

ADDENDUM TO THE DRAFT ECONOMIC IMPACT ANALYSIS OF PROPOSED CRITICAL HABITAT FOR BLACKBURN'S SPHINX MOTH

1. INTRODUCTION

In June 2002, the U.S. Fish and Wildlife Service (the Service) proposed designation of critical habitat under the Endangered Species Act of 1973, as amended (the Act) for the Blackburn's Sphinx Moth (the Moth). This proposal encompassed approximately 99,433 acres of land on Hawaiian Islands of Maui, Hawai'i, Moloka'i, and Kaho'olawe. Because the Act requires the consideration of economic impacts of the critical habitat designation, the Service released a "Draft Economic Impact Analysis of Proposed Critical Habitat for the Blackburn's Sphinx Moth" (hereafter the DEA) for public review and comment in November 2002.¹

The primary purpose of this Addendum is to update the DEA. As such, the Addendum revisits the assumptions and analytic conclusions presented in the DEA in light of new information obtained since the DEA was published. It also addresses issues raised in public comments on the DEA. The DEA as modified by this Addendum constitutes the economic analysis for this rule.

2. REDUCED UNITS

The Service indicates that it intends to modify all eight units to remove areas from the proposed designation that lack the *primary constituent elements* or that were deemed not essential to the conservation of the species (i.e., for biological reasons). With the intended modifications, the total acreage would be reduced from 99,433 acres to 73,829 acres, or a decrease of 25,605 acres (26 percent). For each of the critical habitat units, Table Add-1 presents the acreage as set forth in the proposed rule, the acreage as intended to be modified based on biological reasons, and the differences between the two.²

The preamble to the final rule explains the Service's revisions to the proposed critical habitat designation. Henceforth, the term "intended designation" refers to the designation with the above intended modifications. The term "proposed designation" refers to the designation as contained in the proposed rule.

¹ Copies of the *Draft Economic Impact Analysis of Proposed Critical Habitat for the Blackburn's Sphinx Moth* are available from the Pacific Islands Fish and Wildlife Office, U.S. Fish and Wildlife Service, Honolulu, Hawai'i.

² The Service has indicated that it intends to remap the boundaries in the final rule for the critical habitat to exclude these areas (Memorandum to Chief, Branch of Listing, January 21, 2003).

**Table Add-1. Blackburn Sphinx Moth Proposed and Intended Critical Habitat:
Acreage Differences by Unit, State Districting, and Land Ownership**

Item	Proposed Rule Acres	Addendum Acres	Change
Total Acreage	99,434	73,829	25,605
Unit Acreage			
1 (Maui)	37,599	36,087	1,512
2 (Maui)	6,794	4,768	2,026
3 (Maui)	559	502	57
4 (Kaho'olawe)	4,641	4,252	389
5-A (Big Island)	309	286	23
5-B (Big Island)	258	232	26
6 (Big Island)	44,753	24,597	20,156
7 (Moloka'i)	4,521	3,105	1,416
Land Ownership*			
Federal	2	2	-
State/County	70,289	57,877	12,412
Private Owners	29,143	15,947	13,196
State Land Use Districts*			
Conservation	32,361	22,626	9,735
Agricultural	66,554	50,772	15,782
Urban	530	430	100
Rural	1	1	(0)

* Land ownership and State land use district acreage totals may not equal total acres due to digital mapping discrepancies between TMK data and USGS coastline or due to rounding.

3. DIRECT COSTS

As noted above, the Service indicates that it intends to modify the critical habitat designation by reducing eight units for biological reasons. These changes would affect some of the direct costs estimated in the DEA. As such, this section revisits the costs affected and derives new costs according to the intended modifications. The DEA costs, the revised Addendum costs, and an explanation for the changes are presented in Table Add-2 at the end of the Addendum.

Unless otherwise noted, the number of consultations and the anticipated project modifications mentioned in the DEA and the Addendum are based on the professional judgment of the team of consultants that prepared these reports. This judgment is based upon discussions with the Service; review of historical section 7 consultation files for the moth and other species; discussions with appropriate landowners, agencies, and stakeholders; and other supporting documentation.

3.a. Residential Development – Kula Residence Lots

Chapter VI, Section 3.b.(1) of the DEA presented estimates of future consultation and project modification costs associated with the Kula Residence Lots development on Department of Hawaiian Home Lands (DHHL) land as a result of lessee participation in U.S. Department of Housing and Urban Development (HUD) loan insurance and guarantee programs. The DEA noted that infrastructure development was recently completed. Since that time, the Service has conducted a field survey and determined that this area does not contain the *primary constituent elements*. As a result, the Service indicates that it intends to modify Unit 2 (Maui) to exclude the Kula Residence Lots area for biological reasons. Thus, section 7 costs reported in the DEA related to this development would no longer be expected.

3.b. Residential Development – Kahikinui Kuleana Homesteads

Chapter VI, Section 3.b.(2) of the DEA presented estimates of future consultation and project modification costs associated with the development of homes by lessees participating in the Kahikinui Kuleana Homestead pilot program on DHHL land in Unit 1 (Maui). While there was no identified *Federal nexus* for activities associated with the development of homes at Kahikinui, the DEA anticipated that individual lessees could participate in the HUD loan guarantee programs available to Native Hawaiians. Given the potentially large number of individual consultations, the DEA estimated that one programmatic consultation covering all of the Kahikinui Homestead land was reasonable and presented the costs associated with such consultation. The Service now indicates that the Kahikinui Kuleana Homesteads area does not contain the *primary constituent elements*. As a result, the Service indicates that it intends to modify Unit 1 (Maui) to exclude the Kahikinui Kuleana Homesteads area for biological reasons. Therefore, section 7 costs reported in the DEA related to this development would no longer be expected.

3.c. Residential Development – Villages at La‘i‘opua

Chapter VI, Section 3.b.(3) of the DEA discussed the development of homes by the State Housing and Community Development Corporation of Hawai‘i (HCDCH) in Unit 5B (Big Island) as part of the Villages at La‘i‘opua (VOLA) project. The DEA noted that the VOLA project did have *Federal involvement* in 1990 because U.S. Environmental Protection Agency (EPA) funds were used to build an off-site wastewater treatment plant, but that once the plant was completed, the

Federal involvement for the project ended. Because there was no other known *Federal involvement* for this planned development, the DEA did not estimate any section 7 costs associated with the project.

During public comment, HCDCH stated that while the VOLA project has no current *Federal involvement*, it may have *Federal involvement* in the future in the form of Federal funding for development of affordable rental and for-sale housing. HCDCH noted that future *Federal involvement* could result in section 7 costs and costly project modifications that could impact the financial feasibility of their project. Moreover, while these costs could be avoided by foregoing *Federal involvement*, this action would negatively impact the agency by preventing it from taking advantage of available Federal sources of funding.

As a result of further discussions with HCDCH and a review of the Service's record regarding the VOLA project, this analysis concludes that no section 7 consultations are anticipated in the next ten years. First, HCDCH is not currently seeking Federal funding for the project and was unable to identify specific potential Federal funding programs (HCDCH, 2003). Second, the U.S. Department of Housing and Urban Development (HUD) indicates that there are currently no competitive grant programs for the development of affordable housing, and that there are not likely to be any in the near future (HUD, 2003). Third, the U.S. Department of Agriculture Rural Housing Service (RHS) has a loan guarantee program and a competitive loan program for the development of affordable housing, but this program is used primarily by individual homeowners and has never been used by State and county agencies in Hawai'i (RHS, 2003). Thus, because there is no reasonably foreseeable Federal involvement for the VOLA development, no section 7 consultations are anticipated.

3.d. Other Residential Development – Urban District

Chapter VI, Section 3.b.(4) of the DEA discussed residential development in the Urban District within the proposed designation in Unit 3 (Maui) and Unit 5A (Big Island). Specifically, the DEA concluded that residential development within the next ten years was unlikely for Unit 3 because the land is under the control of the State Department of Transportation, Airports Division and used for purposes related to the management of Kahului Airport and for Unit 5A because there were no known plans for development.

During public comment, the landowner of all the Urban acreage in Unit 5A (Big Island) indicated that it intends to develop this area within the next ten years for a golf course and residential uses, as part of the implementation of its 1987 master plan for development of the Kaloko Properties. There is no known *Federal involvement* for this planned development. Thus, no section 7 costs for this project are anticipated. As such, this Addendum acknowledges the new information, but makes no changes to the DEA's cost estimate.

3.e. Other Residential Development – Agricultural District

Chapter VI, Section 3.b.(5) of the DEA discussed residential development in the Agricultural District within the proposed designation in Unit 1 (Maui), Unit 2 (Maui), Unit 3 (Maui), Unit 5A (Big Island), Unit 6 (Big Island), and Unit 7 (Moloka'i). Specifically, the DEA concluded that residential development within the next ten years was unlikely for Units 1, 2, 3, 5A, and 7 either because there were no known plans for development or because there was a lack of existing infrastructure or limited water resources. The DEA described potential residential development in Unit 6 (Big Island), but concluded there was no *Federal involvement*.

During public comment, the landowner of all the Agricultural acreage in Unit 5A (Big Island) indicated that it intends to develop this area within the next ten years for residential use, as part of the implementation of its 1987 master plan for development of the Kaloko Properties. There is no known *Federal involvement* for this planned development. Thus, no section 7 consultations or project modifications for this project are anticipated. As such, this Addendum acknowledges the new information, but makes no changes to the DEA's cost estimate.

In addition, the Service indicates that it intends to modify the designation in Unit 6 (Big Island) to exclude areas for biological reasons. As a result of these intended modifications, the areas identified for future residential development in Unit 6 would no longer be within the critical habitat designation. Because there is no known *Federal involvement* for the planned residential development in Unit 6 (Big Island), the DEA did not estimate any section 7 costs associated with the planned development. As such, this Addendum acknowledges the intended modifications to the critical habitat designation, but makes no changes to the DEA's cost estimate.

3.f. Industrial and Commercial Development

Chapter VI, Section 3.c. of the DEA discussed industrial and commercial development in the Urban District within the proposed designation in Unit 5A (Big Island). Specifically, the DEA discussed the Kaloko Industrial Park expansion and concluded that there was no *Federal involvement*.

During public comment, the landowner of all the Urban acreage in Unit 5A (Big Island) indicated the developer of the Kaloko Industrial Park expansion is TSA Corporation, not TSA International, Ltd., as mentioned in the DEA. The landowner also mentioned that the county zone change allowing for commercial-industrial mixed use development has been granted and is no longer pending as reported in the DEA. There is still no known *Federal involvement* for this planned development. Thus, no section 7 consultations or project modifications for this project are anticipated. As such, this Addendum acknowledges the new information, but makes no changes to the DEA's cost estimate.

3.g. Farming and Ranching Operations

Chapter VI, Section 3.d. of the DEA discussed agricultural activities. During public comment, the Land Division within the State Department of Land and Natural Resources (DLNR) identified two parcels within the proposed critical habitat designation that are leased for pasture purposes. DLNR-Land Division expressed concern that designation of leased parcels could result in restrictions on their ability to continue to lease these lands, resulting in loss of lease revenues and other benefits. DHHL also identified three parcels within the proposed critical habitat designation that are leased for pasture purposes.

However, no direct section 7 costs involving these leases are anticipated because there is no known *Federal involvement*. As such, this Addendum acknowledges the new information, but makes no changes to the DEA's cost estimate. DLNR-Land Division's concerns about the indirect impacts are addressed in Sections 4.a. and 4.b. of this Addendum.

3.h. Kaho'olawe

Chapter VI, Section 3.f. of the DEA discussed existing and anticipated activities on Kaho'olawe. Based on new biological information received from the Kaho'olawe Island Reserve

Commission, the Service indicates that parts of Kaho‘olawe do not contain the *primary constituent elements*. As a result, the Service indicates that it intends to modify Unit 4 (Kaho‘olawe) to reduce the area designated from 4,641 acres to 4,252 acres, a reduction of approximately 389 acres. After review of the intended modifications and the anticipated activities on Kaho‘olawe, this Addendum concludes that the DEA’s estimate of two to five consultations over the next ten years remains a reasonable estimate of the number of consultations expected over the next ten years. Thus, this Addendum makes no changes to the DEA’s cost estimate.

3.i. Kahului Airport (Maui)

Chapter VI, Section 3.h. of the DEA discussed economic impacts associated with activity by the State Department of Transportation, Airports Division (DOTA) at Kahului Airport. Specifically, the DEA recognized that DOTA opposes designation of critical habitat in this area due to a possible conflict with safety requirements. In addition, the DEA noted that while DOTA receives Federal funding for transportation improvements, the Federal funds were not likely to be used for activities within the proposed critical habitat designation. Thus, while the possibility of a future *Federal nexus* was recognized, the DEA concluded that no section 7 consultations or project modifications were anticipated because there was no known *Federal involvement* for the existing activities.

During public comment, DOTA objected to designation of Kahului Airport and stated that the proposed designation failed to adequately consider the potential economic impacts to the Kahului Airport. As noted in the DEA, activities within the critical habitat designation primarily involve the clearance and cutting back of vegetation. These activities are not typically supported through Federal funds. However, based on discussions with DOTA, it is assumed that DOTA would avoid utilizing Federal funds, if they were available, to support activities within the area designated for critical habitat in order to avoid *Federal involvement* and section 7 consultation. As DOTA does not currently use or anticipate using Federal funds to support activities within the critical habitat designation, the economic impact of forgoing Federal funding sources is estimated to be zero.

DOTA did not provide any specific information demonstrating economic impact, identify any other activities that would be impacted by the designation, or raise any other *Federal nexus*. As discussed above, there is no anticipated *Federal involvement* for activities at Kahului Airport. Thus, no section 7 consultations or project modifications relating to the Airport are anticipated. As such, this Addendum acknowledges the concern expressed during public comment, but makes no changes to the DEA’s cost estimate.

3.j. Roads

Chapter VI, Section 3.i.(2) of the DEA discussed two potential road projects: extension of Olowalu Street (Unit 5A (Big Island)) and construction of the Ane Keohokalole Highway (Unit 5A (Big Island)). Public comment from a landowner in Unit 5A (Big Island) indicated that the County of Hawai‘i no longer plans to extend Olowalu Street. Because there was no known *Federal involvement* for this road construction project, the DEA did not estimate any section 7 costs associated with its construction. Thus, this Addendum acknowledges the new information, but makes no changes to the DEA’s cost estimate.

Public comment questioned the attribution of all the project modifications associated with construction of the Ane Keohokalole Highway in Unit 5A (Big Island) to the moth critical habitat in light of the fact that the larval host plant is also an endangered plant species. The DEA

conservatively attributed all of the costs to the moth critical habitat as a worst-case scenario for public review. It should be noted that it is uncertain whether all of these project modifications would actually be required, because the project modifications depend upon the specific plans for the roadway and the characteristics of the surrounding area. In addition, whether the costs associated with project modifications would most appropriately be attributed to the plant's endangered status, the listing of the moth, or the designation of moth critical habitat also depends upon the particular circumstances, including the location of the plants, the number of plants impacted and whether the plant is actively hosting moth larvae. Until the roadway is actually planned, this information is not available. Because the project modification costs presented in the DEA reasonably reflect possible project modifications resulting from consultation due to critical habitat designation for the moth, no changes have been made to the DEA's cost estimate for Ane Keohokalole Highway.

Finally, public comment from the State Department of Transportation (DOT) indicates the proposed critical habitat designation could impact three additional projects: 1) Route 36 (Hana Highway) widening in Unit 3 (Maui); 2) Route 190 (Mamalaho Highway) safety improvements in Unit 6 (Big Island); and 3) Route 197 (Kealakehe Parkway) widening in Unit 5B (Big Island). In addition, DOT expressed concern that critical habitat designation could increase the costs to improve, maintain and repair State highway facilities and requested a minimum buffer zone of 100 feet between existing roads and critical habitat.

While the existing roadway of Route 36 (Hana Highway) is located outside of the moth critical habitat designation, future widening of the roadway could possibly involve use of land inside the critical habitat designation. The widening of the area adjacent to the critical habitat designation was planned for construction between 1996 and 2000 in the 1997 Maui Long Range Transportation Plan. However, in the January 2002 Final Joint County/State Maui Interim Transportation Plan, the project is re-designated as a long-term project with no anticipated date of construction. Given the circumstances and the number of other priority projects listed before it, it is deemed unlikely that widening of Hana Highway will occur within the next ten years. Thus, no changes have been made to the DEA's cost estimate.

According to the County of Hawai'i, the Mamalaho Highway (Route 190) safety improvements in Unit 6 (Big Island) will involve simple repaving and resurfacing of the existing roadway. As mentioned in the DEA, the critical habitat provisions of section 7 do not apply to the operation and maintenance (O&M) of existing man-made features and structures because these features do not contain any *primary constituent elements*. Thus, the safety improvements planned for Mamalaho Highway in Unit 6 (Big Island) would not be subject to section 7 consultation because they involve operation and maintenance activities rather than new construction. Thus, no changes have been made to the DEA's cost estimate.

Finally, while the widening of Kealakehe Parkway (Route 197) in Unit 5B (Big Island) is a long-term project, there is no timetable given for the project. It is likely that extension of the Parkway (outside of the intended critical habitat designation) would be required before widening the existing portion of roadway; however, no timetable is given for the completion of the extension either. In addition, the State DOT is working on several other widening projects in the area, with its main focus on widening the Queen Ka'ahumanu Highway from downtown Kailua to the Airport, that are not estimated to be completed until 2011. Given the circumstances, it is deemed unlikely that widening of Kealakehe Parkway (Route 197) will occur within the next ten years. Thus, no changes have been made to the DEA's cost estimate.

3.k. Communications Facilities

Chapter VI, Section 3.1. of the DEA presents estimates of costs associated with consultation regarding communications facilities. The Service indicates that it intends to modify the proposed critical habitat designation to remove areas for biological reasons. As discussed further below, the intended modification would result in a reduction of the number of communications anticipated to be built within the designation over the next ten years. Thus, this Addendum revises the estimated number of projects within the intended critical habitat designation and adjusts the costs accordingly.

Consultation Cost:

- Total Section 7 Costs: \$9,100 to \$18,200

The DEA estimated that four to eight communications facilities would be built in the critical habitat within the next ten years, with a consultation cost estimate of \$36,400 to \$72,800. This estimated number of new facilities was based upon the number of existing facilities within the proposed critical habitat designation and the conservative projection that the number of facilities would increase by 50 to 100 percent over the next ten years. Due to the indicated reduction in the acreage proposed for critical habitat designation, the existing communications facilities in Unit 6 (Big Island) would no longer be situated within the intended designation. Because 75 percent of the existing communications facilities were located within Unit 6 (Big Island), the estimated number of communications facilities to be constructed over the next ten years is reduced by 75 percent, to one to two new communications facilities over the next ten years. Thus, the above consultation cost estimate is based on (1) one to two consultations in the next ten years, (2) the Low cost (from Table VI-I of the DEA) of a consultation with a Federal agency as the applicant and/or with the involvement of a non-Federal applicant, and (3) the cost of a biological survey, based on a ten-acre site with medium access. Currently, the Service consults on all communications towers to review impacts to listed birds. The Low cost was selected from Table VI-I of the DEA to reflect the section 7 consultation cost attributable to the additional level of effort required to review these projects for impact to the moth critical habitat. Thus, while the total cost of a consultation regarding communication facilities could be higher due to issues relating to impact on birds, this analysis includes an estimate only of the incremental cost attributable to the moth critical habitat.

Project Modification Costs:

- Total Section 7 Costs: \$0 to \$8,400

The DEA estimated that project modifications costs would range from \$0 to \$33,600, associated with four to eight consultations. Based on the methodology presented in the DEA, the project modifications costs for the one to two consultations will be \$0 to \$8,400.

3.1. Golf Courses

Chapter VI, Section 3.m. of the DEA discussed costs associated with planned golf courses in Unit 5B (Big Island) and in Unit 6 (Big Island). The Service has indicated that it intends to modify the designation in Unit 6 (Big Island) to exclude areas for biological reasons. As a result of these intended modifications, the area under development for a golf course would no longer be within the critical habitat designation. Because there was no known *Federal involvement* for the planned golf course in Unit 6 (Big Island), the DEA did not estimate any section 7 costs associated with its development. Thus, this Addendum acknowledges the intended modifications to the critical habitat designation, but makes no changes to the DEA's cost estimate.

In addition, during public comment, a major landowner in Unit 5A (Big Island) indicated that it intends to develop a golf course on Urban land within Unit 5A (Big Island). There is no known *Federal involvement* for this proposed golf course. Therefore, no section 7 costs associated with its development are anticipated. As such, this Addendum acknowledges the new information, but makes no changes to the DEA's cost estimate.

4. INDIRECT COSTS

As noted above, the Service indicates that it intends to modify the critical habitat designation by reducing eight units for biological reasons. These changes would affect some of the indirect costs discussed in the DEA. As such, this section revisits the indirect costs affected. An explanation for the specific changes is presented in Table Add-2 at the end of this Addendum.

As noted in the DEA, because consultation under section 7 only applies to activities that have *Federal involvement*, the designation of critical habitat alone does not afford any additional protections for listed species with respect to strictly private activities. However, the DEA also recognized that designation of critical habitat may have indirect impacts beyond those associated with the Act based on the interplay of critical habitat designation with State and local laws. For example, potential indirect impacts raised by stakeholders include imposition of conservation management obligations, redistricting of Agricultural land into the Conservation District, and reduced property values.

There is considerable uncertainty on whether any or all of these indirect impacts may occur, as they depend upon actions and decisions by entities other than the Service under circumstances for which there is limited or no history that can be used to determine the probability of different outcomes. Thus, based on the available information, these impacts were discussed qualitatively in the DEA and where possible, estimates were given of worst-case scenarios for illustrative purposes.

4.a. Conservation Management

Chapter VI, Section 4.c. of the DEA discussed the concern that some landowners will be required to alter the management of their lands that fall within the critical habitat designation to assure the survival and conservation of the moth due to the application of Federal or State prohibitions on taking listed species. While the costs associated with mandated conservation management, as a result of litigation, were included in the DEA for purposes of illustrating the potential costs involved, the DEA estimated the probability of these costs occurring as moderate to low. This assessment was based on the recognition that there are no direct requirements under Federal or State law to proactively manage lands to protect critical habitat or conserve listed species. In addition, the DEA noted that while the designation of critical habitat may play a role in litigation

by identifying areas important to the conservation to the moth, most of the resulting economic impact would likely be attributable to section 9 of the Act (*taking*), and thus would be outside the scope of the economic analysis.

During public comment, DLNR-Land Division identified two parcels and DHHL identified three parcels within the proposed critical habitat designation that are leased for pasture purposes. DLNR-Land Division expressed specific concern that designation of these parcels could result in mandated conservation management measures that would interfere with their ability to continue to lease these lands, resulting in loss of lease revenues.

Although the costs of conservation management were presented in the DEA for the purposes of illustration, this analysis concludes that these costs are not reasonably foreseeable. The concern expressed by some is that the prohibition on *taking* endangered and threatened species could be triggered by designation of critical habitat if courts apply the principles of *Palila v. Hawai'i Dept. of Land and Natural Resources*, 471 F. Supp. 985 (D. Haw. 1979), *aff'd* 639 F.2d 495 (9th Cir. 1981) and *Palila v. Hawai'i Dept. of Land and Natural Resources*, 649 F. Supp. 1070 (D. Haw. 1986), *aff'd* 852 F. 2d 1106 (9th Cir. 1988). While the circumstances considered by these cases happened to occur in the palila's critical habitat, the legal issues involved interpretation of "harm" in the Act's definition of "*take*," affirming that habitat degradation can constitute "harm" to a listed species. They did not announce a rule that degradation of designated critical habitat automatically constitutes *take*. While critical habitat may provide information to help a landowner identify where *take* through habitat modification may occur, the Federal and State *take* prohibitions are triggered by the listing of a species. These prohibitions apply whether or not critical habitat has been designated. In addition, there is no Federal, State, or county law or regulation that mandates conservation management for critical habitat. As such, this analysis concludes that mandated conservation management based on critical habitat designation is not likely.

4.b. State Redistricting of Land

Chapter VI, Section 4.e. of the DEA discussed the concern that once critical habitat is designated, the State may redistrict it from the Agricultural, Rural or Urban District to the Conservation District. In particular, the DEA noted the concern that this could result in (1) a potential loss in current or future agricultural use of the land; (2) a potential loss of planned development; (3) a reduction in property values; (4) higher property taxes because Conservation land can be assessed at a higher value than Agricultural land; (5) costs incurred to contest redistricting; and (6) reduced ability to secure bank financing.

4.b.(1) Likelihood of Occurrence

The DEA recognized that the concern about potential redistricting of land designated as critical habitat stems from the interplay between two State statutes, HRS chapter 195D and HRS chapter 205. Specifically, HRS 195D-5.1 provides that DLNR "shall initiate amendments to the Conservation District boundaries in order to include high quality native forests and the habitat of rare native species of flora and fauna within the Conservation District." HRS 205-2(e) defines the Conservation District, and provides that, among other areas, it shall include areas necessary for "conserving indigenous or endemic plants, fish and wildlife, including those which are threatened or endangered." In addition, the DEA noted that critical habitat could prompt the State Department of Business, Economic Development and Tourism's (DBEDT's) Office of Planning (OP) to consider redistricting from the Agricultural, Rural or Urban Districts to the Conservation District during its periodic review of State District boundaries.

The DEA concluded that the redistricting of privately owned land was likely to occur in only a limited number of cases. The Addendum makes no changes to this conclusion and categorizes the likelihood of redistricting as small. This assessment is based on the following:

- State law only permits State and county departments and agencies and persons with a property interest in the land to be reclassified to propose redistricting (HRS 205-4).
- Further, the plain language of the State statutes contains no reference to designated critical habitat. Unlike the automatic conferral of State law protection for all federally listed species, State law does not require initiation of the amendment process for all federally designated critical habitat. (Compare HRS § 195D-5.1 with HRS § 195D-4(a)).
- Private landowners typically oppose proposals to redistrict their lands if they believe this might result in a decrease in property value and/or a loss in the economic use of their lands (Discussions with landowners, 2002).
- The Land Use Commission must hold a hearing on all petitions to redistrict areas greater than 15 acres, and must admit as intervening parties all persons who have some property interest in the land, thus giving private property owners opposing redistricting the opportunity to present evidence (HRS 205-4).
- While the Land Use Commission is specifically directed to consider the impact of the proposed reclassification on “the preservation or maintenance of important natural systems or habitats,” it is also specifically directed to consider five other impacts in its decision:
 - (1) the “maintenance of valued cultural, historical, or natural resources;”
 - (2) the “maintenance of other resources relevant to Hawai‘i’s economy, including, but not limited to, agricultural resources;”
 - (3) the “commitment of State funds and resources;”
 - (4) the “provision for employment opportunities and economic development;” and
 - (5) the “provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.” (HRS 205-17).

In this case, redistricting all the land within the intended critical habitat designation could impact the maintenance of agricultural resources (e.g., existing grazing and ranching activities), the commitment of State funds and resources (e.g., VOLA project; road projects); the provision for employment opportunities and economic development (e.g., Kaloko Industrial Park; Kaloko Properties); and the provision of housing opportunities for all income groups (e.g., VOLA project).

- Approval of redistricting requires six affirmative votes from the nine commissioners, with the decision based on a “clear preponderance of the evidence that the proposed boundary is reasonable.” (HRS 205-4).

- In the last State District boundary review, only four privately owned parcels were redistricted to Conservation.
- Finally, not all designated critical habitat is in Conservation Districts. For example, all or portions of existing critical habitat for two listed plants (*Gouania hillebrandii* and *Kokia drynarioides*), both designated in 1984, are within the State's Agricultural District.

Based on the foregoing, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

4.b.(2) Affected Land

The DEA reported that approximately 11,500 acres of privately owned Agricultural land on Maui, one acre of privately owned Rural land on Maui, 550 acres of privately owned Agricultural land on Moloka'i, 10,670 acres of privately owned Agricultural land on the Big Island, and 45 acres of privately owned Urban land on the Big Island were affected. In addition, the DEA noted that 258 acres of State owned land in the Urban District in Unit 5B (Big Island) were planned for development and could be adversely affected by redistricting.

As noted previously, the Service indicates that it intends to modify the proposed critical habitat designation to remove areas for biological reasons. As a result, the amount of land that could be affected by redistricting would be reduced. As modified, the intended designation would include (1) approximately 12,600 acres of privately owned Agricultural land; (2) approximately one acre of privately owned Rural land; and (3) approximately 45 acres of privately owned Urban land. More specifically, for the privately owned Agricultural land, approximately 9,100 acres would be situated in Unit 1 (Maui); approximately 1,040 acres would be situated in Unit 2 (Maui); approximately 230 acres would be situated in Unit 5A (Big Island); approximately 1,700 acres would be situated in Unit 6 (Big Island); and approximately 530 acres would be situated in Unit 7 (Moloka'i). The one acre of privately owned Rural land would be situated in Unit 1 (Maui). Finally, for the privately owned Urban land, approximately six acres would be situated in Unit 3 (Maui) and approximately 39 acres would be situated in Unit 5A (Big Island). In addition, the 258 acres of State owned land in the Urban District in Unit 5B (Big Island) would remain within the intended critical habitat designation.

4.b.(3) Cost of Reduction in Agricultural Use of Land

The DEA noted that if land is redistricted to Conservation, agricultural activities could continue depending upon which subzone is assigned: typical agricultural activities are not allowed in the Protective Subzone, but are allowed in other subzones with permission of the State Board of Land and Natural Resources (BLNR). Because many areas of critical habitat have been grazed for tens or hundreds of years, the DEA concluded that areas that have previously been used for ranching will not be placed in the Protective Subzone and that grazing could continue with BLNR approval through a Conservation District Use Authorization (CDUA) permit. The DEA estimated the cost of obtaining a CDUA as between \$25,000 and \$100,000 based on information from planning consultants. The DEA assumed that any large landowner that allows grazing for ranching or weed control purposes on their land will obtain a CDUA permit and that some smaller landowners or lessees may also obtain CDUA permits. As a result, the DEA estimated that a total of 15 to 30 landowners would obtain CDUA permits at a cost of \$375,000 to \$3 million (15 x \$25,000; 30 x

\$100,000). As a result of the intended modifications to the critical habitat designation, the number of landowners who seek a CDUA permit may drop because the intended modifications have reduced the number of landowners on the Big Island potentially affected by the critical habitat designation. However, because the number of smaller landowners or lessees who may be affected has not significantly changed, the Addendum revises the estimate of landowners who may seek a CDUA permit to 10 to 30. Thus, the revised cost to agricultural activities if land in the Agricultural District was redistricted to the Conservation District would be \$250,000 to \$3 million (10 x \$25,000; 30 x \$100,000).

4.b.(4) Cost of Loss of Development

DEA Estimates. While the DEA noted that redistricting of privately owned land is likely to occur in only a limited number of cases, if any, it also recognized that if redistricting were to occur, certain planned development projects would not be able to continue as planned, if at all. Specifically, the DEA recognized that the Kaloko Industrial Park expansion planned in Unit 5A (Big Island), the State VOLA master planned community in Unit 5B (Big Island) and several agricultural subdivisions in Unit 6 (Big Island) would be impacted. The DEA estimated previous expenditures for these projects at \$500,000 for the Kaloko Industrial Park expansion in Unit 5A (Big Island), \$30 million for the VOLA master planned community in Unit 5B (Big Island), and \$75 million for the agricultural subdivisions in Unit 6 (Big Island). The DEA also estimated potential future profits associated with these developments at \$10.4 million for the Kaloko Industrial Park expansion in Unit 5A (Big Island) and \$100 million for the agricultural subdivisions in Unit 6 (Big Island). Finally, the DEA estimated that the loss associated with not developing the VOLA affordable housing project would be approximately \$2.7 million. Thus, the DEA estimated that the potential cost associated with loss of planned development could reach \$220 million.

Agricultural Subdivisions – Big Island. As a result of the intended modifications to the critical habitat designation discussed previously, the planned agricultural subdivisions in Unit 6 (Big Island) would no longer be situated within critical habitat. Thus, the economic impact to the developer of the loss of development potential noted in the DEA associated with these subdivisions, including the previous expenditures of \$75 million and the estimated future profits of \$100 million, would no longer be a possibility.

Kaloko Industrial Park. As a result of the intended modification to critical habitat designation, the number of affected acres in the Kaloko Industrial Park expansion is reduced from 32.5 acres to 30.1 acres. In addition, the landowner of the expansion site indicates that the loss of future profits associated with redistricting of the land would be roughly \$400,000 per acre. Thus, a revised estimate of potential lost profits would be approximately \$12 million. As discussed in more detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

Kaloko Properties. The landowner in Unit 5A (Big Island) also indicated that portions of Unit 5A (Big Island) in the Agricultural District are planned for future development as part of a master plan for the Kaloko Properties. The landowner indicated that approximately 100 acres of Unit 5A (Big Island) are planned for single-family homes, 120 acres are planned for multi-family homes, 20 acres are planned for a golf course, and 10 acres are planned for a school or park. Based on the allowable density, average regional selling values of single-family and multi-family homes,

and the development costs per acre of golf courses and parks, the landowner estimates that the total economic impact if this development does not occur will be approximately \$400 million in revenues.

The methodology used to derive the estimated economic impact of \$400 million in revenues is not consistent with the methodology presented in the DEA. The landowner's estimate is based on selling values and development cost, not profits. As mentioned in the DEA, only the previous expenditures (sunk costs) and future potential profits to the landowner are considered an economic impact of critical habitat designation. Additional construction and development costs are not considered because it is assumed that if development cannot occur in critical habitat, it will relocate elsewhere in the region. This assumption is supported by the fact that a large area surrounding critical habitat is planned for urban expansion in the County of Hawai'i's General Plan, and because there are other entitled projects awaiting development (such as a 2,640 acre project on State lands that is just north of Unit 5A (Big Island) and planned for residential, commercial, and light industrial development; parks; a golf course; and other uses).

The sunk costs associated with the Kaloko Properties development are calculated as follows. The landowner indicated that it and its predecessor owners have already expended over \$20 million for infrastructure improvements, engineering, and entitlements for their lands in expectation of the future development of the 1,150 acres Kaloko Properties. The intended designation of critical habitat covers approximately 240 acres, or 21 percent of the total master planned area. As such, it is assumed that approximately \$4.2 million of the previous expenditures (21% x \$20 million) are associated with the land in critical habitat.

The future potential profits associated with the Kaloko Properties will be a portion of the selling values and development costs of the development planned in critical habitat. Developers typically expect a profit margin of ten to 20 percent of selling values and development costs. Based on the selling values and development costs estimated by the landowners for the part of the development planned in critical habitat (\$400 million), the loss in profit would range from \$40 million to \$80 million.

The loss in profit would occur over the life of the project. While the landowner anticipates commencing the project within the next ten years, most of the project development is likely to occur outside the time frame of this analysis. Thus, a present value of the future stream of profits is presented. All elements of the project except the golf course will require a change in the State land use designation and county permitting, so it is assumed that construction will not begin for at least three years. It is also assumed that the profit generating portions of the project will not be completed for another two years. Finally, it is assumed that the entire project will be completely built out within 20 years. These assumptions are based on the development approvals and phasing described in the 1996 Kaloko Town Center Environmental Impact Statement (EIS) for a planned project on the adjacent parcel owned by the same landowners as the land in critical habitat. Based on these assumptions and using a ten percent discount rate, the present value of the future stream of profits ranges from \$13 million to \$25 million. Importantly, as discussed in more detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

State-owned Parcels. Also during public comment, DLNR-Land Division objected to the inclusion of three State owned parcels in Unit 1 (Maui) near Makena. DLNR-Land Division noted that these parcels are lands with either high land values or that have been identified as having development potential. At this time, however, there are no current plans for development on these

parcels. While it is possible that redistricting of these parcels, should it occur, could restrict the ability of DLNR to develop these lands in the future, the economic impact of such a restriction is impossible to estimate due to the speculative nature of such development at this time.

Summary: Loss of Development. Based on the changes mentioned above, the DEA estimate of \$220 million for the cost of the loss of development is revised to reflect the Service's intended critical habitat designation and the new information provided during the public comment period. The revised estimate is \$62.4 million to \$74.4 million, based on the following components:

- *Kaloko Industrial Park expansion in Unit 5A (Big Island):* \$500,000 in previous expenditures and \$12 million in the potential loss of future profits
- *VOLA master planned community in Unit 5B (Big Island):* \$30 million in previous expenditures and \$2.7 million in the loss associated with not developing the affordable housing
- *Kaloko Properties development in Unit 5A (Big Island):* \$4.2 million in previous expenditures and \$13 million to \$25 million in the potential loss of future profits

Importantly, as discussed in more detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

4.b.(5) Reduction in Property Values

The DEA evaluated the possibility of reduction in property values associated with redistricting by island and further, by specific location. The Addendum reconsiders the DEA's conclusions below.

Small Agricultural Parcels – Maui. The DEA concluded that because of the unique nature of many of the small parcels in the Agricultural District in Unit 1 (Maui), the net effect on the property values of these parcels was not anticipated to be significant and in some cases, could be positive. The Addendum makes no changes to this estimate.

Large Agricultural Parcels – Maui and Big Island. The DEA then considered the larger parcels of privately owned Agricultural land on Maui and on the Big Island (a total of 21,930 acres) that are not currently planned for development. The DEA estimated the total economic impact of redistricting these lands at \$63.6 million to \$327 million. This estimate was based upon (1) market property values ranging from \$3,000 to \$15,000 per acre; and (2) an assumption that the property values would drop to \$120, the low end value for Conservation District land within the proposed critical habitat designation. As a result of the intended modifications to the critical habitat designation discussed previously, approximately 11,340 acres of privately owned Agricultural land on Maui and the Big Island would remain situated within the critical habitat designation and are not planned for development, including approximately 8,600 acres in Unit 1 (Maui), 1,040 acres in Unit 2 (Maui), and 1,700 acres in Unit 6 (Big Island). Using the assumptions from the DEA, the total economic impact of redistricting these lands would be \$33 million to \$169 million. However, as mentioned in the DEA, if the land was redistricted to the General Subzone of the Conservation District where grazing and other uses of the land are permissible, the total loss would be less than

\$33 million to \$169 million. For example, if redistricting were to reduce the property values by half of this loss, the total economic impact would range from \$17 million to \$85 million.

Urban Parcels – Big Island. The DEA then estimated the potential economic impact of redistricting on the 13-acre portion of a parcel of unplanned land in the Urban District in Unit 5A (Big Island) at \$258,000 to \$388,000 based on market property values and assuming the property value would drop to \$120. Based on new information provided by the landowner of this parcel, it is no longer considered unplanned, and the economic impact is discussed in the “Cost of Loss of Development” subsection above.

Agricultural Parcels - Moloka‘i. Finally, the DEA estimated the potential economic impact of redistricting on 545 acres of privately owned Agricultural land on Moloka‘i at no greater than \$341,000, the approximate total market value of privately owned Agricultural land not already managed for conservation. While the Service has indicated that it intends to modify the critical habitat designation as discussed above, the modifications would not significantly reduce this estimate. Thus, the Addendum makes no changes to this estimate.

As discussed in more detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

4.b.(6) Cost of Contesting Redistricting

The DEA estimated that if redistricting of Agricultural, Rural and Urban land to the Conservation District were proposed, then affected landowners could spend more than \$50,000 contesting the redistricting. Since this could involve approximately 45 private landowners on Maui, 13 owners on the Big Island, and five owners on Moloka‘i, the DEA estimated that total costs would be almost \$3.2 million (63 x \$50,000).

As discussed previously, the Service indicates that it intends to modify the critical habitat designation to remove the areas for biological reasons. As a result of these intended modifications, fewer landowners would be impacted by the possibility of redistricting: approximately 43 owners on Maui, three owners on the Big Island, and four owners on Moloka‘i. Thus, the total costs associated with contesting redistricting for the intended designation would be almost \$2.5 million (50 x \$50,000).

As discussed in more detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District. However, the mere filing of a petition would trigger these costs of contesting redistricting and, unlike other costs discussed in this Section, they would not be dependent upon a successful redistricting. Thus, the probability of these particular costs being incurred is higher than that of other costs discussed in this Section. However, it is not possible to accurately predict the probability of these costs as it depends upon future actions of the State under conditions for which there is no history on which to base a prediction. Specifically, it is not possible to predict whether the State would seek redistricting of all, part, or none of the land designated as critical habitat. Thus, this section presents a worst-case scenario of the costs of contesting redistricting, for which the probability of occurrence is undetermined.

4.b.(7) Summary of Potential Impacts of Redistricting

As mentioned above, if all of the Agricultural and Urban land in the intended critical habitat designation is redistricted to the Conservation District, the costs could be as follows:

- Cost to Agricultural Activities: \$250,000 to \$3 million
- Cost of Loss of Development: \$62.4 million to \$74.4 million
- Potential Loss in Big Island and Maui Agricultural Property Values: \$17 million to \$169 million
- Loss in Moloka'i Property Value: up to \$341,000
- Cost to Contest Redistricting: up to \$2.5 million

As such, the economic costs of the loss of development and the loss in property values could range from \$80 million to \$249 million if the entire intended critical habitat designation were put in the Conservation District. However, as discussed in more detail earlier, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District. Again, the redistricting of all of the critical habitat designation to the Conservation District would require:

- (1) an entity of the State to seek redistricting;
- (2) the presentation of a clear preponderance of evidence demonstrating that the proposed boundary is reasonable; and
- (3) six of the nine commissioners on the Land Use Commission to approve the reclassification over landowner objection.

Based on the professional judgment of the team of consultants preparing this report, after a review of the criteria for redistricting and the information gathered about activities in the intended critical habitat designation during the preparation of this report, the likelihood is deemed small that all of the land within the intended designation would be redistricted to the Conservation District. Moreover, the estimates presented in the DEA and the Addendum are conservative and therefore likely overstate the actual loss that would occur if the entire intended critical habitat designation were put in the Conservation District. In other words, economic losses on the order of \$249 million are not anticipated.

4.c. State and County Development Approvals

Chapter VI, Section 4.f.(1) of the DEA indicated that a major concern among private landowners, developers, and other interested parties is that critical habitat designations will significantly affect State and county development approvals, even when there is no *Federal involvement*. The DEA stated that there are no anticipated projects within the proposed critical habitat for the moth that would require major discretionary approvals by the State or county. Thus, there was no discussion of what mitigation measures might be required by the State or county as a condition of receiving the discretionary approvals for projects within the critical habitat designation.

However, during public comment, a landowner in Unit 5A (Big Island) indicated that the Kaloko Properties development in critical habitat will require major discretionary approvals from the State and county, including Land Use District Boundary Amendment and a county Zone Change.

However, because the moth was just listed in February, 2000, there is no history upon which to forecast the types of project modifications that may be required by the State or county in granting discretionary approvals. Because the habitat value could be enhanced if developers included moth host plants in their landscaping, the use of moth host plants in landscaping plans is the most obvious potential mitigation measure that could be required in the future. As mentioned in Chapter VI, Section 4.c. of the DEA, the estimated cost of modifying landscaping plans to incorporate the use of the host plants is an additional ten percent of the planned landscaping expenditures.

Assuming that the landscaping budget for the planned golf course in Unit 5A (Big Island) would be similar to the budget for the golf course planned for Unit 5B (Big Island), the total landscaping expenditure for the portion within the intended critical habitat designation (approximately 10-15 percent of the entire course) would be approximately \$500,000 to \$750,000 (\$5 million x 10%; \$5 million x 15%). Assuming 50 percent of the residential development in unit 5A (Big Island) is landscaped at a cost of \$1.40 per square foot (No Ka Oi Plants, Akamai Gardens, 2002), the total estimated cost for landscaping the residential development would be approximately \$6.7 million (50% x 220 acres x 43,560 square feet per acre x \$1.40). As such, if an additional ten percent were required for landscaping that is beneficial to the moth, the cost of the State and county mitigation measure could be \$720,000 to \$750,000 (10% x (\$6.7 million + \$500,000); 10% x (\$6.7 million + \$750,000)).

The specific likelihood of this occurrence is unknown, as it depends upon the actions of the State or county agency with permit approval under circumstances for which there is no prior history. In addition, the State or county may develop their own mitigation measures based on the particular circumstances before them when reviewing the permit. In the worst-case scenario, the State or county might decide not to grant the discretionary approvals as a result of the moth critical habitat designation. Under this worst-case scenario, the landowner may not be able to continue with the current plans for residential and golf course development. The economic impact of this scenario is discussed in Section 4.b. of the Addendum. If the discretionary approvals were not granted for development in critical habitat, the total cost for the Kaloko Properties development would be \$4.2 million in previous expenditures and \$13 million to \$25 million in the potential loss of future profits. Again, the specific likelihood of this occurrence is unknown. However, based on the professional judgment of the team of consultants preparing this report, it is not deemed likely that discretionary approvals for the Kaloko Properties would be denied solely on the basis of moth critical habitat designation.

4.d. Reduced Property Values

Chapter VI, Section 4.g. of the DEA indicated that uncertainties about the impacts of the proposed critical habitat designation could cause a temporary reduction in land value that could continue as long as perceptions about the impact of critical habitat designation exist. The concern of landowners about reduced property values primarily involves land that is: (1) privately owned; (2) in the State's Agricultural District, Urban or Rural District; and (3) is suitable for eventual development or commercial use based on access, gentle slopes, proximity to infrastructure and services, pleasing views, etc. The DEA recognized that the magnitude of a long-term decrease in property values due to critical habitat will depend on the property market's assessment of the potential costs or reduced opportunities due to critical habitat designation (many of which were discussed in the DEA's direct and indirect cost sections) and that the largest impacts to property values would likely result from fears of redistricting. For illustration purposes, the DEA estimated that if all of the potential costs and lost opportunities for land in critical habitat resulted in a drop in property values of 20 percent, the total economic impact would range from \$15.6 million to \$70.8

million, but recognized that the actual impact to property values could be significantly higher or lower.

As discussed previously, the Service indicates that it intends to modify the critical habitat designation to remove the areas for biological reasons. The intended modifications make minor changes to the small parcels in Unit 1 (Maui); thus, the DEA's estimated market value of these properties of \$12 to \$25 million remains unchanged. Based on the information provided above in Section 4.b of the Addendum, the total market value of large privately owned unplanned parcels on Maui and the Big Island ranges from \$34 million to \$170 million ($\$3,000 \times 11,340$ acres; $\$15,000 \times 11,340$ acres). The present value of the expected future stream of profits for the Kaloko Properties in Unit 5A (Big Island), which is another measure of property value, ranges from \$13 million to \$25 million. Once development is complete at the Kaloko Industrial Park expansion, the property values will be approximately \$12 million for the land in critical habitat. Finally, the DEA's estimate of \$341,000 for the Agricultural land on Moloka'i remains unchanged. Thus, the total market value of the property in the intended critical habitat designation ranges from \$71 million to \$232 million ($\$12$ million + $\$34$ million + $\$13$ million + $\$12$ million + $\$341,000$; $\$25$ million + $\$170$ million + $\$25$ million + $\$12$ million + $\$341,000$).

For illustration purposes, if all of the potential costs and lost opportunities for land in the intended critical habitat designation resulted in a drop in property values of 20 percent, the total economic impact would range from \$14 million to \$46 million ($20\% \times \$71$ million; $20\% \times \$232$ million). Again, as noted in the DEA, the actual impact to property values could be significantly higher or lower. This uncertainty can only be resolved after a significant number of parcels inside critical habitat and comparable parcels outside of critical habitat are sold and the final selling prices can be compared.

4.e. Costs to Investigate Implications of Critical Habitat

Chapter VI, Section 4.i. of the DEA indicated that landowners may want to learn how the designation may affect (1) the use of their land (either through restrictions or new obligations), and (2) the value of their land. The DEA estimated the costs of investigation at \$200,000 to \$713,000, assuming that all 75 private landowners impacted by the proposed designation would spend approximately 15 to 40 hours investigating.

Public comment noted that the estimate of investigative costs presented in the DEA was too low considering the size of the designation and uncertainties about the exclusion of "unmapped holes." It is recognized that some landowners may spend a great deal of time investigating, while other landowners may not conduct any investigation. The estimate contained in the DEA is a range that reflects the total cost for all landowners based on an average cost per landowner. Public comment did not provide an alternative estimate of time or cost incurred in order to investigate implications of critical habitat sufficient to require changes to the estimated average cost per landowner. Thus, this Addendum does not revise the number of hours that the DEA estimated the landowner and/or his attorneys or professional staff would spend on investigating the issues.

However, the Addendum does revise the number of affected landowners to 65 because of the intended modifications to the critical habitat indicated by the Service. Thus, an estimate of the costs involved with investigation for the intended designation ranges from roughly \$173,000 to \$618,000. This cost is based on the following assumptions: (1) 65 landowners will investigate the implications of critical habitat; (2) the landowner and/or his attorneys or professional staff will spend about 15 to 40 hours on the investigation at rates of \$150 to \$200 per hour; and (3) Service staff will

spend four to ten hours at \$100 to \$150 per hour responding to inquiries from each landowner. The range reflects the possibility that landowners with fewer than 50 acres within the intended critical habitat designation might not investigate.

Public comment questioned whether the indirect cost of investigating the implications of critical habitat should be considered a sunk cost of the critical habitat designation process rather than a potential future cost of a final designation. While some landowners may expend time and money to investigate the implications of critical habitat on their land during the designation process, many landowners may not do so until after final designation is complete. Thus, the DEA and this Addendum conservatively treat these costs as attributable to the final designation.

5. COSTS TO SMALL ENTITIES

Under the Regulatory Flexibility Act (RFA)—as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996—whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

SBREFA does not explicitly define either “substantial number” or “significant economic impact.” Consequently, to assess whether a “substantial number” of small entities is affected by the proposed designation, the DEA considered the relative number of small entities likely to be impacted in the area. Similarly, the DEA considered whether or not entities incur a “significant economic impact.” The DEA considered only small entities that were expected to be directly affected by the proposed designation. This approach is consistent with several judicial opinions related to the scope of the RFA.³

After evaluating all the entities directly affected by the proposed designation for the moth, the DEA concluded that the only small or potentially small entities that could be impacted by the moth listing and critical habitat designation were: (1) Ka ‘Ohana O Kahikinui on Maui (participation in residential loan program; conservation activities; development of water collection system); (2) one to two lending institutions on Maui (loans for DHHL residential development); and (3) one farmer or rancher on Maui, Moloka‘i, or the Big Island (participation in farm loan programs).

While the DEA recognized that implementation of the Act’s section 7 provisions for the moth could have a significant economic impact on these entities, the DEA concluded that these entities did not represent a substantial number of the small entities in their respective fields or industries. Accordingly, the DEA concluded that the proposed designation of moth critical habitat would not have a significant economic impact on a substantial number of small entities in Hawai‘i.

³ See *Mid-Tex Elec. Co-Op, Inc. v. FERC*, 773 F.2d 327 (D.C. Cir. 1985) and *American Trucking Ass’ns, Inc. v. EPA*, 175 F.3d 1027 (D.C. Cir. 1999), *aff’d in part and rev’d in part on other grounds*, *Whitman v. American Trucking Ass’ns*, 531 U.S. 457 (2001).

No new small entities have been identified as being potentially impacted by the intended designation. Because estimated section 7 costs associated with possible lessee participation in HUD loan insurance and guarantee programs are no longer expected for the intended designation, as discussed more fully in Sections 3.a. and 3.b. of this Addendum), this Addendum estimates that the one to two lending institutions on Maui would no longer be impacted by the intended critical habitat designation. The other identified small entities, Ka 'Ohana O Kahikinui and one farmer or rancher on Maui, Moloka'i, or the Big Island, remain potentially impacted by the intended designation as the Addendum makes no changes to the estimated direct section 7 costs related to conservation or water system projects involving Kahikinui or to the estimated direct section 7 costs related to farm service loans.

As reported in the DEA, Ka 'Ohana O Kahikinui and one farmer or rancher on Maui, Moloka'i, or the Big Island do not represent a substantial number of the small entities in their respective fields or industries. Thus, the Addendum concludes that the intended designation will not have a significant economic impact on a substantial number of small entities in Hawai'i.

6. SECTION 7-RELATED BENEFITS

6.a. Regional Economic Activity Generated by Conservation Management

Chapter VI, Section 6 of the DEA discussed the potential direct and indirect benefits that could result from critical habitat. Specifically, Chapter VI, Section 6.b.(1) discussed the economic activity generated by conservation management. The DEA noted that the economic activity supported by expenditures due to mandated conservation management may or may not represent an expansion of Hawai'i's economy, depending upon how the expenditures are financed. Subsequently, Section 4.a. of this Addendum reported that because mandated conservation management is no longer reasonably foreseeable, revised estimates of mandated conservation management are not calculated. Thus, revised estimates of the related increase in regional economic activity generated by mandated conservation management are not presented.

6.b. Social Welfare Benefits

There is little disagreement in the published economic literature that real social welfare benefits can result from the conservation and recovery of endangered and threatened species (Bishop (1978, 1980), Brookshire and Eubanks (1983), Boyle and Bishop (1986), Hageman (1985)). Such benefits have also been ascribed to preservation of open space, general biodiversity and ecosystem function (see examples in Fausold and Lillieholm (1999)), all of which are associated with species conservation. Likewise, a regional economy can benefit from the preservation of healthy populations of endangered and threatened species, and the habitat on which these species depend.

A commenter suggested that the critical habitat designation for the moth would help protect intact native ecosystems, including native forest in the watershed. In turn, the commenter suggested that this protection would promote groundwater recharge, keep water pure and clean and reduce erosion onto the reefs. The commenter also suggested that species preservation results in social welfare benefit, including cultural benefits, and that these benefits should be quantified. Chapter VI, Section 6 of the DEA already discussed these potential benefits.

It is not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the proposed critical habitat for the moth because of the scarcity of available studies and information relating to the size and value of beneficial changes that area likely to occur

as a result of listing the moth or designating critical habitat. In particular, the following information is not currently available: 1) quantified data on the value of the moth or the moth's critical habitat; and 2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation (for example, how many fewer ungulates will roam into the critical habitat, how many fewer invasive plants will be introduced as a result, and therefore how many more of the adult or larval host plants will be present in the area and how many more moths these additional plants will support).

When primary research is not possible, economists frequently rely on the method of benefits transfer. Benefits transfer involves application of results of existing valuation studies to a new policy question.⁴ Two core principles of defensible benefits transfer are (1) the use of studies that apply acceptable techniques to generate welfare values, and (2) similarity between the good being valued in the literature and the good being valued in the policy context to which the transfer is being made (i.e., the protection afforded the moth by critical habitat). As noted above, no known studies exist on quantified data on the value of the moth or the change in the quality of the ecosystem and the species as a result of the designation. Therefore, applying results of existing valuation studies on other species to the moth is not feasible.

The discussion presented in the DEA and in this Addendum provides examples of potential benefits based on information obtained in the course of developing the economic analysis. It is not intended to provide a complete analysis of the benefits that could result from section 7 of the Act in general, or of critical habitat designation in particular. In short, the Service believes that the benefits of critical habitat designation are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

6.c. UH Study on the Value of Environmental Services Provided by the Ko'olau Mountains

A commenter suggested that a 1999 analysis by the University of Hawai'i (UH) economists on the total value of environmental service provided by O'ahu's Ko'olau Mountains be used as a model for estimating the value of the environmental benefits provided by critical habitat (Kaiser, et al). This document was, in fact, used in the DEA as a resource document for concepts, and for identifying documents that report the original research on certain subjects.

However, the UH study has limited applicability for valuing the benefits of the proposed critical habitat designation for the moth for a number of reasons. First, the UH study had a different purpose, which was to estimate the total value of environmental benefits provided by the entire Ko'olau Mountains on the island of O'ahu versus the value of the more limited benefits provided by the proposed critical habitat for the moth on the islands of Maui, Moloka'i, Kaho'olawe, and the Big Island. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land and stream management due to critical habitat designation.

Furthermore, many of the assumptions and much of the analysis in the UH study are not transferable to the economic analysis for the moth critical habitat. For example, the Ko'olau Mountains were evaluated as a contiguous area, whereas the moth critical habitat is composed of

⁴ For more discussion of benefits transfer, see Environmental Protection Agency, *Guidelines for Preparing Economic Analyses* (EPA 240-R-00-003), September 2000.

separate areas on four different islands. The value of water recharge in the UH study reflects projected water supply and demand conditions on O‘ahu – conditions that are not applicable to Maui, Moloka‘i, Kaho‘olawe, or the Big Island due to the differences in size and population. Also, the UH benefit analysis of reducing soil runoff is unique to three valleys that drain through partially channelized streams in urban areas into the man-made Ala Wai Canal. Since this canal was designed with inadequate flushing from stream or ocean currents, it functions as an unintended settling basin so must be dredged periodically. In addition, the recreational and ecotourism values provided in the UH study apply to areas that are accessible to most hikers, which is not necessarily the case with the moth critical habitat.

7. PUBLIC COMMENTS

Some reviewers commented that the DEA did not address or did not adequately consider a variety of costs and benefits that they believe could occur due to the implementation of section 7 for the moth. Many of these possible costs were, in fact, considered and some were addressed in the DEA. In many cases, however, potential costs were purposely not addressed in the DEA because they are not expected to occur. In other cases, the concerns no longer have substance given the Service’s modifications to the proposed critical habitat. Finally, in some cases, the comments provided new information and costs were modified earlier in this Addendum.

To clarify further, the following addresses specific comments raised during the public comment period that relate to economic impact of the proposed designation but are not expected to occur and/or have already been addressed by the DEA or this Addendum.

7.a. Investigative Costs

Comment: A commenter stated the following: The narrative exclusion of areas underlying currently developed areas such as buildings and driveways (“unmapped holes”) is too vague considering the cryptic nature of the moth and its habitat. Although the DEA concedes that the lack of clarity can force landowners to incur costs to investigate the implications of the regulations, it fails to fully consider the economic impacts of landowners’ costs to properly demarcate “unmapped holes” in the process of obtaining necessary permits for development projects. The estimate that this will only take 15 to 40 hours is too low given the size of the designated areas, the vagueness of the regulatory exclusion, and the real costs of obtaining development approvals.

Another commenter also stated that the DEA’s analysis of potential costs expected to be incurred by private landowners to investigate the implications of critical habitat on their lands was flawed, because the analysis failed to recognize that the costs to investigate the implications of critical habitat are sunk costs associated with the designation process, not additional costs that the final designation would impose. The commenter further stated that any concerned party investigating the proposed designation of critical habitat on their lands would have already hired lawyers and consultants and would have incurred the costs associated with figuring out the implications of designation on their lands. Moreover, were the private landowners' lands ultimately excluded from the final critical habitat designation, the landowners would still not recoup those costs; the money has already been spent. Thus, the commenter concluded that these costs should not be included in the analysis of future potential costs from designation since they have already been incurred and were incurred regardless of the final designation decision.

Response: Chapter VI, Section 4.i. of the DEA indicated that the landowner may want to learn how the designation may affect (1) the use of his land (either through restrictions or new obligations), and (2) the value of his land. It is recognized that some landowners may spend a great

deal of time investigating, while other landowners may not conduct any investigation. The estimate contained in the DEA is a range that reflects the total cost for all landowners based on an average cost per landowner. Public comment did not provide an alternative estimate of time or cost incurred in order to investigate implications of critical habitat sufficient to require changes to the estimated average cost per landowner. Thus, this Addendum does not revise the number of hours that the DEA estimated the landowner and/or his attorneys or professional staff would spend on investigating the issues. However, the Addendum does revise the number of affected landowners to 65 because of the intended modifications to the critical habitat indicated by the Service. As described in Section 4.e. of this Addendum, an estimate of the costs involved with investigation for the intended designation ranges from roughly \$173,000 to \$618,000.

While some landowners may expend time and money to investigate the implications of critical habitat on their land during the designation process, many landowners may not do so until after final designation is complete. Thus, the DEA and the Addendum conservatively treat these costs as costs attributable to the final designation.

7.b. Underestimated Direct Costs

Comment: A commenter stated that project modification costs, such as those to roads, are underestimated, particularly the cascading effect of project realignment with the purpose of avoiding critical habitat.

Response: The project modification cost estimates were developed after lengthy discussions with Service personal, considering a wide array of projects, locations, and contingencies, as well as by examining the limited historical record of project modifications regarding the moth. For the planned road project within the critical habitat designation (the proposed Ane Keohokalole Highway), the DEA recognized that until the right-of-way is finalized and the area is surveyed, there is considerable amount of uncertainty regarding the cost of realignment. However, as noted in the DEA, because the known larval host plants located in Unit 5A (Big Island) are not within the currently planned route for the Highway, the area is owned by one landowner, and biological surveys will occur early in the planning process, the cost of realignment, if any, was expected to be minor. No additional information was provided during the public comment period that contradicts this conclusion.

7.c. Underestimated Indirect Costs

Comment: A commenter stated the following: The DEA only partially considers the “indirect impacts” of critical habitat designation, and instead focuses on “direct impacts” due primarily to consultations under section 7 of the Act. Due to precedent set by *New Mexico Cattle Growers*, the Service must fully consider both types of impacts, and the DEA must present a thorough analysis of these economic effects. Several other commenters stated the DEA overemphasizes the direct costs attributable to critical habitat designation and ignores or omits other indirect impacts, such as: impacts to housing supply, including affordable housing; decreases in public revenues as a result of lost construction and reduced economic activity; impacts to subsistence activities and their role in the local economy; and impacts to public infrastructure such as roads and water systems.

Response: A thorough analysis of both direct and indirect impacts was presented in Chapter VI of the DEA. With respect to indirect effects, there is considerable uncertainty regarding whether any or all of the indirect impacts may actually occur, because they depend upon actions and decisions by entities other than the Service under circumstances for which there is limited or no history that can be used to determine the likelihood of different outcomes. Thus, based on the available information, indirect impacts were discussed qualitatively in the DEA. In addition, where

possible, estimates were given of worst-case scenarios for illustrative purposes and a sense of the likelihood of occurrence was provided.

The impact to the supply of affordable housing was discussed in the DEA in Chapter VI, Section 4.e. The DEA recognized that some landowners feared the possibility of redistricting land within the critical habitat designation to the Conservation District and discussed the impact to the affordable housing supply should redistricting occur and prevent planned development. Specifically, in regards to the planned Villages at La‘i‘opua (VOLA) affordable housing development planned by the State in Unit 5B (Big Island), the DEA noted that the County of Hawai‘i requires developers to provide a certain number of affordable housing units or pay \$4,720 to the County for each unit not built. Using this value as a proxy for the social value of affordable housing, the DEA estimated that the loss of 570 affordable units in the VOLA development equates to a loss of almost \$2.7 million to the community.

Further, the DEA also addressed the potential impact on public revenues as a result of lost construction. In Chapter VI, Section 4.e., the DEA recognized that a loss in development can lead to economic losses due to the “ripple-effect.” For example, if a home cannot be built, both the developer and construction company who would have built the home would have reduced revenues. In addition, the lumber company and other companies supplying the construction company would have reduced revenues, an impact that would “ripple” through the regional economy and could result in reduced public revenues. However, due to the availability of suitable land outside the critical habitat designation, the DEA concluded that any economic activity that is displaced within critical habitat for the moth due to redistricting of land to the Conservation District would still be expected to occur, just in other locations. Thus, the DEA implicitly concluded that there would be no appreciable impact on public revenues.

The DEA addressed the impacts to subsistence and their role in the local economy in Chapter VI, Section 4.d. The DEA recognized that subsistence not only plays an important role in community life, but also provides important sustenance to many residents in communities on Maui, the Big Island, and Moloka‘i. The DEA estimated that restriction of access and prohibition of subsistence activities in all areas proposed for critical habitat designation was extremely unlikely, and that more likely to occur were restrictions in small, localized areas of significant biological importance. Because of the strong stewardship and conservation values associated with those practicing subsistence activities within the proposed critical habitat, as well as the traditional recognition of the value of protecting certain areas through the *kapu* system, the DEA concluded that the impact of critical habitat designation on subsistence activities would be minimal.

Finally, the economic analysis addressed impacts to public infrastructure such as roads and water systems in Chapter VI, Sections 3.i. and 3.j. of the DEA and Section 3.j. of the Addendum. These sections addressed projects planned within the critical habitat designation. Final estimated section 7 costs for planned road projects are \$32,600 for consultations and \$985,000 to \$1,230,000 for project modifications. Final estimated section 7 costs for planned water projects are \$20,600 to \$61,200 for consultations and up to \$6,200 for project modifications.

7.d. Redistricting: Reporting of Impacts

Comment: A commenter stated that the DEA acknowledges that some or all lands designated as critical habitat may be redistricted/rezoned at the State or county level to preclude further development and that the actual economic costs of redistricting could be very high. The commenter

complained that while these estimates are mentioned in the text, they are not included in the summaries of the economic impacts.

Response: Tables ES-1 and VI-3 (“Summary Tables”) of the DEA summarize the economic impacts associated with the moth critical habitat designation. Although Chapter VI, Section 4 of the DEA and Section 4 of the Addendum provided general estimates of some of the potential indirect costs, including costs associated with State redistricting of land (Chapter VI, Section 4.e. of the DEA, Section 4.b. of the Addendum), these estimates were not totaled in the Summary Tables because the probability that many of the indirect costs will occur is unknown. As noted on each of the Summary Tables, the Tables instead reported qualitatively on the likelihood and the potential magnitude of each of the indirect costs. Moreover, the Summary Tables referred the reader to Chapter VI of the DEA for additional information on any of the indirect impacts.

7.e. Investment

Comment: A commenter stated the following: The DEA does not account for investments and other expenditures already made on lands with the expectation that rezoning and redistricting will allow future development and hence a return on investment, nor does it account for the potential lost recapture of investment yields that may be foregone due to lost development potential for lands that have successfully been rezoned and permitted for development at a very high cost.

Response: Chapter VI, Section 4.e.(6) of the DEA and Section 4.b. of this Addendum specifically considered the investments and expenditures already made on lands within the critical habitat designation to facilitate future planned development, as well as the future profits that may be foregone due to lost development potential as a result of redistricting. The total cost associated with previous expenditures and estimated future profits for planned projects within the intended critical habitat designation ranges from \$62.4 million to \$74.4 million. However, as more fully discussed in Section 4.b., while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

7.f. Timeframe

Comment: A commenter stated the following: The DEA underestimated economic costs because the costs are limited to what is likely to occur within ten years. Critical habitat designation is permanent and not automatically revised if there is new evidence of the benefits of non-designation, or if the species is delisted.

Response: A listed species is delisted when it is recovered or has gone extinct. Recovery is defined as no longer needing the protections provided by the Act, including critical habitat. Thus, when a species is delisted, critical habitat for that species would no longer be in effect.

Furthermore, a ten-year time horizon is used because many landowners and managers do not have specific plans for projects beyond ten years. In addition, the forecasts in the analysis of future economic activity are based on current socioeconomic trends and the current level of technology, both of which are likely to change over the long term.

7.g. Benefits

Comment: A commenter stated the following: The level of effort to document and analyze the potential economic impacts resulting from critical habitat designation greatly exceeded the level of effort to document and analyze the potential economic benefits due to designation, such as the

benefits of watershed protection and improvement, protection of other stream and riparian biota, the value of the species as an indicator of ecological health, the value of protecting culturally significant species, the value that Hawai‘i’s people place on conservation of Hawaiian species, the benefit of keeping other native species off the endangered species list, of maintaining water quality and quantity, of promoting ground water recharge, and of preventing siltation of the marine environment, thus protecting coral reefs. The Service cannot exclude land from critical habitat designation if it considers only the costs, and not the benefits, of critical habitat designation. In failing to discuss these benefits, the Service missed an opportunity to educate the public regarding the value of protecting native species and native ecosystems. The Service must use the tools available, such as a study by the University of Hawai‘i (UH) Secretariat for Conservation Biology that estimated the value of ecosystem services, to quantify the benefits of critical habitat. The DEA results in an unbalanced overestimation of detrimental economic impacts, and an unfair under-estimation of economic benefits due to designation of critical habitat.

However, multiple other commenters stated the following: The benefits of species protection are overstated and speculative. The DEA does not present the expected circumstances or timeline for delisting the species, nor is there a quantifiable estimate of the economic benefits of delisting. Additionally, multiple commenters stated that the species themselves have no economic value; any estimate of economic benefit derived from not fully developing lands proposed for critical habitat are speculative and unquantifiable; and the likelihood of new conservation dollars entering the State is speculative. Furthermore, in the DEA summary of costs and benefits, the benefits of designating critical habitat are “difficult to estimate” and are exceeded by the costs.

Response: The DEA discussed the benefits mentioned above. There is little disagreement in the published economic literature that real social welfare benefits can result from the conservation and recovery of endangered and threatened species. Such benefits have also been ascribed to preservation of open space, general biodiversity, and ecosystem function, all of which are associated with species conservation. Likewise, a regional economy can benefit from the preservation of healthy populations of endangered and threatened species, and the habitat on which these species depend.

It is not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the proposed critical habitat for the moth because of the scarcity of available studies and information relating to the size and value of beneficial changes that area likely to occur as a result of listing the moth or designating critical habitat. In particular, the following information is not currently available: 1) quantified data on the value of the moth or the moth’s critical habitat; and 2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation.

Although the UH study does value ecosystem services, it has limited applicability for valuing the benefits of the critical habitat designation for the moth for a number of reasons. First, the UH study had a different purpose, which was to estimate the total value of environmental benefits provided by the entire Ko‘olau Mountains on the island of O‘ahu. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land and stream management due to critical habitat designation. Furthermore, many of the assumptions and much of the analysis in the UH study are not transferable to the economic analysis for the critical habitat of the moth. For example, the Ko‘olau Mountains were evaluated as a contiguous area, whereas the moth critical habitat is composed of separate areas on four different islands. The value of water recharge in the UH study reflects projected water supply and demand conditions on O‘ahu – conditions that are not applicable to Maui, Moloka‘i, Kaho‘olawe, or the Big

Island due to the differences in size and population. Also, the UH benefit analysis of reducing soil runoff is unique to three valleys that drain through partially channelized streams in urban areas into the man-made Ala Wai Canal. Since this canal was designed with inadequate flushing from stream or ocean currents, it functions as an unintended settling basin, so must be dredged periodically. In addition, the recreational and ecotourism values provided in the UH study apply to areas that are accessible to most hikers, which is not necessarily the case with the moth critical habitat.

Delisting of the moth is not anticipated within the ten-year time horizon of this economic analysis, and it is beyond the scope of the economic analysis to forecast when delisting may occur beyond this period. The economic analysis does not conclude that the moth or that critical habitat for the moth has no economic value; rather, it simply states that the value of the species cannot be quantified at this time. The economic analysis does not attempt to quantify the economic benefit derived from not fully developing lands proposed for critical habitat. Rather, the economic analysis acknowledges that there may be benefits resulting from the preservation of open lands that might otherwise be developed, but concludes that because much of the critical habitat designation is already kept as open space and governed by existing State and local land use laws and county plans, these benefits may be insignificant. Finally, while the economic analysis concludes that many of the benefits of critical habitat designation are “difficult to estimate,” it does not necessarily lead to a conclusion that the benefits are exceeded by the costs. The Service believes that the benefits of the species and of critical habitat designation are best expressed in biological terms that can be weighed against the expected costs of the rulemaking.

7.h. Benefits - Ecotourism

Comment: One commenter pointed out that critical habitat does not benefit ecotourism by creating new special places for people to visit, as the DEA suggested. Rather, it helps to protect the special places that already exist from degradation, ensuring that they will be around in the future to attract future ecotourists.

Response: Chapter VI, Section 6.b.(1) of the DEA indicated that the proposed critical habitat may enhance the appeal of ecotourism by providing a marketing dimension. However, the DEA also stated that this benefit may be slight since these places may already be regarded as special due to the existing natural and cultural resources in the area.

7.i. Benefits – Ecosystem Functions

Comment: A commenter stated that assigning an economic value to preservation of ecosystem functions that may result from the designation of critical habitat (such as groundwater recharge, protection of coastal marine waters and fisheries, and other ecosystem services) is now an acceptable method of economic analysis, and that the dollar value of these services is high. The commenter noted that this analysis was done in a qualitative, narrative manner in the DEA and questioned why it was not done in a quantitative manner.

Response: The economic analysis recognized that the preservation of ecosystem functions may result from the designation of critical habitat for the moth. It was not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the proposed critical habitat for the moth because of the scarcity of available studies and information relating to the size and value of beneficial changes that area likely to occur as a result of listing the moth or designating critical habitat. In particular, the following information is not currently available: 1) quantified data on the value of the moth or the moth’s critical habitat; and 2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation.

7.j. Benefits – Open Space and Reduced Development

Comment: A commenter stated that there was no attempt in the DEA to quantify the value of open space (parks, preserves, even golf courses) surrounding real estate. The commenter noted that such increased property values are acknowledged but there was no attempt to estimate the corresponding increases in property values. Also, the commenter noted that some tourists prefer less developed areas.

Response: As discussed in the DEA and in the Addendum, there are only two areas where the moth critical habitat could potentially increase the amount of open space. These areas include approximately 220 acres planned for single-family and multi-family homes in the Kaloko Properties development in Unit 5A (Big Island) and approximately 75 acres planned single-family and multi-family homes in the State VOLA project in Unit 5B (Big Island). If these areas are redistricted to the Conservation District, the likelihood of which, as discussed earlier in this Addendum, is considered small, they may remain open spaces, but they will not necessarily be converted into golf courses and parks. Most golf courses and parks are not consistent with the regulations associated with the Conservation District. If the areas are left in the natural state or as preserves, the positive impact on surrounding real estate is likely to be minimal because much of the area is currently open and likely remain open over the next ten years.

The planned developments in critical habitat are located outside of the areas in Kailua-Kona designed to host tourists. As such, critical habitat will have little or no effect on the amount of development in the areas frequented by tourists.

7.k. Agriculture

Comment: Multiple commenters opposed the designation of Agricultural land and lands needed to support agriculture and ranching. Commenters were concerned that designation would reduce property values and the ability to develop lands that were previously planned for development and also stated the following: Thirty-three percent of the proposed designated land is within the State Conservation District, which includes irrigation water essential to agriculture. The rest of the lands proposed for designation are primarily in the State Agricultural District. Designation of Agricultural lands could prevent a farmer or rancher from using those lands since the very nature of those uses would in all likelihood entail cutting, uprooting, or injuring plants to a certain extent. The DEA failed to examine the economic impact of a landowner not being able to use his own land for fear of injuring a species he doesn't even recognize. No protection is afforded to farmers who unwittingly "harm" the designated critical habitat.

Response: Chapter VI, Section 4.e. of the DEA discussed potential indirect impacts to Agricultural land, including the potential reduction in property values and the impact of redistricting Agricultural land to the Conservation District. Section 4.b. of the Addendum revised these estimates based upon the intended modifications to the critical habitat designation to remove areas for biological reasons. The Addendum estimated the loss in property value associated with a worst-case scenario – that of all unplanned Agricultural land on Maui, Moloka'i, and the Big Island being redistricted to Conservation – at \$17 million to \$169 million. The loss of development potential on the Agricultural land in Unit 5A (Big Island) is estimated at \$13 million to \$25 million. While it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting land into the Conservation District. This determination was the result of professional judgment, after review of the requirements for redistricting, including the requirement that the Land Use Commission consider the "maintenance of other resources relevant to Hawai'i's

economy, including, but not limited to, agricultural resources” as well as “the preservation or maintenance of important natural systems or habitats” when considering a petition for redistricting.

In addition, the economic analysis did not conclude that designation of critical habitat on Agricultural lands would prevent a rancher from using those lands. Rather, the economic analysis recognized that many areas within the critical habitat designation have been grazed for tens or hundreds of years, yet still contain the *primary constituent elements* for the moth. Based on information from the Service, the DEA concluded that sustainable grazing does not adversely affect the moth, and in fact, may indirectly benefit the species by reducing fire danger and controlling non-native weeds. Moreover, the DEA concluded that areas historically subject to grazing were unlikely to meet the standards of a natural ecosystem required to be put in the Protective Subzone (HAR §13-5-11). As a result, even if Agricultural land within the critical habitat designation were redistricted to Conservation, the DEA anticipated that agricultural activities could continue because typical agricultural activities are allowed in all subzones, except the Protective Subzone, with permission of the State Board of Land and Natural Resources (BLNR).

7.1. Hunting

Comment: Several commenters were concerned about the potential for critical habitat to decrease the amount of available hunting lands and game animals. Frustration was expressed that governmental officials value plants and insects more than hunting, an important family and cultural tradition, means of subsistence, and way of life. In addition, commenters stated the following: Members of all ethnic groups hunt and depend on subsistence activities as a real part of their income. Hunting also contributes to the economy via money spent on pet foods, interisland trips, gasoline, supplies, etc. Additionally, DLNR will lose money as the demand for hunting licenses and tag fees dwindles. The DEA does not adequately reflect the costs associated with management of game mammals and loss of hunting lands.

Response: Chapter VI, Section 4.b. of the DEA discussed the potential indirect impact of critical habitat on the management of game mammals on Moloka‘i and the Big Island, the only areas where the critical habitat designation overlaps with State-managed hunting units. The DEA noted that section 7 of the Act by itself does not require DLNR to manage State hunting lands to protect critical habitat; assure the survival and conservation of listed species; or participate in projects to recover species for which critical habitat has been established. Moreover, the DEA noted that critical habitat designation does not require (1) creating any reserve, refuge, or wilderness areas; (2) fencing for any reason; (3) removing ungulates; or (4) closing areas to hunters.

However, the DEA recognized that a change in game-management strategy as a result of a lawsuit or as a voluntary decision by DLNR is possible, but not likely.

Nonetheless, for illustration purposes, Chapter VI, Section 4.b. of the DEA presented potential costs that could result if DLNR removed areas within the intended designation from the State-managed hunting units. To illustrate the magnitude of the impacts on Moloka‘i, if about half of those who hunt game mammals on the affected lands were to give up hunting, then hunting activity could drop by about eight percent (half of 16 percent, which is the estimated percentage of the accessible State-managed hunting lands on Moloka‘i proposed for designation). This translates into an annual decrease in economic activity related to hunting on Moloka‘i of about \$25,000 in direct sales; \$45,000 in total direct and indirect sales; one job; and \$15,000 in income. To illustrate the magnitude of the impacts on the Big Island, if about half of those who hunt game mammals on the affected lands were to give up hunting, then hunting activity could drop by about 12.5 percent. While the proposed critical habitat covers only three percent of the total hunting area on the Big

Island, the actual hunting activity within the area proposed for designation is much higher than three percent. Based on information provided by DLNR regarding the popularity and the number of hunting trips in the Pu'u Wa'awa'a area, it is assumed the area included in critical habitat supports approximately 25 percent of the hunting activity on the Big Island. A reduction in hunting activity by half in this area would translate into an annual decrease in economic activity related to hunting on the Big Island of about \$425,000 in direct sales; \$750,000 in total direct and indirect sales; 13 jobs; and \$250,000 in income. However, the \$450,000 (\$25,000 + \$425,000) decrease in expenditures by the displaced hunters would probably be spent on other activities, goods and services, so these figures are likely to overstate economic costs. In addition to the change in economic activity discussed above, a reduction in hunting activity would also result in a loss in value or benefit to hunters (consumers' surplus). Chapter VI, Section 4.b. of the DEA estimates this loss in value at \$238,000 (\$13,000 for hunting on Moloka'i and \$225,000 for hunting on the Big Island) annually and recognizes that benefits derived from recreational activities that replace game mammal hunting would partially offset this loss. Because the intended revisions did not significantly reduce the amount of overlap between State-managed hunting units and the intended designation, the Addendum made no changes to the conclusions reported in the DEA regarding hunting.

7.m. Kahului Airport

Comment: The State Department of Transportation, Airports Division stated that the proposed rule fails to adequately consider potential economic impacts to the Kahului Airport as a result of the designated airport lands.

Response: Chapter VI, Section 3.h. of the DEA and Section 3.i. of this Addendum discussed direct economic impacts associated with activity by the State Department of Transportation, Airports Division (DOTA) at Kahului Airport. Specifically, the DEA recognized that DOTA opposes designation of critical habitat in this area due to a possible conflict with safety requirements. In addition, the DEA noted that while DOTA receives Federal funding for transportation improvements, the Federal funds were not likely to be used for activities within the proposed critical habitat designation. Thus, while the possibility of a future *Federal nexus* was recognized, the DEA concluded that no section 7 consultations or project modifications were anticipated because there was no known *Federal involvement* for the existing activities.

During public comment, DOTA objected to designation of Kahului Airport and stated that the proposed designation failed to adequately consider the potential economic impacts to the Kahului Airport. As noted in the DEA, activities within the critical habitat designation primarily involve the clearance and cutting back of vegetation. These activities are not typically supported through Federal funds. However, based on discussions with DOTA, it is assumed that DOTA would avoid utilizing Federal funds, if they were available, to support activities within the area designated for critical habitat in order to avoid *Federal involvement* and section 7 consultation. As DOTA does not currently use or anticipate using Federal funds to support activities within the critical habitat designation, the economic impact of forgoing Federal funding sources is estimated to be zero.

DOTA did not provide any specific information demonstrating economic impact, identify any other activities that would be impacted by the designation, or raise any other *Federal nexus*. As discussed above, there is no anticipated *Federal involvement* for activities at Kahului Airport. Thus, no section 7 consultations or project modifications relating to the Airport are anticipated.

7.n. Planned Development in Unit 5-A

Comment: The MID Corporation and the TSA Corporation (MID/TSA) stated that the DEA vastly understated potential economic impacts to its various projects as a result of designation of lands in proposed Unit 5-A. The commenters suggested indirect costs approximating \$415 million dollars. Furthermore, the commenters stated that the DEA fails to address broader economic impacts to the community of Kailua-Kona and the State such as costs approximating \$24 million dollars as a result of potential loss of land development.

Response: The new information regarding the Kaloko Industrial Park expansion and the Kaloko Properties development by the MID Corporation and the TSA Corporation (MID/TSA) are incorporated into Section 4.b. of the Addendum. The \$415 million figure presented by MID/TSA represents a combination of selling values and development costs for the two planned developments. As mentioned in the DEA and in the Addendum, full selling values, development costs, and broader economic impacts to the community are not considered economic impacts of critical habitat designation for the moth, because if the development can not occur in critical habitat, it is assumed that it will relocate elsewhere in the region. This assumption is supported by the fact that a large area surrounding Unit 5A is planned for urban expansion in the County of Hawai‘i’s General Plan, and because there are other entitled projects awaiting development (such as a 2,640 acre project on State lands that is just north of Unit 5A and planned for residential, commercial, and light industrial development; parks; a golf course; and other uses). As such, the full \$415 million in selling values and development costs and the \$24 million in economic impacts to the community will not be lost if development does not occur in critical habitat.

According to the methodology described in the DEA and in the Addendum, the \$415 million is converted to the potential future stream of profits to MID/TSA from the planned development. As discussed further in Section 4.b. of the Addendum, the estimated future profits for the Kaloko Industrial Park expansion is approximately \$12 million and the present value of the future profits for the Kaloko Properties planned development ranges from \$13 million to \$25 million. In addition, if development cannot occur in critical habitat, MID/TSA will not be able to recoup the money already invested in the project. Section 4.b. of the Addendum estimates this amount to be approximately \$500,000 for the Kaloko Industrial Park expansion and \$4.2 million for the Kaloko Properties development.

While it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting land into the Conservation District. This determination was the result of professional judgment, after review of the requirements for redistricting, including the requirement that the Land Use Commission consider the “provision for employment opportunities and economic development” as well as “the preservation or maintenance of important natural systems or habitats” when considering a petition for redistricting.

7.o. Specific Comments Regarding Planned Development in Unit 5-A

Additional specific comments from MID/TSA regarding the DEA:

Comment: Table ES-1: Under “Residential Development,” needs to add reference to Kaloko Properties Development.

Response: The Kaloko Properties development is referenced in Section 3.e. of the Addendum and it is included in the heading “Other Residential Development, Agricultural District” in Table Add-1.

Comment: Page VI-11, second to last paragraph: Based on maps supplied by the Service, MID/TSA estimates that 37 acres are in the Urban District (Kaloko Industrial Park, Phases III & IV). Assuming the referenced 13 acres refers to lands north of Hina Lani Street, the second sentence should be revised to reflect that there are plans to develop golf course and residential uses on Urban lands proposed for critical habitat designation.

Response: This information is included in Section 3.d. of the Addendum; however, there is no change in the DEA cost estimate.

Comment: Page VI-13, 2nd paragraph: The second sentence should be revised to reflect that as part of the Kaloko Properties development, there are plans to develop golf course and residential uses on lands proposed for critical habitat designation. Development is planned within the next ten years.

Response: This information is included in Section 3.e. of the Addendum; however, there is no change in the DEA cost estimate.

Comment: Page VI-14, 2nd paragraph under 3.c: The paragraph should be revised to reflect that 1) the developer is TSA Corporation and 2) county zone change allowing for commercial-industrial mixed use development was granted.

Response: This information is included in Section 3.f. of the Addendum; however, there is no change in the DEA cost estimate.

Comment: Page VI-28, Section 3.i.(2) New Roads: In the first paragraph, the County of Hawai‘i no longer plans to extend Olowalu Street. As such, this paragraph should be deleted.

Response: This information is included in Section 3.j. of the Addendum; however, there is no change in the DEA cost estimate.

Comment: Page VI-39, Section 3.m.(2) Planned Golf Courses: The discussion should add the planned Kaloko Golf Course in Unit 5-A which has Urban zoning and is planned to be constructed on approximately 194 acres in TMK Parcel 7-3-09: 25.

Response: This information is included in Section 3.l. of the Addendum; however, there is no change in the DEA cost estimate.

Comments: Page VI-64, last paragraph: Need to also add reference to the Kaloko Properties development; Page VI-65, Previous Expenditures and Future Profits: Need to add reference to the economic impacts from Kaloko Properties development; Page VI-65, 7th paragraph regarding Kaloko Industrial Park: We estimate up to 33 lots would be affected, with an economic loss of \$15 million based on property sales in the latest phase; Page VI-69, 3rd paragraph, Potential Redistricting Costs: The potential economic cost range of \$255 million to \$550 million appears to be grossly understated given our own estimate of the loss of \$415 million on our Properties in Unit 5-A, but even then, this cost range (including Kaloko Properties costs) should be included in the summary tables, rather than being dismissed as “speculative.”

Response: All of this information is included in Section 4.b. of the Addendum. The potential economic impacts to the Kaloko Industrial Park expansion in Unit 5A (Big Island) include a loss of \$500,000 in previous expenditures and \$12 million in future profits. The potential impacts to the Kaloko Properties development in Unit 5A (Big Island) include \$4.2 million in previous expenditures and \$13 million to \$25 million in future profits. While it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting land into the Conservation District. This determination was the result of professional judgment, after review of the requirements for redistricting, including the requirement that the Land Use Commission consider the “provision for employment opportunities and economic development” as well as “the preservation or maintenance of important natural systems or habitats” when considering a petition for redistricting.

Comment: Page VI-70, 1st paragraph: The Kaloko Properties development will require major discretionary approvals from the State and county, including Land Use District Boundary Amendment and county zone change.

Response: This information is included in Section 4.c. of the Addendum. As a mitigation measure for a discretionary approval, the State or county may require that the landowner use native vegetation that is beneficial to the moth in the residential development and golf course construction. The cost of this mitigation measure was estimated at \$720,000 to \$750,000. In a worst-case scenario, if the State or county did not grant the discretionary approvals as a result of the moth critical habitat designation, the landowner may not be able to continue with the current plans for residential and golf course development. In this case, the total cost for the Kaloko Properties development would be \$4.2 million in previous expenditures and \$13 million to \$25 million in the potential loss of future profits. The specific likelihood of either occurrence is unknown, as it depends upon the actions of the State or county agency with permit approval under circumstances for which there is no prior history. In addition, the State or county may develop their own mitigation measures based on the particular circumstances before them when reviewing the permit. Based on the professional judgment of the team of consultants preparing this report, it is not deemed likely that discretionary approval for the Kaloko Properties project would be denied solely on the basis of moth critical habitat designation. However, for illustrative purposes, costs associated with this worst-case scenario are reported.

7.p. Villages of La‘i‘opua

Comment: The State of Hawai‘i, Housing and Development Corporation of Hawai‘i, stated that the DEA incorrectly concluded that economic impacts to the Villages of La‘i‘opua (VOLA) project would be moderate or modest because there is not likely to be any Federal involvement. The VOLA project may in the future request Federal funding to assist with development of affordable housing. The State would then lose money due to the direct impacts of various required consultations. Furthermore, the DEA does not acknowledge the cost of developing affordable housing at VOLA *in lieu* of Federal funding assistance.

Response: Section 3.c. of the Addendum specifically addresses HCDCH concerns. As a result of further discussions with HCDCH and a review of the Service’s record regarding the VOLA project, the Addendum analysis concludes that no section 7 consultations are anticipated in the next ten years. First, HCDCH is not currently seeking Federal funding for the project and was unable to identify specific potential Federal funding programs (HCDCH, 2003). Second, the U.S. Department of Housing and Urban Development (HUD) indicates that there are currently no competitive grant programs for the development of affordable housing, and that there are not likely to be any in the near future (HUD, 2003). Third, the U.S. Department of Agriculture Rural Housing Service (RHS) has a loan guarantee program and a competitive loan program for the development of affordable housing, but this program is used primarily by individual homeowners and has never been used by State and county agencies in Hawai‘i (RHS, 2003). Thus, because there is no reasonably foreseeable *Federal involvement* for the VOLA development, no section 7 consultations are anticipated.

7.q. Exclusion – State land

Comment: The State of Hawai‘i identified five parcels (TMK (2) 1-8-001:005; TMK (2) 2-1-004:049; TMK (2) 2-1-006:076; TMK (2) 2-1-006:077; and TMK (2) 2-1-006:078) and stated that these parcels should be excluded from designation because the DEA failed to establish that the benefits of including these parcels in the designation outweigh the costs of including these parcels in the designation.

Response: Two of the five parcels (TMK (2) 1-8-001:005 and TMK (2) 2-1-004:049) are leased for pasture purposes. The other three parcels (TMK (2) 2-1-006:076, TMK (2) 2-1-006:077, and TMK (2) 2-1-006:078) are identified as lands with either high land values or with development potential.

Section 3.g. of the Addendum evaluated the direct economic impact of critical habitat designation on these two parcels under lease for pasture purposes and concluded that no direct section 7 costs involving these leases are anticipated because there is no known *Federal involvement*.

Sections 4.a. and 4.b. of the Addendum discussed indirect costs, specifically the possibility of mandated conservation management measures that would interfere with the ability to lease these lands for pasture purposes and the possibility of restrictions on the State’s ability to develop the land in the future as a result of redistricting.

As discussed in Section 4.a., mandated conservation management for all of the land in critical habitat is not reasonably foreseeable. The concern expressed by some is that the prohibition on *taking* endangered and threatened species could be triggered by designation of critical habitat if courts apply the principles of *Palila v. Hawai‘i Dept. of Land and Natural Resources*, 471 F. Supp.

985 (D. Haw. 1979), *aff'd* 639 F.2d 495 (9th Cir. 1981) and *Palila v. Hawai'i Dept. of Land and Natural Resources*, 649 F. Supp. 1070 (D. Haw. 1986), *aff'd* 852 F. 2d 1106 (9th Cir. 1988). While the circumstances considered by these cases happened to occur in the palila's critical habitat, the legal issues involved interpretation of "harm" in the Act's definition of "take," affirming that habitat degradation can constitute "harm" to a listed species. They did not announce a rule that degradation of designated critical habitat automatically constitutes *take*. While critical habitat may provide information to help a landowner identify where *take* through habitat modification may occur, the Federal and State *take* prohibitions are triggered by the listing of a species. These prohibitions apply whether or not critical habitat has been designated. In addition, there is no Federal, State, or county law or regulation that mandates conservation management for critical habitat. As such, this analysis concludes that mandated conservation management based on critical habitat designation is not likely.

Section 4.b. of the Addendum discussed the possible impact on future development on the three parcels identified by DLNR. The Addendum recognized that while it is possible that redistricting of these parcels (should it occur) could restrict the ability of DLNR to develop these lands in the future, the economic impact of such a restriction was impossible to estimate due to the speculative nature of such development at this time in light of the fact that there were no current plans for development of these parcels. In addition, Section 4.b. concluded that while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District. This determination was the result of professional judgment, after review of the requirements for redistricting, including the requirement that the Land Use Commission consider the "commitment of State funds and resources" as well as "the preservation or maintenance of important natural systems or habitats" when considering a petition for redistricting.

7.r. State Highways

Comment: The State Department of Transportation stated that the proposed designations on the islands of Maui and Hawai'i would greatly increase costs to maintain and repair State Highway facilities. Specifically, the proposed Kanaha Pond - Spreckelsville unit would impact costs to the planned widening project for Route 36; the proposed Kailua-Kona Unit 5-B will impact planned widening for Route 197; and the proposed Pu'u Wa'awa'a Unit will impact planned improvements for Route 190. The Department recommends that a buffer zone of 100 feet on the sides of the State highway right of way lines be excluded from critical habitat units to eliminate or minimize designation-related additional costs for improvements, maintenance, and repair.

Response: Section 3.j. of the Addendum evaluated the impact of critical habitat designation on these three identified road projects. While the existing roadway of Route 36 (Hana Highway) is located outside of the moth critical habitat designation, future widening of the roadway could possibly involve use of land inside the critical habitat designation. The widening of the area adjacent to the critical habitat designation was planned for construction between 1996 and 2000 in the 1997 *Maui Long Range Transportation Plan*. However, in the January 2002 *Final Joint County/State Maui Interim Transportation Plan*, the project is designated as a long-term project with no anticipated date of construction. Given the circumstances and the number of other priority projects listed before it, it is deemed unlikely that widening of Hana Highway will occur within the next ten years.

The Mamalahoa Highway (Route 190) safety improvements in Unit 6 (Big Island) involve simple repaving and resurfacing of the existing roadway. As mentioned in the DEA, the critical habitat provisions of section 7 do not apply to the operation and maintenance (O&M) of existing

man-made features and structures because these features do not contain any *primary constituent elements*. Thus, the safety improvements planned for Mamalahoa Highway in Unit 6 (Big Island) would not be subject to section 7 consultation because they involve operation and maintenance activities rather than new construction.

Finally, while the widening of Kealakehe Parkway (Route 197) in Unit 5B (Big Island) is a long-term project, there is no timetable given for the project. It is likely that extension of the Parkway (outside of the intended critical habitat designation) would be required before widening the existing portion of roadway; however, no timetable is given for the completion of the extension either. In addition, the State DOT is working on several other widening projects in the area, with its main focus on widening the Queen Ka'ahumanu Highway from downtown Kailua to the Airport, that are not estimated to be completed until 2011. Given the circumstances, it is deemed unlikely that widening of Kealakehe Parkway (Route 197) will occur within the next ten years.

As a result of the above analysis, the Addendum did not make any changes to the DEA's conclusions that there would be no consultation costs associated with any of these three projects.

7.s. Interplay with State Law: Hawai'i Land Use Law

Comment: Multiple commenters stated the following: The DEA failed to consider economic impacts of critical habitat that result through interaction with Hawai'i's Land Use Law. Critical habitat could result in changes to zoning under State law. There is an overriding directive under State law that endangered plant species are to be protected in the State's planning and zoning process. HRS § 205-2(e) states that Conservation Districts shall include areas necessary for conserving endangered species. HRS 195D-5.1 states that DLNR shall initiate amendments in order to include the habitat of rare species. Even if DLNR does not act, the Land Use Commission may initiate such changes, or they may be forced by citizen lawsuits. Areas for endangered species are placed in the protected subzone with the most severe restrictions. While existing uses can be grandfathered in, downzoning will prevent landowners from being able to shift uses in the future, will reduce market value, increase property tax, and make the land unmortgageable. Although the Service acknowledges that there could be substantial indirect costs relating to redistricting of land to the Conservation District, several commentators disagreed with the characterization of these costs as "minor" and with the statement that the probabilities of redistricting as "slight to small."

Response: As indicated in the Section 4.b. of the Addendum, about 50,772 acres of Agricultural land, one acre of Rural land, and 430 acres of Urban land are included in the intended designation. Of this, approximately 12,600 acres of Agricultural land is owned by private landowners; one acre of Rural land is owned by private landowners; and 45 acres of Urban land is owned by private landowners. Assuming a worst-case scenario, the cost to agricultural activities could range from \$250,000 to \$3 million; reduction in land values for unplanned land due to redistricting from the Agricultural, Rural or Urban District to Conservation District could range from \$17 million to \$169 million; and the cost of contesting redistricting could reach \$2.5 million. Under this scenario, even if a landowner has no plans to sell the land, the loss in land value could reduce potential mortgage financing. However, as discussed more fully in Section 4.b., while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

In addition, under a worst-case scenario, planned development on the privately owned Agricultural and Urban land would be stopped. The economic impact to the developer would include the amount of money already invested in the project plus the expected profits that would not

be realized due to redistricting. The cost associated with such a scenario is approximately \$62.4 million to \$74.4 million. Combined with the impacts mentioned above, the total economic cost associated with redistricting could range from \$80 million to \$249 million. Again, and as discussed more fully in Section 4.b., while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting any particular parcel of land into the Conservation District.

7.t. Interplay with State Law: Hawai‘i Environmental Impact Statements

Comment: Multiple commenters stated that the DEA fails to consider economic impacts of critical habitat that result through interaction with State law, specifically Hawai‘i’s Environmental Impact Statement Law. HRS 343-5 applies to any use of conservation land, and a full Environmental Impact Statement is required if any of the significance criteria listed in HAR 11-200-12 apply. One of these criteria is that an action is significant if it “substantially affects a rare, threatened or endangered species or its habitat.” This will result in costly procedural requirements and delays.

Response: Chapter VI, Section 4.f. of the DEA discussed the concern that critical habitat will result in more expensive environmental studies. The DEA noted that subject to certain exemptions, a State Environmental Assessment (EA) or Environmental Impact Statement (EIS) is required for projects that: (1) use State or county lands or funds; (2) are in the Conservation District; (3) are in the Shoreline Setback Area (usually 40 feet inland from the certified shoreline); (4) require an amendment to a county plan that would designate land to some category other than Agriculture, Conservation or preservation; or (5) involve reclassification of State Conservation District lands. If a project “substantially affects a rare, threatened, or endangered species, or its habitat,” then a State EIS might be required instead of the simpler and less expensive EA.

Based on a review of projects planned within the critical habitat designation, the DEA concluded that five projects could be affected: Makena State Park; Kanaha Beach Park improvements; Kaho‘olawe Island Reserve Commission projects; and water tank installation and fire control at Pu‘u Wa‘awa‘a. The DEA reported that if all these projects subsequently require EISs, the additional cost to prepare them could be between \$125,000 and \$375,000. However, the DEA also recognized that this estimate may overstate costs, because other aspects of these projects may compel the preparation of an EIS rather than an EA. Because the areas surrounding these five projects remain within the intended designation, the Addendum made no changes to the conclusions reported in the DEA.

7.u. Interplay with State Law: State and County Permit Decisions

Comment: Multiple commenters stated that the DEA fails to evaluate the practical effect critical habitat designation will have on development. One commenter speculated that Special Management Area permits administered by Maui County as required by Hawai‘i’s Coastal Zone Management Act will be harder to get, will result in delays, will cause a decline in property values and may make it impossible to develop. This economic impact disappears because the DEA’s bottom line erroneously counts only so-called “direct” costs of consultation.

Another commenter expressed concern that the Service may get involved in county permitting processes, stating:

“[r]egardless of whether there is a Federal nexus for a proposed action, State and local agencies can and will require consultations with the Service (whether formal

or informal) on actions that they approve in areas within or near critical habitat, and are likely to place restrictions on those actions as a result of such consultations. For example, a recent ‘informal’ consultation between the County of Maui and the Service pursuant to issuance of a County Special Management Area Permit for a proposed A & B project near BSM habitat in Kahului resulted in the incorporation of permit conditions requiring the planting of three native ‘aiea [*Nothocestrum latifolium*] trees for every tree tobacco plant removed from the project area. The proposed project would not have impacted any BSM critical habitat, nor would it have resulted in the ‘take’ of any BSM; mandatory compensatory measures therefore do not appear to have been warranted for this project under any provisions of the Endangered Species Act.”

Finally, another commenter stated the following: The Service has taken the position in other states that it has a right to intervene in local land use proceedings if they affect endangered species on private property. For example, the Service petitioned the local zoning board in Arizona to postpone approval of a rezoning petition pending a survey to determine the extent to which an endangered plant was present on the property even though no Federal approval was being sought. The failure of the Service to address this type of activity in the DEA is a fundamental error of the analysis.

Response: The DEA acknowledged that if a proposed project requires major State or county approvals and is within critical habitat, developers are likely to be required by State and county agencies to request comments from the Service on the project. If the Service indicates that the project would have a negative impact on the habitat of listed species, then State and county agencies probably would require project mitigation to address Service concerns. This would be expected even with no *Federal involvement*. The DEA concluded that the cost of the mitigation would depend upon the circumstances. Because there were no anticipated projects within the proposed critical habitat for the moth that would require major discretionary approvals by the State or county, there was no specific discussion in the DEA of what mitigation measures might be required by the State or county as a condition of receiving the discretionary approvals for projects within the critical habitat designation.

During public comment, a landowner in Unit 5A (Big Island) indicated that the Kaloko Properties development in critical habitat will require major discretionary approvals from the State and county, including Land Use District Boundary Amendment and a county zone change. Section 4.c. of the Addendum addresses the costs of potential State and county mitigation measures that could be associated with approvals for this project. For example, as a mitigation measure for this project, the State or county may require that the landowner use native vegetation that is beneficial to the moth in the residential and golf course construction. The cost of this mitigation measure is estimated at \$720,000 to \$750,000. In a worst-case scenario, if the State or county did not grant the discretionary approvals as a result of the moth critical habitat designation, the landowner may not be able to continue with the current plans for residential and golf course development. In this case, the total cost for the Kaloko Properties development would be \$4.2 million in previous expenditures and \$13 million to \$25 million in the potential loss of future profits. The specific likelihood of either occurrence is unknown, as it depends upon the actions of the State or county agency with permit approval under circumstances for which there is no prior history. In addition, the State or county may develop their own mitigation measures based on the particular circumstances before them when reviewing the permit. Based on the professional judgment of the team of consultants preparing this report, it is not deemed likely that discretionary approval for the Kaloko Properties project would

be denied solely on the basis of moth critical habitat designation. However, for illustrative purposes, costs associated with this worst-case scenario are reported.

7.v. Interplay with State Law: State Water Code

Comment: Multiple commenters stated that the DEA fails to consider economic impacts of critical habitat that result through interaction with State law, specifically the State Water Code. HRS 174C-2 states “adequate provision shall be made for protection of fish and wildlife.” HRS 174C-71 instructs the Commission of Water Resource Management to establish an instream use protection program to protect fish and wildlife. Multiple commenters were concerned that water resource development would be greatly restricted leading to many indirect costs. The proposed rule states that activities such as watershed alteration or water diversion may trigger section 7 consultations if there is Federal involvement. If the ability to divert or take water from these sources or systems is restricted or limited, the impact would be far reaching and affect all lands served by such water sources or systems. The Service has an obligation to thoroughly investigate this issue and refrain from designating critical habitat until it has determined whether its actions will affect water use and balance this against any benefit to the species. One commenter stated that opponents of water diversions may use critical habitat as a tool to delay, and effectively stop, many worthwhile water diversion projects.

Response: No costs are expected to occur from such impacts to water systems, because neither the moth nor the host plants on which it relies are stream-dependent for their survival and therefore would not cause a reduction in existing water diversions.

Future (i.e., currently unplanned) water diversion projects are most likely to be planned in mountainous areas with significant rainfall or existing water resources. In other words, they are most likely to occur in areas already in the Conservation District and thus, would be subject to discretionary approval by the State (BLNR). While development is already limited within the Conservation District, the designation of critical habitat would be relevant to BLNR’s determination of whether to grant a permit. More specifically, the designation of critical habitat could make it more likely that BLNR would find that a proposed land use would cause substantial adverse impact to existing natural resources within the surrounding area (Hawai‘i Administrative Rules § 13-5-30). Therefore, it is possible that critical habitat designation could result in additional environmental studies, project delays, project modifications, and potential project denials (as discussed generally in Chapter VI, Section 4.f. of the DEA). However, without more specific information on the scope and location of a future (and currently unplanned) water diversion project, it is not possible to meaningfully estimate the potential indirect costs associated with these events.

7.w. Interplay with State Law: Habitat Conservation Plans

Comment: A commenter stated the following: The DEA failed to consider the more restrictive Habitat Conservation Plan (HCP) guidelines under the Hawai‘i Endangered Species Law (HRS 195D-4, HRS 195D-21) which required that the State HCP permittee show a net benefit to the species. The DEA failed to analyze impacts due to the circumstance in which a landowner qualifies for a Federal HCP but is unable to obtain a State HCP.

Response: As discussed in Chapter III of the DEA, the Act allows the Service to permit *take* by private applicants that would otherwise be prohibited, provided such *taking* is “incidental to, and not [for] the purpose of, the carrying out of an otherwise lawful activity.” Section 10(a)(1)(B) of the Act allows non-Federal parties planning activities that have no *Federal involvement*, but which could result in the incidental *taking* of listed animals, to apply for an incidental *take* permit. The application must include a habitat conservation plan (HCP) laying out the proposed actions,

determining the effects of those actions on affected fish and wildlife species and their habitats (often including proposed or candidate species) and defining measures to minimize and mitigate adverse effects. The Service may elect to issue an incidental *take* permit if the incidental *take* is to be minimized by reasonable and prudent measures and implementing terms and conditions that are stipulated in the permit. The Hawai'i Endangered Species Law has a comparable incidental *take* provision that also requires the permittee to show a net benefit to the species to receive the permit.

The economic analysis considers the economic impacts of section 7 consultations related to critical habitat even if they are attributable co-extensively to the listed status of the species. In addition, the economic analysis examines any indirect costs of critical habitat designation, such as where critical habitat triggers the applicability of a State or local statute. However, where it is the listing of a species that prompts action at the State or local level (e.g., further regulating the *take* of federally listed species), the impacts are not attributable to critical habitat designation and are not appropriately considered in the economic analysis of critical habitat designation. *Take* prohibitions under Hawai'i law are tied to the Federal listing of the species and do not co-extensively occur because of critical habitat designation. Thus, the circumstance in which a landowner qualifies for a Federal HCP but is unable to obtain a State HCP is outside the scope of the economic analysis and was not addressed by it.

Table Add-2. Revised Section 7 Costs and Benefits Attributable to the Moth Listing and Critical Habitat

(10-year estimates)

CH = critical habitat

PMs = project modifications

O&M = operation and maintenance

Fed = Federal

ne = not estimated

Item	DEA		Addendum		Explanation
	Total		Total		
	Low	High	Low	High	
DIRECT SECTION 7 COSTS					
Management of Game Hunting					
State-Managed Lands, Consultations	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	No change
State-Managed Lands, PMs	None	None	None	None	
Residential Development					
Kula Residence Lots, Consultation	\$ -	\$ 44,500	\$ -	\$ -	Area to be removed due to lack of primary constituent elements
Kula Residence Lots, PMs	Minor	Minor	\$ -	\$ -	
Kahikinui Kuleana Homesteads, Consultation	\$ -	\$ 51,100	\$ -	\$ -	Area to be removed due to lack of primary constituent elements
Kahikinui Kuleana Homesteads, PMs	Minor	Minor	\$ -	\$ -	
Villages at La'opua	None	None	\$ -	\$ -	Addendum addresses State comment regarding possible economic impact, but concludes no reasonably foreseeable Fed involvement.
Other Residential Development, Urban District	None	None	None	None	No change, but Addendum considers new information
Other Residential Development, Agricultural District	None	None	None	None	No change, but Addendum considers new information
Industrial and Commercial Development					
Kaloko Industrial Park	None	None	None	None	No change, but Addendum considers new information
Farming and Ranching Operations					
Farm Service Loans, Consultations	\$ -	\$ 9,100	\$ -	\$ 9,100	No change, but Addendum considers new information
Farm Service Loans, PMs	Minor	Minor	Minor	Minor	
Conservation Projects					
Conservation Projects Funded by the Service, Consultations	\$ 8,000	\$ 24,000	\$ 8,000	\$ 24,000	No change
Conservation Projects Funded by the Service, PMs	Minor	Minor	Minor	Minor	
USDA Conservation Programs, Consultations	\$ -	\$ 76,000	\$ -	\$ 76,000	No change
USDA Conservation Programs, PMs	Minor	Minor	Minor	Minor	
Other Conservation Programs, Kahikinui, Consultations	\$ 3,800	\$ 11,400	\$ 3,800	\$ 11,400	No change
Other Conservation Programs, Kahikinui, PMs	Minor	Minor	Minor	Minor	
Other Conservation Programs, EMWP, Consultations	\$ 3,800	\$ 3,800	\$ 3,800	\$ 3,800	No change
Other Conservation Programs, EMWP, PMs	Minor	Minor	Minor	Minor	
Other Conservation Projects, Consultations	\$ 3,800	\$ 34,500	\$ 3,800	\$ 34,500	No change
Other Conservation Projects, PMs	Minor	Minor	Minor	Minor	
Kaho'olawe					
Kaho'olawe, Consultations	\$ 10,400	\$ 78,500	\$ 10,400	\$ 78,500	No change, but Addendum considers impact of intended reduction in area designated
Kaho'olawe, PMs	Minor	Minor	Minor	Minor	
Military Activities					
Hawai'i Army National Guard, Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
Hawai'i Army National Guard, PMs	Minor	Minor	Minor	Minor	
Kahului Airport	None	None	None	None	No change, but Addendum considers new information

Table Add-2. Revised Section 7 Costs and Benefits Attributable to the Moth Listing and Critical Habitat

(10-year Estimates)

CH = critical habitat PMs = project modifications O&M = operation and maintenance Fed = Federal ne = not estimated

Item	DEA		Addendum		Explanation
	Total		Total		
	Low	High	Low	High	
DIRECT SECTION 7 COSTS (continued)					
Roads					
Existing Roads	None	None	None	None	No change
New Roads, Consultations	\$ 32,600	\$ 32,600	\$ 32,600	\$ 32,600	No change, but Addendum considers new information
New Roads, PMs	\$ 985,000	\$ 1,230,000	\$ 985,000	\$ 1,230,000	
Water Systems					
Water Systems, Big Island, Consultations	\$ 20,600	\$ 30,600	\$ 20,600	\$ 30,600	No change
Water Systems, Big Island, PMs	\$ -	\$ 6,200	\$ -	\$ 6,200	
Water Systems, Maui, Consultations	\$ -	\$ 30,600	\$ -	\$ 30,600	No change
Water Systems, Maui, PMs	Minor	Minor	Minor	Minor	
Water Systems, Moloka'i	None	None	None	None	No change
Fire Management					
Consultations	\$ 50,200	\$ 50,200	\$ 50,200	\$ 50,200	No change
PMs	Minor	Minor	Minor	Minor	
Communications Facilities					
New Facilities, Consultations	\$ 36,400	\$ 72,800	\$ 9,100	\$ 18,200	Estimate reduced to reflect intended reduction in acreage due to lack of primary constituent elements
New Facilities, PMs	\$ -	\$ 33,600	\$ -	\$ 8,400	
Golf Courses					
Existing Golf Courses	None	None	None	None	No change
Planned Golf Courses, Consultations	\$ 9,700	\$ 9,700	\$ 9,700	\$ 9,700	No change, but Addendum considers new information
Planned Golf Courses, PMs	None	None	None	None	
State Trail and Access System					
Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
PMs	None	None	None	None	
Parks					
National Parks	None	None	None	None	No change
State Parks, Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
State Parks, PMs	Minor	Minor	Minor	Minor	
County Parks	None	None	None	None	No change
Community Economic Development					
Moloka'i Enterprise Community	None	None	None	None	No change
Kahikinui, Consultations	\$ 15,700	\$ 47,100	\$ 15,700	\$ 47,100	No change
Kahikinui, PMs	Minor	Minor	Minor	Minor	
Natural Disasters					
FEMA Recovery Projects, Consultations	\$ 4,000	\$ 7,500	\$ 4,000	\$ 7,500	No change
FEMA Recovery Projects, PMs	Minor	Minor	Minor	Minor	
USDA Disaster Assistance, Consultations	\$ 4,000	\$ 7,500	\$ 4,000	\$ 7,500	No change
USDA Disaster Assistance, PMs	Minor	Minor	Minor	Minor	
Ecotourism					
	None	None	None	None	No change
TOTAL DIRECT COSTS					
Direct	\$ 1,211,100	\$ 1,914,400	\$ 1,183,800	\$ 1,739,000	Totals may understate economic impact because the cost of "minor" project modifications are not included
Discounted Present Value	\$ 850,626	\$ 1,344,594	\$ 831,452	\$ 1,221,401	Present value and annualized calculations are based on the OMB prescribed seven percent discount rate and the assumption that total costs are distributed evenly over the entire period of analysis.
Annualized	\$ 121,110	\$ 191,440	\$ 118,380	\$ 173,900	

Table Add-2. Revised Section 7 Costs and Benefits Attributable to the Moth Listing and Critical Habitat

(10-year Estimates)

CH = critical habitat PMs = project modifications O&M = operation and maintenance Fed = Federal ne = not estimated

Item	DEA Estimate	Addendum Estimate and Explanation of Changes from DEA
INDIRECT COSTS		
Management of Game Mammals and Loss of Hunting Lands	Low probability of State-initiated change in game management policy, undetermined probability of successful third-party lawsuit to change game management policy	No change
Conservation Management	Low to moderate probability of court-mandated conservation management, but costs likely to be attributable to section 9 rather than CH.	Court-mandated conservation management not reasonably foreseeable.
Subsistence and Native Hawaiian Traditional and Cultural Practices	Slight probability of a moderate impact	No change
Redistricting of Land by the State	Small probability of redistricting of entire area; higher yet undetermined probability of redistricting of individual parcels	Same probability, but impact reduced based on intended unit modifications
State and County Development Approvals	Incremental cost to prepare an EIS rather than an EA for five projects; current information insufficient to determine whether factors beside CH would require preparation of EIS	Revised to reflect new information regarding potential project requiring major discretionary approvals
Reduced Property Values	Possibility of loss of property value due to uncertainty about long-term impacts of CH. Current information insufficient to determine amount of loss	Overall potential decrease in value smaller due to intended unit modifications
Condemnation of Property	No condemnation resulting from CH. Also, the Service acquires land by negotiation, not condemnation	No change
Investigate Implications of CH	75 private landowners may investigate the implications of CH on their lands; cost may range from \$200,000 to \$713,000	Revised to reflect reduction in number of affected landowners based on intended unit modifications
Reduced Cooperation on Conservation Projects	Moderate probability of reduced participation in conservation projects to avoid Federal nexus	No change

Table Add-2. Revised Section 7 Costs and Benefits Attributable to the Moth Listing and Critical Habitat

(10-year Estimates)

CH = critical habitat PMS = project modifications O&M = operation and maintenance Fed = Federal ne = not estimated

Item	DEA Estimate	Addendum Estimate and Explanation of Changes from DEA
DIRECT SECTION 7 BENEFITS		
Regional Economic Activity Generated by Conservation Management	Potential for increase, but may or may not reflect an increase in regional economy, depending on source of funding.	Court-mandated conservation management not reasonably foreseeable.
Regional Economic Activity Associated with Ecotourism	The Service prefers that guides do not feature visits to threatened & endangered plants.	No change
Regional Economic Activity Associated with Avoided Cost to Developers	Helps developers site projects.	No change
Regional Economic Activity Associated with Medical/Pharmaceutical Benefits	No way to determine statistical probability of economic value of future ethnobotanical use of host plants, or contribution of CH to conservation of host plants	No change
Social Welfare Benefits of Habitat Designation	The designation may result in the preservation of open lands	No change
INDIRECT BENEFITS		
Social Welfare Benefits of Endangered Species Preservation	Difficult to estimate preservation benefits and their value	No change
Social Welfare Benefits of Broader Ecological Improvements	Difficult to determine environmental improvements attributable to the implementation of section 7	No change
<p>* Although the analysis does provide general estimates of some of the potential indirect costs shown below, not all of the estimates are summarized in this table. Because some of these indirect costs are highly speculative, this table instead reports qualitatively on their likelihood and magnitude. For additional information on any of these indirect impacts, the reader should refer to the economic cost and benefit chapter of the analysis. Only those costs deemed more likely to occur are included in this summary table in order to present the most probable overall impact of critical habitat designation.</p>		

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Information was provided in communications with representatives of:

- U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office
- U.S. Department of Housing and Urban Development
- U.S. Department of Agriculture, Rural Housing Service
- State of Hawai‘i, Department of Business, Economic Development & Tourism, Housing and Community Development Corporation of Hawai‘i
- No Ka Oi Plants
- Akamai Gardens