixed Use Medium-density
AMX-3	AMX-3 Apartment Mixed Use High-density
Apartment	Apartment Precinct
ApartmentMix	Apartment Mixed Use Subprecinct
B-1	B-1 Neighborhood Business
B-2	B-2 Community Business
BMX-3	BMX-3 Community Business Mixed Use
BMX-4	BMX-4 Central Business Mixed Use
C	C Country
F-1	F-1 Federal and Military Preservation
I-1	I-1 Limited Industrial
I-2	I-2 Intensive Industrial
I-3	I-3 Waterfront Industrial
IMX-1	IMX-1 Industrial Mixed Use
IS	Industrial Service Precinct
Kak	Kakaako Community Development District
Marine	Marine Precinct
MU	Mixed Use Precinct
P-1	P-1 Restricted Preservation
P-2	P-2 General Preservation
Pub	Public Precinct
PU	Public Use Precinct
R-20	R-20 Residential
R-10	R-10 Residential
R-7.5	R-7.5 Residential
R-5	R-5 Residential
R-3.5	R-3.5 Residential
ResCom	Resort Commercial Precinct
ResMix	Resort Mixed Use Precinct
Resort	Resort
WI	Waterfront Industrial Precinct

2.7.1.2 Kalaeloa Master Plan for Point Area

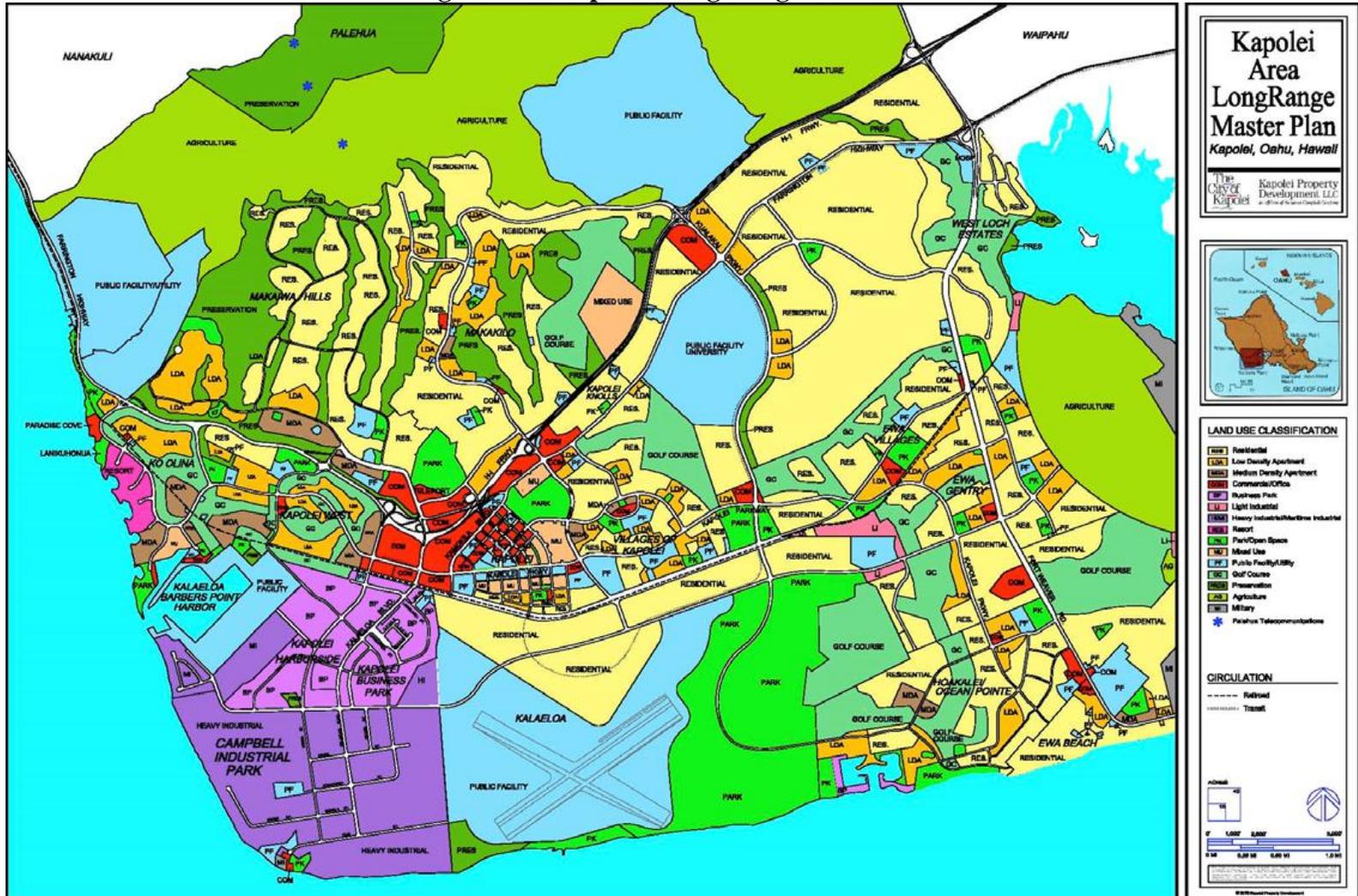
In May 2005 the Hawaii Community Development Authority (HCDA) adopted a Strategic Plan that established a vision for Kalaeloa as a “Center of Excellence” within the Ewa region of Oahu. Precipitating the Strategic Plan was the closure of the Naval Air Station Point, forcing the community to consider how it wanted to evolve absent this major economic contributor. The Plan envisions redeveloping Kalaeloa into a diversified economy over the course of a generation. The Master Plan was finalized in 2006 as an amendment to the Kalaeloa Community Redevelopment Plan, which was prepared as part of the U.S. Navy’s Base Realignment and Closure process. The Master Plan allows the Redevelopment Plan to retain its statutory function as the principal policy and planning document for HCDA’s use in coordinating with Federal, State, and county government agencies, developers, private landowners, and the community.¹⁴

2.7.1.3 Kapolei Area Long Range Master Plan

The City of Kapolei has prepared an Urban Design Plan (UDP) that defines how the City wants to evolve as it develops into a Secondary Urban Center to absorb future growth emanating from the City of Honolulu. As part of its planning process, the City has defined how it envisions its surrounding areas to be developed into an integrated and sustainable community. As part of this process, the UDP shows desired future development and any necessary rezoning for surrounding areas (Figure 2.2). This document has been prepared to be used by prospective developers, the State of Hawaii, the City and County of Honolulu, James Campbell Company LLC and its affiliates, and the Kapolei Design Advisory Board in the development and review of projects.

¹⁴ Kalaeloa Master Plan, State of Hawai’I, Hawai’I Community Development Authority, March 1, 2006, p. 1-1.

Figure 2.2 - Kapolei Long Range Master Plan



Source: Kapolei Property Development, LLC, Affiliates of the James Campbell Company LLC.

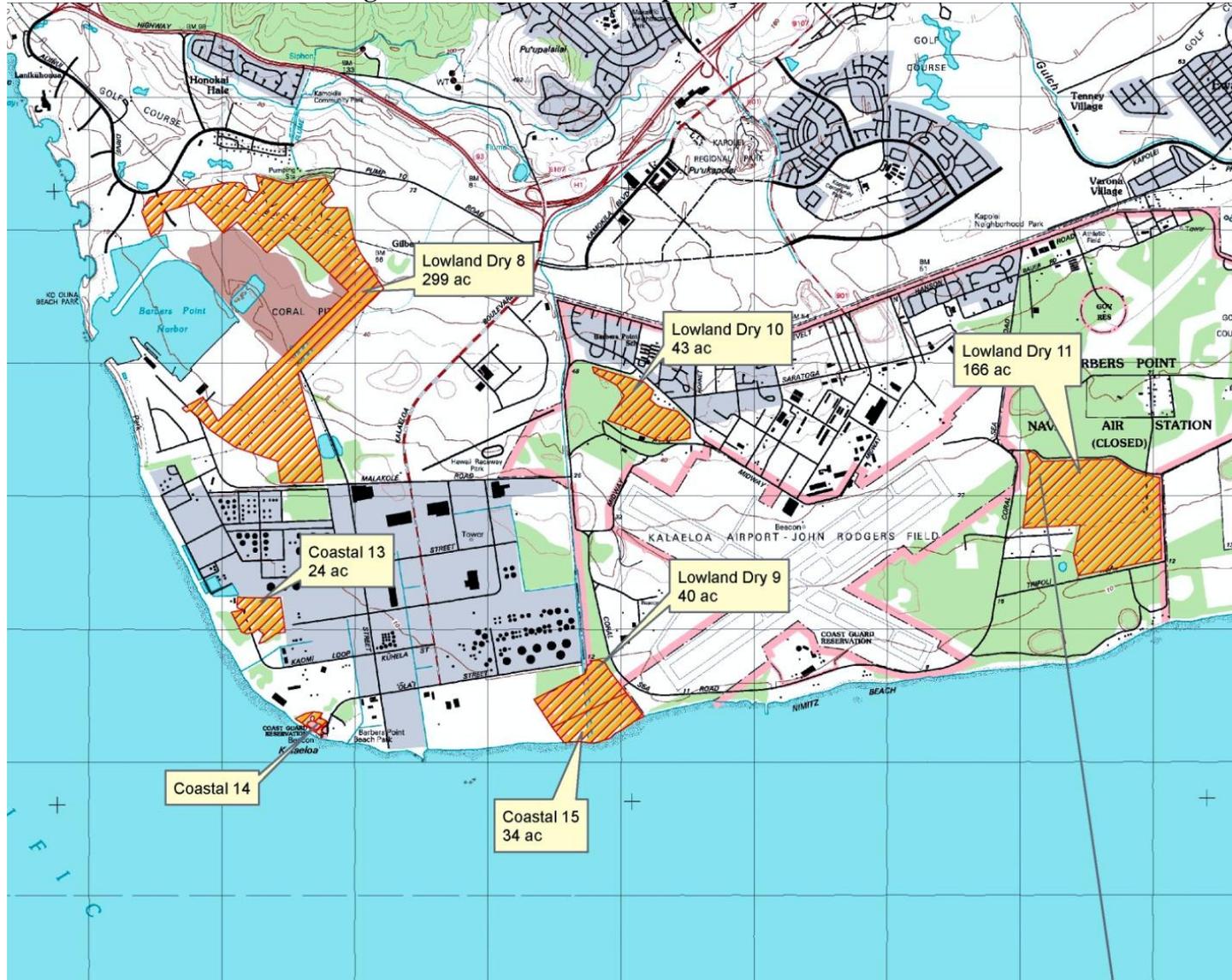
http://www.kapolei.com/master_plan.cfm. Accessed 7/25/11.

CHAPTER 3 - Critical Habitat Description

This section provides an overview for each of the proposed critical habitat units at Kalaeloa. In total the Service is proposing 566 ac (229 ha) as critical habitat. The proposed areas are located within an area of Oahu known as Kalaeloa. Kalaeloa is west of the city of Honolulu, on Oahu's southwestern coastline, and was formerly referred to as Barbers Point, which was the name of a former naval air station located in the area. The Barbers Point naval air station was decommissioned in 1999 under the Base Realignment and Closure Act, and the community of Kalaeloa is in the process of developing a strategic plan for sustaining and developing the economy in absence of the naval air station.

Currently the Kalaeloa area consists of heavily industrialized areas interspersed with open areas, an airport, a harbor, and other commercial enterprises. The master plan for Kalaeloa envisions re-developing the area so as to integrate the economy more closely to that of nearby Honolulu City. Figure 3.1 shows the location of the seven proposed critical habitat units.

Figure 3.1 - Location of Proposed Critical Habitat Units



3.1 Coastal Unit 13

Coastal Unit 13 is 23.6 ac (9.5 ha) in size and overlies 8 parcels of property. This unit is currently occupied by the Ewa hinahina and provides unoccupied critical habitat for six other species (*Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, and *Vigna o-wahuensis*). All of the parcels within this proposed designation are currently zoned by the Department of Planning and Permitting as Intensive Industrial (I-2) properties. The landward portions of this proposed critical habitat unit is surrounded on three sides by intensively developed industrial properties. Four of the parcels are owned by the City and County of Honolulu. The combined size of these three parcels is slightly over 24 ac (9.7 ha) and together they account for about 82 percent (19 ac (7.7 ha)) of the proposed critical habitat area. The combined real estate assessment for these three parcels is over \$12 million. There are no reported improvements (i.e. buildings) on any of the parcels.

The remaining four parcels are privately owned and average approximately 4.5 ac (1.8 ha) in size. Proposed critical habitat overlays approximately one-third of the area for three of these parcels. The other two parcels have about two percent of their area proposed as critical habitat. The combined assessment for these four parcels is about \$9.5 million and according to DPP records none of the properties has any improvements. Table 3.2 identifies the ownership class, size, percent of critical habitat coverage, current zoning, envisioned future use, and current market assessment for each parcel contained in Coastal Unit 13. The arial imagery for the unit is shown in Figure 3.3, and identifies the location for each parcel within the unit.

Table 3.2: Parcel Characteristics Underlying Critical Habitat Coastal Unit 13						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91026017	Private	5.72	2.80%	I-2	Heavy Industrial	\$ 4,503,100
91026033	Govt non-Fed	6.00	71.66%	I-2	Heavy Industrial	\$ 3,614,900
91026034	Govt non-Fed	8.12	95.20%	I-2	Heavy Industrial	\$ 4,461,600
91026035	Govt non-Fed	8.51	85.36%	I-2	Heavy Industrial	\$ 4,113,500
91026037	Govt non-Fed	2.35	38.75%	Roadway	Heavy Industrial	No Assessment
91026047	Private	4.58	2.52%	I-2	Heavy Industrial	\$ 3,150,800
91026048	Private	4.51	33.82%	I-2	Heavy Industrial	\$ 3,127,200
91026049	Private	4.28	36.86%	I-2	Heavy Industrial	\$ 3,124,400
Total		44.08				\$ 26,095,500

Source: Honolulu Land Information System, Department of Planning and Permitting, City and County of Honolulu Hawaii. Accessed 7/13/11. <http://gis.hicentral.com/>

Figure 3.3: Coastal Unit 13



3.2 Coastal Unit 14

Coastal unit 14 consists of a total of approximately 4 ac (1.6 ha). The unit is occupied by the Ewa hinahina, provides unoccupied critical habitat for six other plants (*Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, and *Vigna o-wahuensis*), and surrounds a developed lighthouse facility. The unit overlays three parcels of property that are currently being assessed for tax purposes as Industrial properties by the County. To the north of this unit lies a cement plant facility. To the southeast lies a commercial tourist site (luau facility).

One parcel (TMK 91026002) is owned by the United States Coast Guard (USCG) and is approximately 5 ac (2 ha) in size; proposed critical habitat overlays approximately 41 percent of the parcel. This parcel is zoned as Federal and Military Preservation lands and the land is

currently assessed at \$3.7 million with an additional building value assessment of \$99,400. We are unaware of any plans to develop the USCG portion of the property that overlays proposed critical habitat.

One parcel is owned by the City and County of Honolulu (TMK 91026004) and is 18 ac (7.3 ha) in size. Proposed critical habitat overlays approximately 2 ac (1.6 ha) of this parcel. The parcels is zoned by DPP as Intensive Industrial (I-2) and the land is assessed at \$11.4 million.

One parcel is privately owned (TMK 91026003), and is slightly greater than 2 ac (1.6 ha) in size. Approximately 1/10 of one percent of the parcel is overlain by the proposed critical habitat designation. The parcel is zoned by DPP as commercial property and there is an active building permit for the site. Proposed critical habit appears to cover just a small portion of the parcel that abuts a paved parking lot.

Table 3.1 identifies the ownership class, size, percent of critical habitat coverage, current zoning, envisioned future use, and current market assessment for each parcel contained in Coastal Unit 14. The arial imagery for the unit is shown in Figure 3.2 and identifies the location for each parcel within the unit.

Table 3.1: Parcel Characteristics Underlying Critical Habitat Coastal Unit 14						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91026002	Govt Fed	5.03	41.33%	F-1	Military	\$ 3,681,700
91026003	Private	2.14	0.07%	I-2/P-2	Commercial	\$ 933,900
91026004	Govt non-Fed	17.99	11.28%	I-2	Public Facility/Utility	\$ 11,427,000
Total		25.17				\$ 16,042,600

Source: Honolulu Land Information System, Department of Planning and Permitting, City and County of Honolulu Hawaii. Accessed 7/13/11. <http://gis.hicentral.com/>

Figure 3.2: Coastal Unit 14



3.3 Lowland Dry Unit 8

Lowland Dry Unit 8 is the largest critical habitat unit proposed in the Kalaeloa area. The unit surrounds the Kalaeloa Point Harbor. It is 298.6 ac (121 ha) in size and overlays 13 separate parcels, which are largely undeveloped and mostly privately owned. The unit is considered to be currently unoccupied by any of the plant species. The unit falls within the proposed Kapolei Harborside Center, which envisions developing the area into a commercial-industrial corridor. Most of the properties are currently zoned as agriculture lands, although a petition has been filed with the State Land Use Commission to rezone the area for industrial purposes.¹⁵

¹⁵ Kapolei Harborside Center, James Campbell Company LLC. www.Jamescampbell.com/properties/Kapolei-harborside-center.com. Accessed 7/25/11.

The Kalaeloa Master Plan envisions further developing this area into an industrial park. Currently, the parcels of land underlying proposed critical habitat include a nursery, intermittent agriculture use, a greenwaste collection and compost processing operation, fill material stockpiling, and a coal conveyor belt that transports coal from the harbor to Hawaiian Electric Company. The Kapolei Area Long Range Master Plan envisions converting the parcels underlying this critical habitat unit into mixed use, medium and low density apartments, golf courses, and business parks. Figure 2.2 illustrates the envisioned plans for this area.

Starting at the northwest portion of the proposed unit and working clockwise, the first parcel (TMK 91057022) is privately owned and approximately 18 ac (7.3 ha) in size. Proposed critical habitat covers nearly 35 percent of the parcel. The Kapolei Master Plan envisions developing this area into a mixed use facility. This parcel abuts the Ko Olina Resort and a marina. The parcel clockwise adjacent to this parcel is a 44 ac (17.8 ha) parcel that contains the marina and access to Alinui Drive (TMK 91057019). Proposed critical habitat covers the approximate northern 4.5 percent of this parcel near the roadway (Kekai Place). This area is identified in the Master Plan for future mixed use.

Kekai Place roadway along with Alinui Drive and other nearby connected roadways comprise parcel TMK 91057025, of which 3.5 percent lies within proposed critical habitat. The next two parcels to the right of the roadway (TMK 91057023 and 91057033) are privately owned small parcels less than 4 ac (1.6 ha) each. Proposed critical habitat covers more than 75 percent parcel 91057023 and 11.5 percent of parcel 91057033. The Master Plan envisions developing this area into medium density apartments. The combined assessed value for these two parcels is slightly less than \$16 million.

The Master Plan identifies the next adjacent parcel (TMK 91056020) and portions of TMK 91015004 as a golf course, which has already been developed. The remaining portions of TMK 91015004 are envisioned to be transformed into low density apartments. HoLIS does not report the ownership for this parcel. TMK 91015002df is transportation-related and bisects parcels TMK 91015004 and TMK 91014041.

TMK 91014041 is a 78 ac (31.5 ha) parcel, 58 percent of which has been proposed as critical habitat. This parcel is privately owned and envisioned to be developed into commercial office space, military space, parkland, and into a business park under the Master Plan. The Master Plan envisions developing the remaining parcels (TMK 91014042, 91014026, 91014042, and 91014035) into the future Kapolei Business Park.

The total assessed land value of the properties of all of the properties underlying proposed critical habitat is over \$206 million with a proportional assessment of \$55.8 million. Other than roadways, only three parcels appear to have some development. TMK 91014042 is a 334 ac (135 ha) parcel that is mostly undeveloped with the exception of a small area in the southern portion of the property. A nursery is located within this area and proposed critical habitat covers approximately one-half of the site. As previously mentioned, TMK 91056020 and a small portion of TMK 91015004 have been developed as a golf course.

A review of permits on the HOLIS website indicates that only one parcel (TMK 91014035) currently has an active permit for development. This unit is owned by the James Campbell Company and the permit indicates that the owner is building a solar farm on this property. Only a small fraction of this parcel is being proposed as critical habitat; available imagery indicates the majority of the parcel has already been developed.

Table 3.3, reflects the general characteristics of the parcels underlying proposed critical habitat Lowland Dry Unit 8. Figure 3.4 shows the location for each of these parcels in relation to proposed critical habitat.

Table 3.3: Parcel Characteristics Underlying Critical Habitat Lowland Dry Unit 8						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91014024	Govt non-Fed	382.50	0.03		Public Facility	\$ 76,024,900
91014026	Private	63.71	82.06	I-3	Maritime Industrial/Business Park	\$ 26,749,200
91014035	Private	12.84	0.01	I-2	Business Park	\$ 159,700
91014041	Private	78.75	58.33	A-s/B-2/IMX-1/P-2	Commercial/Maritime Industrial/Park/Business Park	\$ 4,049,200
91014042	Private	334.87	30.71	I-2/I-3/IMX-1/P-2	Business Park	\$ 53,881,400
91015002	Govt non-Fed	13.94	24.90	A-2/AG-1/P-2	Right-of-Way	\$ 4,300
91015004	no data	466.47	14.12		Golf Course/Low Density Apartment	no assessment
91056020	Private	17.39	37.08	P-2	Golf Course	\$ 1,284,100
91057019	Private	43.97	4.50	B-2/P-2	Mixed Use/Commercial	\$ 10,145,600
91057022	Private	17.86	34.35	B-2/P-2	Mixed Use	\$ 17,946,900
91057023	Private	3.52	76.26	A-2	Medium Density Apartment	\$ 9,271,500
91057025	Private	24.48	3.45	A-2/p_2/Resort	Roads	\$ 100
91057033	Private	2.87	11.50	A-2	Medium Density Apartment	\$ 6,590,700
Total		1,463.18				\$ 206,107,600

Source: Honolulu Land Information System, Department of Planning and Permitting, City and County of Honolulu Hawaii. Accessed 7/13/11. <http://gis.hicentral.com/>

Figure 3.4: Lowland Dry Unit 8



3.4 Lowland Dry Unit 9 and Coastal Unit 15

Lowland Dry Unit 9 and Coastal Unit 15 are adjacent, and near the southwestern end of the Kalaeloa Airport. Lowland Dry Unit 9 is 40.3 ac (16.3 ha), occupied by the Ewa hinahina, and provides unoccupied critical habitat for 16 plants (*Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Euphorbia haeleleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei*, *Isodendron pyriformum*, *Melanthera tenuifolia*, *Neraudia angulata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, and *Spermolepis hawaiiensis*). Coastal Unit 15 is 33.6 ac (13.6 ha), occupied by the Ewa hinahina, and provides unoccupied critical habitat for six plants (*Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, and *Vigna o-wahuensis*). The Campbell Industrial Park drainage channel runs through the middle of both units. Both units overlay five distinct parcels. Only

one parcel (TMK 91031028) is overlaid by a single proposed critical habitat unit (Lowland Dry Unit 9).

All parcels are undeveloped with the exception of TMK 91031046 (an outlet channel for the surrounding area), and TMK 91013035 (a road). The U.S. Fish and Wildlife Service owns parcel TMK 91913030, which is part of the Pearl Harbor National Wildlife Refuge. The other parcels are owned by the City and County of Honolulu, Hawaii Community Development Authority, the State of Hawaii, and the James Campbell Corporation. We are unaware of any active development permits associated with these parcels. The Kalaeloa Master Plan classifies this area as Eco-Industrial for planning purposes, targeting environmentally compatible industries that benefit the Oahu population (e.g., solar or hybrid energy generation, bio-filtration, or other related types of industries). These parcels are also located within the airport’s accident potential zone where height restrictions may limit development.¹⁶ The total assessed value for these parcels is \$99.9 million.

Specifically, the Plan projects the likely development for each of the parcels. TMK 91031028 is projected to build approximately 28,000 square feet of non-residential development within the next 7 to 20 years. This equates to about three percent of the total parcel size of 20 ac (8 ha). TMK 91031047 is also projected to develop about three percent of its property (approximately 15,000 square feet) for non-residential purposes, within the next seven years. The Plan does not forecast any development for TMK 91013030 because the parcel contains endangered plants. While the Plan recognizes that the previous two parcels also contain sensitive habitats, it does not explicitly state that endangered plants occupy these areas.¹⁷ Parcels TMK 91031028 and 91031047 are both classified as General Urban lands under HCDA Ch 15-215.¹⁸ Parcel 91013030 is classified as Natural.

Table 3.4: Parcel Characteristics Underlying Critical Habitat Lowland Dry Unit 9 and Coastal Unit 15

Lowland Dry 09						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91013030	Govt Fed	38.46	42.01%	F-1	Preserve	\$ 13,082,000
91013035	No Data	171.02	0.05%	No Data	Preserve	No assessment
91031001	Govt non-Fed	110.11	0.56%	I-2/F-1	Heavy Industrial	\$ 65,684,600
91031028	Govt non-Fed	20.02	99.93%	F-1	Heavy Industrial	\$ 13,374,900
91031046	Private	5.12	52.85%	F-1	Heavy Industrial	\$ 100

¹⁶ Kalaeloa Master Plan, p. 4-6.

¹⁷ Kalaeloa Master Plan Infrastructure Master Plan Updates, Table 1.2-1.

¹⁸ Ibid.

91031047	Govt non-Fed	10.26	7.37%	F-1	Heavy Industrial	\$ 7,734,500
Total		354.99				\$ 99,876,100

Coastal 15

TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91013030	Govt Fed	38.46	56.03%	F-1	Preserve	\$ 13,082,000
91013035	No Data	171.02	0.05%	No Data	Preserve	No assessment
91031001	Govt non-Fed	110.11	0.26%	I-2/F-1	Heavy Industrial	\$ 65,684,600
91031046	Private	5.12	42.74%	F-1	Heavy Industrial	\$ 100
91031047	Govt non-Fed	10.26	90.52%	F-1	Heavy Industrial	\$ 7,734,500
Total		334.98				\$ 86,501,200

Figure 3.5: Lowland Dry Unit 9 and Coastal Unit 15



3.5 Lowland Dry Unit 10

Lowland Dry Unit 10 is 43.1 ac (17.4 ha), occupied by the Ewa plains akoko, and provides unoccupied critical habitat for 16 plants (*Achyranthes splendens* var. *rotundata*, *Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Euphorbia haeleleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei*, *Isodendron pyriformium*, *Melanthera tenuifolia*, *Neraudia angulata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, and *Spermolepis hawaiiensis*). The unit is entirely within a parcel owned by the Department of Hawaiian Homelands.¹⁹ Proposed critical habitat occupies a little over 30 percent of the 137 ac (55.3 ha) property. Property owners have active permits to build a large scale solar array field on the site. The Kalaeloa Master Plan projects this parcel to support approximately 137,000 square feet of non-residential development within the next 7 to 20 years. This corresponds to approximately two percent of its total acreage. The site has a General Urban land use designation under HCDA Ch 15-215 and the Plan notes that the site is populated with the endangered plant and in addition contains archaeological sites.²⁰ The current land assessment value for the property is nearly \$48 million.

Table 3.5: Parcel Characteristics Underlying Critical Habitat Lowland Dry Unit 10						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91013028	Private	136.95	31.48%	F-1	Public Facility	\$ 47,928,300
Total		307.97				\$ 47,928,300

¹⁹ Incremental effects memo, page 8.

²⁰ Kalaeloa Master Plan Infrastructure Master Plan Update, Table 1.2-1

Figure 3.6: Lowland Dry Unit 10



3.6 Lowland Dry Unit 11

Lowland Dry Unit 11 is approximately 166 ac (67 ha) and overlays two parcels of property. The proposed unit is occupied by the Ewa plains akoko and provides unoccupied critical habitat for 16 species (*Achyranthes splendens* var. *rotundata*, *Bidens amplexens*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Euphorbia haeleeleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei*, *Isodendrion pyriformium*, *Melanthera tenuifolia*, *Neraudia angulata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, and *Spermolepis hawaiiensis*). Both parcels are owned by the United States

Navy.²¹ The Kalaeloa Master Plan identifies this area as passive open space.²² The area also contains a relatively high density of cultural and archaeological sites that would also limit, to some extent, any redevelopment activities.

The Kalaeloa Master Plan notes that parcel TMK 91013039 is populated with the endangered plant and that the parcel contains archaeological sites. The parcel has two separate land use designations. One hundred and thirty-one ac (53 ha) are designated as rural, while the remaining 14.7 ac (5.9 ha) is designated as General Urban. The Rural portion of the parcel is forecast to have less than one percent of its total area developed for non-residential purposes (approximately 26,300 square feet) not including a 60 ac (24.2 ha) energy generation project. Twenty-eight percent of the area designated as General Urban is forecasted to be developed for residential purposes within the next 7 to 20 years (177,000 square feet or 177 residential units).²³

Parcel TMK 91013042 also has two separate land use classifications according to the Master Plan. Forty-seven ac (19 ha) of the parcel are designated as Rural, no development is allowed except for a new restroom facility. The remaining acres are designated as General Urban and lie on the eastern portion of the parcel. The Plan projects that 23 percent of this section of the parcel to be builtout within the next 7 to 20 years, although development constraints exist due to the presence archaeological sites.²⁴

Table 3.6: Parcel Characteristics Underlying Critical Habitat Lowland Dry Unit 11						
TMK	Property Class	Acres	Pct CH	Zoning	Kapolei Area Long Range Master Plan	Land Assessment
91013039	Govt Fed	145.91	77.91%	F-1	Park	\$ 51,024,800
91013042	Govt Fed	57.85	90.58%	F-1	Park	\$ 20,278,000
Total		203.76				\$ 71,302,800

²¹ Incremental Effects memo, p. 9.

²² Master Plan pp. 4-9 and 4-10.

²³ Kalaeloa Master Plan Infrastructure Update, Table 1.2-1.

²⁴ Ibid.

Figure 3.7: Lowland Dry Unit 11



CHAPTER 4 - Economic Impacts of Proposed Critical Habitat Designation

This section presents the results of the Service’s assessment of the economic effects associated with the designation of critical habitat at Kalaeloa. Economic effects associated with both future conservation measures as well as additional administrative burdens associated with conducting a section 7 consultation are considered. Section 4.1 presents the assessment for occupied critical habitat units and section 4.2 presents the assessment for unoccupied units.

4.1 Occupied Critical Habitat Units

This section provides an upper-bound conservative estimate for the economic cost of a critical habitat designation in occupied critical habitat units. This section considers both administrative costs and the cost of associated conservation actions, however, only those actions

uniquely associated with the critical habitat designation are considered (i.e., only incremental effects are considered). This analysis does not attempt to quantify any baseline administrative costs and conservation measures, since those costs and measures would occur regardless of the designation of critical habitat. Accordingly, they are not instructive for purposes of the Secretary's section 4(B)(2) determinations.

4.1.1 Administrative Costs

It is difficult to predict with any precision the number of future section 7 consultations that would take place in the future for activities on the proposed parcels. For the parcels being proposed on occupied habitat, the designation of critical habitat will not affect the likelihood of future section 7 consultations. The only change would be the marginal increase in effort required by the Service and its Federal partner to additionally consider the effects of the action on critical habitat. In occupied critical habitat, the Service typically does not require additional conservation measures or recommendations for a project's impact beyond those necessary to avoid jeopardizing a listed species. We acknowledge there could be a difference depending on the particular circumstances of the Federal action being proposed, but are unable to quantify that difference based on our consultation history to date. A theoretical example could be a circumstance where a catastrophic event (e.g., wildfire, hurricane, etc.) eliminates a species from an occupied area. Although a jeopardy analysis may no longer apply if the species is no longer present, consultation would be required based on the critical habitat designation, which could result in the implementation of conservation measures or recommendations related to reestablishing the species in the area.

There are 21 individual parcels being proposed as critical habitat in occupied areas in Kalaehoa. Should any future development projects on these parcels have a Federal nexus, both the Service and its consulting partners would incur some additional effort related to the consultation. In previous economic analyses for critical habitat designations, the Service has been using a simple model to estimate the economic costs to these parties.

Table 4.1 below shows the economic cost related to address critical habitat concerns for a new consultation. The table shows the cost to the Service, Federal action agency, third party, and for including critical habitat information needs in a biological assessment. Total economic costs in 2011 dollars are \$405 for technical assistances, \$2,380 for an informal consultation, and \$5,000 for a formal consultation.

Table 4.1: Economic Costs for New Consultations to Additionally Address Critical Habitat Informational Needs					
Incremental Administrative Costs of Consultation					
Consultation Type	Service	Federal Agency	Third Party	Biological Assessment	Total Costs
Additional effort to address adverse modification in a new consultation (for new consultations that consider both jeopardy and adverse modification)					
Technical Assistance	\$143	\$263*	\$263	n/a	\$405
Informal	\$613	\$775	\$513	\$500	\$2,380
Formal	\$1,380	\$1,550	\$875	\$1,200	\$5,000
Source: IEC analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2011, and a review of consultation records from several Service field offices across the country conducted in 2002.					
* Notes: \$2011. Federal agency costs for a technical assistance are assumed to be similar to third party.					

While long-range master plans for the area clearly envision industrial and commercial types of development for many of these parcels it remains difficult to assess the likelihood, timing, and outcome of consultations without additional information. Consequently, this analysis estimates the upper-bound of economic costs based on a few simplifying assumptions:

1. Each parcel is subject to a single consultation;
2. Consultations are evenly distributed over a 21 year timeframe (i.e., one consultation per year); and
3. The consultation will be formal.

Because these areas are occupied by the species none of these consultations are assumed to be triggered solely by the designation of critical habitat. If several parcels are part of a single development project it is more likely that they would be batched for a single consultation (because it is a single project seeking Federal permitting or funding), which would have the effect of reducing the total number of consultations estimated as part of this analysis.

Table 4.2 shows the potential upper-bound economic costs for occupied critical habitat parcels under the assumption that every parcel would have a formal consultation because of critical habitat designation. The Service believes that because these parcels are already occupied the costs of consultation will be minimal because Federal agencies are already compelled to consult with the Service on any future actions that may affect the species. Even under the conservative upper-bound estimate of the administrative section 7 consultation impact of a critical habitat designation the economic costs are relatively minor.

Table 4.2: Upper-Bound Estimate of Administrative Costs Occupied Critical Habitat					
	Service	Federal Agency	Third Party	Biological Assessment	Total Costs
Formal Consultation					
Total Costs	\$28,980	\$32,550	\$18,375	\$25,200	\$105,000
NPV (.07 discount rate)	\$14,953	\$16,795	\$9,481	\$13,003	\$54,178
NPV (.03 discount rate)	\$21,273	\$23,893	\$13,488	\$18,498	\$77,075
Annualized Cost	\$1,380.00	\$1,550.00	\$875.00	\$1,200.00	\$5,000.00
Notes: Assumes single consultation for every parcel evenly distributed over the next 21 years. Annualized cost does not change based on discount rate because economic costs are the same in each year.					

4.1.2 Economic Effects Associated with Future Conservation Measures

The proposed designation of critical habitat for areas occupied by Ewa hinahina and the Ewa plains akoko is not expected to result in any additional conservation measures or consultations with the Service for the following reasons:

1. Federal agencies are already compelled under the Act to consult with the Service on any actions that may affect listed species in occupied habitat areas. Consequently, the designation of critical habitat is not expected to result in any additional consultations on future land use activities. Further, any conservation measures recommended within areas occupied by the Ewa hinahina or Ewa plains akoko would also benefit other listed plant species where unoccupied habitat is being proposed within the same unit.
2. The Service believes that any recommended conservation measures or conservation recommendations implemented to ensure that an agency action will avoid jeopardizing the species would, in most cases, be sufficient to avoid effects to critical habitat. Since the primary threat to the Ewa hinahina and Ewa plains akoko is habitat loss or degradation, the jeopardy analysis under section 7 of the Act for a project with a Federal nexus would evaluate the effects of a Federal action on the conservation or functionality of the species' habitat. As a result, we believe that in many cases the analysis of the project to address designated critical habitat will be comparable, and do not anticipate, for many circumstances, that the outcome of the consultation to address critical habitat will result in any significant additional project modifications or measures.
3. Private activities on critical habitat that are not directly funded or authorized by a Federal agency are not affected by the designation of critical habitat because the designation only requires the Federal agency to consult with the Service before carrying out an action. The Service's Pacific Islands Fish and Wildlife Office has rarely consulted on private development projects within critical habitat areas, partly because these actions

do not require direct Federal government approval or funding. To date there have been no section 7 consultations on real estate development activities involving areas that provide habitat for the Ewa hinahina or Ewa plains akoko.²⁵

4. Finally, State law prohibits the taking of listed plants, which by definition includes all indigenous plants listed under the Endangered Species Act. This protection becomes effective with the listing of a plant species under the Act, and is independent from the designation of critical habitat. Any conservation measures imposed by the State to minimize the effects of the private action on critical habitat are coincidental to the designation of critical habitat as they are fully associated with the listing of the species.

For the reasons cited above, the Service believes that the designation of critical habitat for occupied units Coastal 13, Coastal 14, Coastal 15, Lowland Dry 9, Lowland Dry 10, and Lowland Dry 11 will not have any economic effect on current or future land uses for any of the parcels identified in this analysis.

4.2 Unoccupied Critical Habitat Units

Lowland Dry 8 is the only proposed critical habitat unit identified in Part 2 of the economic analysis that is not currently occupied by any of the species at issue in the proposed rule. . Consequently, Federal agencies are not currently compelled to consult with the Service on any actions that they authorize, fund, or carry-out with regard to possible effects on the listed plants in this area. In the future, should critical habitat be designated for this area then Federal agencies would need to first check with the Service to ensure that their actions do not adversely modify critical habitat.²⁶ However, due to the infrequency of section 7 consultations with Federal agencies on private development activities the Service is unsure how the designation of critical habitat will affect future conservation measures and associated economic impacts.²⁷ This unit contains 13 separate parcels, none of which are owned by the Federal government.

4.2.1 Administrative Costs

Although the parcels in Lowland Dry Unit 8 are planned to be commercially developed, for the most part, it remains difficult for the Service to determine the likelihood that such planned activities will be subject to a consultation. The primary reason why the Service has difficulty predicting how the planned future activities will be subject to a section 7 consultation is the inability to identify a credible Federal nexus that would require consultation. Due to the

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²⁶ It is assumed for purposes of this analysis that because the area is not currently occupied by the species any future actions that are consulted on could not lead to a jeopardy finding by the Service due to the physical absence of the species.

²⁷

uncertainty of whether or not future commercial development will be subject to a section 7 consultation this analysis presents a range of potential effects. The lower-bound estimate is no economic effect because future development would not be subject to a section 7 consultation. However, should future development be consulted on under section 7 it would presumably be attributable to the proposed critical habitat designation. Table 4.3 shows the economic cost related to section 7 consultations triggered by a critical habitat designation in 2011 dollars. The table shows the cost to the Service, Federal action agency, third party, and for preparing a biological assessment. Total economic costs range from \$1,620 for a technical assistance to \$20,000 for conducting a formal consultation.

Table 4.3: Economic Cost for New Consultations Attributable to the Designation of Critical Habitat					
Incremental Administrative Costs of Consultation					
Consultation Type	Service	Federal Action Agency	Third Party	Biological Assessment	Total Costs
New consultation resulting entirely from critical habitat designation (Total administrative costs of a consultation considering both jeopardy and adverse modification)					
Technical Assistance	\$570	n/a	\$1,050	n/a	\$1,620
Informal	\$2,450	\$3,100	\$2,050	\$2,000	\$9,500
Formal	\$5,500	\$6,200	\$3,500	\$4,800	\$20,000

Source: IEC analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2011, and a review of consultation records from several Service field offices across the country conducted in 2002.

Notes: \$2011.

To estimate the upper-bound administrative cost of critical habitat designation for Lowland Dry Unit 8, this analysis makes a few simplifying assumptions:

1. Each parcel is subject to a single consultation;
2. Consultations are evenly distributed over the next 13 years (e.g., one per year);
3. Each consultation would be a formal because of the possibility that the development action may adversely affect critical habitat.

Table 4.4 shows the upper-bound estimate for administrative costs should each parcel be subject to a formal consultation as part of its development process. The present value of total costs is estimated to be \$167,153 (seven percent discount rate) or \$212,699 (three percent discount rate). Annualized costs are estimated to be \$20,000. These costs reflect the total cost for all parties. Third-party costs are significantly less.

	Service	Federal Action Agency	Third Party	Biological Assessment	Total Costs
Formal Consultations					
Total Costs	\$71,500	\$80,600	\$45,500	\$62,400	\$260,000
NPV (.07 discount rate)	\$45,967	\$51,817	\$29,252	\$40,117	\$167,153
NPV (.03 discount rate)	\$58,492	\$65,937	\$37,222	\$51,048	\$212,699
Annualized Cost	\$5,500	\$6,200	\$3,500	\$4,800	\$20,000

Notes: Assumes single consultation for every parcel evenly distributed over the next 13 years. Annualized cost does not change based on discount rate because economic costs are the same in each year.

4.2.2 Economic Effects Associated with Future Conservation Measures

Because the Service is unsure about how the designation of critical habitat will affect future conservation measures through the section 7 consultation process, this analysis estimates a potential range of economic impacts that may affect the landowners. The Service believes that a realistic lower-bound estimate of the potential economic impacts to the landowners in Lowland Dry 8 is no impact at all. The Service cannot identify any realistic Federal nexus on the types of future uses identified in the Kapolei Area Long Range Master Plan that would lead to a formal section 7 consultation and associated conservation measures. Critical habitat designations have no effect on private actions on private property absent a Federal nexus that would allow the Service to consult on the activity with its Federal partner.

At the other end of the scale, should critical habitat designation lead to future section 7 consultations with associated conservation measures this analysis estimates the upper-bound limit of economic impacts based on land assessments and the percentage of parcel lands proposed as critical habitat. Specifically, because the Service is unable to estimate how much of the proposed critical habitat could be disturbed as part of planned future development activities without violating the prohibition on destroying or adversely modifying critical habitat, this analysis bases its upper-bound estimate of economic impacts using the very conservative approach that the designation could effectively lead to all of the proposed areas remaining in an open, undeveloped state. In essence, this approach sets forth the “worst case scenario” from an economic standpoint, which although extremely unlikely to occur, does provide some relative context.

As previously discussed, Lowland Dry Unit 8 surrounds the Kalaeloa Point Harbor. This unit consists of 13 mostly undeveloped distinct parcels ranging from as little as 3 ac (1.2 ha) to over 400 ac (161.6 ha) in size. The Kapolei Area Long Range Master Plan generally identifies intense development for these parcels and the County has already zoned these areas in a manner appropriate for planned future development. The total current assessment for these parcels is

slightly over \$206 million, which according to the Real Property Assessment Division for the government, reflects the current market value for the properties.²⁸

The designation of critical habitat could lead to a loss in land value if the designation caused either significant delays in the planned development of the land or if the designation led to restrictions in the type of development allowed. In the first instance, a delay in planned development, which could be caused by a section 7 consultation with the Service that otherwise would not have occurred absent critical habitat, may correspond to a delay in the realization of revenue streams associated with the development (i.e., rental income) even if the consultation results in no change to the type of development initially planned. Land value losses could be even greater under the second scenario if a section 7 consultation results in a change in the type of development initially planned and most likely to have occurred absent a designation of critical habitat and associated consultation with the Service. For example, if a section 7 consultation results in less land area being developed as originally conceived and allowed under pre-existing conditions, the total value of the development and associated revenue streams may be less.

Many economic, financial, and social factors influence development decisions. Isolating the effects of a single factor such as critical habitat designation can be difficult and imprecise. For simplicity, the estimation that critical habitat designation alone is responsible for an area remaining undeveloped represents an extreme case, but nonetheless, is more easily quantified for the purposes of this analysis. Given the very small area of essential habitat proposed for designation, it is reasonable to assume absent more specific information that a likely outcome of such a consultation, should it occur, would be for the project proponents to avoid any impact to the areas designated as critical habitat on their property.

Absent specific information on how development projects would mitigate for impacts to critical habitat, this economic analysis presents the value derived from potential future development on each of the parcels in Lowland Dry Unit 8. The framework followed to estimate these effects and the results of the analysis follows.

4.2.3 The Economic Cost of Development Restrictions

Critical habitat designations may impose two kinds of costs to society if development is prohibited on the designated land. Generally, these two costs are:

1. Loss of value of land that can no longer be developed; and
2. Associated consumer surplus losses resulting from decreased supply.

Because the areas proposed as critical habitat are relatively small compared to the land areas available for development or redevelopment to meet future desired demand, consumer surplus losses would be minimal to the extent that some or all of the land areas in Lowland Dry

²⁸ Sec. 8-7.1, Revised Ordinances of Honolulu, requires the fair market value of all taxable real property to be determined and annually assessed by the market data (sales comparison) and cost approaches to value. Assessments represent 100 percent of estimated market value. www.realpropertyhonolulu.com, Assessed September 7, 2011.

Unit 8 are not developed because of critical habitat designation. The method used to estimate the loss in the value of lands within Lowland Dry Unit 8 proposed as critical habitat follow the general theoretical models developed by Capozza and Li (1994)²⁹ and Capozza and Helsley (1990)³⁰ that have been adopted in the Service's previous critical habitat economic analyses where real estate development impacts have been estimated.³¹ These models essentially state that the current value of land is a reflection of three components: 1) the value of current rents; 2) the growth premium; and 3) the option value of potential development.

The value of current rents represents the value of the land in its current use. The growth premium equals the present value of expected increases in land rents after being converted to development and the option value is the value of land derived from the option of future development. Both the growth premium and the option value decrease as distance from the boundary of the urban area increases and the time of development moves further into the future. Because the parcels within this critical habitat unit are undeveloped (in particular those areas overlaying proposed critical habitat) current land rents are assumed to be minimal (i.e., zero). Consequently, this analysis assumes that the current value of these parcels is reflective of the growth premium and option value for future development. In other words, the current market assessments are reflective not of returns from current use but rather of the expected future returns once the properties are developed.

Specifically, the current price of land can be written as:

$$P^L = \frac{R^V}{r} + GP + OV$$

Where P^L is the price of the land parcel, R^V is the annual net return of the parcel in its current use, r is the discount rate, GP is the growth premium and OV is the option value. From this equation, the percent of land value derived from the growth premium and option value can be derived as:

$$S \equiv \frac{GP + OV}{P^L} = 1 - \frac{R^V}{rP^L}$$

Three variables are required to employ this formula for calculating the percent of land value derived from the growth premium and option value. These are the current value of the land (P^L), annual net return from the land (R^V) and discount rate to the land owner r . Note however, that if the current net returns from the land is zero, then 100 percent of the land value is derived from the growth premium and option value, regardless of the landowner's discount rate. For this reason, this analysis assumes that the upper-bound economic impact to landowners is

²⁹ Capozza, D.R. and Yuming Li. "The Intensity and Timing of Investment: The Case of Land." *The American Economic Review*, Vol. 84, No. 4 (Sep., 1994):889-904.

³⁰ Capozza, D.R. and R.W. Helsley. "The Stochastic City," *Journal of Urban Economics* 28 (1990): 187-203.

³¹ See for example, *Draft Economic Analysis of Critical Habitat for Three Willamette Species*, Prepared for U.S. Fish and Wildlife Service by Northwest Economic Associates, May 2006..

equivalent to the total land value (i.e., current market assessment) multiplied by the proportion of the parcel proposed for critical habitat.

Table 4.5 shows the results of this analysis concerning the range of potential economic impacts on land values in Lowland Dry Unit 8. One parcel, TMK 91915004 was unable to be estimated because there was no information on the City and County of Honolulu’s website concerning its current market assessment. The range of upper-bound impacts is dependent on the percentage of land within each unit proposed as critical habitat. The lower-bound estimate is no impact under the presumption that future development could occur as planned without any type of Federal nexus that would require section 7 consultation.

Table 4.5: Property Value Impacts Associated with Critical Habitat Designations - Lowland Dry Unit 8				
			Property Value Impacts from CH Designation	
TMK	Acres	Pct CH	Lower-Bound	Upper-Bound
91014024	382.5	0.03%	\$0	\$21,488
91014026	63.71	82.06%	\$0	\$21,950,699
91014035	12.84	0.01%	\$0	\$8
91014041	78.75	58.33%	\$0	\$2,361,963
91014042	334.87	30.71%	\$0	\$16,545,650
91015002	13.94	24.90%	\$0	\$1,071
91915004	466.47	14.12%	\$0	-
91056020	17.39	37.08%	\$0	\$476,136
91057019	43.97	4.50%	\$0	\$457,038
91057022	17.86	34.35%	\$0	\$6,164,367
91057023	3.52	76.26%	\$0	\$7,070,862
91057025	24.48	3.45%	\$0	\$3
91057033	2.87	11.50%	\$0	\$757,650
Total	1,463.18		\$0	\$55,806,934
Annualized (.03)				\$3,751,103
Annualized (.07)				\$5,267,780

Note: Property value loss is based on current market value. Net present value calculation is unaffected by discount rate. Annualized property value losses calculated based on losses carrying out 20 years.

Given the relatively small land area proposed for designation coupled with the fact that the designation is not expected to result in any additional conservation measures or conservation

recommendations for the species above and beyond the baseline, this designation is not expected to significantly affect land market prices on the island even though the designation could have an effect on individual parcel values as previously discussed.

CHAPTER 5 - Economic Benefits

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.³² OMB's circular A-4 distinguishes two types of economic benefits: *direct benefits and ancillary benefits*. Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemakings.³³

In the context of critical habitat, the primary purpose of the rulemaking (i.e., the direct benefit) is the potential to enhance the conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance for implementing E.O. 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research. This analysis was unable to identify any studies that reported on the public's valuation for the species or its habitat.³⁴ Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements (PCEs) on which the species depends. To this end, critical habitat designation can result in maintenance of particular environmental conditions that may have coincident, positive social welfare implications, such as increased recreational opportunities in a region. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the direct, negative impacts to a region's economy resulting from actions to conserve a species or its habitat.

In the particular instance of these two plant species, however, it is not expected that the designation of critical habitat will result in any significant ancillary benefits in terms of net gains

³² E.O. 12866, Regulatory Planning and Review, September 30, 1993.

³³ U.S. Office of Management and Budget, "Circular A-4," September 17, 2003.

³⁴ See for example, Kroeger, Timm, John Loomis and Frank Casey "Introduction to the Wildlife Habitat Benefits Estimation Toolkit," Defenders of Wildlife, June 2008

(http://www.defenders.org/programs_and_policy/science_and_economics/conservation_economics/valuation/benefits_toolkit.php). See also the Environmental Valuation Reference Inventory, <https://www.evri.ca/Global/Home.aspx>.

in employment, output, or income. Again, the designation of critical habitat in occupied areas is not expected to have any additional effects in terms of future conservation measures or conservation recommendations for the species or its habitat. Thus, no change in ancillary benefits is expected in these areas. For the one entirely unoccupied unit (Lowland Dry 8), it is possible the designation could have a beneficial effect to the extent that planned development is connected to a Federal nexus that leads to a consultation with the Service.

Should future development activities become subject to a section 7 consultation, which is uncertain, the statutory prohibition on destruction or adverse modification of critical habitat may require project proponents to either avoid development on the habitat areas or to minimize the areas affected. In such instances the economic impact related to the required conservation actions (e.g., purchasing and installing protective fencing) would likely be offset by a reduction in the development project's size or scope.

The Service at this time is unable to clearly identify recommended conservation measures or conservation recommendations because it does not have specific project proposals to review. Consequently, this analysis is unable to credibly estimate how future development plans would be altered by critical habitat designation and the extent to which positive economic impacts associated with conservation measures or conservation recommendations would compare to any economic impact losses due to project modifications.

INCREMENTAL EFFECTS MEMO

PROPOSED PLANT CRITICAL HABITAT DESIGNATION AT KALAELOA, OAHU: INCREMENTAL EFFECTS INFORMATION FOR DIVISION OF ECONOMICS

I. SPECIES DESCRIPTIONS

A. *Achryanthes splendens* var. *rotundata* (Ewa hinahina).

Status: Listed as endangered March 26, 1986; Fed. Reg. 51(58): 10518-10521.

Background: Historically, Ewa hinahina was found on arid and semi-arid lowlands on Oahu, Molokai, and Lanai. At the time of Federal listing, only two populations consisting of two individuals at Kaena Point State Park, and approximately 400 individuals at Kalaeloa (on the Ewa Plain) were known on Oahu. Molokai and Lanai populations are presumed extinct. The Ewa Plain has been heavily impacted by development and the populations have been fluctuating, with some populations significantly reduced, and other increasing due to augmentation. There were four subpopulations on the Ewa Plain reported from the late 1980s through the 1990s containing approximately 1,400 individuals. The largest subpopulation was fenced in 1990 and three plant sanctuaries were created to protect plants on-site (Brewer Plant Sanctuary and Alternative Tech Park sanctuaries). One of the sanctuaries was planted with a newly reintroduced population from nursery stock. The habitat surrounding the subpopulation has largely been developed (Service Informal 2009-I-0422 2009, p. 2).

In 2004, a decline in the number of extant individuals statewide was reported. The subpopulation at the U.S. Coast Guard Lighthouse Plant Sanctuary at Kalaeloa was no longer extant (a loss of 224 individuals). The number of individuals in the Brewer Plant Sanctuary totaled 150 mature and 150 immature plants, and there was a total of 62 mature and 200 immature individuals in the two other fenced enclosures (Alternative Tech Park sanctuaries). However, a new population of 600 to 700 mature individuals was discovered in the same year on the ridge between Makaha and Waianae Kai (Service Informal 2009-I-0422 2009, p. 2).

Ewa hinahina has had 88 percent of its historical range reduced by habitat conversion largely for industrial and agricultural developments, and the remaining 12 percent of habitat has been degraded by invading exotic shrubs and trees. Habitat destruction at Kalaeloa continues to be the main threat to the survival of the taxon. Approximately 3,259 Ewa hinahina individuals have been outplanted on the Kalaeloa Unit of the Pearl Harbor National Wildlife Refuge (Refuge). Although weed control is ongoing at the Refuge, increased mortality of wild individuals has been observed due to scale farming by long-legged ants (*Anoplolepis longipes*) (Service 2008, p. 8). The Refuge reports that as of January 2011, Ewa hinahina totals about 350 to 400 individuals, with loss attributed to weather, scale, and possibly micro-climatic conditions (Silbernagle, pers. comm. 2011).

B. *Chamaesyce skottsbergii* var. *skottsbergii* (Ewa plains akoko).

Status: Listed endangered as *Euphorbia skottsbergii* var. *kalaeloana* August 24, 1982; Fed. Reg. 47(164): 36846-36849.

Background: At the time of listing, Ewa plains akoko was recorded only on Oahu's Ewa Plain, from Kalaeloa to Puuloa, on "coral outcrop." Botanists surveying for Ewa plains akoko 1978 and 1979, found 2 subpopulations totaling 2,450 individuals at the western end of the Ewa Plain in the area of the present day Kalaeloa Point Harbor, and 1,300 individuals in the West Beach Resort (Resort) area. In addition, another 518 plants were found in two areas on Naval Air Station Point (NASBP) at Kalaeloa. Although several attempts were made to remove and transplant Ewa plains akoko plants threatened by harbor expansion and resort development, these subpopulations are no longer extant due to enlargement of the harbor, construction of harbor facilities, and development of the Resort. Two of the attempted transplantings were conducted on NASBP. In the first attempt, 218 plants were moved to a site in the southwestern corner of NASBP in 1979. Two years later, only two of the plants remained alive.

In 1980 a second transplanting of 742 plants was conducted in the northwestern portion of NASBP. When the second group was surveyed seven months after transplantation, only 172 living individuals of the original 742 were found, and three months later only 143 plants were still extant. In a 1998 survey of NASBP for Ewa plains akoko, only two individuals were found at this transplantation site. In 1983 the number of plants in the eastern portion of NASBP was estimated to be 5,000, with the highest concentration of plants at the Northern Trap and Skeet Range (NTSR) site. A few plants were also found at scattered locations away from the NTSR site. In a 1993 survey of the northeastern corner of NASBP only seven plants were found, with four additional plants recorded in another part of this area in 1994. In a 1998 survey only one plant was located in the northwestern corner of NASBP.

Due to the NASBP base closure in 1999 and planned transfer of NASBP lands to several landowners, in 2004 the U.S. Navy removed soil contaminated with arsenic and lead that had been deposited at the NTSR site when it was in use. During a survey conducted in March and April 2003 prior to the cleanup of the 23-acre NTSR site, a total of 858 Ewa plains akoko plants were located; with 391 individuals found in 8 concentrations distributed over a total of 0.4 acres of the 23-acre site, and the remaining 467 individuals distributed outside of those concentrations. The Navy and the Service agreed upon a conservation work plan in response to the effects that cleanup actions might have on the last sizeable population of Ewa plains akoko on Oahu. The goals of the work plan were as follows:

1. No net loss in the number of adult Ewa plains akoko plants as a result of the cleanup action.
2. Reestablishment of a viable seed bank of Ewa plains akoko at each site where outplanting was to occur.
3. Establishment of an ex situ collection of Ewa plains akoko seeds that represent the genetic diversity of the existing, pre-cleanup NTSR population.
4. Maintenance of an average of 300 or more adult, self-sustaining and reproducing individuals of Ewa plains akoko at each of two sites (a total of 600 such plants) over the five-year period. One of the two sites was to be established in the former NTSR (which includes Building 1527), the other at the Service's Refuge. At the end of the five-year

period, the 300 or more plants at each of the two sites would be self-reproducing (i.e., reproducing without supplemental care).

5. Maintenance or establishment of a minimum total of 100 adult, self-sustaining and reproducing Ewa plains akoko plants within the 8 "islets" in the cleanup area.
6. Seeds and seedling collection was to follow strict protocols outlined in the work plan. Genetic materials were to be stored at Lyon Arboretum.

As of October 2005, 316 individuals were outplanted at the Building 1527 site, and 302 individuals were outplanted in the Refuge. In 2006, there were 894 adult plants at the NTSR site (including Building 1527), and 451 adult plants in the Refuge (Service 2006, p. 8). Conservative estimates of the number of Ewa plains akoko in 2008 totaled 1,524 individuals (375 at NTSR, (the "cleaned" islands of vegetation); 676 at Building 1527; and 473 at the Refuge (Guinther and Withrow 2008). In 2010, restoration activities for Ewa plains akoko at the NTSR site included non-native plant control to reduce wildfire risk, and Ewa plains akoko outplantings. Non-native plants were either pulled by hand or chemically treated. Very little natural recruitment of Ewa plains akoko was observed, most likely due to drought conditions. Twenty-five Ewa plains akoko seedlings were transplanted and despite the drought, there was 95 percent survival (Koebele 2011).

C. Other listed species with unoccupied habitat in one or more units

Bidens amplexans, *Bonamia menziesii*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Cyperus trachysanthos*, *Euphorbia haeleleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendron pyrifolium*, *Marsilea villosa*, *Melanthera tenuifolia*, *Neraudia angulata* var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Sesbania tomentosa*, *Spermolepis hawaiiensis*, *Vigna o-wahuensis*.

II. ECOSYSTEM DESCRIPTIONS

A. Lowland dry ecosystem physical or biological features: (1) elevation: less than 1,000 m (3,281 feet); (2) annual precipitation less than 127 cm (50 in); (3) substrate - weathered silty loams to stony clay, rocky ledges, little-weathered lava; (4) canopy - *Diospyros*, *Myoporum*, *Pleomele*, *Santalum*, *Sapindus*; (5) subcanopy - *Chamaesyce*, *Dodonaea*, *Leptecophylla*, *Osteomeles*, *Psydrax*, *Scaevola*, *Wikstroemia*; and (6) understory - *Alyxia*, *Artemisia*, *Bidens*, *Chenopodium*, *Nephrolepis*, *Peperomia*, *Sicyos*.

B. Coastal ecosystem physical or biological features: (1) elevation: less than 300 m (984 feet); (2) annual precipitation less than 50 cm (20 in); (3) substrate - well-drained calcareous, talus slopes, weathered clay soils, ephemeral pools, and mudflats; (4) canopy - *Hibiscus*, *Myoporum*, *Santalum*, *Scaevola*; (5) subcanopy - *Gossypium*, *Sida*, *Vitex*; and (6) understory - *Eragrostis*, *Jacquemontia*, *Lyceum*, *Nama*, *Sesuvium*, *Sporobolus*, *Vigna*.

III. PROPOSED CRITICAL HABITAT UNIT DESCRIPTIONS

A. Lowland Dry 8

Area: 291.75 ac (118.07 ha).

Ownership: Primarily owned by the City and County of Honolulu, with a small area privately owned by several individuals and companies.

Ongoing or proposed development: Located adjacent to Kalaeloa Harbor. Both long-term plans guiding development in the region, the Ewa Development Plan and the Kapolei Area Long Range Master Plan, designate the area as industrial. The Kapolei Harborside Center Environmental Impact Statement Preparation Notice (EISPN) (<http://luc.state.hi.us/dockets/a06-763kapolei/a06-763exh4.pdf>) proposes to use the area as an industrial park. The proposed project area is located on property that is privately owned by Kapolei Property Development, Aina Nui Corporation, James Campbell Company, and Campbell Hawaii Investor, Inc. Currently, there are several uses operating, although the majority of the parcel is vacant (see figure 1.1, EISPN). Existing uses include a nursery, intermittent agricultural use, a greenwaste collection and compost processing operation, fill material stockpiling, and a coal conveyor belt that transports coal from the harbor to Hawaiian Electric Company power stations to the south of the site (EISPN 2006, p. 1-3). The proposed industrial use includes light manufacturing and warehousing in proportions similar to other industrial parks on Oahu, industrial service businesses that would support the population of Ewa and innovative land uses within the current City and County of Honolulu Land use Ordinance parameters for industrially zoned lands (EISPN 2006, p. 2-2).

Potential for Federal nexus: Based on the information available at this time, we are unable to determine the potential for a Federal nexus for the City and County of Honolulu, or private lands. The Service prepared a Biological Opinion in 1982 (see consultation history, below) that allowed the harbor to be built and the Ewa plains akoko to be “moved”. See above Ewa plain akoko description (“approximately 400 individuals at Kalaeloa”).

Occupied by: None of the species addressed in the proposed rule.

Unoccupied by: *Achryanthes splendens* var. *rotundata*, *Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Euphorbia haeleleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendron pyriformis*, *Melanthera tenuifolia*, *Neraudia angulata* var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Spermolepis hawaiiensis*.

B. Lowland Dry 9

Area: 40.33 ac (16.32 ha).

Ownership: Federal (Kalaeloa Unit of the Pearl Harbor National Wildlife Refuge), State, City and County of Honolulu, private.

Ongoing or proposed development: Located adjacent to Coastal Unit 15. No development is planned on the national wildlife refuge. The non-Federal lands are noted as Foreshore Protection in the Master Plan (2006, pp. 4-6, 4-7; see also figure 4-1) (<http://hcdaweb.org/kalaeloa/plans->

rules/kalaeloa-master-plan). Designated to be eco-industrial land use and currently scheduled for use as a wind farm. For the purposes of the Master Plan, eco-industrial uses are defined as environmentally compatible industries that benefit the entire population of Oahu. Potential industries include solar or hybrid energy generation, bio-filtration, and other such technologies (Master Plan 2006, pp. 4-6 & 4-7).

Potential for Federal nexus: Based on the information available at this time, we are unable to determine the potential for a Federal nexus for the State, City and County of Honolulu, or private lands. We searched our records for informal and formal consultations done in the general Kalaeloa area back to 1982. There must have been an internal consultation (within the USFWS) in order for the refuge to be created but we could not easily find the document.

Occupied by: *Achryanthes splendens* var. *rotundata* and outplants of *Chamaesyce skottsbergii* var. *skottsbergii*.

Unoccupied by: *Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Euphorbia haelealeana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendrion pyriformis*, *Melanthera tenuifolia*, *Neraudia angulata* var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Spermolepis hawaiiensis*.

C. Lowland Dry 10

Area: 43.11 ac (17.45 ha).

Ownership: State (Department of Hawaiian Homelands).

Ongoing or proposed development: Scheduled for many uses, including: 1) light industrial (Master Plan 2006, p. 4-6); 2) mixed use of moderate intensity (Master Plan 2006, p. 4-2); 3) eco-industrial alternative energy research and production; 4) a school; and 5) mixed use high intensity commercial (Master Plan 2006, p. 4-2).

Potential for Federal nexus: Based on the information available at this time, we are unable to determine the potential for a Federal nexus for the State lands, however, this area is currently scheduled for use as a solar energy farm. We could not determine whether this project will require Federal funding or permitting (City of Kapolei 2011) (<http://www.kapolei.com/projects.cfm?phase=pp>) (Kapolei Sustainable Energy Park).

Occupied by: *Chamaesyce skottsbergii* var. *skottsbergii*.

Unoccupied by: *Achryanthes splendens* var. *rotundata*, *Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Euphorbia haelealeana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendrion pyriformis*, *Melanthera tenuifolia*,

Neraudia angulata var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Spermolepis hawaiiensis*.

D. Lowland Dry 11

Area: 166.08 ac (67.21 ha).

Ownership: Federal (U.S. Navy).

Ongoing or proposed development: Scheduled to be mostly a large open space for a preserve or cultural park. The area contains a relatively high density of cultural and archaeological sites, which to some extent will limit redevelopment for active recreational uses. However, the area is planned for passive open space opportunities (Master Plan 2006, pp. 4-9 & 4-10). The remaining portion of the unit on the eastern edge will be mixed use of moderate intensity development, a school, and a cultural center (Master Plan 2006, p. 4-2).

Potential for Federal nexus: Under the Base Realignment and Closure Act, this area will be released to the State of Hawaii. Discussions are underway between the Navy and the Service regarding whether land transfer actions in and of themselves constitute a Federal nexus (<http://hcdaweb.org/kalaelo/EA%20NAVY.pdf>). Discussions are also underway regarding conveying these lands to the National Wildlife Refuge system. The previous transfer of Lot 13059-B from the Navy to the City and County of Honolulu was determined to have a Federal nexus and required a Biological Opinion (BO) (see list of BOs in Section IV B).

Occupied by: *Chamaesyce skottsbergii* var. *skottsbergii* (wild and outplants)

Unoccupied by: *Achryanthes splendens* var. *rotundata*, *Bidens amplexans*, *Bonamia menziesii*, *Chamaesyce celastroides* var. *kaenana*, *Chamaesyce skottsbergii* var. *skottsbergii*, *Euphorbia haeleleana*, *Gouania meyenii*, *Gouania vitifolia*, *Hibiscus brackenridgei* ssp. *mokuleianus*, *Hibiscus brackenridgei* ssp. *molokaiana*, *Isodendrion pyrifolium*, *Melanthera tenuifolia*, *Neraudia angulata* var. *angulata*, *Neraudia angulata* var. *dentata*, *Nototrichium humile*, *Pleomele forbesii*, *Schiedea hookeri*, *Schiedea kealiae*, *Spermolepis hawaiiensis*.

E. Coastal 13

Area: 23.58 ac (13.53 ha).

Ownership: City and County of Honolulu and private.

Ongoing or proposed development: Unknown whether any development is planned. This parcel is not addressed in the Master Plan (2006).

Potential for Federal nexus: Based on the information available at this time, we are unable to determine the potential for a Federal nexus for the City and County of Honolulu, or private lands.

Occupied by: *Achryanthes splendens* var. *rotundata* (Ewa hinahina).

Unoccupied by: *Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, *Vigna o-wahuensis*.

F. Coastal 14

Area: 4.11 ac (1.66 ha).

Ownership: Federal (U.S. Coast Guard), private.

Ongoing or proposed development: The site of a lighthouse, this parcel is owned by the U.S. Coast Guard. There currently are no plans for any development at the site (Wright pers. comm. 2011).

Potential for Federal nexus: This land is under Federal jurisdiction.

Occupied by: *Achryanthes splendens* var. *rotundata* (Ewa hinahina).

Unoccupied by: *Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, *Vigna o-wahuensis*.

G. Coastal 15

Area: 33.44 ac (13.53 ha).

Ownership: Federal (Kalaehoa Unit of the Pearl Harbor National Wildlife Refuge), State, private.

Ongoing or proposed development: Located adjacent to Lowland Dry Unit 9. No development is planned on the national wildlife refuge. It is unknown whether any development is planned on the non-Federal lands.

Potential for Federal nexus: A portion of the unit is under Federal jurisdiction. Based on the information available at this time, we are unable to determine the potential for a Federal nexus for the State and private portions of the unit.

Occupied by: *Achryanthes splendens* var. *rotundata* (Ewa hinahina).

Unoccupied by: *Bidens amplexans*, *Centaurium sebaeoides*, *Chamaesyce celastroides* var. *kaenana*, *Schiedea kealiae*, *Sesbania tomentosa*, *Vigna o-wahuensis*

IV. COMPLETED SECTION 7 CONSULTATIONS IN KALAELOA

A. Modification recommendations for past projects

Consultations with the Service on listed plant species on Oahu in most cases have not resulted in significant project modifications, and the recommendations have varied by project. Project

modification costs are determined on a project-by-project basis and are not based on standardized costs of typical project modifications (Draft Economic Analysis 2002, p. VI-7). Typical project modification recommendations in the past have included:

1. Installation of silt fencing to control silt on construction sites.
2. Containment of construction site surface runoff to avoid contamination of native plant habitat protection areas.
3. Establishment of buffer zones around fenced plant protection areas where plants are located.
4. Completion of post-construction site restoration that includes removal of any structures and/or concrete pads and stabilization of any temporary use area (Service Informal 2009-I-0422, p. 2).
5. Fencing to protect species from environmental impacts of rodents that are known to eat a variety of plant seeds, leaves, and roots (Service Informal 2007-I-0086, p. 2).
6. Cleaning procedures to reduce the introduction of non-native plant seeds (Service Informal 2007-I-0086, p. 5).
7. No importation of earthen soil from off-site to reduce introduction of non-native seeds (Service Informal 2007-I-0086, p. 4).
8. Protect habitat from development and remove invasive species that compete for habitat and increase fire risk. Invasive species may include *Leucaena leucocephala* (koa haole), *Prosopis pallida* (kiawe), and non-native grasses (Nadig 2011, pers. comm.).

B. Examples of past section 7 consultation records

Biological Opinions (formal consultations)

1. Dredge Harbor Construction, Point, Oahu, 1-2-1982-F-210. Sept. 29, 1982.
2. Kapolei Gulches Fill, Kapolei, Oahu, 1-2-1982-F-210. Jul. 9, 1999.
3. Decontamination at Naval NASBP Point, Point, Oahu, 1-2-2002-F-02. Oct. 25, 2001.
4. Parcel Conveyance at Kalaeloa, Kalaeloa, Oahu, 1-2-2002-F-06. Apr. 22, 2002.
5. Decontamination of the Northern Trap and NTSR, Naval NASBP Point, Point, Oahu, 1-2-2002-F-01R. Jun. 15, 2003.
6. Transfer of Lot 13059-B to the City and Country of Honolulu via the National Park Service at the Former Naval Air Station Point, Kalaeloa, Oahu, 1-2-2003-F-168. Nov. 20, 2003.

Informal consultations

1. Transfer of Three Parcels at Kalaeloa, Kalaeloa, Oahu, 2007-I-0213, August 3, 2007.
2. Major Modifications to H-Power Waster-to-Energy Facility, Kapolei, Oahu, 2009-I-0422, October 6, 2009.

V. FEDERAL AND STATE PROTECTION

A. Federal: Endangered Species Act (Act), 16 U.S.C § 1531 et seq.

B. Hawaii State Law: The Hawaii state law that is analogous to the Act is Hawaii Revised Statutes (HRS) § 195D (HRS 195D), Conservation of Aquatic Life, Wildlife and Land Plants.

Any species listed as endangered under the Act is automatically listed under state law (HRS 195D-4). Hawaii law has no provision to protect critical habitat of listed species. Unless there is a Federal nexus in the form of funding or permitting, state actions require no different considerations with or without critical habitat. This also applies to private developers (HRS 195D).

VI. REFERENCES FOR INCREMENTAL EFFECT MEMO

City of Kapolei Official Website. Accessed Mar. 28, 2011.
<http://www.kapolei.com/projects.cfm?phase=pp>.

Guinther, E. and Withrow J. 2008. Akoko restoration project, Kalaeloa, Ewa District, Oahu, Final Report. AECOS, Inc.

Hawaii Revised Statutes (HRS) § 195D. Conservation of Aquatic Life, Wildlife and Plants.
Available at <http://www.hawaii.edu/ohelo/statutes/HRS195D/HRS195D.htm>.

Kapolei Harborside Center. 2006. Environmental Impact Statement Preparation Notice (EISP). Prepared by Group 70 International, Kapolei Property Development.
Available at <http://luc.state.hi.us/dockets/a06-763kapolei/a06-763exh4.pdf>.

Koebele, B.P. 2011. January 2011 Report to USFWS – Ecosystem Restoration at the US Navy Northern Trap & Skeet Range (NTSR), Building 1527 Site, Oahu. Available from bpkoebele@gmail.com.

Nadig, A. U.S. Fish and Wildlife Service Biologist, pers. comm. Feb. 24, 2011. Honolulu, HI.

Silbernagle, M.D. U.S. Fish and Wildlife Biologist, pers. comm. to J. Kwon. Jan. 31, 2011. Honolulu, HI.

State of Hawai'i. 2006. Kalaeloa Master Plan. Prepared by Belt Collins, Hawaii Community Development Authority, Honolulu, HI.

U.S. Fish and Wildlife Service. 2006. 5-Year Review Summary and Evaluation for *Chamaesyce skottsbergii* var. *kalaeloana* (Akoko). Pacific Islands Fish and Wildlife Office, Honolulu, HI.

U.S. Fish and Wildlife Service. 2008. 5-Year Review Summary and Evaluation for *Achyranthes splendens* var. *rotundata* (Round-leaved chaff-flower). Pacific Islands Fish and Wildlife Office, Honolulu, HI.

U.S. Fish and Wildlife Service. 2002. Draft Economic Analysis of Proposed Critical Habitat Designation for Oahu Plants, Island of Oahu, Hawaii. Prepared by Decision Analysts Hawaii, Inc., Honolulu, HI and submitted to Division of Economics, U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2007. Informal Consultation on the Predator-proof Fence at Kaena Point, Habitat Restoration, 2007-I-86.

U.S. Fish and Wildlife Service. 2009. Informal Consultation on the Major Modifications to H-Power Waste-to-Energy Facility, 2009-I-0422.

Wright, A., PE, LCDR, USCG. Director at large, U.S. Coast Guard Engineering Unit, pers. comm. Mar. 15, 2011. Honolulu, HI.

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 06-JUL-07	Section 7 Consultation	12200-2007-SL-0193	EIS, U.S. Navy, Introduction of the Multi-Mission Maritime Aircraft (MMA)	Department of Defense (DOD) - Navy	Blalock Herod, Holly
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 20-AUG-07	Section 7 Consultation	12200-2007-I-0233	Section 7 Consultation and NEPA Compliance on FY 2007 Section 6 Grants to Hawaii, Guam & CNMI	Fish and Wildlife Service	Blalock Herod, Holly
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 20-NOV-06	Section 7 Consultation	12200-2007-SL-0031	Kalaeloa Barber's Point Harbor Modification Project (verify existing species list)	Army Corps of Engineers	Ashfield, Patrice
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 22-JAN-07	Section 7 Consultation	12200-2007-I-0086	Predator-proof fence at Kaena Point, Habitat Restoration	Fish and Wildlife Service	Freifeld, Holly
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 01-MAY-08	Section 7 Consultation	12200-2008-TA-0189	Technical Assistance for Hawaii State Department of Health Property Yorktown Road, Kalaeloa, Oahu	STATE OF HAWAII	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 08-NOV-07	Section 7 Consultation	12200-2008-TA-0021	Hawaii Range Complex Biological Assessment	Department of Defense (DOD) - Navy	Laut, Megan
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 18-SEP-08	Section 7 Consultation	12200-2008-TA-0342	Oahu National Wildlife Refuge Complex Review of Pesticide Use	Fish and Wildlife Service	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 21-JUL-08	Section 7 Consultation	12200-2008-TA-0248	Air Tour Operations below 1,500 ft AGL in Hawaii, Docket Number FAA-2008-0608	Federal Aviation Administration	Greenlee, Dawn
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 29-AUG-08	Section 7 Consultation	12200-2008-TA-0340	LANDFIRE Hawaii fuel model mapping project	Forest Service	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 01-AUG-09	Section 7 Consultation	12200-2009-TA-0053	LANDFIRE Hawaii vegetation grass height mapping project	Forest Service	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 06-OCT-09	Section 7 Consultation	12200-2009-I-0422	EPA Permitting of H-Power Waste to Energy Facility, Kapolei, Oahu	Environmental Protection Agency	Nadig, Aaron

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 07-AUG-09	Section 7 Consultation	12200-2009-TA-0325	Draft INRMP and EA for Air Force Kaena Point Satellite Tracking Station, Oahu	Department of Defense (DOD) - Air Force	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 08-APR-09	Section 7 Consultation	12200-2009-TA-0172	Honuaula Master Planned Community EIS/SPN, Kihei-Makena, Maui	STATE OF HAWAII	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 09-JUL-09	Section 7 Consultation	12200-2009-TA-0171	Makena Resort Flora Fauna Survey	-- OTHER NON-FEDERAL AGENCY -	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 13-NOV-10	Section 7 Consultation	12200-2009-TA-0190	State Assessment and Resource Strategies - USDA Farm Bill/DOFAW (SWARS)	DEPT OF AGRICULTURE	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 20-JUN-09	Section 7 Consultation	12200-2009-TA-0128	Proposal for PIFWO funding, when necessary, of State of Hawaii Fire Suppression Helicopters	Forest Service	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 22-JAN-10	Section 7 Consultation	12200-2009-TA-0423	Final INRMP and EA for Air Force Kaena Point Satellite Tracking Station, Oahu	Department of Defense (DOD) - Air Force	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 26-AUG-09	Section 7 Consultation	12200-2009-SL-0373	H-Power Third Boiler Expansion at Barbers Point Trash to Power Facility	Environmental Protection Agency	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2009-TA-0024	Maui Beach Place 3-Unit Condominium and Associated Landscaping, Parking, and Utilities, Kihei, Maui	-- OTHER NON-FEDERAL AGENCY -	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2009-TA-0407	Heritage Hall cultural and community center	-- OTHER NON-FEDERAL AGENCY -	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2009-TA-0434	EIS Preparation Notice Chevron Pipeline Replacement Project, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 02-JUL-10	Section 7 Consultation	12200-2010-TA-0286	Draft EIS for Honuaula (Wailea 670) Housing Development, Maui	-- OTHER: CONSULTANT --	Greenlee, Dawn
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 08-OCT-10	Section 7 Consultation	12200-2010-SL-0502	Species List for Hawaii Army National Guard Facility Locations, Oahu	Department of Defense (DOD) - National Guard	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0390	Grading Project at Campbell Industrial Park, Kaploei, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0402	Pre-Draft Environmental Assessment for Expansion of Kalaeloa Barbers Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0512	Draft EA for Acquisition of Lands for Development of Kalaeloa Barbers Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 19-NOV-09	Section 7 Consultation	12200-2010-TA-0054	Joint Fire Science Proposal seeking funding to refine fuel model mapping in Hawaii grasslands	Federal Aviation Administration	Greenlee, Dawn
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 31-AUG-10	Section 7 Consultation	12200-2010-TA-0436	Pre-Assessment for Kalaeloa Solar One Power Generating Facility, Kalaeloa, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2010-TA-0355	Kihei Residential Project, Kihei, Maui	STATE OF HAWAII	Greenlee, Dawn
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded 15-JUN-11	Section 7 Consultation	12200-2011-SL-0335	Species List for Western Kapolei Regional Drainage Plan, Oahu	Federal Highway Administration	Nadig, Aaron
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2011-TA-0101	Draft EA for Kalaeloa Solar One Power Generating Facility, Kalaeloa, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Achyranthes splendens var. rotundata (Round-leaved chaff-flower)	concluded, no Service work performed	Section 7 Consultation	12200-2011-TA-0102	Final EA for Acquisition of Lands for Development of Kalaeloa Barber's Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 03-AUG-07	Section 7 Consultation	12200-2007-I-0213	Transfer of 3 Parcels at Barber's Point, Kalaeloa, Oahu, HI	General Services Administration	Zimpfer, Jeff
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 20-NOV-06	Section 7 Consultation	12200-2007-SL-0031	Kalaeloa Barber's Point Harbor Modification Project (verify existing species list)	Army Corps of Engineers	Ashfield, Patrice
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 21-SEP-07	Section 7 Consultation	12200-2007-TA-0268	Cell Tower, Kapolei High School, TMK: 191016.074, Kapolei, Oahu, HI	Federal Communications Commission	Laut, Megan
2007	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 31-AUG-07	Section 7 Consultation	12200-2007-TA-0241	Proposed Barber's Pt. Non-Potable Reservoir No. 2, Kapolei, Oahu, Hawaii	-- OTHER NON-FEDERAL AGENCY -	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 01-MAY-08	Section 7 Consultation	12200-2008-TA-0189	Technical Assistance for Hawaii State Department of Health Property Yorktown Road, Kalaeloa, Oahu	STATE OF HAWAII	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 17-OCT-08	Section 7 Consultation	12200-2008-TA-0344	Preliminary review of BRAC for Kalaeloa, Barber's Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 18-SEP-08	Section 7 Consultation	12200-2008-TA-0342	Oahu National Wildlife Refuge Complex Review of Pesticide Use	Fish and Wildlife Service	Nadig, Aaron
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 21-JUL-08	Section 7 Consultation	12200-2008-TA-0248	Air Tour Operations below 1,500 ft AGL in Hawaii, Docket Number FAA-2008-0608	Federal Aviation Administration	Greenlee, Dawn
2008	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 29-AUG-08	Section 7 Consultation	12200-2008-TA-0340	LANDFIRE Hawaii fuel model mapping project	Forest Service	Greenlee, Dawn

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 01-AUG-09	Section 7 Consultation	12200-2009-TA-0053	LANDFIRE Hawaii vegetation grass height mapping project	Forest Service	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 06-OCT-09	Section 7 Consultation	12200-2009-I-0422	EPA Permitting of H-Power Waste to Energy Facility, Kapolei, Oahu	Environmental Protection Agency	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 10-JUL-09	Section 7 Consultation	12200-2009-TA-0315	Disposal and Reuse of Lot 13058-D at Naval Air Station Barbers Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 13-NOV-10	Section 7 Consultation	12200-2009-TA-0190	State Assessment and Resource Strategies - USDA Farm Bill/DOFAW (SWARS)	DEPT OF AGRICULTURE	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 18-FEB-09	Section 7 Consultation	12200-2009-TA-0093	Naval Station Pearl Harbor draft INRMP 2008-2012, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 20-JUN-09	Section 7 Consultation	12200-2009-TA-0128	Proposal for PIFWO funding, when necessary, of State of Hawaii Fire Suppression Helicopters	Forest Service	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded, no Service work performed	Section 7 Consultation	12200-2009-TA-0407	Heritage Hall cultural and community center	-- OTHER NON-FEDERAL AGENCY -	Greenlee, Dawn
2009	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded, no Service work performed	Section 7 Consultation	12200-2009-TA-0434	EIS Preparation Notice Chevron Pipeline Replacement Project, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 08-OCT-10	Section 7 Consultation	12200-2010-SL-0502	Species List for Hawaii Army National Guard Facility Locations, Oahu	Department of Defense (DOD) - National Guard	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0390	Grading Project at Campbell Industrial Park, Kapolei, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0392	Pre-Assessment for a DEA for Transit Rail, Kalaeloa Precast Yard, Oahu	-- OTHER NON-FEDERAL AGENCY -	Nadig, Aaron

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0402	Pre-Draft Environmental Assessment for Expansion of Kalaeloa Barbers Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 19-AUG-10	Section 7 Consultation	12200-2010-TA-0512	Draft EA for Acquisition of Lands for Development of Kalaeloa Barbers Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 19-NOV-09	Section 7 Consultation	12200-2010-TA-0054	Joint Fire Science Proposal seeking funding to refine fuel model mapping in Hawaii grasslands	Federal Aviation Administration	Greenlee, Dawn
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 21-MAY-10	Section 7 Consultation	12200-2010-TA-0297	Navy Disposal of Lot 13058-D former Northern Trap and Skeet Range, Barber's Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 22-OCT-10	Section 7 Consultation	12200-2010-I-0520	Informal Consultation for the Land Transfer of Lot 13058-D at Barbers Point, Kalaeloa, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 31-AUG-10	Section 7 Consultation	12200-2010-TA-0436	Pre-Assessment for Kalaeloa Solar One Power Generating Facility, Kalaeloa, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2010	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded, no Service work performed	Section 7 Consultation	12200-2010-TA-0036	Base Realignment and Closure Final Finding to Transfer Lots, Barbers Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 15-JUN-11	Section 7 Consultation	12200-2011-SL-0335	Species List for Western Kapolei Regional Drainage Plan, Oahu	Federal Highway Administration	Nadig, Aaron
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 15-NOV-10	Section 7 Consultation	12200-2011-TA-0020	Draft EA for Kalaeloa Life Safety Improvements, Ewa District, Oahu	STATE OF HAWAII	Bogardus, Michelle
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 25-APR-11	Section 7 Consultation	12200-2011-TA-0228	Navy Draft EA for the Disposal and Reuse of Surplus Property at Barbers Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron

Fiscal Year	Lead Region	Lead Office	Species Involved / Evaluated	Active/Concluded	Activity Type	Activity Code	Activity Title	Lead Agency / Tribe	Staff Lead
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded 28-JAN-11	Section 7 Consultation	12200-2011-TA-0092	No Effect Determination Regarding Transfer of Land (Lot 13058-D), Barbers Point, Oahu	Department of Defense (DOD) - Navy	Nadig, Aaron
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded, no Service work performed	Section 7 Consultation	12200-2011-TA-0101	Draft EA for Kalaeloa Solar One Power Generating Facility, Kalaeloa, Oahu	-- OTHER: CONSULTANT --	Nadig, Aaron
2011	1	PACIFIC ISLANDS FISH AND WILDLIFE OFFICE	Chamaesyce skottsbergii var. kalaeloana (Ewa Plains `akoko)	concluded, no Service work performed	Section 7 Consultation	12200-2011-TA-0102	Final EA for Acquisition of Lands for Development of Kalaeloa Barbers Point Harbor, Oahu	STATE OF HAWAII	Nadig, Aaron

COST TO SMALL ENTITIES

SMALL BUSINESS ANALYSIS AND ENERGY IMPACTS ANALYSIS

This appendix considers the potential distributional economic effects that the proposed critical habitat designation could have on small businesses and upon the energy industry. Specifically, these considerations are required through the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) and Executive Order 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use.”³⁵

A.1 Impacts to Small Entities

The RFA identifies three types of small entities:

- **Small Business** - Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The SBA has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm’s parent company and all affiliates as a single entity.
- **Small Governmental Jurisdiction** - Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
- **Small Organization** - Section 601(4) defines a small organization as any not-for profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc.

The courts have held that the RFA/SBREFA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC)*, FERC proposed regulations affecting the manner in which generating utilities incorporated construction

³⁵ Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164 (codified at 5 U.S.C. § 601). Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, 110 Stat. 857 (codified at 5 U.S.C. § 601 et seq). E.O. No. 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” May 18, 2001.

work in progress in their rates. The generating utilities that expected to be regulated were large businesses; however, their customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.³⁶

Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.³⁷ The basis of EPA's RFA/SBREFEA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of state plans that incorporated the standards. The court found that, while EPA imposed regulation on states, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.

The SBA in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.³⁸ "If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the Federal agency to some other governing body."³⁹

The regulatory mechanism through which critical habitat protections are enforced is section 7 of the Act, which directly regulates only those activities carried out, funded, or permitted by a Federal agency. By definition, Federal agencies are not considered small entities, although the activities they may fund or permit may be proposed or carried out by small entities. Given the SBA guidance described above, this analysis considers the extent to which this designation could potentially affect small entities, regardless of whether these entities would be directly regulated by the Service through the proposed rule or by a delegation of impact from the directly regulated entity. Although businesses affected indirectly are considered, this analysis considers only those entities for which impact would not be measurably diluted.

³⁶ 773 F. 2d 327 (D.C. Cir. 1985).

³⁷ 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

³⁸ Small Business Administration, Office of Advocacy. May 2003. *A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act*, pg. 20.

³⁹ *Ibid.*, pg. 21.

This screening analysis is based on the estimated incremental impacts associated with the proposed rulemaking. An assessment of the level of incremental costs (upper-bound) of critical habitat designation quantified in this analysis is due to:

- Reductions in land value due to development restrictions following the designation of critical habitat; and
- Administrative consultation costs.

The affected agencies (State of Hawaii, City and County of Honolulu, Department of Defense) are Federal and State agencies that, by definition, are not small entities. Thus this screening analysis focuses on impacts to development activities, which may be experienced by small entities.

This analysis assumes that the designation of critical habitat for the two plant species would primarily impact businesses in the building construction industry. Table 1 below shows the Small Business Administration’s definition for small businesses in this industry. All businesses within the North American Industry Classification System (NAICS) subsector 236 (Construction of Buildings) are defined by the SBA to be small entities if their annual receipts are less than \$33.5 million. NAICS is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. SBA has adopted NAICS industry definitions as the basis for its table of small business size standards.⁴⁰ The SBA defines “receipts” to mean “total income” (or in the case of a sole proprietorship, “gross income”) plus “cost of goods sold” as these terms are defined and reported on Internal Revenue Service tax return forms.⁴¹

Table 1		
Building Construction Small Business Size Standards		
Subsector 236 – Construction of Buildings		Annual Receipts (\$ million)
236115	New Single-Family Housing Construction (except Operative Builders)	\$33.5
236116	New Multifamily Housing Construction (except Operative Builders)	\$33.5
236117	New Housing Operative Builders	\$33.5
236118	Residential Remodelers	\$33.5
236210	Industrial Building Construction	\$33.5
236220	Commercial and Institutional Building Construction	\$33.5

⁴⁰ For more information about NAICS, see <http://www.census.gov/eos/www/naics/>.

⁴¹ <http://www.sba.gov/content/table-small-business-size-standards>

Source: Table of Small Business Size Standards, U.S. Small Business Administration.
<http://www.sba.gov/content/table-small-business-size-standards>

Based on the analysis of planned future land uses, this analysis further assumes that firms primarily in the business of Non-Residential Building Construction (NAICS 2362) will be potentially affected by the proposed designation. There are two subsectors in this category: (1) Industrial Building Construction (NAICS 236210); and (2) Commercial and Institutional Building Construction (NAICS 236220) The U.S. Census defines firms classified in NAICS 236210 as establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of industrial buildings (except warehouses).⁴² NAICS 236220 is defined as establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of commercial and institutional buildings and related structures, such as stadiums, grain elevators, and indoor swimming pools.⁴³

U.S. Census reports that there are 1,685 construction establishments in Honolulu County, Hawaii in 2009. 159 of these establishments were primarily in the non-residential building industry. Specifically, eight of these establishments were in the business of industrial building construction and 151 were in the primary business of commercial and institutional building construction. Table 2, below summarizes this information. Census also provides a breakdown of establishments by employee size. This information is presented in Table 3. The majority of establishments have only one to four employees. Over 75 percent of the establishments in Commercial and Institutional Building Construction have less than 20 employees.

NAICS	Description	Total Establishments	Employees	Annual Payroll (\$1,000)
23	Construction	1,685	21,855	\$ 1,339,514
236210	Industrial building construction	8	114	\$ 8,665
236220	Commercial and institutional building	151	3,637	\$ 261,214

⁴² The construction of selected additional structures, whose production processes are similar to those for industrial buildings (e.g., incinerators, cement plants, blast furnaces, and similar nonbuilding structures), is included in this industry. Included in this industry are industrial building general contractors, industrial building operative builders, industrial building design-build firms, and industrial building construction management firms.

⁴³ This industry includes establishments responsible for the on-site assembly of modular or prefabricated commercial and institutional buildings. Included in this industry are commercial and institutional building general contractors, commercial and institutional building operative builders, commercial and institutional building design-build firms, and commercial and institutional building project construction management firms.

	construction			
2362	Non-Residential Building Construction	159	3,751	\$ 269,879

Source: 2009 County Business Patterns, U.S. Census. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpdetl.pl>

It is unlikely that every affected developer would be a small business as defined by the SBA. However, because it is difficult to predict which developers would be specifically impacted by the proposed designation this analysis conservatively assumes that every developer impacted is in fact a small business, which likely will overstate the economic impacts of this designation. Furthermore, this analysis conservatively assumes that one developer is associated with each affected land parcel. Therefore, thirteen small business developers would be affected in the unoccupied unit of Lowland Dry 08, while 21 small business developers would be affected in the other occupied units.⁴⁴

⁴⁴ Five parcels are included in both Coastal Unit 15 and Lowland Dry 09, which are counted only once to avoid double counting.

Table 3 - Honolulu, Hawaii Construction Industry Statistics, Employment Size Standards

Industry code	Industry code description	Total establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
23	Construction	1,685	888	316	219	175	55	27	4	1	-
236210	Industrial building construction	8	2	2	2	1	1	-	-	-	-
236220	Commercial and institutional building construction	151	58	30	27	22	7	6	-	1	-
2362	Non-Residential Building Construction	159	60	32	29	23	8	6	-	1	-

Source: 2009 County Business Patterns, U.S. Census. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpdetl.pl>

Census does not provide a breakdown of the number of establishments by total receipts, however, which is how the SBA defines small businesses in this industrial sector. To estimate the financial impact on small businesses this analysis uses Census’s reported “Value of Business Done” for NAICS code 236220 as reported in the latest Economic Census.⁴⁵ This figure includes the receipts, billings, or sales for construction work done by building contractors. The total value of business done by these businesses was reported to be \$2.3 billion in 2007. There were 160 establishments in this NAICS category at that time meaning the average value of business done by an establishment was approximately \$14.7 million.

Table 4 shows how the proposed critical habitat designation may affect the average small developer under the assumptions discussed above. The table breaks down impacts for both property value impacts and for administrative section 7 consultation impacts. The only critical habitat unit facing potential property value impacts would be the unoccupied unit, Lowland Dry 08. This would only occur under the extreme assumption that none of the critical habitat areas could be developed, which would lead to a property value loss. If this were to occur, potentially up to 13 small developers could be affected with an average financial impact of 2.0 percent to 2.8 percent to their annual receipts. Similarly, under the extreme upper-bound assumption that every parcel would incur a formal consultation the financial impact to the average small developer would be 0.03 percent of annual receipts. Potentially up to 34 small businesses would be impacted although it is unlikely that every parcel would face a formal consultation in the future. Figure 1, below, summarizes the assumptions followed in this assessment.

Figure 1 Key Assumptions used in Small Business Impact Analysis		
Assumption	Likelihood	Effect
Every parcel has one formal consultation.	Highly unlikely- some parcels may have no consultations or only informal. Need for Federal nexus.	Overestimate
Parcels in unoccupied unit would incur property value losses.	Highly unlikely – Service has allowed development in other critical habitat areas in the past.	Overestimate
A unique developer is associated with each parcel.	Highly unlikely – some parcels are likely to be included in single action and developers are likely to be involved in more than a single project.	Overestimate
Each establishment reported in Census data reflects a unique business.	Unlikely – a single business can be composed of one or more establishments.	Overestimate

⁴⁵ 2007 Economic Census, U.S. Census Bureau. Sector 23: Construction: Geographic Area Series: Detailed Statistics for Establishments: 2007. <http://factfinder.census.gov>.

Table 4 - Upper Bound Economic Impacts to Small Businesses (NAICS 2362)						
Property Value Impacts						
	Average Receipts	Average Annualized Property Value Impacts		Annualized Impact		UB Potentially Affected Firms
		0.07 disc rate	0.03 disc rate	0.07 disc rate	0.03 disc rate	
	\$	14,673,156	\$405,214	\$288,546	2.8%	2.0%
Administrative Impacts						
	Average Receipts	Annualized Consultation Cost		Annualized Impact		
		0.07	0.03	0.07	0.03	
	\$	14,673,156	\$5,000	\$5,000	0.03%	0.03%

A.2 Potential Impacts to the Energy Industry

Pursuant to Executive Order No. 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” issued May 18, 2001, Federal agencies must prepare and submit a “Statement of Energy Effects” for all “significant energy actions.” The purpose of this requirement is to ensure that all Federal agencies “appropriately weigh and consider the effects of the Federal Government’s regulations on the supply, distribution, and use of energy.”⁴⁶ 6

The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may constitute “a significant adverse effect” when compared with the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day;
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million thousand cubic feet per year;
- Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;

⁴⁶ Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, <http://www.whitehouse.gov/omb/memoranda/m01-27.html>

- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.⁴⁷

As previously described critical habitat designation for the plants is anticipated to impact development activities. Resource extraction, energy production and/or distribution are not expected to be affected. Because none of the above criteria are relevant to this analysis, energy-related impacts within the proposed critical habitat designation are not anticipated.

⁴⁷ Ibid.

REFERENCES CITED FOR ECONOMIC ANALYSIS PART I

1. 16 U.S.C. 1533
2. Executive Order 12866. Regulatory Planning and Review. September 30, 1993.
3. Decision Analysts Hawaii, Inc. 2001. Draft Economic Analysis of Critical Habitat Designation for the Oahu Elepaio. August 2001.
4. Decision Analysts Hawaii, Inc. 2001. Addendum to Economic Analysis of Critical Habitat Designation for the Oahu Elepaio. October 2001.
5. Decision Analysts Hawaii, Inc. and Resource Solutions, LLC. Draft Economic Impact Analysis of Proposed Critical Habitat for the Newcomb's Snail. March 2002.
6. Decision Analysts Hawaii, Inc. 2002. Draft Economic Analysis of Proposed Critical Habitat Designation for Oahu Plants Island of Oahu, Hawaii. December 2002.
7. Decision Analysts Hawaii, Inc. 2003. Addendum to Draft Economic Analysis of Proposed Critical Habitat Designation for Oahu Plants Island of Oahu, Hawaii. March 2003.
8. Decision Analysts Hawaii, Inc. 2007. Economic Analysis of Proposed Critical Habitat Designation for Hawaiian Picture-wing Flies, State of Hawaii. February 2007.
9. Decision Analysts Hawaii, Inc. 2008. Final Economic Analysis of Critical Habitat Designation for the Hawaiian Picture-wing Flies. October 2008.
10. Decision Analysts Hawaii, Inc. 2009. Memorandum, Economic Impacts of Final Critical Habitat Designation for the Hawaiian Picture-wing Flies. January 2009.
11. Honolulu Advertiser. 2007. Hawaii State Agency Urged to Run Irrigation System. October 8, 2007.
12. State of Hawaii. Hawaii Administrative Rules, Title 13, Department of Land and Natural Resources, Adoption of Chapter 13-5.
13. State of Hawaii. Hawaii Revised Statute § 205-4. Amendments to District Boundaries Involving Land Areas Greater Than Fifteen Acres.
14. State of Hawaii. Hawaii Revised Statute § 205-18. Periodic Review of Districts.
15. State of Hawaii. 2001. News Release NR-0101, Update on Waimanalo Reservoir Controversy. March 2001.

16. State of Hawaii. 2004. Department of Agriculture, Economic Impact of the Waiahole Irrigation System. December 2002.
17. State of Hawaii. 2004. Department of Agriculture, Agricultural Water Use and Development Plan. Revised December 2004.
18. State of Hawaii. 2008. Department of Agriculture, Wahiawa Irrigation System Economic Impact Study. November, 2008.
19. State of Hawaii. 2006. Department of Land and Natural Resources, Notice to all Owners of Dams or Reservoirs. March 2006.
20. U.S. Army Corps of Engineers. 2006. Limited Visual Dam Safety Inspections, OA00017, Waihawa Dam, Oahu, Hawaii. May 2006.
21. U.S. Army Corps of Engineers. 2007. Regulatory Guidance Letter 07-02, Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches Under Section 404 of the Clean Water Act. July 2007.
22. U.S. Office of Management and Budget. Circular A-4, September 17, 2003. Available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.
23. U.S. Fish and Wildlife Service. Economic Impact Analysis, Proposed Listing and Critical Habitat Designation for 48 Species on the Island of Hawaii. October, 2010.

99 Listed Oahu Plants

	Species
1	<i>Abutilon sandwicense</i>
2	<i>Adenophorus periens</i>
3	<i>Alectryon macrococcus</i> var. <i>micrococcus</i>
4	<i>Bonamia menziesii</i>
5	<i>Cenchrus agrimonioides</i> var. <i>agrimonioides</i>
6	<i>Centaurium sebaeoides</i>
7	<i>Chamaesyce celastroides</i> var. <i>kaenana</i>
8	<i>Chamaesyce deppeana</i>
9	<i>Chamaesyce herbstii</i>
10	<i>Chamaesyce kuwaleana</i>
11	<i>Chamaesyce rockii</i>
12	<i>Colubrina oppositifolia</i>
13	<i>Ctenitis squamigera</i>
14	<i>Cyanea acuminata</i>
15	<i>Cyanea crispa</i>
16	<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i>
17	<i>Cyanea grimesiana</i> ssp. <i>obatae</i>
18	<i>Cyanea humboldtiana</i>
19	<i>Cyanea koolauensis</i>
20	<i>Cyanea longiflora</i>
21	<i>Cyanea pinnatifida</i>
22	<i>Cyanea st.-johnii</i>
23	<i>Cyanea superb</i>
24	<i>Cyanea truncata</i>
25	<i>Cyperus pennatiformis</i> ssp. <i>pennatiformis</i>
26	<i>Cyperus trachysanthos</i>
27	<i>Cyrtandra dentata</i>
28	<i>Cyrtandra polyantha</i>
29	<i>Cyrtandra subumbellata</i>
30	<i>Cyrtandra viridiflora</i>
31	<i>Delissea subcordata</i>
32	<i>Diellia erecta</i>
33	<i>Diellia falcata</i>
34	<i>Diellia unisora</i>
35	<i>Diplazium molokaiense</i>
36	<i>Dubautia herbstobatae</i>
37	<i>Eragrostis fosbergii</i>
38	<i>Eugenia koolauensis</i>
39	<i>Euphorbia haeleeleana</i>

40	<i>Flueggea neowawraea</i>
41	<i>Gardenia mannii</i>
42	<i>Gouania meyenii</i>
43	<i>Gouania vitifolia</i>
44	<i>Hesperomannia arborescens</i>
45	<i>Hesperomannia arbuscula</i>
46	<i>Hibiscus brackenridgei</i>
57	<i>Huperzia nutans</i>
48	<i>Isodendrion laurifolium</i>
49	<i>Isodendrion longifolium</i>
50	<i>Isodendrion pyriformium</i>
51	<i>Kadua coriacea</i>
52	<i>Kadua degeneri</i>
53	<i>Kadua parvula</i>
54	<i>Labordia cyrtandrae</i>
55	<i>Lepidium arbuscula</i>
56	<i>Lipochaeta lobata</i> var. <i>leptophylla</i>
57	<i>Lobelia gaudichaudii</i> ssp. <i>koolauensis</i>
58	<i>Lobelia monostachya</i>
59	<i>Lobelia niihauensis</i>
60	<i>Lobelia oahuensis</i>
61	<i>Lysimachia filifolia</i>
62	<i>Marsilea villosa</i>
63	<i>Melanthera tenuifolia</i>
64	<i>Melicope lydgatei</i>
65	<i>Melicope pallida</i>
66	<i>Melicope saint-johnii</i>
67	<i>Myrsine juddii</i>
68	<i>Neraudia angulata</i>
69	<i>Nototrichium humile</i>
70	<i>Peucedanum sandwicense</i>
71	<i>Phyllostegia hirsuta</i>
72	<i>Phyllostegia kaalaensis</i>
73	<i>Phyllostegia mollis</i>
74	<i>Phyllostegia parviflora</i>
75	<i>Plantago princeps</i>
76	<i>Platanthera holochila</i>
77	<i>Pteris lidgatei</i>
78	<i>Sanicula mariversa</i>
79	<i>Sanicula purpurea</i>
80	<i>Schiedea hookeri</i>
81	<i>Schiedea kaalae</i>
82	<i>Schiedea kealiae</i>
83	<i>Schiedea nuttallii</i>
84	<i>Schiedea obovata</i>

85	<i>Schiedea trinervis</i>
86	<i>Sesbania tomentosa</i>
87	<i>Silene lanceolata</i>
88	<i>Silene perlmanii</i>
89	<i>Solanum sandwicense</i>
90	<i>Spermolepis hawaiiensis</i>
91	<i>Stenogyne kanehoana</i>
92	<i>Tetramolopium filiforme</i>
93	<i>Tetramolopium lepidotum</i> ssp. <i>lepidotum</i>
94	<i>Tetraplasandra gymnocarpa</i>
95	<i>Trematolobelia singularis</i>
96	<i>Urera kaalae</i>
97	<i>Vigna o-wahuensis</i>
98	<i>Viola chamissoniana</i> ssp. <i>chamissoniana</i>
99	<i>Viola oahuensis</i>