KAUA‘I LAGOONS HABITAT CONSERVATION PLAN

Kaua‘i Lagoons LLC
3351 Hoolaulea Way
Līhu‘e, Hawai‘i 96766

February 2012

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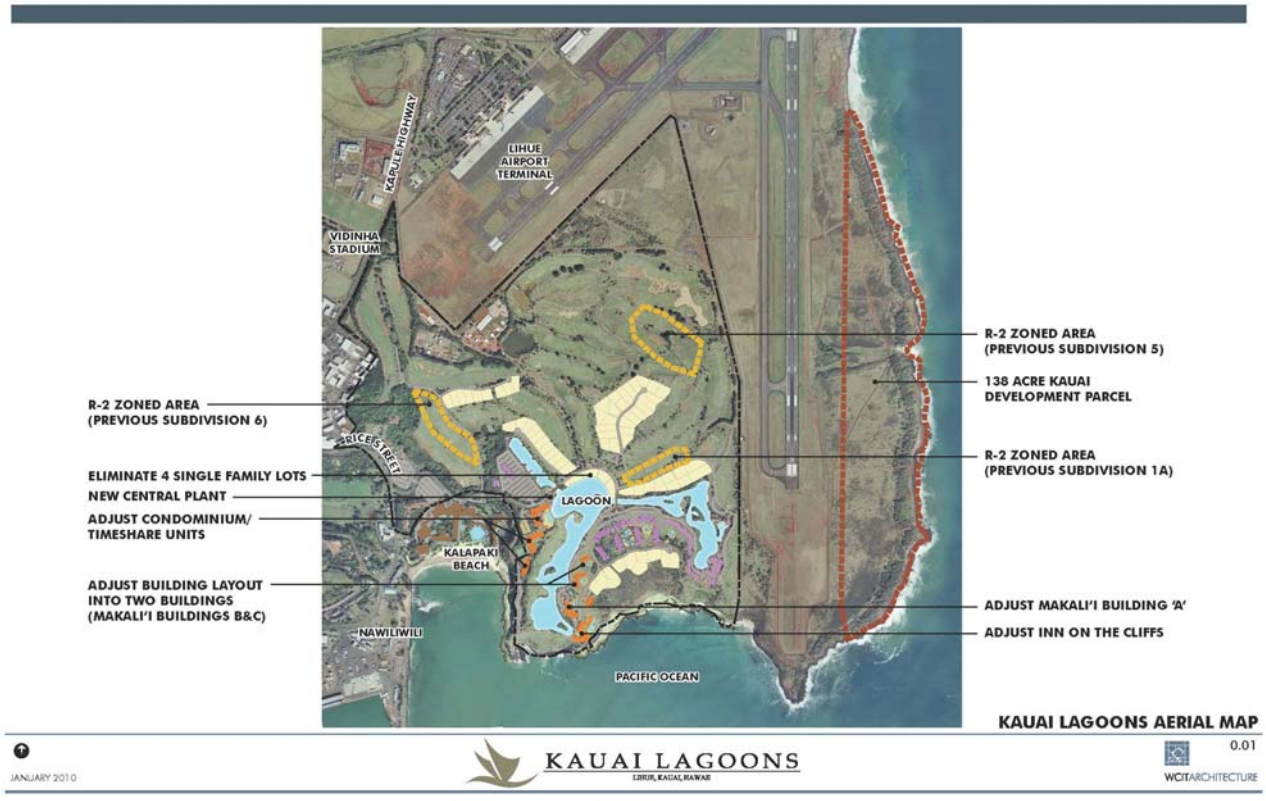
1. Introduction and Background

1.1 Overview

The Kauaʻi Lagoons Resort (Resort) in Līhuʻe, Kauaʻi was established in the 1980's, and is unique among Hawaiʻi's resort destinations. The oceanfront resort property encompasses approximately 600 acres, and was originally developed with two 18-hole championship golf courses, a golf and racquet club facility, a network of man-made navigable lagoons, a restaurant, commercial development, and associated parking areas. The Resort is adjacent to Marriott's Kauaʻi Resort and Beach Club.

Kauaʻi Lagoons LLC ("KL" or "Applicant") is conducting additional development at the Resort. This development will consist of several projects comprising a total of 772 resort residential units (consisting of 707 condominium/time share and multi-family units and 65 single-family residential lots) and support facilities including a new golf clubhouse, a 27-hole golf course complex, a central operations building with a marketplace/cafe, administrative office facilities, a commercial area, a marketplace express/grill kitchen, a fitness center, a restaurant, public recreational facilities, and parking. Some of this development will replace structures and facilities damaged by Hurricane Iniki in September 1992, and some will replace portions of the original golf courses.

The location of the Resort, and the major elements of the Resort expansion project, are depicted below:



Despite their artificial nature, the lagoons and golf courses have been colonized by several endangered bird species including the Hawaiian Goose or Nēnē (*Branta sandvicensis*) (hereafter referred to as Nēnē), the Hawaiian endemic sub-species of the Black-necked Stilt (*Himantopus mexicanus knudseni*) (hereafter referred to as Hawaiian Stilt), Hawaiian Coot (*Fulica alai*), the Hawaiian endemic sub-species of the Common Moorhen (*Gallinula chloropus sandvicensis*) (hereafter referred to as Hawaiian Moorhen), and the Hawaiian Duck (*Anas wyvilliana*). Currently the Resort supports one of the largest breeding populations of Nēnē in the state, as well as populations of Hawaiian Moorhen and Hawaiian Duck, and large numbers of predominantly non-breeding Hawaiian Coots on a seasonal basis. The property also supports a small breeding population of Hawaiian Stilt.

The resident breeding Nēnē population has been so succesful that each year beginning with the 2005-06 nesting season the State of Hawai‘i, Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has translocated Nēnē eggs and goslings, as well as paired adults and their goslings, from the Resort to other properties on Kaua‘i and other islands. The motivations for these translocation efforts have been twofold: to assist in the recovery of the species by establishing additional populations, and to control the Nēnē population at the Resort in order to minimize the potential hazard these birds pose to arriving and departing aircraft at the immediately adjacent Līhu‘e Airport.

Given the presence of these endangered species (and the potential presence of other listed species), and the potential for both construction and ongoing Resort operations to adversely affect these species, KL has prepared this Habitat Conservation Plan (HCP) in support of its application to the U.S. Fish and Wildlife Service (USFWS) for an Incidental Take Permit (ITP) under the federal Endangered Species Act (ESA), and its application to the Department of Land and Natural Resources (DLNR)/Division of Forestry and Wildlife for an Incidental Take License (ITL) under Chapter 195D of the Hawai‘i Revised Statutes.

The USFWS and DOFAW have not been requested to, and do not have the authority to, approve the Resort construction and operations activities described above. Rather, KL is requesting that the USFWS and DOFAW approve this HCP, and authorize the requested incidental take of listed species.

1.2 Background

KL began consulting with the USFWS and DOFAW about endangered species issues at the Resort in the fall of 2007. At that time KL, its consultants, and the agencies identified specific impact avoidance efforts, which KL then implemented during the 2007-08 Nēnē nesting season. These measures included erecting wooden exclusion fencing around two construction sites, improving nesting habitat away from construction areas, providing endangered species awareness training to all personnel that work on the property (from construction managers and supervisors, to crews that maintain the landscaping and the golf course), as well as performing extensive monitoring.

In mid-2008, KL and the agencies met to review the results of the 2007-08 nesting season, and to develop an enhanced suite of impact avoidance measures for the following season. These

measures included providing endangered species awareness training to each of the many hundreds of employees and contractors working at the Resort, employing construction and biological monitors, imposing a speed limit and posting warning signs throughout the property, enhancing nesting areas, conducting predator trapping, establishing centralized contractor parking areas and employee shuttles, and providing secure trash and recycling containers at construction sites. KL implemented all of these measures, which were memorialized in a Memorandum of Agreement (MOA) between the USFWS and KL, and in a Biological Opinion issued by the USFWS, in January 2009.

In October 2008, KL convened a meeting of the USFWS, DOFAW and key officials associated with the Līhuʻe Airport [Hawaiʻi Department of Transportation, Airports Division – which operates the Airport (HDOT); Federal Aviation Administration (FAA); U.S. Department of Agriculture, Wildlife Services (USDA-WS), which HDOT pays to perform wildlife management services at the Līhuʻe airport such as hazing Nēnē away from the airfield]. The purpose of the meeting was to discuss long-standing and continuing concerns about potential hazards to aircraft safety posed by the large Nēnē population present at the Resort.[1] The airport is located immediately adjacent to the Resort.

Throughout the last quarter of 2008 and the first half of 2009, KL engaged in ongoing dialogue with the USFWS and DOFAW regarding all of these species issues at the Resort, and how they should be addressed both in the short-term, and also in the longer term through this HCP.

In late June 2009 KL met with USDA-Wildlife Services to get an update on airport efforts to address bird hazards at Līhuʻe Airport. In October 2009, KL and all involved agencies (USFWS, DOFAW, HDOT, FAA, USDA-Wildlife Services) met again to discuss aircraft safety issues, and the best means of coordinating KL's HCP with the airport's separate, FAA-required process for reducing bird strike hazards. At the conclusion of that meeting, KL and the wildlife agencies agreed that KL should develop an HCP that would address KL resort construction and operation impacts, and that would also acknowledge the airport issues and commit to KL cooperation with the airport agencies in their separate efforts pursuant to FAA regulations (discussed below) to develop and implement a Wildlife Hazard Management Plan to address aircraft safety issues.

In January 2010 KL presented a revised HCP draft to DOFAW and the USFWS. On February 18, 2010 the state's Endangered Species Recovery Committee (ESRC) considered that HCP draft and formally recommended that the Board of Land and Natural Resources (BLNR) release it for public review and comment once KL incorporated certain changes. In April 2010 KL provided to DOFAW and USFWS a further revised HCP incorporating the changes requested by the ESRC. In May and August 2010, KL received additional comments from DOFAW and USFWS regarding the April draft.

[1] See, e.g., Wildlife Hazard Assessment, Lihue Airport LIH (2005) (prepared for Hawaii Department of Transportation (HDOT), Airports Division, by U.S. Department of Agriculture - Wildlife Services); Hawaiian Goose (Nēnē) Wildlife Hazard Assessment, Lihue Airport LIH (July 22, 2009) (USDA-WS) (number of Nēnē dispersed at LIH has been steadily increasing since 2004; in 2008 USDA-WS observed 2,791 individual Nēnē at LIH, including 230 runway crossings involving 972 individual Nēnē.).

On August 19, 2010 the FAA convened a meeting attended by the airport agencies, DOFAW, USFWS and KL to again discuss aircraft safety issues. A follow-up meeting occurred on August 30, 2010. Again KL, DOFAW and USFWS pledged their cooperation with the expected effort of HDOT to develop and implement a Wildlife Hazard Management Plan.

On November 12, 2010 the BLNR approved releasing the Draft HCP for public review. DOFAW accepted public comments from December 8, 2010 until February 8, 2011, and held a public hearing in Līhuʻe on February 2, 2011.

On April 14, 2011, Hawaiʻi Governor Neil Abercrombie issued a Proclamation declaring that the Nēnē population at the Resort constitutes a threat to public safety because of the proximity of the Līhuʻe Airport, directing DLNR to immediately undertake to translocate the Nēnē from the Resort, and suspending 26 state statutes in order to expedite such translocation. As described further in Section 3.9.1, below, pursuant to the Proclamation DLNR began translocating Nēnē from the Resort to off-island locations in April, August and October 2011.

On July 12, 2011 the USFWS published a Notice in the Federal Register, announcing the availability of the Draft HCP and associated Environmental Assessment for a 45-day public review and comment period. The public comment period closed on August 26, 2011.

1.3 Species Covered by the HCP and Incidental Take Permit/License

This Habitat Conservation Plan, and the incidental take authorizations which it supports, covers the following eight (8) bird species, all of which are listed as threatened or endangered under the ESA and/or Chapter 195D:

- Nēnē (*Branta sandvicensis*)
- Hawaiian Stilt (*Himantopus mexicanus knudseni*)
- Hawaiian Coot (*Fulica alai*)
- Hawaiian Moorhen (*Gallinula chloropus sandvicensis*)[2]
- Hawaiian Duck (*Anas wyvilliana*)
- Hawaiian Petrel (*Pterodroma sandwichensis*)
- Newell's Shearwater (*Puffinus auricularis newelli*)
- Band-rumped Storm-Petrel (*Oceanodroma castro*)[3]

1.4 Permit Duration

This Habitat Conservation Plan covers both short-term construction and long-term Resort and golf course operations. As a result, Kauaʻi Lagoons seeks a 30-year ITP and ITL.

[2] The common and scientific names of this species were recently changed by the American Ornithological Union from Common Gallinule (Gallinula chloropus) to Common Gallinule (*Gallinula galeata sandvicensis*; Cheeser et al. 2011, Pg. 603). To remain consistent with its designation under the ESA and to avoid confusion, this HCP will still refer to this species as the Hawaiian Moorhen.

[3] The first seven species listed above are listed as either threatened or endangered under the ESA, and thus are also automatically protected under Chapter 195D. The Band-rumped Storm-Petrel is not presently listed under the ESA, but instead is a Candidate for listing; nevertheless, the State of Hawaii has independently listed this species as endangered under Chapter 195D.

1.5 Regulatory Framework

1.5.1 Federal Endangered Species Act (ESA)

The ESA and its implementing regulations prohibit the "take" of any fish or wildlife species that is federally listed as threatened or endangered, without prior approval pursuant to either Section 7 (16 USC 1536) or Section 10 (16 USC 1539). Section 9 defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct." (16 USC 1532(19)) The term "harm" in the definition of take means "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." The term "harass" in the definition of take means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." (50 CFR 17.3)

The USFWS may, under certain terms and conditions, authorize take otherwise prohibited by Section 9 if such taking is incidental to, and not the purpose of, an otherwise lawful activity. It may do this by issuing an Incidental Take Permit to an applicant that has prepared and submitted a Habitat Conservation Plan HCP, which specifies the following:

- The impact that will likely result from such taking;
- The steps the applicant will undertake to monitor, minimize and mitigate such impacts, the funding that will be available to implement such steps, and the procedures to be used to deal with unforeseen circumstances;
- The alternative actions to such taking the applicant considered and the reasons why such alternatives are not proposed to be utilized; and
- Such other measures that the Director of the USFWS may require as necessary or appropriate for purposes of the plan.

The *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, published by the USFWS and the National Marine Fisheries Service (NMFS) in November 1996, provides additional policy guidance concerning the preparation and content of HCP's. The USFWS and NMFS published an addendum to the *HCP Handbook* on June 1, 2000 (65 FR 35242). This addendum, also known as the Five-Point Policy guidance, requires that HCPs address the following:

- *Biological Goals and Objectives*: HCPs must include biological goals (broad guiding principles for the conservation program – the rationale behind the minimization and mitigation strategies), and biological objectives (the measurable targets for achieving the biological goals). These goals and objectives must be based on the best scientific information available and are used to guide conservation strategies for species covered by the plan.
- *Adaptive Management*: The Five-Point Policy encourages the development of adaptive management plans as part of the HCP process under certain circumstances. Adaptive management is an integrated method for addressing biological uncertainty and devising

alternative strategies for meeting biological goals and objectives. An adaptive management strategy is essential for HCPs that would otherwise pose a significant risk to the covered species due to significant information gaps.

- *Monitoring*: Monitoring is a mandatory element of all HCPs under the Five-Point Policy. As such, an HCP must provide for monitoring programs to gauge the effectiveness of the plan in meeting the biological goals and objectives, and to verify that the terms and conditions of the plan are being properly implemented.
- *Permit Duration*: Under existing regulations, several factors are used to determine the duration of an incidental take permit, including the duration of the applicant's proposed activities and the expected positive and negative effects on covered species associated with the proposed duration. Under the Five-Point Policy, the USFWS will also consider the level of scientific and commercial data underlying the proposed operating conservation program, the length of time necessary to implement and achieve the benefits of the operating conservation program, and the extent to which the program incorporates adaptive management strategies.
- *Public Participation*: Under the Five-Point Policy guidance, the USFWS announced its intent to expand public participation in the HCP process to provide greater opportunity for the public to assess, review, and analyze HCPs and associated documentation (e.g., National Environmental Policy Act review). As part of this effort, the USFWS has expanded the public review process for most HCPs from a 30-day comment period to a 60-day period.

The USFWS will approve the HCP, and issue the requested Incidental Take Permit, if it finds the following:

- The taking will be incidental to otherwise lawful activities;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings;
- The applicant will ensure that adequate funding for the plan and procedures to deal with unforeseen circumstances will be provided;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- Such other measures that the USFWS requires, as being necessary or appropriate for purposes of the plan will be met.

1.5.2 Hawai‘i Revised Statutes: Chapter 195D

Chapter 195D, Hawai‘i Revised Statutes, is the Hawai‘i equivalent of the ESA. Chapter 195D formally declares that it is the State’s policy to take positive actions to enhance the prospects of survival of Hawai‘i’s indigenous aquatic life, wildlife, plants and their habitats. Section 195D-3 expressly prohibits, except as permitted by rules, any person to take, possess, transport, transplant, export, process, sell, offer for sale, or ship any species that DLNR has determined to be in need of conservation. (See also §195D-4(e)). Similar to the ESA, the term “take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collected endangered or threatened species of aquatic life or wildlife, or to cut, collect, uproot, destroy,

injure, or possess endangered or threatened species of aquatic life or land plants, or to attempt to engage in any such conduct."

Under §195D-4, any species listed as endangered or threatened pursuant to the ESA is automatically deemed to be an endangered or threatened species under Chapter 195D. Section 195D-4 also authorizes DLNR to declare any other indigenous species of aquatic life, wildlife, or land plant to be an endangered species or a threatened species.

§195D-4(i) directs DLNR to work cooperatively with Federal agencies in concurrently processing habitat conservation plans and incidental take licenses pursuant to the federal ESA. §195D-21 deals specifically with habitat conservation plans, and is similar to the equivalent provisions in the ESA and associated federal regulations. HCPs submitted in support of an ITL application must:

- Identify the geographic area encompassed by the plan; the ecosystems, natural communities, or habitat types within the plan area that are the focus of the plan; and the endangered, threatened, proposed, and candidate species known or reasonably expected to be present in those ecosystems, natural communities, or habitat types in the plan area;
- Describe the activities contemplated to be undertaken within the plan area with sufficient detail to allow DLNR to evaluate the impact of the activities on the particular ecosystems, natural communities, or habitat types within the plan area that are the focus of the plan;
- Identify the steps that will be taken to minimize and mitigate all negative impacts, including without limitation the impact of any authorized incidental take, with consideration of the full range of the species on the island so that cumulative impacts associated with the take can be adequately assessed; and the funding that will be available to implement those steps;
- Identify the measures or actions to be undertaken; a schedule for implementation of the measures or actions; and an adequate funding source to ensure that the actions or measures are undertaken in accordance with the schedule;
- Be consistent with the goals and objectives of any approved recovery plan for any endangered species or threatened species known or reasonably expected to occur in the ecosystems, natural communities, or habitat types in the plan area;
- Provide reasonable certainty that the ecosystems, natural communities, or habitat types will be maintained in the plan area, throughout the life of the plan;
- Contain objective, measurable goals; time frames within which the goals are to be achieved; provisions for monitoring; and provisions for evaluating progress in achieving the goals quantitatively and qualitatively; and
- Provide for an adaptive management strategy that specifies the actions to be taken periodically if the plan is not achieving its goals.

Under Section 195D-30, all HCPs and associated incidental take licenses, and subsequent actions authorized under them, must be designed to result in an overall net gain in the recovery of the listed species.

Section 195D-25 provides for the creation of an Endangered Species Recovery Committee (ESRC) composed of biological experts, representatives of relevant Federal and State agencies,

and appropriate governmental and non-governmental members, to serve as a consultant to DLNR and the Board of Land and Natural Resources (BLNR). The ESRC's duties include reviewing all HCPs, safe harbor agreements, and applications for incidental take licenses, and making recommendations to DLNR and the BLNR on whether they should be approved, amended or rejected; reviewing all existing HCPs, safe harbor agreements and incidental take licenses annually to ensure compliance, and making recommendations for any necessary changes; and considering and recommending appropriate incentives to encourage landowners to voluntarily engage in efforts that restore and conserve endangered, threatened, proposed, and candidate species. Hence, the ESRC plays a significant role in the HCP planning process.

Under §195D-4(g) the BLNR, after consultation with the ESRC, may issue an ITL as part of a habitat conservation plan to allow a take otherwise prohibited if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity, provided that:

- The applicant minimizes and mitigates the impacts of the take to the maximum extent practicable;
- The applicant guarantees that adequate funding for the plan will be provided;
- The applicant posts a bond, provides an irrevocable letter of credit, insurance, or surety bond, or provides other similar financial tools, including depositing a sum of money in the endangered species trust fund created by §195D-31, or provides other means approved by BLNR, adequate to ensure monitoring of the species by the State and to ensure that the applicant takes all actions necessary to minimize and mitigate the impacts of the take;
- The plan increases the likelihood that the species will survive and recover;
- The plan takes into consideration the full range of the species on the island so that cumulative impacts associated with the take can be adequately assessed;
- The activity permitted and facilitated by the license to take a species does not involve the use of submerged lands, mining, or blasting;
- The cumulative impact of the activity, which is permitted and facilitated by the license, provides net environmental benefits; and
- The take is not likely to cause the loss of genetic representation of an affected population of any endangered, threatened, proposed, or candidate plant species.

1.5.3 National Environmental Policy Act (NEPA)

Congress enacted the National Environmental Policy Act (NEPA) in 1969 to ensure that Federal agencies consider the environmental impacts of their actions and decisions. NEPA requires the Federal government to use all practicable means and measures to protect environmental values and makes environmental protection a part of the mandate of every Federal agency and department. NEPA requires analysis of the potential environmental impacts of any proposed Federal action that significantly affects the quality of the human environment, and public disclosure of that analysis. Issuance of an incidental take permit by the USFWS is a Federal action subject to NEPA compliance. Before deciding whether to approve a proposed HCP and issue an incidental take permit, the USFWS will prepare and distribute an Environmental Assessment (EA) or Environmental Impact Statement (EIS) that addresses the direct, indirect,

and cumulative effects of the incidental take authorized by permit issuance, and the direct, indirect, and cumulative effects associated with the implementation of mitigation and minimization measures described in the HCP.

1.5.4 Hawai‘i Revised Statutes: Chapter 343

HRS Chapter 343 requires state and county agencies to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) prior to issuing an approval for or implementing certain types of actions. DLNR, in consultation with the Department of the Attorney General, has determined that HRS Chapter 343 does not require BLNR or DLNR to prepare an EA or EIS in connection with approving this HCP or issuing the requested ITL.

1.5.5 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC 703-712), prohibits the taking, killing or possessing of migratory birds. A list of birds protected under MBTA implementing regulations is provided at 50 CFR 10.13. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, kill, possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product. In addition, USFWS regulations require a permit for the banding or marking of migratory birds protected under the MBTA.

The MBTA provides no process for authorizing incidental take of MBTA protected birds. Several of the bird species covered by this HCP are also protected by the MBTA. If this HCP is approved and the USFWS issues an ITP to Kaua‘i Lagoons, the terms and conditions of that ITP will also constitute an MBTA Special Purpose Permit (see 50 CFR 21.27) for the take of any covered bird species that are listed under both the ESA and the MBTA.

1.5.6 Federal Aviation Administration Regulations – Wildlife Hazards

Pursuant to the Federal Aviation Act of 1958, the Federal Aviation Administration (FAA) issues Airport Operating Certificates to airports serving certain air carriers. The FAA is responsible for establishing minimum safety standards, and airport operators must meet those standards in order to obtain, and maintain, their Airport Operating Certificate.

The FAA safety standard regulations specifically address the management of wildlife hazards. These regulations require airport operators to take immediate action to alleviate wildlife hazards whenever they are detected. 14 C.F.R. 139.337(a). To implement this requirement, airport operators are required to prepare a Wildlife Hazard Assessment (WHA) when a “triggering event” occurs, such as a wildlife-aircraft strike, or the observance of wildlife of a size or in numbers that are capable of causing wildlife-aircraft strikes. The Wildlife Hazard Assessment must be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airports.[4] The airport operator must then

[4] The federal Animal Damage Control Act (7 U.S.C. 426-426c) charges the Secretary of Agriculture with management of wildlife injurious to human health and safety. The U.S. Department of Agriculture’s Wildlife Services unit is responsible for dealing with wildlife damage management issues. Pursuant to a Memorandum of Agreement, the FAA utilizes USDA-Wildlife Services in efforts to resolve wildlife hazards to aviation. FAA Certalert No. 04-09 (August 30, 2004) (“Relationship Between

submit the WHA to the FAA for approval. The FAA then determines based on a series of criteria whether a Wildlife Hazard Management Plan (WHMP) must be prepared. If the FAA determines that a WHMP is needed, the airport operator is required to then prepare and implement a WHMP which meets certain specific criteria.

The FAA issues Advisory Circulars containing methods and procedures for wildlife hazard management at airports that are acceptable to the FAA. Advisory Circular 150/5200-33B (August 28, 2007) provides official FAA guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. Specifically, the FAA recommends a distance of five miles between the farthest edge of an airport's Aircraft Operations Area and a hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

As noted in Section 1.2 above, the state and federal agencies responsible for addressing potential bird hazard issues at the Līhu'e Airport (HDOT, FAA and USDA-WS) will address those issues through the process required by the FAA's Part 139 airport certification regulations. KL has pledged it cooperation with such effort, which is discussed in more detail in Section 3.10, below.

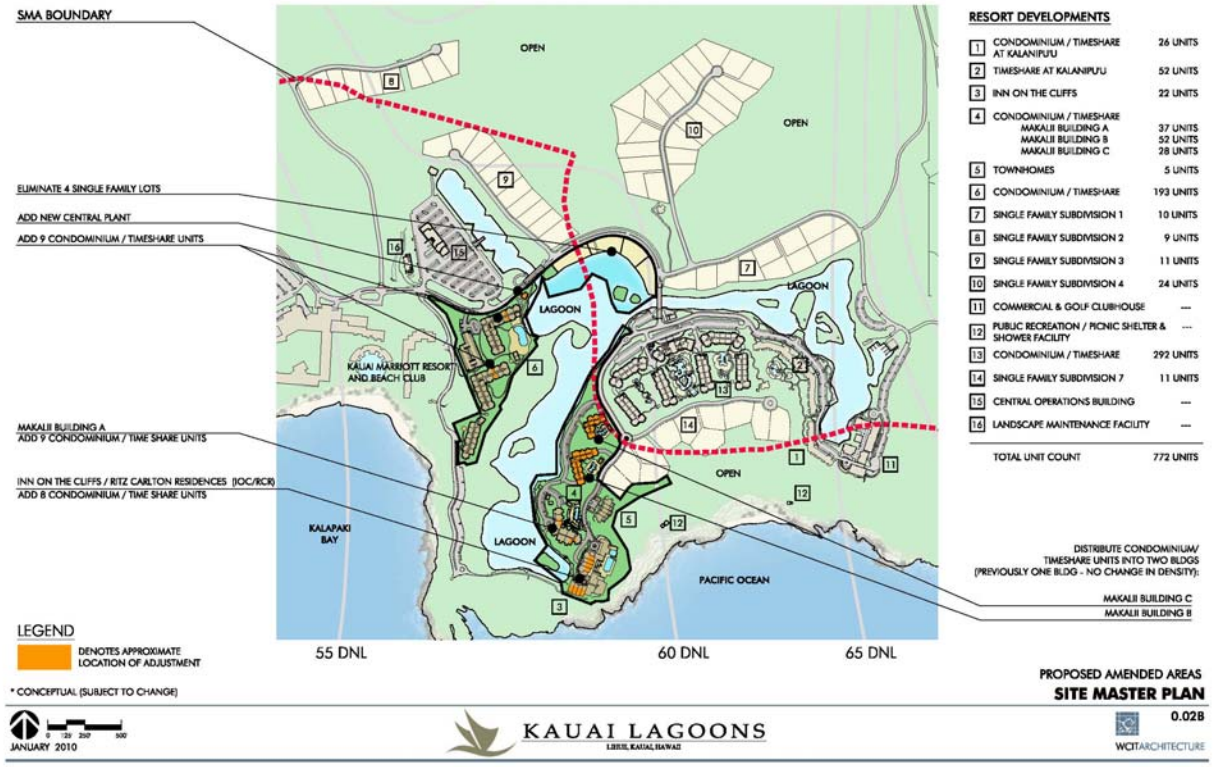
FAA and WS"). As a result, USDA-Wildlife Services regularly prepares Wildlife Hazard Assessments and Wildlife Hazard Management Plans, and implements wildlife hazard management efforts, at public airports, including Līhu'e Airport.

2.0 Project Description

2.1 Project Description – New Construction and Resort Operations

2.1.1 New Construction

Kaua‘i Lagoons LLC is developing additional facilities at the Kaua‘i Lagoons Resort based on its revised resort master plan, and pursuant to the Special Management Area Use Permit, Project Development Use Permit, Class IV Zoning Permit, subsequent Amendments, and other approvals received from the County of Kaua‘i beginning in 2005. The current Master Plan is set forth below:



These projects will result in a total of 772 resort residential units (consisting of 707 condominium/time share and multi-family units and 65 single-family residential lots), and support facilities including a new golf clubhouse, a 27-hole golf course complex, a central operations building with a marketplace/cafe, administrative office facilities, a commercial area, a marketplace express/grill kitchen, a fitness center, a restaurant, public recreational facilities, and parking.

Grading and earth moving associated with the complete development project will result in the disturbance of approximately 230 acres of land. Project grading and construction will occur in phases. As of late-2011, approximately 60% of total project grading and infrastructure construction had been completed. The remainder of project grading and construction is expected

to continue through at least 2019. The timing of each construction phase, and specific details of building and facility amounts, sizes and locations, may change over time subject to market conditions (and subject to any required permit modifications or approvals from the County of Kauaʻi).

2.1.2 Resort Operations

Both during the grading and construction described above, and afterwards, numerous Resort operational activities will occur. These include facilities maintenance and repair, landscaping and grounds maintenance, operation of the golf course, etc.

2.2 Covered Activities

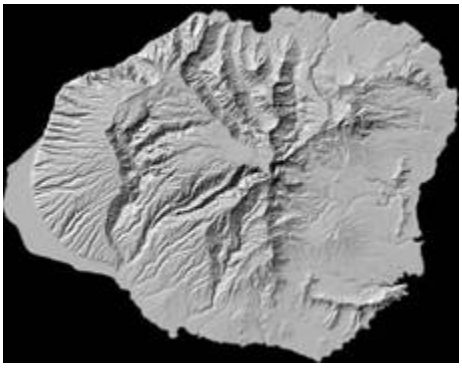
This HCP, and the associated Federal and State incidental take authorizations to be issued by the USFWS and DLNR, will cover and provide incidental take authorization for all of the following activities which will occur as part of the project, subject to any requirements or restrictions described in this HCP or contained in the incidental take authorizations:

- Grading and earth-moving activity associated with new construction
- Installation and construction of infrastructure associated with the new construction projects, including roadways, cart paths, bicycle/walking paths, parking lots, sewer lines and lift stations, utilities, and exterior lighting
- Construction of new facilities and reconstruction or modification of existing facilities, including building pads, buildings, swimming pools, water features, tennis courts, golf course, recreational picnic shelters, and associated structures, facilities and access routes
- Installation of landscaping
- Employee, contractor and public driving and biking which occurs on established roadways, sidewalks and paths and in accordance with posted speed limits
- Operation, management and maintenance of all existing and newly constructed facilities
- Operation, management and maintenance of the golf course
- General property operation, management and maintenance activities, including landscape and recreational facility maintenance, operation and maintenance of the lagoons, and operation of boats on the lagoons
- Implementation of the conservation measures described in this HCP

3.0 ENVIRONMENTAL SETTING

3.1 Regional Location/Physiography

The island of Kauaʻi is the oldest, and fourth largest, of the main Hawaiian Islands. It has a land area of slightly more than 550 square miles. Roughly circular in shape, its most striking physiographic features are a high central plateau topping out at over 5,000 feet at the summits of Waiʻaleʻale (5,148 feet) and Kawaikini (5,243 feet), steep cliffs and deeply incised valleys along the northern Nāpali coast, the 3,600-foot deep Waimea Canyon, the broad Līhuʻe Basin on the southeastern quadrant of the island, and extensive coastal plains. These can be seen on the shaded relief map to the left.



3.2 Project Location

The Kauaʻi Lagoons Resort is located on the southeastern shore of Kauaʻi, approximately one mile southwest of Līhuʻe. As shown in the figure below, the Resort is immediately adjacent to the Līhuʻe Airport, and completely within the angle formed by the two Airport runways.

3.3 Climate

The climate in the vicinity of the project site is characterized as semi-tropical with two seasons. The summer period from May through September is generally warm and relatively dry, with predominantly northeast trade winds. In contrast, the winter season from October through April is associated with lower temperatures and higher rainfall, and less prevalent trade winds. Long-term data collected at the Līhuʻe Airport indicated that the northeast wind direction prevails throughout the year with a mean annual wind speed of 20 miles per hour. The average daytime maximum temperature ranges from about 78 degrees in the winter to 85 degrees in the summer. Median annual rainfall is about 43 inches.

3.4 Geology/Topography/Soils

The island of Kauaʻi is geologically one of the oldest and structurally complex islands in the State of Hawaiʻi, consisting principally of a large volcano, the Kauaʻi shield, which became active approximately four million years ago. The island's land mass was formed by two major volcanic series identifies as the Waimea Canyon Volcanic Series and the Kōloa Volcanic Series. The Waimea series refers to the flows that formed the original volcanic shield and caldera of the island. The Kōloa series refers to subsequent flows that overlaid much of the Waimea series formations on the lower slopes of the island.

The Kauaʻi Lagoons Resort property ranges in elevation from about 100 feet above mean sea level (msl) near the center of the site, down to about 40 feet above msl near the shoreline. The property generally slopes towards Runway 17-35 of the Līhuʻe Airport, and towards Nāwiliwili Bay and the Pacific Ocean. The U.S. Department of Agriculture, Natural Resources Conservation Services, classifies the soils within the project area as predominantly Līhuʻe

gravelly silty clay. These soils developed in material weathered from basic igneous rock. The soil permeability is moderately rapid, runoff is slow, and erosion hazards are not significant.

3.5 Hydrology

Five aquifer systems make up the Līhuʻe basin: Kīlauea, Anahola, Wailua, Hanamāʻulu, and Kōloa. The project site is located within the Hanamāʻulu system that mantled with the Kōloa formation. The Hanamāʻulu aquifer system has a sustainable yield of 40 million gallons per day. (CWRM, 2000).

No streams cross the project site. Nāwiliwili Stream is the nearest perennial stream, located southwest of the site.

A network of man-made lagoons encompassing a total of approximately 35 acres provides an attractive resort amenity that will be maintained. The lagoons are approximately 10 feet deep, are aerated to help maintain water quality, and are supplied by non-potable wells within the property.

Kauaʻi's topography interacts with the winds to produce large variations in conditions from one locality to another. Air blowing inland as part of the trade wind flow is redirected horizontally and vertically by the mountains and valleys. This complex three-dimensional flow of air results in marked differences from place to place in wind speed, cloudiness, and rainfall. Together with variations in the elevation of the land, it results in differences in air temperature.

3.6 Air Quality

Air quality on the island is generally good. This is a function of the island's mid-ocean location, the persistent regional winds, and the absence of substantial industry. In 2006, 24-hour PM_{10} (10-micron size particulate matter) concentrations at the single State of Hawaiʻi Department of Health monitoring station in Līhuʻe ranged from a low of 0 microgram per cubic meter to a high of 34 microgram per cubic meter. The average for the entire year was 11 microgram per cubic meter. At no time did the concentration exceed 25 percent of the 150 microgram per cubic meter State Standard for PM_{10}. (DOH 2007).

3.7 Vegetation

A botanical survey of the project site was performed in September-October 2005 (David 2005).

Much of the Resort property was previously developed for golf course use, with other areas including landscaped resort vegetation, and overgrown pasture and tree nursery. The golf courses are dominated by alien turf grasses, and various ornamental landscape plants including numerous fig trees (*Ficus sp.*), silk oak (*Grevillea robusta*), ironwood (*Casuarina equisetifolia*), African tulip (*Spathodea campanulata*), coconut (*Cocos nucifera*), monkey pod (*Samanea saman*), *hau* (*Hibiscus tiliaceus*), Royal Poinciana (*Delonix regia*), Manila palm (*Veitchia merrillii*), sago palm (*Cycas sp.*), plumeria (*Plumeria sp.*), bougainvillea (*Bouganvillea sp.*), and various ornamental palms. There is very little ground cover other than turf grass, though the more common ruderal weedy species are present between some of the paved cart paths and the vegetation separating the golf courses from the Resort areas.

The areas between the golf courses and the Kauaʻi Marriott Resort and Beach Club buildings are heavily landscaped and well maintained. All of the species seen within the golf course areas

were seen in these areas as well, along with many species more commonly used in resort and residential landscaping including several species of heliconia (*Heliconia sp.*), white ginger (*Hedychium cornorarium*), yellow ginger (*Hedychium flavescens*), kahili ginger (*Hedychium gardnerianum*), Cook pine (*Arauaria columnaris*), Octopus tree (*Sheffeiera actinophylla*), mango (*Mangifera indica*), banana (*Musa x paradisiaca*), avocado (*Persea Americana*), papaya (*Carica papaya*), mock orange (*Philadelphus sp.*), croton (*Codiaeum sp.*), spider lilly (*Hymenocallis sp.*), yellow oleander (*Cascabela thevetia*), *naupaka* (*Scaevola sericea*), and large areas of wedelia (*Sphagneticola trilobata*). Within the less well tended area between the old brew pub and the ocean the dominant vegetation is Guinea grass (*Panicum maximum*).

3.8 Wildlife at Kauai Lagoons

A faunal survey of the project site was conducted in September-October 2005 (David 2005).

The survey revealed that avian diversity was relatively low, though densities recorded for several species were high. Four species, House Finch (*Carpodacus mexicanus frontalis*), Japanese White-eye (*Zosterops japonicus*), Western Meadowlark (*Sturnella neglecta*), and Chestnut Munia (*Lonchura atricapilla*) accounted for slightly more than 55% of the total number of all birds recorded during station counts. The most common avian species recorded was the House Finch, which accounted for 23% of the total number of individual birds recorded.

Seven native avian species were detected during the course of the survey. Four of these species are listed as threatened or endangered under the ESA and Chapter 195D: Nēnē, and four species of waterbirds (Hawaiian Stilt, Hawaiian Coot, Hawaiian Moorhen and Hawaiian Duck). Each of these species is discussed in further detail below, under "Covered Species." The other two native species recorded were Black-crowned Night-Heron (*Nycticorax nycticorax hactli*), a common resident indigenous heron, and Pacific Golden-Plover (*Pluvialis fulva*), an indigenous migratory shorebird species that nests in the high Arctic, returning to Hawai‘i and the tropical Pacific during the winter months.

Although not recorded during the survey it is likely that the Hawaiian endemic sub-species of the near cosmopolitan Short-eared Owl (*Asio flammeus sandwichensis*) forages over the project site at times, as they are regularly seen within the open lowland areas on Kaua‘i and over the Līhu‘e Airport grounds.

Although also not detected during this survey, it is also likely that three species of seabirds listed under the ESA and/or Chapter 195D fly over the project site as they transit between their ocean feeding grounds and their inland nesting colonies: Hawaiian Petrel, Newell's Shearwater and Band-rumped Storm-Petrel. Each of these species is also discussed in further detail below, under "Covered Species."

With respect to mammalian species, none were encountered during the 2005 survey. However, during predator trapping efforts conducted during the 2008-09 Nēnē breeding season, cats (*Felis catus*), one dog (*Canis f. familiaris*) and numerous roof rats (*Rattus r. Rattus*), and European house mice (*Mus musculus domesticus*) were captured.

3.9 Covered Species

As noted in Chapter 2, each of the species discussed in detail below are considered to be "Covered Species" for purposes of this HCP, and incidental take of such species will be authorized through the incidental take authorizations to be issued by the USFWS and DLNR. The following discussions for each species include: (i) a description of their ecology and population biology; (ii) their distribution, range, and abundance; (iii) known current threats to their survival; and (iv) their status on the Kauaʻi Lagoons property.

3.9.1 Nēnē[5]

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Taxonomy and Species Description: The Nēnē is a medium-sized goose, with an overall length of approximately 63 to 69 centimeters (cm) (25 to 27 inches (in)). This species is adapted to a terrestrial and largely non-migratory lifestyle in the Hawaiian Islands with limited freshwater habitat. Compared to the related Canada Goose (*Branta canadensis*), Nēnē wings are reduced by about 16 percent in size and their flight is weak. Nonetheless, Nēnē are capable of both interisland and high altitude flight (Banko et al. 1999, p. 9).

Historic and Current Distribution: Fossil evidence shows Nēnē were found on all the main Hawaiian Islands. It is believed that they were abundant (about 25,000 birds) on the Big Island before the arrival of Captain James Cook in 1778 (USFWS 2004, p. 24). Currently, there are wild populations of Nēnē on the islands of Hawaiʻi, Maui, Molokaʻi, and Kauaʻi with an estimated 611, 462, 146 and 800-860 individuals, respectively (A. Marshall 2008, pers. comm.). After narrowly avoiding extinction in the 1940s and 1950s, Nēnē populations have been slowly rebuilt through captive-breeding programs. As a result of such programs, Nēnē have been re-introduced onto four of the main Hawaiian Islands (Kauaʻi, Maui, Molokaʻi, and Hawaiʻi). There are currently four population centers on Kauaʻi, each resulting from releases of captive-bred

[5] The Nēnē species account is based in large part on information contained in U.S. Fish and Wildlife Service, *Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose (Branta sandvicensis)* First Revision (2004), and all references in these Sections are provided in that document

birds. Approximately 25 captive Nēnē were released by Kipu Kai Ranch in 1985 on the southeast coastline of Kauaʻi. Another 38 captive bred Nēnē have been released at Kīlauea Point National Wildlife Refuge since 1991. A third population was initiated on the Na Pali Coast of northwestern Kauaʻi with the release of 62 captive Nēnē from 1995 to 1996. Twenty-four Nēnē were introduced to the Hanalei National Wildlife Refuge in April 2000 (Service 2004, p.17-18; Nēnē Recovery Action Group 2007, pers. comm.).

Life History: The Nēnē has an extended breeding season with eggs reported from all months except May, June, and July, although the majority of birds in the wild nest during the rainy (winter) season between October and March (Banko et al. 1999, p. 4). Nesting peaks in December and most goslings hatch from December to January (Banko et al. 1999). Nēnē typically nest on the ground, in a shallow scrape in the dense shade of a shrub or other vegetation. A clutch typically contains three to five eggs, and incubation lasts for 29 to 31 days. While the female incubates the eggs, the male stands guard nearby, often from an elevated location. Once hatched, the young remain in the nest for one to two days (Banko et al. 1999, p. 16-17). Fledging of captive birds occurs at 10 to 12 weeks, but may occur later in wild birds. During molt, adults are flightless for a period of 4 to 6 weeks, generally attaining their flight feathers at about the same time as their offspring. When flightless, goslings and adults are extremely vulnerable to predators such as dogs, cats, and mongooses. From June to September, family groups join others in post-breeding aggregations (flocks), often far from nesting areas.

Habitat Description: The current distribution of Nēnē has been highly influenced by the location of release sites for captive-bred Nēnē. Nēnē are known to occupy various habitat and vegetation community types ranging from coastal dune vegetation and non-native grasslands (such as golf courses, pastures, and rural areas) to sparsely vegetated low- and high-elevation lava flows, mid-elevation native and non-native shrubland, cinder deserts, native alpine grasslands and shrublands, open and nonnative alpine shrubland-woodland community interfaces (Banko et al. 1999, p. 4-6). Nēnē are browsing grazers. The composition of their diet depends largely on the vegetative composition of their surrounding habitats and they appear to be opportunistic in their choice of food plant as long as they meet nutritional demands (Banko et al. 1999, p. 6-8; Woog and Black 2001, p. 324). Nēnē may exhibit seasonal movements to grasslands in periods of low berry production and wet conditions that produce grass with a high water content and resulting higher protein content. The distribution of Nēnē nests generally has also been associated with the location of release sites of captive-bred Nēnē since 1960. The sites used by Nēnē for nesting range from coastal lowland to subalpine zones and demonstrate considerable variability in physiognomic features (Banko et al. 1999, p. 4-5). Nest sites studied at Haleakalā National Park were located in well-vegetated habitat. During the breeding season, Nēnē were observed feeding mainly on berries and other plant items found near their nest sites. Although some birds supplemented their diets by feeding in grasslands due to declining berry density, during the pre- and non-breeding season their principal foods are cultivated grasses (Black et al. 1994, pp. 65-109).

Threats: The Nēnē was listed as endangered in 1967 (Service, 1967, p. 4001). The Nēnē Recovery Plan was first written in 1983. A Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose was recently published and incorporated a considerable amount of new information in the fields of genetics, paleontology, nutrition, behavior, effects of predation, and predator control. The plan also recommended a shift in recovery efforts to include more intensive habitat management and releases of captive-reared birds at lower elevations (Service 2004, p. 3)

The main limiting factors currently affecting Nēnē recovery are predation by introduced mammals, insufficient nutritional resources for both breeding females and goslings, limited availability of suitable habitat, and human-caused disturbance and mortality (Service 2004, p. iii). In order for Nēnē populations to survive, they must be provided with relatively predator-free breeding areas and sufficient food resources, human-caused disturbance and mortality must be minimized, and genetic and behavioral diversity maximized. At the same time, it is recognized that Nēnē are highly adaptable, successfully utilizing a gradient of habitats, ranging from highly altered to completely natural, which bodes well for the recovery of the species. The Service's Draft Revised Recovery Plan proposes utilizing a mix of natural and human-altered habitats in such a way that meets the life history needs of the species and promotes self-sustaining populations at or above recovery target levels (Service 2004, pp. iv-vi).

Nēnē at Kauaʻi Lagoons: Nēnē have been present at the Kauaʻi Lagoons property since the late 1990's. The population and nesting activity has increased on the property significantly in the ensuing 10 years (Table 1). Five nests were recorded on the property in 1999. Those five nests produced eight goslings. Ten years later, 66 nests were documented on the property, which produced 103 goslings (Table 1).

Table 1 Nēnē Nesting at Kauaʻi Lagoons 1999 - 2009

Year	Nests	Eggs Laid	Eggs Hatched	Goslings[6]	Moved by DOFAW
1999	5	11	11	8	
2000	6	-	-	4	
2001	13	-	-	23	
2002	9	-	-	5	
2003	16	-	-	34	
2004	26	74	-	63	
2005	22	-	-	57	41
2006	44	130	-	90	53
2007	40	124	-	92	56
2008	57	181	131	82	29 +12 Adults
2009	66	206	144	103	none

Data source: 1999-2007 DOFAW unpublished data; 2008-09, KL and DOFAW unpublished data

Nēnē at the KL site have shown remarkable plasticity in their nest site selection, and their ability to rapidly utilize emerging nesting habitat, and resources. This phenomenon is best illustrated by nesting activity in and around what used to be the #15 hole of the golf course, just east of the lagoon. During the 2004-2005 season two nests were found in the rough along this golf hole, and in 2005-2006 three nests were found in the same general area. Prior to the start of the next nesting season KL cleared the *koa haole* forest between fairway # 15 and Fashion Landing. Nēnē immediately moved into this newly available nesting habitat during the 2006-2007 season, establishing 12 nests, and they established 15 nests there during the 2007-2008 season. Then, as part of the Resort development project, KL cleared all vegetation from this same area prior to the 2008-2009 season, rendering it no longer suitable for nesting. Nevertheless, all 15 Nēnē pairs

[6] Goslings are defined as birds that survived to fledging (i.e. are able to fly).

from the prior season nested successfully at other locations on the Resort property; indeed one pair double clutched, raising goslings from the first clutch while still sitting on eggs from the second clutch. (Table 2). During the 2009-2010 nesting season all 13 surviving pairs again nested on the Resort property. (As discussed below, in 2009 one or both members of two of these 15 pairs died in captivity at the Huleia National Wildlife Refuge - pair oIP♂+ gJZ♀, and male gZU. We assume that the companion to gZU (female gZS) is still at the Refuge, as DOFAW previously clipped the wings of the translocated birds to render them flightless.)

Table 2 – Mass Grading Area Nēnē Nesting Pairs 2007 - 2010

Nest #	Pair 2007-2008	Nest #	Pair 2008-2009	Nest #	Pair 2009-2010
6	oIP♂ + gJZ♀	13	oIP♂ + gJZ♀		Both died Huleia
7	b191♂ + y097♀	9	b191♂ + y097♀	5	b191♂ + y097♀
8	gYY♂ + yTN♀	2	gYY♂ + yTN♀	9	gYY♂ + yTN♀
14	bFD♂ + oIV♀	8	bFD♂ + oIV♀	44*	r505 + oIV♀
15	gUF♂ + gJX♀	42*	y123♂ + gJX♀	49	y123♂ + gJX♀
17	gYX♂ + rSJ♀	7	gYX♂ + rSJ♀	32	gYX♂ + rSJ♀
23	gLF♂ + gJS♀	12	gLF♂ + gJS♀	36	gLF♂ + gJS♀
25	y742♂ + gVH♀	56	y742♂ + gVH♀	46	y742♂ + gVH♀
26	y112♂ + gXI♀	27	y112♂ + gXI♀	30	y112♂+ gXI♀
27	gZU♂ + gZS♀	43	gZU♂ + gZS♀		gZU Died Huleia
31*	bPX♂ + rSF♀	51*	bPX♂ + rSF♀	61*	bPX♂ + rSF♀
33	bTS♂ + gVB♀	17	bTS♂ + gVB♀	3	bTS♂ + gVB♀
34	gYP♂ + gUV♀	11	gYP♂ + gUV♀	39	gYP♂ + gUV♀
37	gUY♂ + gUX♀	14	gUY♂ + gUX♀	14*	y170♂ + gUX♀
40	y099♂ + gUI ♀	33	y099♂ + gUI ♀	48	y099♂ + gUI ♀

*Nest # 42 – 2008-2009 Female paired with new male; *Nest # 44 – 2009-2010 Male bFD rebanded as r505; *Nest # 14 – 2009-2010 Female paired with new male; *bPX♂ was rebanded as r506 during the 2008-09 season

The population of Nēnē on the KL property varies in size on a seasonal basis. Low counts over the past four years have been on the order of 25 birds. Lowest numbers are typically recorded between May and July. High numbers have exceeded 245 birds. Peak numbers usually are present between December and February. Table 3 illustrates the growth of the Nēnē population on the property from 1999 to 2009.

Table 3 Approximate Numbers of Nēnē on the Resort Property 1999-2009

Year	Nests	Goslings	Adults	Total Nēnē
1999	5	8	10	18
2000	6	4	12	16
2001	13	23	26	49
2002	9	5	18	23
2003	16	34	32	66
2004	26	63	52	115
2005	22	57	44	101
2006	44	90	88	178
2007	40	92	80	172
2008	57	82	114	196
2009	66	103	150-169	253-272

Data source: 1999 – 2007 DOFAW unpublished data, 2008-2009, KL & DOFAW unpublished data

Captive-bred Nēnē raised in England and various facilities in Hawai‘i have been re-introduced onto Hawai‘i, Maui, Moloka‘i and Kaua‘i. Between 1960 and 2003 a total of 2,643 captive-bred Nēnē have been released statewide (USFWS 2004). As previously mentioned, DOFAW has also translocated Nēnē (both adults and goslings) and eggs from the Resort property to other locations annually since the 2005-2006 nesting season. In 2005 DOFAW translocated 8 eggs from KL to Maui, and an additional 3 eggs in 2006, and all 11 eggs hatched successfully. In 2006, 2007 and 2008, DOFAW translocated 41, 53, and 56 goslings from the Resort property to other sites on private lands on Kaua‘i. Of the 53 goslings translocated in 2007, six returned to the Resort, as did 3 of the 56 goslings translocated in 2008. In both instances the birds were back at the Resort within 10 days of their releases. DOFAW presumably has more complete data regarding the current status of the 150 goslings that DOFAW has translocated from the Resort to other properties on Kaua‘i over the past several seasons.

In January 2009, KL entered into a Memorandum of Agreement (MOA) with the USFWS, and the USFWS issued a Biological Opinion on that MOA. In the MOA, the USFWS required that KL work with USFWS and DOFAW to facilitate the agencies' development of a protocol for translocating up to 14 Nēnē family groups (i.e., adults and their goslings) from the Resort to other locations on Kaua‘i, and that KL fund the agencies' implementation of such protocol. The USFWS then took the lead in developing the protocol and associated budget, and making arrangements for six Nēnē family groups to be translocated to the nearby USFWS Huleia National Wildlife Refuge in Spring 2009. USFWS arranged for DOFAW to capture these Nēnē families (consisting of a total of 12 adults and 20 goslings) at the Resort and transfer them to Huleia, where they were placed into fenced pens.[7] During the ensuing period of captivity, DOFAW staff clipped the wings of the adults to render them flightless. One translocated gosling and five of the twelve translocated adults died in captivity. The U.S. Geological Survey, Biological Resources Division (USGS-BRD), performed a necropsy on the deceased gosling and determined that it died of toxoplasmosis. The first adult mortality was discovered on June 22, 2009. A USGS-BRD necropsy determined that this adult died of "uncomplicated emaciation"

[7] DOFAW also separately translocated 9 goslings from the Resort to Grove Farm property.

due to a failure to receive proper nutrition. Three additional deceased adults were discovered on July 4, and one additional deceased adult was discovered on July 5; USGS-BRD later determined that these birds likewise died of emaciation. The remaining birds were released from the holding pens shortly thereafter, and USFWS arranged to monitor their condition.

As noted above in Section 1.2, on April 14, 2011 Hawai‘i Governor Neil Abercrombie issued a Proclamation declaring that the Nēnē population at the Resort constitutes a threat to public safety because of the proximity of the Līhu‘e Airport, directing DLNR to immediately undertake to translocate the Nēnē from the Resort, and suspending 26 state statutes in order to expedite such translocation. In late April and early May 2011, DLNR captured 10 goslings, quarantined them on the KL property, and then translocated them to Maui. In late August and early September, 2011, DLNR captured 12 adults (6 breeding pairs), quarantined them on the KL property, and then translocated them to Maui. In October, 2011 DLNR captured 10 adults (5 breeding pairs), quarantined them, and translocated them to the Big Island. Beginning in late December 2011, DLNR intends to begin a systematic operation of capturing, quarantining at a new location on HDOT property, and translocating to off-island locations, approximately five to ten family groups (breeding pair plus their goslings) per week, through the end of the 2011-12 nesting season. DLNR anticipates replicating these efforts each of the next four years thereafter.

DLNR intends that at the conclusion of this translocation project in early 2016, Nēnē will no longer be present on the KL property. However, given the inherent uncertainties associated with the long-term outcome of the translocation effort, the possibility that Nēnē from elsewhere on the island could later move to KL, and the long-term nature of the requested incidental take authorizations, this HCP takes a biologically conservative approach and assumes that up to 20 Nēnē could be present at any particular time following completion of the DLNR translocation project.

3.9.2 Hawaiian Stilt[8]

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Taxonomy and Species Description: The Hawaiian Stilt (*Himantopus mexicanus knudseni*) is part of a cosmopolitan superspecies complex including the Black-necked Stilt (*Himantopus mexicanus*) of North and South America, the Black-winged Stilt (*H. himantopus*) of Eurasia and Africa, and Pied Stilt (*H. leucocephalus*) and Black Stilt (*H. novazelandiae*) from Australasia (Robinson *et al.* 1999). The Hawaiian endemic race of the Black-necked Stilt is considered a distinct subspecies of the Black-necked Stilt (AOU 1998). Colonization of Hawai‘i by stilts probably resulted from North American vagrants. The stilt is a slender wading bird, black above (except for the forehead) and white below with distinctive long, pink legs. The Hawaiian Stilt differs from North American Black-necked Stilts by having black extending lower on the forehead as well as around to the sides of the neck, and by having a longer bill, tarsus (lower leg), and tail (Coleman 1981; Robinson *et al.* 1999).

Historic and Current Distribution: Hawaiian Stilts were historically known from all of the major islands except Lana‘i and Kaho‘olawe (Paton and Scott 1985). As with the other Hawaiian waterbirds, there are no estimates of historical numbers. However, extensive wetlands and aquatic agricultural lands historically provided a fair amount of habitat. Loss of this habitat undoubtedly caused a decrease in stilt numbers. It has been suggested that the population had declined to approximately 200 birds by the early 1940's (Munro 1960). This number, however, may have been an underestimation of the population, as other estimates from the late 1940's place the population at approximately 1,000 birds (Schwartz and Schwartz 1949). Hawaiian stilts are currently found on all of the main Hawaiian Islands except Kaho‘olawe. Based on biannual Hawaiian waterbird surveys from 1998 through 2003 (2002 was excluded because of missing data), the stilt population averaged 1,350 birds, but fluctuated between 1,200 and 1,500 birds (HDLNR 1976-2003). Long-term census data indicate statewide populations have been relatively stable or slightly increasing for the last 30 years (Reed and Oring 1993). Hawaiian

[8] The species accounts in Sections 3.9.2 through 3.9.5 are based in large part on information contained in U.S. Fish and Wildlife Service, *Draft Revised Recovery Plan for Hawaiian Waterbirds*, Second Draft of Second Revision (2005), and all references in these Sections are provided in that document.

Stilts readily disperse between various islands. For example, considerable movement occurs between Kauaʻi and Niʻihau, apparently in response to rainfall patterns and the flooding and drying of Niʻihau's ephemeral lakes (Engilis and Pratt 1993). On Kauaʻi, stilts are numerous in large river valleys such as Hanalei, Wailua, and Lumahaʻi. Stilts also frequent Kauaʻi's reservoirs, particularly during drawdown periods, as well as sugarcane effluent ponds in Līhuʻe and Waimea. Between 1998 and 2003 (excluding 2002 because of missing data), the stilt population on Kauaʻi has fluctuated between approximately 125 to 350 birds (HDLNR 1976-2003).

Life History: Hawaiian Stilts prefer to nest on freshly exposed mudflats interspersed with low growing vegetation. The nest itself is a simple scrape on the ground. They have also been observed using grass stems and rocks for nesting material (Coleman 1981; M. Morin, pers. comm. 1994). Nesting also occurs on islands (natural and manmade) in fresh or brackish ponds (Shallenberger 1977). Stilts are territorial and maintain an area approximately 14 to 30 meters (46 to 98 feet) around nests (Robinson *et al.* 1999). The nesting season normally extends from mid-February through August, but varies among years, perhaps depending on water levels. Stilts usually lay 3 to 4 eggs that are incubated for approximately 24 days (Coleman 1981; Chang 1990). Because of their exposed nest sites, stilts appear to be more susceptible to avian predators than other Hawaiian waterbirds. Stilts are opportunistic feeders. They eat a wide variety of invertebrates and other aquatic organisms as available in shallow water and mudflats. Feeding typically occurs in shallow flooded wetlands. These types of wetlands are ephemeral in nature and may appear at any time of year, but are primarily available in winter. Hawaiian Stilts require specific conditions (water depths of 13 centimeters [5 inches] or less) for optimal foraging (Telfer 1973). Thus, intra- and inter-island movement is an important strategy for exploiting food resources and has been documented between Oʻahu and Maui by statewide waterbird survey data and banding studies (Ueoka 1979; Engilis and Pratt 1993; Reed *et al.* 1994; Reed *et al.* 1998).

Habitat Description: Hawaiian Stilts use a variety of aquatic habitats but are limited by water depth and vegetation cover. Stilts require early successional marshlands with water depth less than 24 centimeters (9 inches) and favor perennial vegetation that is limited and low growing such as nonnative pickleweed (*Batis maratima*), California grass, and seashore paspalum or knotgrass (*Paspalum* spp.), or exposed tidal flats. Native low-growing wetland plants associated with stilt nesting areas include *ʻaeʻae* (*Pacopa monnieri*), *ʻakuliʻkuli* (*Sesuvium portulacastrum*), and the sedges *makaloa* (*Cyperus laevigatus*) and *kaluhā* (*Bolboschoenus maritimus*) (Robinson *et al.* 1999). Stilts may also use taro ponds where the full-grown vegetation forms a protective canopy. Stilts are rarely found in wetlands above 200 meters (660 feet) elevation. Stilts generally forage and nest in different wetland sites, moving between these areas daily. Adults with 3-day-old chicks have been observed to move 0.5 kilometer (0.3 mile) from the nest site (Reed and Oring 1993). Nesting sites are adjacent to or on low-relief islands within bodies of fresh, brackish, or salt water. These include irrigation reservoirs and settling basins, natural or manmade ponds, marshes, taro patches, silted ancient fishponds, salt evaporation pans, and other wetlands. Feeding habitat consists of shallow water that is fresh, brackish, or saline. Freshwater sites include irrigation ditches, reservoirs, settling basins, taro patches, sewage ponds, and marshes. Brackish-water feeding habitat consists of coastal ponds, fishponds, and estuaries. Saltwater feeding habitat includes inshore reefs, beach areas, and tidal flats. Loafing areas

include open mudflats, pickleweed flats, and pasture lands where visibility is good and predator populations are low.

Threats: Threats to the Hawaiian Stilt are similar to those faced by Nēnē. The primary threat to this species has been the conversion of wetland habitat. Twenty years ago it was estimated that there had been a 31% reduction in wetlands located in the coastal plains in the Hawaiian Islands; that reduction has continued in the ensuing 20 years as many wetland based agricultural ventures and sugar cane production have been greatly reduced or ceased operation (Dahl 1990). Introduced mammalian predators also pose a signiificant threat to stitls as stilt nest on the ground, and thus their nests are readily accessible by cats, dogs, and rodents.

Hawaiian Stilt at Kauaʻi Lagoons: There is little usage of habitat present on the KL property by this species (see the description of foraging and nesting preferences provided above). This is primarily due to the lack of suitable foraging and nesting habitat. Over the past two years, between one and three pairs of stilt have been documented on the site. In both years one pair successfully nested in an abandoned golf course sand trap. During the 2008-2009 nesting season the one pair that nested produced four chicks, which all successfully fledged. The location in which this pair nested was created during the remodeling of the golf course – this habitat will not be available to the birds over the next two years, as it is expected that the currently abandoned sand trap will once again be filled with sand and will be part of an active golf hole in 2012. Stilt have not usually been observed in areas that place them at risk from golf play.

3.9.3 Hawaiian Coot

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Taxonomy and Species Description: The Hawaiian Coot (*Fulica alai*) is endemic to the Hawaiian Islands. In the past the Hawaiian Coot was considered a subspecies of the American Coot (*Fulica americana*) and was originally listed under the Endangered Species Act as such, but it is now regarded as a distinct species (AOU 1993). The Hawaiian Coot is non-migratory and presumably originated from stray migrants from continental North America that remained as residents in the islands (Brisbin *et al.* 2002). The Hawaiian Coot is smaller in body size than the American Coot, and the bulbous frontal shield above the bill is distinctly larger than that of the American Coot and is usually completely white (Shallenberger 1977; Pratt *et al.* 1987. A small

percentage of the Hawaiian Coot population has a red lobe at the top of the frontal shield and deep maroon markings at the tip of the bill, similar to the American Coot (Pratt *et al.* 1987; Figure 5-A). Adult coots are dark, slate-gray in color, with white undertail feathers. Male and female coots are similar in color. Coots have large feet with lobed toes, unlike the webbed feet of ducks. Immature coots are a lighter gray with buff-tipped contour feathers, smaller, dull white bill, and lack a well-developed frontal shield. Downy chicks have red skin and a bill with a yellow tip, similar to that of the American Coot (Brisbin *et al.* 2002).

Historical and Current Distribution: Hawaiian Coots historically occurred on all of the main Hawaiian Islands except Lanaʻi and Kahoʻolawe, which lacked suitable wetland habitat. Coots have always been most numerous on Oʻahu, Maui, and Kauaʻi (Shallenberger 1977). It is likely that they were once fairly common in large natural marshes and ponds and used wetland habitats created by Hawaiians for taro cultivation and large-scale fish production. No population estimates are available prior to the 1950's, however Schwartz and Schwartz (1949) identified a decline and potential threat of extinction in the first half of this century. Censuses from the late 1950's to the late 1960's indicated a population of fewer than 1,000 birds, contributing to the Federal listing of the Hawaiian Coot as endangered in 1978 (USFWS 1978). Hawaiian Coots currently inhabit all of the main Hawaiian Islands except Kahoʻolawe. Based on winter counts from biannual waterbird surveys from 1998 through 2003 (2002 was excluded due to missing data), the coot population averaged 2,100 birds and fluctuated between 1,500 and 3,000 birds (HDLNR 1976-2003). As coots are conspicuous and often use open water areas, they are relatively easy to census, so these data are considered fairly accurate minimum population estimates. Survey data from 1976 through 2003 reveal short-term population fluctuations, with a long-term slightly increasing population trend overall. Coots are known to disperse readily and exploit seasonally flooded wetlands, thus their populations will naturally fluctuate according to climatic and hydrologic conditions (Engilis and Pratt 1993). During the 1998 to 2003 census period (excluding 2002 due to missing data), the coot population on Kaua`i fluctuated between 300 and 1,500 birds (HDLNR 1976-2003). Some of this variation is due to dispersal of coots to Niʻihau in wet years. Several authors have speculated that annual migration occurs between Kauaʻi and Niʻihau, but statewide surveys indicate that these movements are less frequent, usually occurring when annual precipitation is above normal and Niʻihau's ephemeral lakes become flooded (Engilis and Pratt 1993).

Life History: Hawaiian Coots nest on open fresh water and brackish ponds, taro ponds, shallow reservoirs, irrigation ditches, and in small openings of marsh vegetation (Udvardy 1960; Shallenberger 1977). They construct floating nests of aquatic vegetation in open water, or semi-floating nests anchored to emergent vegetation or in clumps of wetland vegetation (Byrd *et al.* 1985). Open-water nests typically are anchored on semi-floating mats of vegetation, usually constructed from water hyssop *(Bacopa monnieri*) and Hilo grass (*Paspalum conjugatum*). Nests in emergent vegetation are platforms constructed from buoyant stems of nearby vegetation, such as bulrush (*Scirpus* spp.) (Byrd *et al.* 1985). Nesting occurs primarily from March through September, although some nesting occurs in all months of the year (Shallenberger 1977). Clutch size ranges from 3 to 10 eggs, with an average of 5 eggs (Byrd *et al.* 1985). The incubation period is about 25 days (Shallenberger 1977; Bryd *et al.* 1985), and chicks are able to swim as soon as their down has dried (Brisbin *et al.* 2002). Coots are generalist feeders, obtaining food near the surface of the water, diving, or foraging in mud or sand. They also graze

on upland grassy sites such as golf courses that are adjacent to wetlands, especially during times of drought and when food is unavailable elsewhere (T. Telfer, pers. comm. 1999). Food items include seeds and leaves of aquatic plants, various invertebrates including snails, crustaceans, and aquatic or terrestrial insects, tadpoles, and small fish (Schwartz and Schwartz 1949). Coots typically feed close to their nesting areas but will travel long distances when food is not locally available (Shallenberger 1977). Intra-island movements occur when water levels are low and food sources become concentrated. Statewide waterbird surveys from 1977 to 1986 indicate that coots migrate between islands in response to precipitation patterns. Periodic increases in coot numbers on Niʻihau and Molokaʻi presumably are the result of movement of birds from Kaua`i and Maui, respectively (Engilis and Pratt 1993). Population increases on Niʻihau are correlated with the intermittent availability of wetlands resulting from high rainfall.

Habitat Description: The Hawaiian Coot is typically a species of the coastal plain, usually found below 400 meters (1,320 feet) elevation, and preferring wetland habitats with suitable emergent plant growth interspersed with open water. Hawaiian Coots prefer freshwater wetlands, but will use brackish wetlands, and rarely, saline habitats. Coots forage in water less than 30 centimeters (12 inches) deep, but can dive in water up to 120 centimeters (48 inches) deep. They prefer more open water than do moorhens, particularly for feeding. Optimum nesting habitat for the North American coot (*Fulica americana*) is generally in a 50:50 to 75:25 mix of dense emergent vegetation and open water. Hawaiian Coots may prefer a similar mix but research on nesting habitat is limited. Large, deep ponds appear to provide only limited habitat for coots, particularly in areas where strong winds can cause the formation of wavelets. Loafing sites include logs, rafts of vegetation, narrow dikes, mud bars, artificial islands, and "false nests." Coots also loaf on open bodies of water such as reservoirs. Because of their ability to disperse to find suitable foraging habitat, ephemeral wetlands play an important part in their annual life cycle.

Threats: Primary threats to Hawaiian Coots are similar to those described for other waterbird species in the Hawaiian Islands. Habitat loss, alien mammalian predators, pathogens, and interactions with human activities being the principal threats.

Hawaiian Coots at Kauaʻi Lagoons: Hawaiian Coots have never been documented nesting on KL property, although during the 2008-09 season a pair of coots with a single chick was observed in the Resort lagoons. The number of birds present on the property varies on a seasonal and annual basis, likely due to precipitation (Engilis and Pratt 1993). In the past twenty years numbers have varied between fewer than a dozen birds to upwards of 350 birds (Alan Silva pers. comm., KL unpublished data). During the 2008-2009 Nēnē nesting season KL documented a range of between two and 84 coots on the property. The low numbers recorded likely represent an inverse relationship to the amount of rain that fell on Kauaʻi and Niʻihau at the end of the year – December rainfall recorded at the Līhuʻe Airport was 407% above average (Pacific ENSO Applications Climate Center 2009). Hawaiian Coots loaf and forage on a number of the golf course holes, and are also regularly seen swimming in all lakes, ponds and water features within the Resort property. When present on the golf course, Hawaiian Coots tend to congregate on golf holes Kieli #17 and #18, with smaller numbers having been seen on a regular basis on Mokihana # 13. At times when coot numbers are high, they are potentially at risk from golf play.

3.9.4 Hawaiian Moorhen[9]

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Taxonomy and Species Description: The Hawaiian Moorhen (*Gallinula chloropus sandvicensis*) is an endemic subspecies of the Common Moorhen (*Gallinula chloropus*) (AOU 1998). The Hawaiian subspecies is non-migratory and presumably originated from stray migrant birds that colonized Hawai‘i from North America (Nagata 1983). Although the Hawaiian sub-species is recognized as distinct from its North and South American relatives, there are no evident plumage, soft body coloration, or measurement differences from forms in North America (Wilson and Evans 1890 to 1899; Rothschild 1900). Hawaiian Moorhens superficially resemble the closely related continental Common Moorhens, but they are noticeably smaller, possess a red shield over their red and yellow bill, and have a white flank stripe (Schwartz and Schwartz 1949; Bannor and Kiviat 2002). They are black above and slate blue below, with underwing coverts mostly white. Their legs and feet are yellowish green, and the feet are not lobed, as in the coot.

Historic and Current Distribution: The Hawaiian Moorhen was found on all of the main Hawaiian Islands except Lana‘i and Kaho‘olawe in 1891 (Munro 1960). However, by the late 1940's their status was considered "precarious," especially on O‘ahu, Maui, and Moloka‘i (Schwartz and Schwartz 1949). Moorhens disappeared from Moloka‘i sometime after the 1940's and were reintroduced in 1983, but the population did not persist and the species currently is not known to occur on the island. Like the continental races of the Common Moorhen, the Hawaiian Moorhen is predominantly a species of the coastal plains, generally found below 125 meters (410 feet) elevation. The Hawaiian Moorhen is quite secretive and difficult to census, and even rough population estimates were lacking until the 1950's, so the long-term population trend is difficult to determine. Surveys in the 1950's and 1960's estimated no more than 57 individuals (Engilis and Pratt 1993). The spread of aquaculture on O‘ahu in the late 1970's and 1980's probably led to an increase in the numbers of moorhens. In some locations aquaculture projects support some of the highest concentrations of moorhens in the State (Engilis 1988; M. Silbernagle, USFWS,

[9] The common and scientific names of this species were recently changed by the American Ornithological Union from Common Moorhen (*Gallinula chloropus*) to Common Gallinule (*Gallinula galeata sandvicensis*; Cheeser et al. 2011, Pg. 603). To remain consistent with its designation under the ESA and to avoid confusion, this HCP will still refer to this species as the Hawaiian Moorhen.

pers. comm. 2000) although wetlands managed for moorhens have the potential to support high concentrations as well. Hawaiian Moorhens are currently found on the islands of Kaua‘i and O‘ahu. Biannual waterbird surveys provide a rough idea of recent population trends, but an accurate population estimate is not available due to the secretive nature of this species and its use of densely vegetated wetland areas. Counts of moorhens have been stable, but remain low, with average totals of 314 birds in a recent 5-year period (1998 to 2001 and 2003) (HDLNR 1976-2003). Hawaiian Moorhens are widely distributed in lowland wetlands and valleys on Kaua‘i. Sizable populations exist in the Hanalei and Wailua River valleys, Waiakalua Reservoir, and Wilcox Ponds. Dense vegetation around lowland reservoirs may also support moorhens, but nesting is limited by deep water and severe water level fluctuations. Moorhens are also found in wetland agricultural areas such as taro fields.

Life History: Little is known of the Hawaiian Moorhen's breeding biology. Most nests are inconspicuously placed within dense emergent vegetation over shallow water. Moorhens generally nest in areas with standing freshwater less than 60 centimeters (24 inches) deep. The emergent vegetation is folded over into a platform nest (Shallenberger 1977). Where emergent aquatic vegetation is insufficient, nests may be placed on the ground, but most have tall cover nearby. Apparently, the particular species of emergent plant used for nest construction by moorhens is unimportant as long as it is a robust emergent (Weller and Fredrickson 1973). Like other moorhen subspecies, the Hawaiian Moorhen is territorial. Territory size of nesting pairs at Hamakua Marsh on O`ahu ranged from 853 to 2,416 square meters (9,182 to 26,006 square feet) (Smith and Polhemus 2003). Nesting occurs year-round, but most activity extends from March through August and is influenced by water levels and vegetation growth (Shallenberger 1977; Byrd and Zeillemaker 1981; Chang 1990). Clutch size differed among 2 island investigations, where it averaged 4.9 eggs on Kaua`i (n = 87 nests) (Chang 1990) and 5.6 eggs on O`ahu (n = 64 nests; Byrd and Zeillemaker 1981). The incubation period ranges from 19 to 22 days (Byrd and Zeillemaker 1981). Moorhens are a precocial species; chicks are covered with down and are able to walk, but are dependent on the parents for several weeks. Re-nesting and multiple broods during one season have been observed (Byrd and Zeillemaker 1981). Little information is available on the feeding habits of the Hawaiian Moorhen. Food items consumed by this subspecies may include algae, aquatic insects, and mollusks (Schwartz and Schwartz 1949). Telfer (unpubl. data) found remains of snails, guava seeds, algae, and other plant material in stomachs of road-killed moorhens on Kaua`i. Seeds of grasses, parts of various plants, and other types of invertebrates are probably also included in the moorhen's diet. Hawaiian Moorhens are the most secretive of the native Hawaiian waterbirds, preferring to forage in dense emergent vegetation. Most birds feeding along the edge or in the open quickly seek cover when disturbed. Moorhens are good swimmers and often cross open water to reach foraging sites. They are generally sedentary; however, moorhens readily disperse in spring, presumably to breed (Nagata 1983). Dispersal may occur in relation to dry and wet periods (Engilis and Pratt 1993). Whether the Hawaiian Moorhen is capable of inter-island movement is unknown.

Habitat Description: Hawaiian Moorhen habitat in Hawai’i consists of freshwater marshes, taro patches, lotus fields, reedy margins of watercourses (streams, irrigation ditches, etc.), reservoirs, wet pastures, and occasionally saline and brackish water areas. The densest moorhen nesting areas are at the Hanalei National Wildlife Refuge and taro fields on the island of Kaua`i, and at the Kahuku and *`Uko`a* wetlands and Waialua lotus fields on O`ahu. The key features of habitat areas for moorhens are: 1) dense stands of robust emergent vegetation near open water; 2)

floating or barely emergent mats of vegetation; 3) water depth less than 1 meter (3.3 feet); and 4) fresh water as opposed to saline or brackish water. Interspersion of robust emergent vegetation and open water is important for common moorhens on the mainland, and presumably is also for the Hawaiian subspecies. The optimal overall ratio of emergent vegetation to open water is 50:50 (Weller and Fredrickson 1973).

Threats: Threats to this species are similar to those described for the other waterbirds that are the subject of this HCP.

Hawaiian Moorhen at Kauaʻi Lagoons: Hawaiian Moorhen are relatively abundant on the Resort property. Determining exactly how many birds use resources on the property is challenging due to their innate secrecy. High numbers recorded on the property have approached approximately 50 birds. This species nests on the property in small numbers. It has been estimated that there may be up to 10 nests a year on the property (Alan P. Silva, pers. comm.). During the 2008-2009 season KL recorded four separate Hawaiian Moorhen pairs with young chicks. One nest was found in an abandoned golf course bunker, close to the lagoon on hole # 18. This pair successfully hatched out five chicks – losing one to predation by a Cattle Egret (*Bulbucus ibis*), an event that one of the KL biological monitors was able to document photographically. Moorhen are typically found on the western side of the Resort property. They are most often seen in or close to the main lagoon, the boat dock lagoon and the irrigation pond located on the northwest corner of the site. They have also been recorded nesting in the nursery, which is located in the "triangle" parcel between the runways. They tend to nest adjacent to the more remote ponds on the site that have dense shoreline vegetation such as the irrigation pond. They do not nest in the water features within the golf course proper. Additionally, they are seldom seen on the golf holes themselves, so they are not often potentially at risk from golf play.

3.9.5 Hawaiian Duck

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Taxonomy and Species Description: The Hawaiian Duck (*Anas wyvilliana*) was first described in 1851. At the time, it was considered to be a species or possibly a subspecies of the Mallard (*Anas platyrhynchos*). However, more recent genetic studies indicate that the Hawaiian Duck is

distinct at the species level and is closely related to the Mallard (AOU 1983; Browne *et al.* 1993). Allozyme data indicate there has been extensive hybridization between Hawaiian Ducks and feral Mallards on Oʻahu, with the near disappearance of Hawaiian Duck alleles from the population on that island (Browne *et al*. 1993). The Hawaiian Duck is a small (mean weight of males 604 grams [19 ounces], females 460 grams [15 ounces]), drab brown duck (Griffin and Browne 1990). Both sexes are mottled brown and similar in appearance to a female mallard (Figure 2). Pure Hawaiian Ducks appear to be significantly more common on Kauaʻi than on the other islands (Fowler et al., 2008).

Historic and Current Distribution: Hawaiian Ducks were known historically from all of the main Hawaiian Islands except Lanaʻi and Kahoʻolawe. There are no population estimates prior to 1940, but in the 1800's they were fairly common in natural and farmed wetland habitats (Engilis *et al.* 2002). The arrival of the Polynesian people in Hawaiʻi about 1,600 years ago (Kirch 1982) and their cultivation of taro (*Colocasiae sculenta*), an agricultural crop grown in a pond-like environment, considerably increased the amount of wetland habitat in the islands (Swedberg 1967). Rice (*Oryza sativa*) cultivation from the late 1800's to the 1940's continued to provide wetland habitat for the Hawaiian Duck. A variety of factors, including predation of eggs and chicks by rats (*Rattus* spp.), small Indian mongooses (*Herpestes auropunctatus)*, domestic dogs *(Canis f. familiaris*), domestic cats (*Felis catus*), introduced fish and birds, habitat reduction due to changes in agricultural practices and urban development, and over-hunting, brought about a significant population decline of the Hawaiian Duck early in the 20th century. In 1949, an estimated 500 Hawaiian Ducks remained on Kauaʻi, and about 30 on Oʻahu. By the 1960's, Hawaiian Ducks were found in small numbers only on Kauaʻi and probably on Niʻihau. From the late 1950's through the early 1990's, Hawaiian Ducks were reintroduced to Oʻahu, Maui, and Hawaiʻi (Paton 1981; Bostwick 1982; Engilis *et al.* 2002) through captive propagation and release. More recently, Engilis *et al.* (2002) estimated the current statewide population of pure Hawaiian Ducks to be 2,200 birds, with 2,000 on Kauaʻi and 200 on Hawaiʻi. The total Hawaiian Duck population appears to be increasing based on the biannual waterbird count, due primarily to increases in the Hawaiian Duck population on Kauaʻi, but Hawaiian Ducks are declining on other islands.

Life History: Hawaiian Ducks breed year-round, but the majority of documented nesting records are from March through June (Engilis et al. 2002). In Kauaʻi lowlands, Hawaiian Ducks form pair bonds between November and May, with pairs dispersing to montane nesting localities. Hawaiian Duck numbers fluctuate seasonally at Hanalei National Wildlife Refuge, with the highest numbers in September and lowest numbers in June and July (A. Asquith, Hanalei National Wildlife Refuge, pers. comm. 1999). These seasonal changes may reflect dispersal into montane areas during the breeding season, perhaps indicating a later breeding period for these Kauaʻi birds. Some pairs find suitable nesting habitat in lowland wetlands. Nests are on the ground near water, but little else is known of their specific nesting habits. There have been few documented records of nesting in areas populated by humans, particularly where cats, dogs, or mongooses are common. Clutch size ranges from 2 to 10 eggs (mean = 8.3) (Swedberg 1967). Incubation lasts approximately 30 days, with most chicks hatching from April to June. Hawaiian Ducks are usually found alone or in pairs and are wary, particularly when nesting or molting. Hawaiian Ducks may congregate in substantially larger numbers when loafing or exploiting rich food sources. Concentrations of 200 or more Hawaiian Ducks have been observed at Hanalei National Wildlife Refuge. They are strong flyers and usually fly at low altitudes. Hawaiian

Ducks exhibit intraisland movement but dispersal tendencies are still unclear (Engilis et al.2002). Hawaiian Ducks, like Mallards, apparently are opportunistic feeders. Foods consumed include snails, insect larvae, earthworms, grass seeds, rice, green algae, and seeds and leaf parts of wetland plants (Swedberg 1967). Feeding in wetlands and streams typically occurs in water less than 24 centimeters (9.4 inches) deep (Engilis et al. 2002).

Habitat Description: The Hawaiian Duck historically used a wide variety of natural wetland habitats for nesting and feeding, including freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, and forest swamplands at elevations ranging from sea level to 3,000 meters (9,900 feet). Agricultural and artificial wetlands such as taro, lotus (*Nelumbo nucifera*), shrimp, fish, and sewage treatment ponds supplement natural wetland habitats and provide important feeding habitat for the Hawaiian Duck. They may also use irrigation ditches, flooded ephemeral fields, reservoirs, and the mouths of larger streams for feeding or nesting. Swedberg (1967) estimated that 90 percent of the Hawaiian Duck population on Kauaʻi lives along that Island's extensive upland stream system, between 300 and 1,200 meters (1,000 to 4,000 feet) elevation. A typical stream used by the Hawaiian Duck on the Big Island is 7 meters (23 feet) wide, swiftly flowing, strewn with boulders, and has heavily vegetated banks (Paton 1981). However, little information is available on habitat use of upland stream systems by the Hawaiian Duck. Ephemeral wetlands are important habitat for the Hawaiian Duck, although how they are used beyond foraging is unknown (Engilis *et al.* 2002). Hawaiian Ducks move regularly between Niʻihau and Kauaʻi in response to above-normal precipitation and the flooding and drying of Niʻihauʻs ephemeral wetlands (Engilis 1988; Engilis and Pratt 1993). More information is needed on movements of the Hawaiian Duck in response to the availability of seasonal and permanent wetland habitats between the summer (dry) and winter (wet) seasons.

Threats: Hybridization with feral mallards is currently the primary threat to the recovery of the Hawaiian Duck. Extensive hybridization has occurred on Oʻahu, Maui and Hawaiʻi, and with somewhat less hybridization on Kauaʻi (Fowler et al. 2008). Hybridization is unlikely to occur with wild migratory mallards that winter or pass through the islands since migrants occur in Hawaiʻi during their nonbreeding season. As with all other ground nesting birds in Hawaii, predation by introduced mammals including dogs, cats, and rats also pose a significant risk to Hawaiian Ducks. Damage to watersheds by pigs, goats, and other feral ungulates may pose direct impacts to nesting habitat.

Hawaiian Duck at Kauaʻi Lagoons: Hawaiian Ducks are relatively abundant on the Resort property. During the course of the 2008-2009 season KL recorded a range of 2- 60 ducks on the property. During that season, KL observed three Hawaiian Duck nests. It is opined that between two and ten pair nest a year on the Resort property (Alan P. Silva, pers. comm.). Hawaiian Ducks have been recorded nesting at the irrigation pond and in the general Pond # 3 area, as well as in the nursery which is located in the "triangle" parcel between the runways. Survival of the ducklings appears to be $\leq$ 10 percent (Alan P. Silva, pers. comm.). Potential causes of the relatively low survival rate of ducklings have not been identified, though predation by alien mammals, Cattle Egrets, and possibly fish are likely to be the principal non-metabolic threats that the young birds face. Since Hawaiian Ducks are almost never seen on the golf holes, it is unlikely that golf play represents a significant threat to this species.

3.9.6 Hawaiian Petrel

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Taxonomy and Species Description: The Hawaiian Petrel (*Pterodroma sandwichensis*) is a pelagic seabird of the Order Procellariiformes, Family Procellaridae. It was formerly considered to be a Hawaiian endemic subspecies of the nominate race of the Dark-rumped Petrel (*Pterodroma. p. phaeophygia*). The Hawaiian sub-species has recently been elevated to a full species, based on work conducted by Tomkins and Milne (1991), and Browne *et al*. (1997), that differentiated the vocalizations and morphology between it and the nominate species (Banks *et al*. 2002). The nominate race has been renamed the Galapagos Petrel (*Pterodroma phaeophygia*). Both species are typical long-winged gadfly petrels, easily confused in flight with several other like species. Within and close to their breeding colonies Hawaiian Petrels are quite vocal, and their vocalizations are distinctive. Hawaiian Petrels are nocturnal feeders, subsisting primarily on squid, fish, and crustaceans caught near the sea surface (Simons 1985). Unlike shearwaters, Hawaiian Petrels are not known to dive or swim below the surface (Pitman 1986). Hawaiian Petrels forage widely across the central, northern and eastern Pacific Ocean, even during the breeding season (Pittman 1986, Warham 1990, Spear et al 1995, Simons et al. 1998, Adam 2007). Satellite tagged birds have been tracked traveling more than 10,000 kilometers on a single foraging trip to and from their breeding colony on the island of Maui (Adams 2007). Hawaiian Petrels produce and store a high-calorie oil in their foregut, which most scientists presume functions to ensure nourishment for chicks despite the Petrels' often unpredictable and widely dispersed food supply (Warham et al. 1976, Warham 1996, 1997, Jacob 1982). This oil production is unique to birds in the order Procellariiformes (Warham et al. 1976). Hawaiian Petrels feed during both daylight hours as well as at night where they search for squid, flying fish, goatfish, lantern fish, skipjack tuna, hatchetfish, and similar species, which they find near the surface of the water (Wheeler 1975, Nelson 1976 Pittmen et al. 1997, Simons 1985). Hawaiian Petrels capture prey items primarily by scavenging on the surface of the ocean, though they have been recorded feeding by aerial dipping, pattering, scavenging and surface-seizing (Ashmole 1971, Pittman 1986).

Historic and Current Distribution: Historical information on the distribution of this species in the Hawaiian Islands is very spotty. Following the initial description of this species in the 1880's there were few records of the species between the early 1900's and the 1930's, followed by a

steady accumulation of reports and information between the 1940's and the present day (Banko 1980). Whether Hawaiian Petrels were truly extremely rare in those years, possibly due to human and introduced mammalian predation, or whether people simply were unaware of these nocturnal seabirds, is unclear. Within recent historic times, Hawaiian Petrels have bred on Maui, Kauaʻi, Lanaʻi and Hawaiʻi (Richardson and Woodside 1954, Simons and Hodges 1998, Pyle 1987, Telfer *et al*. 1987, DOFAW unpublished data 2006, 2009). The species is thought to be extinct on Oʻahu (Harrison 1990). All attempts to estimate either world or individual island populations have been fraught with major problems. Spear et al. (1995) estimated from at-sea densities that the world population of Dark-rumped Petrels was 19,000, with at least 5,000 pairs nesting on Kauaʻi and 1,600 pairs on Maui (Ainley et al. 1997). The recently re-discovered Hawaiian Petrel colony on Lanaʻi appears based on survey efforts to contain thousands of birds, rather than hundreds of birds as first surmised (Jay Penniman, DOFAW, pers. Communication with R. David). The breeding population on Maui is relatively stable, due in large part to predator control efforts and protection by the National Park Service (Simons 1985, Hodges 1994). The population nesting within Haleakalā National Park is increasing (Cathleen Bailey, Pers. comm. April 11, 2008). The status of the Hawaiian Petrel population on the Island of Hawaiʻi is unknown, although it is believed to be declining due to continued predation by introduced mammals. The breeding populations on Kauaʻi are similarly under-researched, although the number of fledglings grounded each year and retrieved by the Save Our Shearwater (SOS) program has remained steady, averaging 10 individuals per year from 1979 to 2008 (SOS Program Data).

Life History: The Hawaiian Petrel breeding cycle is quite synchronous and follows a timing pattern characteristic of Procellariiformes in general. First, breeding occurs at approximately five to six years of age, with an estimated 89 percent of the adult population breeding each year. Birds begin arriving on breeding grounds and pairing in mid-February. A distinct pre-laying exodus occurs in late March. Egg-laying typically transpires between late April and mid-May, with chicks hatching in July and August after an average incubation period of 55 days (Simons 1985). Each breeding pair produces only one egg per year. Hatching success at Haleakalā has been estimated at approximately 70% (Hodges 1994), but no comparable data are available from Kauaʻi, where the nests have never been studied (principally because of their very remote location, on very steep and inaccessible terrain). At the time of hatching, failed breeders and non-breeding adults depart the colony. Although there have been no studies of the breeding biology of this species on Kauaʻi it is probable that their breeding biology is similar to that of birds studied on Maui, and likely similar to that of other similar petrels such as the Galapagos Petrel, which has been studied extensively. If so, then it can be stated that chicks are born with a soft, powdery down, which is replaced after a fortnight by a slightly heavier down. The chicks spend most of their time sleeping, although they can move around the nest burrow. Both adults spend their time flying to sea to feed and bring food home for the chicks; this occurs at diminishing intervals over the span of the nestling period, which averages about 110 days total. Growth rate of the chicks is extremely fast. The size of a meal can vary from 10 to 110 grams, the latter figure represents more than one quarter of a parent's weight. This amount of food is likely the most an adult can carry. Fledging begins in late September, during which time breeding adults begin to leave the nest. By the end of November most adult and successful fledgling birds (estimated at about 85% of nestlings) have departed the islands (Simons 1985). It is probable that parental feeding visits drop to just one or two in the final month, causing the

weight of the chicks to drop precipitously. Some individuals are deserted by their parents up to six weeks before they fledge, while others are fed right up to the day of departure. Once the chicks leave they will not return to land again for several years, when they will return to nest. Hawaiian Petrels are long-lived, with birds banded on Maui commonly reaching 35 years of age (Simons and Hodges 1998).

Habitat Description: Hawaiian Petrels spend nearly all of their lives at sea, returning to land only to breed. Known Hawaiian Petrel breeding areas on Kauaʻi are within interior valleys. Petrels on Kauaʻi excavate burrows beneath dense vegetation along valley headwalls, particularly favoring steep slopes covered with ʻuluhe fern (*Dicranopteris spp.*), though in at least one valley, petrel burrows are concentrated on the valley floor in dense native forest (R. David, personal observation). On Maui and Hawaiʻi, relictual colonies are mainly found in sparsely vegetated sub-humid and sub-alpine areas on Haleakalā and Mauna Loa, respectively. Hawaiian Petrel nests in colonies on Maui and Hawaiʻi are typically widely dispersed, however densities in at least one colony matrix in Lumahaʻi Valley on Kauaʻi are apparently quite dense. Hawaiian Petrels, like most other Procellariiformes, appear to exhibit high degrees of nest-site and mate fidelity year after year. Hawaiian Petrels, along with other forest nesting seabirds, are an integral part of the forest nutrient cycle. The birds deposit a large quantity of nitrogen-rich fertilizer in the form of excrement in and around their burrows. In very wet forests such as those found on many Pacific Islands, soils are often relatively infertile and thus the added seabird generated nitrogen is significant.

Threats: Most Procellariiformes, including Hawaiian Petrels, have evolved in ecosystems free of terrestrial mammalian predators, and they are for the most part naïve of the threats that these predators pose to them. The only known native predator of Hawaiian Petrels is the Hawaiian Short-eared Owl (*Asio flammeus sandwichensis*), which causes some mortality at breeding colonies. Many biologists believe that predation of nesting Hawaiian Petrels by introduced mammals, such as the roof rat (*Rattus r. rattus*), Norway rat (*Rattus n. norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), domestic cat (*Felis catus*), domestic dogs (*Canis f. familiaris*) and the small Indian mongoose, is the most serious cause of mortality and breeding failure. Furthermore, they believe it has contributed significantly to the decline of the species. Small Indian mongooses have been thought to be absent from Kauaʻi, but there have been a few recent reported sightings. Habitat destruction and alteration from pigs (*Sus s. scrofa*) uprooting burrows and facilitating the introduction of non-native plant species poses another serious threat to Hawaiian Petrels (Ainley *et al*. 1997, Cooper and Day 2003). Additionally, the introduced Barn Owl (*Tyto alba*) is thought to have killed Hawaiian Petrels, and it is thought that they also prey on Newell's Shearwaters as well. Artificial light sources and associated structures (e.g., fences, buildings, power lines, and telephone poles) constitute another anthropogenic threat to Hawaiian Petrels. Particularly in urbanized areas of Maui and Kauaʻi, Petrels have fallen to the ground after colliding with structures or becoming disoriented by artificial lights. While the numbers of downed Petrels documented on Kauaʻi per year have remained relatively small (averaging 10 birds annually), the threat posed by artificial lighting and structures will likely increase over time unless more bird-friendly designs are incorporated into new lights, power lines, etc.

Hawaiian Petrel at Kauaʻi Lagoons: Currently there is very little nighttime activity on the Resort property, as only two new buildings (Kalanipuʻu complex) associated with the current and planned development projects are complete and occupied. To date (i.e., through the end of 2011) there have not been any downed Hawaiian Petrels recorded on the Resort property. However,

downed Hawaiian Petrels have been recorded at the adjacent Marriott hotel property. (1979-2009 Unpublished SOS Data). As a result, it is possible that following build-out and occupation of the new buildings at the Resort, downed Hawaiian Petrels could occur there.

3.9.7 Newell's Shearwater

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Taxonomy and Species Description: The Newell's Shearwater (*Puffinus auricularis newelli*), is a Hawaiian endemic sub-species of the nominate species, the Townsend's Shearwater (*Puffinus a. auricularis*) of the eastern Pacific.[10] Its size and black and white coloring make it superficially similar in appearance to several other shearwater species that occur in the central and northern Pacific, which are sometimes referred to as Manx-type shearwaters. The Newell's Shearwater is a pelagic bird which forages over deep water east and south of Hawai'i, concentrating feeding in areas where tuna (*Thunnus* spp.) and other large, predatory fish have chased squid and other prey near to the ocean surface (Ainley *et al*. 1997). The birds feed by pursuit-plunging, diving 10 meters or more below the ocean surface to retrieve prey (Ashmole 1971).

Historic and Current Distribution: The Newell's Shearwater is known to nest on Kaua'i, Moloka'i, and Hawai'i (Ainley *et al*. 1997, Day *et al*., 2003, Day and Cooper 2002, Day *et al*. 2003). Newell's Shearwaters may also nest on Maui (Cooper and Day 2003), and possibly in very small numbers on O'ahu and Lana'i. Numbers of colonies and individuals are greatest on Kaua'i (Ainley *et al*. 1997). Spear *et al.* (August 1995: 624) estimated the total year-round at-sea population of Newell's Shearwaters in the Hawaiian Islands during the early 1990s at roughly 84,000 individuals (95% confidence interval of 57,000 to 115,000 for spring and 58,000 to 113,000 for autumn). Using Spear et al.'s total population estimate and allowing for an estimated 7,600 one-year-old birds that do not visit Kaua'i, Ainley *et al.* (1995a) estimated that the Kaua'i population in the mid-1990s was approximately 65,000 birds, with a breeding population of about 14,600 pairs (Ainley *et al.* 1995a:42).[11] Using population models

[10] While the U.S. Fish and Wildlife Service recognizes the Newell's Shearwater as a subspecies, it should be noted that the International Union for Conservation of Nature redlist and many modern taxonomists recognize it as a full species.

[11] The breeding population of 14,600 pairs was estimated by multiplying the total population of 84,000 by 0.637 (proportion of total population of breeding age [6 years or older]), and then by 0.547 (the breeding probability). This estimate assumes that all Newell's Shearwater breeding occurs on Kaua'i.

incorporating best estimates of breeding effort and success, Ainley *et al*. (2001) projected an annual population decrease of 3.2 percent. When anthropogenic variables influencing Newell's Shearwater mortality (e.g., predation, light attraction, and power line collision) were included, their models predicted an annual population decline of 6.1%, or approximately 60 percent every 10 years. If this projection is accurate, then the current population ought to be around 50,000 birds. There is little empirical data to confirm whether this estimate is in fact valid. However, the available scientific data (particularly radar studies conducted over the past decade and SOS data (Day *et al*., 2003; Planning Solutions Inc., 2003a, 2003b, 2004)) strongly suggest that the population of Newell's Shearwater on Kaua'i has declined sharply over the past 10 years.

Life History: First breeding occurs at approximately 6 years of age, after which breeding pairs produce up to one egg per year. The high rate of non-breeding, among experienced adults occupying the colony during the summer breeding season, is comparable to that of similar species (Ainley *et al*. 2001). No specific data exist on longevity for this species, but other shearwaters may reach 30 years of age or more (see for example Bradley *et al*., 1989, del Hoyo *et al*. 1992). The Newell's Shearwater breeding season begins in April, when birds return to prospect for nest sites. A pre-laying exodus follows in late April and possibly May, and egg-laying begins in the first two weeks of June and likely continues through the early part of July. Pairs produce one egg, and the average incubation period is thought to be approximately 51 days (Telfer 1986). The fledging period is approximately 90 days, and most fledging takes place in October and November, with a few birds still fledging into December (SOS Data). Biologists have long believed that adult Newell's Shearwaters leave the nesting colony before or during fledging. However, very recent radar and at-nest electronic monitoring indicate that at least some adults continue to feed their young through fledging, and in fact some adults remain in the colonies after the fledglings have left (R. David, B. Zaun personal communication 2004).

Habitat Description: Newell's Shearwaters spend nearly all of their lives at sea, returning to land only to breed. The marine range of Newell's Shearwater closely overlaps that of the Hawaiian Petrel, extending east as far as 120ºW, north up to 22ºN, and south to the equator near Hawai'i (Ainley *et al*. 1997). Isolated records exist as far west as the Mariana Islands and Johnston Atoll and as far south as the Marquesas Islands and Samoa, with at least one record from California (Pratt *et al*. 1987; Maryl Faulkner, email of 8/3/07). Their breeding colonies are found at high elevations (160 to 1,200 meters), often in isolated locations and/or on slopes greater than 65 degrees (Ainley *et al*. 1997). Typical vegetation around colonies consists of open native forest dominated by 'ōhia (*Metrosideros polymorpha*) with a dense understory of 'uluhe fern (*Dicranopteris linearis*). The birds nest in short burrows excavated into the crumbly volcanic rock and ground, usually under dense vegetation, and under the base of trees. Burrows on Kaua'i ranged in depth from 46-175 cm with an average of 87.78cm ± 22.2 SD (Telfer 1986). A single egg is laid in the burrow and one adult bird remains on the egg while the second adult goes to sea to feed. Newell's Shearwaters will not usually lay their eggs straight onto the ground if a nesting burrow is not available. Some colonies on Kaua'i are located in vertical cliff faces, where birds presumably are nesting in rock crevices rather than creating burrows (Wood *et al*. 2001). Newell's Shearwaters arrive and leave their burrows in the mountains during darkness and birds are seldom seen near land during daylight hours.

Threats: Cooper and Day (1995:4) states that the leading cause of the decline in population is predation by introduced mammals, although it acknowledges that there are a number of other potential contributing causes. The *Newell's Shearwater Five-year Workplan* drafted by the

Newell's Shearwater Working Group[12] (October 2005) summarizes the causes contributing to the species population decline as predation, habitat degradation and loss, light attraction, collision with manmade structures, and natural disturbance. Loss of existing and potential nesting habitat due to clearing of forests for agriculture and urban development, mining of cinder cones, and recent volcanic eruptions on the Island of Hawai'i are among the terrestrial factors believed to be contributing to the decline of Newell's Shearwater. Newell's Shearwater habitat has also been degraded by feral ungulates such as pigs (*Sus s. scrofa*) and goats (*Capra h. hirca*), which now are managed as game species. Pigs and goats facilitate the invasion of nonnative plants and perhaps predators. These animals also crush burrows and compact the soil. Invasive nonnative plants, such as Moluccan albizia (*Albizia falcataria*), guava (*Psidium spp*.), and rose myrtle (*Rhodomyrtus tomentosa*), displace native vegetation and can completely alter vegetation structure and substrates typical of Shearwater nesting habitat. For example, the habitat at the Kāluahonu colony (southeastern Kaua'i) has been almost completely and perhaps irreversibly transformed in just a few years and is now dominated by nearly pure and impenetrable stands of rose myrtle and guava. Intensive surveys in 2003 indicate that the colony has either dramatically declined or been abandoned entirely (David et al., 2002, David 2003). Urbanization on Kaua'i, chiefly on the eastern and northern shores, has been positively correlated with increased groundings or "fallout" of fledgling Shearwaters on their first nocturnal flight from the burrow to the sea (Telfer *et al*. 1987, Ainley *et al*. 2001). The young birds are attracted to and disoriented by light sources, and they occasionally collide with buildings, cars, and other

obstacles, including power lines. More frequently they simply fall to the ground, exhausted after fluttering around lights for long periods (Ainley *et al*. 1997, Podolsky *et al*. 1998). Risk of grounding for fledglings seems to increase on and around the new moon. Adult Shearwaters apparently are not attracted to lights to the same degree as fledglings, but adults do collide with power lines (Cooper and Day 1998). Once Shearwaters are grounded they become extremely vulnerable to alien mammalian predators and other hazards, as it is very difficult for them to take flight from flat ground (Ainley *et al*. 1997). The SOS program on Kaua'i has retrieved and released over 30,000 downed Newell's Shearwaters since 1979, giving them veterinary attention as needed, and then releasing them at elevated hack sites overlooking the ocean from which they can easily take flight. These efforts result in about 90 percent of retrieved birds being returned to the wild each year, most of whom would almost certainly have perished otherwise (SOS Database 1979-2008).

Newell's Shearwater at Kaua'i Lagoons: Currently there is very little nighttime activity on the Resort property, as only two new buildings (Kalanipu'u complex) associated with the current and planned development projects are complete and occupied. To date (i.e., through the end of 2011) there have not been any downed Newell's Shearwaters recorded on the Resort property due to Resort lighting or other features.[13] However, downed Newell's Shearwaters have been recorded at the adjacent Marriott hotel property. (1979-2009 Unpublished SOS Data). As a result, it is possible that following build-out and occupation of the new buildings at the Resort, downed Newell's Shearwaters could occur there.

[12] The Newell's Shearwater Working Group, created by the USFWS, is an informal working group consisting of experienced seabird scientists from USFWS, DLNR and other entities.

[13] The SOS Program did report that one downed Newell's Shearwater was found on the Resort property during the 2009 SOS season. This bird was found along a lightly traveled road (Kalapaki Circle), in an undeveloped portion of the property, between two golf hole fairways. There are no lights, buildings or structures in the vicinity.

3.9.8 Band-rumped Storm-Petrel

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Taxonomy and Species Description: The Band-rumped Storm-Petrel (*Oceanodroma castro*) is a small seabird about 20 centimeters (8 inches) long, weighing less than 40 grams (1.5 ounces). It is an overall blackish-brown bird with an evenly-cut white rump band and uppertail-coverts. Sexes are alike in size and appearance. There is little or no seasonal variation in plumage. At sea field identification can be difficult, because several other white-rumped species of storm-petrels are similar in size, color, and shape. However, vocalizations at breeding colonies are distinctive and can be used to identify the species (Allan 1962). In hand, identification of this species is relatively straight forward.

Historic and Current Distribution: The Band-rumped Storm-Petrel is a wide ranging species found in the subtropics of the Pacific and Atlantic Oceans (Harris 1969). Breeding populations in the Atlantic are restricted to the eastern portions of the ocean, primarily in the Azores island group off northwestern Africa (Cramp and Simmons 1977). Wintering populations may occur as far west as the mid-Atlantic, with small numbers regularly reaching the coasts of North and South America (Cramp and Simmons 1977). In the Pacific, there are three widely separated breeding populations--one in Japan, one in Hawai‘i, and one in the Galapagos (Harris 1969; Richardson 1957). Populations in Japan and the Galapagos are comparatively large and number in the thousands (Coulter 1984; Hasegawa 1984), while the Hawaiian birds represent a small, remnant population of possibly only a few hundred pairs (Harrison *et al*.1984; Harrison *et al*. 1990). Extensive at-sea surveys of the Pacific have revealed a broad gap in distribution of the Band-rumped Storm-Petrel to the east and west of Hawai‘i (Pitman 1986; Spear *et al*. 1994). The Hawaiian population of the Band-rumped Storm-Petrel is the only population within U.S. borders or under U.S. jurisdiction. Sub-fossil remains of Band-rumped Storm-Petrels have been found on O‘ahu and Moloka‘i and Hawai‘i (Olson and James 1982, A. Ziegler personal communication), and their bones are abundant in some ancient Hawaiian midden (A. C. Ziegler personal communication as reported in Wood *et al*. (2002). Slotterback (2002) and Athens *et al*. (1991) found bones of this species in sea level midden. They speculate that Hawaiian populations once nested in coastal sites throughout Hawai‘i and loss of habitat and predation by introduced mammalian predators including humans has been an important factor in the decline of this species. Evidence of existing nesting populations of Band-rumped Storm-Petrels in the

Hawaiian Islands is based on detection of adult birds during breeding-season surveys and by retrieval of fledglings in the fall by persons involved in the SOS Program. Fledglings have been retrieved sporadically on the islands of Hawai‘i and Kaua‘i, providing additional evidence of nesting colonies within the Hawaiian archipelago (Harrison *et al*. 1990, Banko *et al*. 1991). Worldwide population of the species is uncertain, but is most likely less than 25,000 breeding pairs. Based on their field investigations, Wood *et al*. (2001a, 2001b) estimated that there are approximately 200 nesting pairs on Kaua‘i.

Life History: The species is long-lived (15 to 20 years) and probably does not breed until its third year (Ainley 1984). The nesting season occurs during the summer months, with adults establishing nesting territories in April or May. The incubation period averages 42 days (Harris 1969) and the young reach fledging stage in 64 to 70 days (Allan 1962; Harris 1969).During the day, adults spend their time foraging on the ocean surface. Food consists mainly of small fish, squid, crustaceans, oily scraps of marine animal carcasses, and garbage remnants (King 1967; Harris 1969). Adults visit the nest site after dark, where they can be detected by their distinctive calls. Since no nests have ever been found in Hawai‘i, information on the breeding biology of this species can only be surmised based on the known breeding biology of this species in other locales, such as the Galapagos Islands. Nests are placed in crevices, holes, and protected ledges along cliff faces, where a single egg is laid (Allan 1962; Harris 1969).

Habitat Description: In September 2001, Wood *et al*. (2001a. 2001b) heard Band-rumped Storm-Petrels in Pōhakuao Valley, an isolated hanging valley on the Nāpali coast, and estimated that 50 to 60 birds were nesting on cliffs 370 to 460 meters (1,200 to 1,500 feet) in elevation. Between April and October of 2002, Wood *et al*. (2002) gathered data on the distribution and abundance of the Band-rumped Storm-Petrel at several locations on Kaua‘i. They concluded that there are nesting populations at several locations on the Island. These include Waimea Canyon (east of Waimea Canyon lookout); four sub-populations along the Nāpali Coast (Kalalau, Pōhakuao, Nu‘olololo Aina, Nu‘olololo Kai); one site in the Koke‘e region of Awa‘awapuhi; one site, called Awa‘awapuhi vista, at the eastern rim of Nu‘alolo and Awa‘awapuhi Valleys (accessed from the Awa‘awapuhi Trail, Koke‘e State Park); and Lehua Islet off the north coast of Ni‘ihau. Three other sites were monitored and appear to be general fly-by sites where the petrels are in transit to nearby nests, including upper Waimea Canyon; Honopu (Kōke‘e); and Kalalau Rim (Koke‘e). Five of the sites that this team investigated represents previously unpublished locations. Wood *et al*. (2002) provide relatively detailed information on the vegetation characterizing the sea cliffs where the Band-rumped Storm-Petrel is nesting:

> *The Pōhakuao cliffs where storm-petrels nest are dominated by the shrub Chamaesyce celastroides var. hanapepensis (akoko), and two native grasses, Eragrostis variabilis (kawelu) and Panicum lineale (panic grass).*
>
> *Common herbs included Plectranthus parviflorus ('ala'ala-wai-nui), Dianella sandwicensis ('uki 'uki), Peperomia tetraphylla, P. blanda var. floribunda, & P. cookiana ('ala'ala wai nui), Pilea peploides, and Peucedanum sandwicense (makou). Sedges included Carex meyenii and Cyperus phleoides. Vines included Alyxia oliviformis (maile), and Cocculus trilobus (huehue). Occasional ferns (and fern allies) were also a component of these cliff regions.*
>
> *Tree species were distributed randomly around small ledges and terraces where soil pockets could accumulate and included Dodonaea viscosa ('a'ali'i), Psydrax odoratum (alahe'e), Metrosideros polymorpha var. glaberrima ('ohi'a), Hibiscus kokio subsp. saintjohnianus (koki'o*

'ula 'ula), Diospyros spp. (lama), Acacia koaia (koai'e), Antidesma platyphyllum var. hillebrandii (hame), Bobea elatior ('ahakea), and Melicope pallida ('alani) (Wood and LeGrande 2001; Wood et al. 2001).

Threats: Introduced predators are believed to be the most serious terrestrial threats facing the Band-rumped Storm-Petrel in Hawai‘i. Rats, cats, dogs, mongoose and barn-owls are likely culprits. The Band-rumped Storm-Petrel, like the other seabirds discussed above, lacks effective anti-predator behavior, and has a lengthy incubation and fledgling period, making adults, eggs, and young highly vulnerable to predation by introduced mammals. Wood *et al*. (2002) observed owls flying along basalt cliff faces where the Band-rumped Storm-Petrels nest in Pōhakuao. These observations included consistent traffic of the Hawaiian Short-eared owl during the day and the screeching of barn owls in the evening. The topic of owl predation on Hawaiian seabirds was covered in an article in the *‘Elepaio* (Byrd and Telfer 1980). Another impact to the Band-rumped Storm-Petrel results from the effects of artificial lights on fledgling young and, to a lesser degree, adults. Artificial lighting of roadways, resorts, ballparks, residences, and other development in lower elevation areas both attracts and confuses night-flying Storm-Petrel fledglings, resulting in “fall-out” (Harrison *et al*. 1990) and collisions with buildings and other objects (Banko *et al*. 1991).

Band-rumped Storm-Petrels at Kaua‘i Lagoons: Currently there is very little nighttime activity on the Resort property, as only two new buildings (Kalanipu’u complex associated with the current and planned development projects is complete and occupied. To date (i.e., through the end of 2011) there have not been any downed Band-rumped Storm-Petrels recorded on the Resort property.

3.10 Wildlife Hazard at Līhu‘e Airport

As described in Section 1.5.5, above, airports subject to FAA regulation must comply with FAA safety standards in order to maintain their Airport Operating Certificate. The FAA safety standard regulations (14 C.F.R. Part 139) require airport operators to assess and manage hazards to aircraft operations posed by wildlife occurring on or near an airport.

Serious concerns about bird-strike hazards at Līhu‘e Airport are long-standing. These concerns have been exacerbated in recent years due to the significant increase in the Nēnē population at Kaua‘i Lagoons. Although Nēnē is not the only bird species which poses a potential hazard to aircraft, it is the focus of aircraft safety concerns due to its size, flocking behavior, frequence of occurence at the Airport, and increasing population at Kaua‘i Lagoons.

Since at least the early 1990s, HDOT (the airport operator) has contracted with USDA-WS to maintain a full-time staff at the Airport to continually monitor bird activity, and to actively haze, harass and disperse Nēnē away from the Airport using a variety of techniques.[14] HDOT, through USDA-WS, prepared a Wildlife Hazard Assessment (WHA) in 2005, and prepared an updated WHA in July 2009 (based on extensive monitoring data collected in 2008) focused exclusively on Nēnē. The 2009 WHA found that:

[14] USDA-Wildlife Services is currently authorized under the federal ESA to harass Nēnē and other endangered bird species at the Līhu‘e Airport as a designated agent of the USFWS, pursuant to 50 C.F.R. 17.21(c)(3). It is similarly authorized to perform such activities under a Protected Wildlife Permit issued by DOFAW.

- There were 2,791 Nēnē sightings at the airport in 2008
- The numbers of Nēnē dispersals at the Līhu‘e Airport have increased steadily from 1,138 in 2004 to 2,252 in 2008
- In 2008, an additional 539 Nēnē were observed but not dispersed at the Airport (the majority of those observations were of Nēnē flying over the Airport).
- In 2008, 230 runway crossings, involving a total of 972 Nēnē, were observed.
- It appears that the Nēnē observed at the Airport do not consist of a small number of repeat visitors, but rather consist of a large portion of the Kaua‘i Lagoons population.

(Hawaiian Goose (Nēnē) Wildlife Hazard Assessment, Lihue Airport LIH (USDA-WS 2009)).

HDOT submitted the 2009 WHA to the FAA, as required by FAA regulations. After reviewing the WHA, the FAA determined that the airport must prepare a Wildlife Hazard Management Plan (Steven Hicks, FAA Airport Certification Safety Inspector, pers. comm. October 2009). See 14 C.F.R. 193.337(d), (e).

Both the HDOT and USDA-WS have recently expressed their views regarding aircraft hazards associated with bird populations at Kaua‘i Lagoons, in comments submitted in June 2009 on the Draft Environmental Assessment for a portion of the Kaua‘i Lagoons expansion project (the Density Amendment component). The HDOT comment letter states: “DOT objects to and opposes any enhancement of the nesting area for the Nēnē and/or other wildlife because of the potential hazard to aircraft operations at Lihue Airport . . . The applicant’s Habitat Conservation Plan (HCP) should incorporate measures to eliminate the nesting habitat and provide mitigation measures. . . .” (DEA Comment Letter submitted by Brennon T. Morioka, Director, Hawai‘i Department of Transportation, June 22, 2009). The USDA-WS comment letter states: “[N]ene . . . have been identified as serious hazards to aviation at Lihue Airport . . . Wildlife Services strongly opposes maintaining this goose population so close to Lihue Airport and recommends that Kauai Lagoons work with the USFWS and DOFAW to eliminate the population of geese on Kauai Lagoons property adjacent to Lihue Airport in order to remove this hazard to aviation.” (DEA Comment Letter submitted by Mike Pitzler, State Director, USDA-Wildlife Services, June 19, 2009). Separately, HDOT-Airports Division sent a letter to DOFAW on July 8, 2009, requesting assistance to address threats to aviation safety caused by the increasing population of Hawaiian Nēnē at Kaua‘i Lagoons. (Letter from Brian H. Sekiguchi, Deputy Director-Airports, Hawai‘i Department of Transportation, to Paul Contry, Administrator, Department of Land and Natural Resources, Division of Forestry and Wildlife, July 8, 2009).

At the conclusion of an October 2009 meeting between KL, DOFAW, USFWS, HDOT, FAA, and USDA-WS, KL and the wildlife agencies agreed that KL’s HCP should only address KL resort construction and operation impacts; applicable FAA regulations require that the airport operator (HDOT) address aircraft-wildlife hazards. Thus, this HCP does not include or cover any specific Nēnē management measures designed to address aircraft safety issues. Instead, this HCP explicitly identifies and acknowledges the aircraft safety issues, and commits KL to cooperate with the airport agencies and the wildlife agencies in their separate efforts to address these issues in accordance with applicable FAA regulations.

As discussed at the October 2009 meeting, the FAA regulations require that the airport operator (HDOT) prepare a Wildlife Hazard Management Plan and submit it to the FAA for review and

approval. KL recommended in October 2009 that in preparing the WHMP that HDOT consult and coordinate with DOFAW, USFWS and KL, each of which pledged their cooperation.

As part of its WHMP review and approval process the FAA must engage in formal consultation with the USFWS pursuant to Section 7 of the ESA. That Section 7 consultation would result in the issuance by the USFWS of a Biological Opinion and Incidental Take Statement authorizing the WHMP activities. As DOFAW explained at the October 2009 meeting, HDOT must also seek authorization for such activities under HRS Chapter 195D.

At a meeting on August 19, 2010 convened by the FAA, HDOT stated that it had not begun preparing the required WHMP. DOFAW, USFWAS and KL again pledged their cooperation in any effort by HDOT to develop and prepare the WHMP. DOFAW, USFWS and KL also pledged their cooperation with respect to considering any interim hazard reduction measures that HDOT and the other airport agencies may recommend. HDOT pledged to the FAA that it would begin to develop and prepare the required WHMP. All parties further discussed these issues at a meeting on August 30, 2010.

As described in Sections 1.2 and 3.9.1, above, on April 14, 2011, Governor Neil Abercrombie issued a Proclamation directing DLNR, in conjunction and in cooperation with HDOT, USFWS, FAA, and USDA-WS, to immediately undertake to translocate Nēnē from the KL property, and to develop long terms plans for management of Nēnē residing at, translocated from, or to be translocated from the KL property. DLNR began such translocations in late April 2011. DLNR intends to translocate all Nēnē from KL, such that no Nēnē would be present at KL by April 2016.

4.0 Conservation Program

4.1 Biological Goals and Objectives

Biological goals and objectives clarify the purpose and direction of an HCP's operating conservation program. The biological goals and objectives for the Kaua'i Lagoons HCP are as follows:

Biological Goals	***Biological Objectives***
Goal 1: Avoid and minimize impacts of new construction activities on the Covered Species	1.A: Provide comprehensive endangered species awareness training to all construction personnel and Resort employees. 1.B: Deploy construction monitors and biological monitors during construction operations to prevent harm to Covered Species 1.C: Develop and implement specific construction Best Management Practices to prevent harm to Covered Species
Goal 2: Avoid and minimize impacts of Resort operations on the Covered Species	2.A: Provide comprehensive endangered species awareness training to all Resort employees. 2.B: Develop and implement specific operational Best Management Practices to prevent harm to Covered Species. 2C: Develop and implement a program to educate golfers about the presence of Covered Species on the golf course, and measures to avoid harm to Covered Species 2D. Develop and implement a program to minimize light-induced attraction of seabirds to Resort facilities through the selection and installation of appropriate lighting fixtures, and implementation of appropriate seasonal lighting restrictions and practices.

Goal 3: Manage the Nēnē population at the Resort to provide a net benefit to species recovery, and work toward an overall reduction in Nēnē frequenting the Resort property.	3.A: Implement appropriate Best Management Practices to prevent harm to Nēnē from Resort construction and operations 3.B: Accommodate breeding of any resident Nēnē through predator control measures 3.C: Facilitate and cooperate with Nēnē translocation efforts undertaken by DOFAW or USFWS 3.D: Manage grounds and vegetation where possible to minimize attractiveness to Nēnē
Goal 4: Provide a net conservation benefit for the recovery of the remaining waterbird Covered Species (Hawaiian Duck, Hawaiian Moorhen and Hawaiian Stilt) which are present all year around.	4.A: Implement construction and operations Best Management Practices to prevent harm to these Covered Species 4.B: Implement specific measures to manage appropriate on-site habitat for the Covered Species
Goal 5: Maintain healthy seasonal populations of Hawaiian Coot at the Resort.	5.A Implement construction and operations Best Management Practices to prevent harm to these Covered Species

4.2 Measures to Avoid and Minimize Impacts to Covered Species

4.2.1 New Construction

Kauaʻi Lagoons will implement the following measures to avoid and minimize impacts to the Covered Species associated with new construction on the project site. These measures are based on the experience and knowledge gained by KL, USFWS and DOFAW during the 2007-08, 2008-09, 2009-2010, and 2010-2011 nesting seasons.

4.2.1.1 Endangered Species Awareness Program

In preparation for the 2008-09 nesting season, KL developed an Endangered Species Awareness Program (ESAP) training session, and used it to train every employee, manager, construction contractor and trade contractor working at the Resort. KL developed this Program in collaboration with the USFWS and DOFAW. The program was updated to reflect new information and the changing face of the construction project following the end of the 2009-2010 Nēnē nesting season.

Prior to the onset of the 2010-2011 Nēnē nesting season KL required that all new employees and construction personnel complete this updated training program. Going forward, KL will require every new employee or construction contractor working at the Resort to complete this training program. A copy of the ESAP is attached as Appendix 2.

4.2.1.2 Endangered Species Construction Contract Provisions

KL will develop provisions and restrictions (such as the Best Management Practices described below) to avoid and minimize take of the Covered Species, which will apply to all construction activities that occur in areas where the Covered Species may occur. KL will insert these provisions into construction contracts for these activities.

4.2.1.3 Pre-construction Endangered Species Surveys

A Biological Monitor (discussed below), will conduct surveys of any new mass grading areas immediately prior to the initiation of mass grading. The surveys must be of appropriate length and duration to confirm that the Covered Species are either present or absent. If any of the Covered Species are observed, their locations and band combinations (if banded) will be recorded, and grading will not be allowed to proceed until such individuals have left the grading area as described in Section 4.2.1.5 below. If any of the Covered Species are observed to be nesting, grading will not be allowed to occur within 500 feet of the nest and the Biological Monitor(s) will immediately contact DOFAW and USFWS. DOFAW and/or USFWS will promptly determine in coordination with the Biological Monitor(s) the appropriate buffer area around the nest (which buffer would likely be less than 500 feet) within which no grading or earth-moving activity may occur so long as nesting activity is ongoing. Grading and earth-moving activity outside of the determined buffer area may then resume. Any such buffer zone will be appropriately marked with construction fencing, flagging or similar means. The buffer will remain in place until nesting is completed and any goslings have fledged, or the nest fails, or the nesting adults and their goslings have been removed and translocated by DOFAW or the USFWS.

4.2.1.4 Biological Monitors

KL will designate at least two individuals to serve as Biological Monitors at the Resort.[15] These individuals shall be trained biologists or otherwise be qualified to serve in this role. The Biological Monitors will be responsible for performing the predator control, biological monitoring, and other similar functions described in this HCP. They will also coordinate any Covered Species translocation activities undertaken by either DOFAW or USFWS.

4.2.1.5 Construction Monitors

During all periods of active grading or earth-moving activity, KL will deploy one or more Construction Monitors on the project site. (A designated Biological Monitor can also perform the responsibilities of a Construction Monitor.) The Construction Monitor(s) are responsible for observing grading and earth-moving activity, and ensuring to the best of their ability that such activity does not adversely affect any Covered Species. The Construction Monitor(s) will complete Endangered Species Awareness Program training described above, and will also be trained in the field on the project site by the Biological Monitors.

The Construction Monitor(s) (and the Biological Monitors) will have the authority to, and will halt construction activities when, they anticipate that any aspect of grading, earth-moving or construction activities pose a threat of harm to any of the Covered Species. In such instance, the

[15] As of late-2011, the designated Biological Monitors are Mr. Alan P. Silva and Mr. Reginald David. Any additional or subsequent Biological Monitors shall be qualified biologists who are approved by DOFAW and USFWS.

Construction Monitor or the Biological Monitor will continue to observe the species in question, and the desire of KL, USFWS and DOFAW is that the observed species will voluntarily move such that the threat is abated. If the observed species does not voluntarily leave the construction area, the species will then first be encouraged to relocate in a non-harmful manner. Failing that, the species may be physically relocated out of the construction area by the Biological Monitors with DOFAW approval, by other qualified biologists with DOFAW approval, by the DOFAW Kauaʻi Wildlife Manager's staff, or by a USFWS biologist. Construction activity may resume when the Biological Monitors observe that the species has departed the immediate construction area.

4.2.1.6 Fencing

Where feasible to do so based on size and location, KL will erect and maintain solid fencing around discrete construction areas, to exclude the Covered Species from walking into such areas. Depending upon site-specific conditions, such fencing could consist of silt fencing, solid wood fencing, or other equivalent types of fencing. All such fencing will be inspected on a daily basis and repaired when necessary.

4.2.1.7 Best Management Practices

The following Best Management Practices will be implemented to ensure that construction parking, traffic, food and beverage trash, and other peripheral construction activities do not harm any Covered Species on the project site.

- Kauaʻi Lagoons, in consultation with a Biological Monitor, shall designate one or more personal vehicle parking areas for construction personnel, away from areas where Nēnē or other Covered Species are known to regularly occur or nest. All other areas will be off limits for parking.
- A speed limit of 15 miles per hour will be enforced for all vehicular traffic within the entire Project area. KL will post speed limit signs throughout the Project area.
- KL or its contractors will provide appropriate trash receptacles with lids and recycle containers at construction sites within the Project area, and ensure that food scraps, beverage containers and trash are properly disposed of.
- Signage will be erected delineating speed limits, parking areas, food disposal sites and Nēnē caution signs.
- Based on consultations with the federal and state wildlife agencies KL has installed permanent roadside signs that display the speed limit and the phrase "Slow Down Wildlife Crossing" with a photo of a Nēnē silk screened onto the sign. In addition KL has made free standing sandwich board signs that have the same message on one side, and the phrase "Please Do Not Feed the Nēnē" on the other side. These are deployed in areas where Nēnē are observed congregating. Additionally, KL has posted warning signs attached to poles located close to every nest within the Resort, with the phrase "Nēnē Nest – Do Not Approach" and an image of a Nēnē on the sign.
- No night-time construction requiring outdoor lighting shall occur during the annual seabird fallout season of September 15 to December 15 each year.
- If an actively used Covered Species nest is found within any active grading or earth-moving area, all such activity within 500 feet of the nest will immediately be halted and the Biological Monitor(s) will immediately contact DOFAW and USFWS. DOFAW

and/or USFWS will promptly determine in coordination with the Biological Monitor(s) the appropriate buffer area around the nest (which buffer would likely be less than 500 feet) within which no grading or earth-moving activity may occur so long as nesting activity is ongoing. Grading and earth-moving activity outside of the determined buffer area may then resume. Any such buffer zone will be appropriately marked with construction fencing, flagging or similar means. The buffer will remain in place until nesting is completed and any goslings have fledged, or the nest fails, or the nesting adults and their goslings have been removed and translocated by DOFAW or the USFWS.

- For any other actively used Covered Species nest within the project area that could be affected by construction activity, KL will consult with DOFAW and USFWS biologists to determine whether any additional protective measures are appropriate.

4.2.2 Resort Operations

4.2.2.1 Roadways

Consistent with the measures described in 4.2.1.7 above, KL will post permanent speed limit and Covered Species warning signs throughout the Resort property. KL will also install speed bumps on Resort roadways wherever necessary to ensure compliance with the posted speed limit.

4.2.2.2 Lighting

Prior to the construction of structures on the site, KL consultants will meet with the architects, electrical engineers and lighting designers to ensure that all lighting associated with the proposed resort development, including parking areas and accent lighting, is bird friendly. Any external lighting shall be only of the following types: shielded lights, cut-off luminaries or indirect lighting. Spotlights aimed upward, or spotlighting of structures and landscaping on the project site, shall be prohibited.[16]

As buildings near completion and are electrified, their lighting will be inspected after dark by a qualified biologist with experience in nocturnal seabird issues in Hawai‘i to determine if any modifications are needed to lighting fixtures, bulbs, lighting direction, shielding etc. to ensure that all measures have been taken to minimize the potential impacts of light attraction to night flying seabirds to the maximum extent practicable.

KL has already implemented these measures with respect to the new Kalanipu‘u building complex (total of 2 buildings, and 78 units), portions of which were completed and became ready for occupancy in 2009, and the rest of which were completed in 2011. In early 2010, KL and its qualified biologist performed a nighttime inspection of the lighting at the Kalanipu‘u building and adjacent grounds, and also took the opportunity to inspect lighting associated with newly installed streets and infrastructure, as well as pre-existing lighting elsewhere in the Resort such as around the grounds and near the golf clubhouse. The resulting findings and remedial measures are as follows:

- The new lighting fixtures installed along new roadways and parking areas are all completely shielded, as described above, and cast all of their light directly downward. No changes are required.

[16] These requirements are also contained in Kauai County’s SMA Conditions of Approval.

- The same light fixtures are used at both ends of the two bridges over the lagoons. However, because of the short length of the bridges the cumulative illumination produced by the lights at both ends was greater than necessary. As a result, KL installed new, lower wattage ballasts in those fixtures.
- The inspection confirmed that KL had eliminated all lighting of monument signage in the resort (signage lettering is now made of reflective material that becomes visible when illuminated by car headlights, thus precluding the need for continuous lighting). No changes are required.
- The inspection determined that certain interior light fixtures within the new Kalanipu‘u building’s breezeways produced an excessive amount of light when viewed from outside. KL installed replacement light fixtures in 2011. In the meantime, those lights were not turned on during the fall 2010 seabird fallout season (September 15 to December 15).
- Regarding long-standing outdoor lighting inherited by the current KL owners:
    - KL has eliminated upward-pointing ground lights used to illuminate tall vegetation, and lights installed in trees
    - KL has eliminated, or replaced with bird-friendly substitutes, old lighting in parking lots and planters
    - KL has replaced numerous (approximately 20) large outdoor globe lights, located near the clubhouse and the lagoons.

As part of the seabird fallout monitoring program described in section 4.5 below, KL’s biologists will analyze the onsite seabird fallout monitoring data on an ongoing basis to determine if any particular lighting or lit areas within the resort development attracts downed birds on a regular basis, and if so, steps will immediately be taken to re-design, re-configure or eliminate any potential light attraction sources that may be responsible.

4.2.2.3 Grounds Management and Maintenance

Based on the more than 20 years of experience operating the Resort, normal grounds management and maintenance activities are not expected to adversely affect or result in take of the Covered Species. Nevertheless, Kaua‘i Lagoons will take the following steps to avoid and minimize potential impacts of grounds management and maintenance activities on the Covered Species.

- All grounds management and maintenance personnel will be required to attend the Endangered Species Awareness Program training described above, on an annual basis.

- Biological Monitors will notify grounds management and maintenance personnel to avoid areas known to contain active nests or high concentrations of Covered Species.

- All grounds management and maintenance personnel will be instructed to contact one of the Biological Monitors before proceeding with any particular grounds management or maintenance activity that has the potential to adversely affect any of the Covered Species. For example, should grounds crews observe nesting Covered Species in an area they intend to mow or otherwise work on, they will contact a Biological Monitor for instruction prior to proceeding with such work.

- In the event that grounds management and maintenance personnel observe any injured or dead member of a Covered Species, they shall follow the Emergency Response Protocol attached to this HCP as Appendix 1.

- KL will continue to use topical treatments, such as herbicides, as necessary to establish and maintain golf course grass. Use of these treatments is subject to Environmental Protection Agency labeling and regulations.

4.2.2.4 Owners and Private Facility Operations

To ensure that following the build-out of the project that the owners, and residents of the Resort understand the various endangered species issues, restrictions, and special rules associated with complying with the terms of the permits that KL is seeking with this application, KL will use several avenues to educate, instruct and require compliance with specific conditions associated with this application. The principle vehicle for ensuring compliance will be through the Covenants, Conditions and Restrictions (CC&Rs) that will be part of the contractual requirements associated with ownership of property within the development.

Issues such as appropriate trash receptacles, disposal of trash, landscape design and maintenance will be included in the CC&R's. The project plans to restrict pets as much as possible, and leash laws will be enforced, not only for dogs, but for cats as well.

A mandatory architectural review process is required for all private residences constructed at Kaua'i Lagoons; as part of this review process specific structural, design and lighting restrictions associated with the minimization of impacts to listed species will be enforced by the architectural design review committee.

The project plans on developing several endangered species information and education tools that will be used to educate owners and visitors to the resort, regarding endangered species issues, restrictions and special seasonal protocols. It is envisioned that the following tools will be developed and distributed.

- A general endangered species awareness program will be developed and shown on the dedicated resort informational television channel.
- An additional television module addressing seabird fallout will also be developed and shown on the station during the annual seabird fallout season.
- A printed endangered species awareness brochure will be produced and included in the sales material, and as part of the in room, and condo amenities.
- An additional brochure, information packet will be developed regarding seabird fallout and the SOS Program which will be included in the sales material, and as part of the in room, and condo amenities.
- These various informational products will be re-supplied as needed by housekeeping staff.

4.2.2.5 Golf Operations

As explained above, as part of the ongoing development project Kaua‘i Lagoons will convert the Resort’s two original 18-hole golf courses into a single, 27-hole course. Avoidance and minimization measures associated with golf course construction and reconfiguration are addressed above. This section discusses measures to avoid and minimize impacts on the Covered Species associated with operation of the golf course.

- Management and maintenance of the golf courses will be subject to the same requirements described above in Section 4.2.2.3.
- In addition to the standard Endangered Species Awareness Program training all Kaua‘i Lagoons personnel must attend, all golf course Starters and Marshalls shall receive additional training from the Biological Monitors to ensure that they can identify the Covered Species, and that they are knowledgeable about relevant Covered Species behaviors, likely areas of occurrence, measures that can be taken to avoid and minimize harm to the Covered Species, non-harmful means which can be used to encourage the Covered Species to leave areas in which they may be at risk of harm, measures to take in response to any observed injury to a member of the Covered Species, etc. Also, the Starters and Marshalls shall always carry a two-way radio and/or cell phone, and the phone numbers of the Biological Monitors, so they can immediately consult with the Biological Monitors in the event any urgent situations arise.
- Each day all Kaua‘i Lagoons golf operations personnel will participate in a morning briefing, which will include an update on observed Covered Species occurrences, locations, behavior, etc.
- The golf course Starter (who must clear every golfer before they proceed onto the course), will inform every golfer about the potential presence of the Covered Species on the course, about the fact that the Covered Species are protected by the ESA and Chapter 195D, about the need to take all appropriate precautions to avoid causing harm to any Covered Species, and about the local rule (discussed below) applicable to play in areas where the Covered Species are nesting. Kaua‘i Lagoons will erect an educational kiosk at the starter location, which kiosk will include large color photographs of the Covered Species, which the starter shall use as part of the educational briefing for all golfers.
- If any members of the Covered Species are observed transiting through areas of the golf course where they may be at significant risk of injury from golf play, the Starters or Marshalls may temporarily halt play in that location and allow the birds to voluntarily move out of harm’s way, and/or they may gently encourage the birds to relocate in a non-harmful manner (i.e., without any physical contact).
- If any members of the Covered Species are observed congregating and remaining on areas of the golf course where they may be at significant risk of injury from golf play, the golf course Starters or Marshalls may encourage these birds to relocate in a non-harmful manner (i.e., without any physical contact). If the birds in question do not relocate, they may be physically relocated by the Biological Monitors with DOFAW approval, by other qualified biologists with DOFAW approval, by the DOFAW Kaua‘i Wildlife Manager’s staff, or by a USFWS biologist.

- Each golf cart will contain a laminated placard, which replicates the key information contained at the educational kiosk.
- If golf operations personnel observe that a Covered Species has established a nest within the golf course, golf operations personnel will notify the Biological Monitors and erect appropriate warning signs near the nest to warn golfers. The Starter will also point out these posted locations to all golfers as part of the educational briefing.
- Kaua‘i Lagoons will officially adopt a “local rule” for golf play, which will allow golfers who hit a ball in the immediate vicinity of a nesting Covered Species to move their ball to the nearest point of relief away from the nest area. The Starter will describe this local rule to all golfers as part of the educational briefing, and this local rule will be printed on the score card provided to each golfer.
- All golfers will be instructed to immediately contact the Marshall or Starter if they observe an injured Covered Species, or if any concerns about any of the Covered Species arise during the course of golf play.
- If any golf operations personnel observe any dead or injured member of a Covered Species, they shall implement the Emergency Response Protocols attached to this HCP as Appendix 1.

4.2.2.6 Sales and Marketing

The KL sales and marketing department is responsible for selling the new residential units being constructed at the Resort. Approximately 50 members of that department will be on the Resort property daily, providing information to prospective purchasers, conducting tours, etc. These activities are not expected to adversely affect or result in take of the Covered Species. Nevertheless, Kaua‘i Lagoons will take the following steps to avoid and minimize potential impacts on the Covered Species.

- All sales and marketing personnel will be required to attend the Endangered Species Awareness Program training described above.
- Biological Monitors will notify sales and marketing personnel to avoid areas known to contain active nests or high concentrations of Covered Species.
- All sales and marketing personnel will be instructed to contact one of the Biological Monitors before conducting any activity that has the potential to adversely affect any of the Covered Species.
- In the event that sales and marketing personnel observe any injured or dead member of a Covered Species, they shall follow the Emergency Response Protocol attached to this HCP as Appendix 1.

4.3 Assessment of Potential Impacts

The following sections assess the impacts of the Covered Activities on each of the Covered Species, taking into account the implementation of the avoidance and impact minimization

measures discussed in Section 4.2 above. The impact assessment for Nēnē assumes that the population at KL will decline rapidly to zero or very low levels by 2016 as a result of the DLNR translocation effort, but that up to 20 Nēnē could nevertheless be present at any particular time thereafter, as described in Section 3.9.1, above. The impact assessment for waterbirds assumes that the populations of the waterbird species at the Resort will remain at or below current (2011) levels.

4.3.1 Nēnē

4.3.1.1 Direct Impacts – New Construction

During the period 2007-2011, no direct take of Nēnē occurred as a result of Resort construction activities such as site clearing, mass grading, or infrastructure or building construction.[17] KL attributes that to the successful implementation of the conservation measures developed in collaboration with DOFAW and the USFWS, such as KL's Endangered Species Awareness Program training, and vigilant monitoring by KL's construction and biological monitors.

Nevertheless, despite those effective measures and despite the fact that the population of Nēnē on the Resort will decrease rapidly as a result of DLNR's translocation program, the threat of direct take from new construction activities cannot be totally eliminated. The total amount of estimated incidental take from new construction, along with that from resort operations, is described in Section 4.2.1.3, below.

4.3.1.2 Direct Impacts – Resort Operations

Based on approximately 20 years of resort operations, and implementation of the avoidance and minimization measures described above, KL does not expect any direct take of Nēnē to occur as a result of grounds management and maintenance.

With respect to golf operations, there is anecdotal information indicating that Nēnē have on occasion been hit by golf balls on the golf course, but there is no empirical data as to how many times or how frequently this has occurred.[18] Given the comprehensive golf operations avoidance and minimization measures described above, KL estimates that any such incidents will occur less frequently than whatever has historically been the case. The likelihood of any such incidents will also decrease tremendously as the population of Nēnē on the Resort will decrease rapidly as a result of DLNR's translocation program. The total amount of estimated incidental take from resort operations, along with that from new construction, is described in Section 4.2.1.3, below. The resort operations component of the total take estimate is not based on empirical data, but is based on the best available information, including KL's close observation and monitoring of Nēnē over several years. The implementation of a comprehensive golf course monitoring plan will produce future data regarding this issue, and the appropriateness of the take level requested in this HCP for this species.

[17] In October 2008, one adult Nēnē was struck and killed near a construction area on the Resort grounds by a private vehicle operated by an outside construction contractor employee. KL responded to the incident, and notified DOFAW and the USFWS, immediately. Shortly thereafter, KL established a centralized parking area and shuttle system for construction contractor employees.

[18] The USFWS reports Nēnē have also been struck by golf balls on the Island of Hawai'i. USFWS (2005), p. 30.

4.3.1.3 Total Direct Impacts

For purposes of this HCP and the requested state and federal take authorizations, and based on all of the information and assumptions described above, KL estimates that direct incidental take of Nēnē from new construction and golf operation activities combined will be 1.0 per year for Years 1 through 4 of the HCP (early 2012 through early 2016) while DLNR's translocation program is in progress, and then 0.33 per year (i.e., one every three years) for Years 5 through 30 of the HCP after completion of DLNR's translocation program.[19]

4.3.1.4 Indirect Impacts – Nesting/Breeding

As described above, beginning in 2007 KL has worked closely with DOFAW and the USFWS to develop and implement numerous conservation measures at the Resort. As part of this effort KL conducted extensive monitoring of the Nēnē population at the Resort to supplement monitoring which DOFAW has conducted in prior years, and that monitoring effort yielded a wealth of new information. In short, the KL Nēnē population is substantial and has been highly productive. Although development activity at the Resort prior to the 2008-09 breeding season eliminated areas in which some Nēnē had nested during the prior several seasons, that action did not affect breeding success. As discussed in detail in Section 3.9.1, every Nēnē pair which had previously nested in those now unavailable areas in 2007-08 nested successfully elsewhere on the Resort property in 2008-09 (including one pair that raised two seperate clutches) and every surviving pair again nested successfully on the property in 2009-10. Moreover, overall Nēnē breeding success in 2008-09 and in 2009-10 was the highest ever recorded at the Resort. As a result, KL does not anticipate that the Covered Activities will result in any take in the form of diminished breeeding success.

4.3.1.5 Indirect Impacts – Loss of Dependent Young

Indirect take to account for loss of dependent young will be assessed for adult Nēnē only when a mortality occurs during the breeding season (observed on the Resort property to be from approximately September through March), which constitutes approximately 60% of the calendar year. An adult killed during the breeding season will be assumed to have had a 60% chance of having been actively breeding because approximately 60% of the population has been recorded to breed in any given year. Banko, P. C., J. M. Black, and W. E. Banko, 1999, Hawaiian Goose (Nēnē) (Branta sandvicensis) (in The Birds of North America, No. 434 (A. Poole and F. Gill, eds.)). Male and female Nēnē care for their young fairly equally, so indirect take would be assessed equally to the direct lethal take of any male or female adult Nēnē during the breeding season. It is assumed based on KL's monitoring data for the 2008/09 and 2009/10 breeding seasons that each Nēnē breeding pair produces approximately two goslings annually. Consequently, the amount of potential indirect take associated with each direct take is calculated as follows:

[19] All of the take estimates in this HCP are stated as a per-year average, which will be based on a 5-year running average.

Fledglings per pair (2) x likelihood of mortality occurring during breeding season (0.6) x likelihood of breeding (0.6) x parental contribution (0.5) = 0.36.

4.3.1.6 Summary of Total Estimated Take

Years 1 through 4: Direct lethal take[20] (maximum of 1.0 per year) + indirect take (1.0 x 0.36) = 1.36 Nēnē per year, or a 4-year total of 5.44.

Years 5 through 30: Direct lethal take (maximum of 0.33 per year) + indirect take (0.33 x 0.36) = 0.48 Nēnē per year, or a 26-year total of 11.67.

Total direct and indirect take for 30 years: 17

Again, for the reasons described above, this is a very conservative estimate, and actual levels of take are expected to be substantially less. This is especially true with respect to indirect take in Years 5 through 30, as DLNR anticipates that following completion of its Nēnē translocation project, HDOT will (with KL's cooperation) implement hazing measures on the KL property to prevent any remaining or newly arriving Nēnē from breeding.

4.3.2 Other listed Waterbird Species

This section assesses the impacts of the Covered Activities on the additional four waterbird Covered Species (Hawaiian Moorhen, Hawaiian Coot, Hawaiian Duck and Hawaiian Stilt).

4.3.2.1 Direct Impacts – New Construction

During the period 2007-2011, no direct take of any of the other four listed waterbird species occurred as a result of Resort construction activities such as site clearing, mass grading, or infrastructure or building construction. KL attributes that to the successful implementation of the conservation measures developed in collaboration with DOFAW and the USFWS, such as KL's Endangered Species Awareness Program training, and vigilant monitoring by KL's construction and biological monitors.

In contrast to Nēnē, these other four waterbird species are very reluctant to venture near active construction operations. Consequently, KL does not anticipate that any take of the waterbird species will occur in the future as a result of new construction activities.

4.3.2.2 Direct Impacts – Resort Operations

Based on approximately 20 years of resort operations, and implementation of the avoidance and minimization measures described above, KL does not expect any direct take of the four waterbird species to occur as a result of grounds management and maintenance operations.

[20] As described above, KL estimates a total of 1.0 lethal or non-lethal take per year in Years 1 through 4, and 0.33 per year for Years 5 through 30. For purposes of calculating indirect effects, however, KL here makes the biologically conservative assumption that all Nēnē take will be lethal.

Hawaiian Coots have been known to seasonally congregate, especially in dry years, on portions of the golf course, and occasionally in large numbers. There is anecdotal information indicating that coots have on occasion been hit by golf balls on the golf course, but there is no empirical data as to how many times or how frequently this has occurred. Given the comprehensive golf operations avoidance and minimization measures described above, KL estimates that any such incidents will occur less frequently than whatever has historically been the case. For purposes of this HCP, KL estimates that direct take of coots from golf operations may occur at the average rate of up to three mortality and six non-lethal injuries per year. This estimate is not based on empirical data, but is based on the best available information, including KL's observation and monitoring of coots over several years. The implementation of a comprehensive golf course monitoring plan will produce future data regarding this issue, and the appropriateness of the take level requested in this HCP for this species.

KL has no information indicating that Hawaiian Moorhen, Hawaiian Duck or Hawaiian Stilt having been injured on the golf course. For these other three waterbird species, based on KL's experience, and implementation of the avoidance and minimization measures, KL estimates that the potential for direct take from golf operations is less than whatever has been the case historically, but take may nevertheless occur at the average rate for Hawaiian Moorhen of up to one mortality and one non-lethal injury per year, and for Hawaiian Duck and Hawaiian Stilt of up to one mortality or non-lethal injury per year. As with the other species discussed above, this estimate is not based on empirical data, but is based on the best available information, including KL's observation and monitoring of coots over several years. The implementation of a comprehensive golf course monitoring plan will produce future data regarding this issue, and the appropriateness of the take level requested in this HCP for this species.

4.3.2.3 Indirect Impacts – Nesting/Breeding

Based on the extensive monitoring conducted during the period 2007-11, KL does not expect that the Covered Activities will result in any indirect impacts to the nesting or breeding of the four additional waterbird species identified above. As described in Chapter 3, Hawaiian Coots have never been documented nesting on KL property (although during the 2008-09 season a pair of coots with a single chick was observed in the Resort lagoons). Nesting on the Resort property by Hawaiian Moorhen and Hawaiian Duck occurs on an annual basis in low-to-moderate numbers. Nesting by Hawaiian Stilt is, and always has been, extremely limited. Based on continued implementation of the conservation measures described in this HCP, KL does not anticipate that the Covered Activities will result in any take in the form of diminished breeeding success to these additional four listed waterbird species.

4.3.2.4 Indirect Impacts – Loss of Dependent Young

- Hawaiian Moorhen: Studies indicate that average number of fledglings produced per pair is 1.3 per year. The nesting season (March to August) constitutes 50% of the calendar year. An adult killed during the breeding season will be assumed to have been breeding.

Males and females care for their young fairly equally. Consequently, the amount of potential indirect take is calculated as follows:

Fledglings per pair (1.3) x likelihood of mortality during breeding season (0.5) x likelihood of breeding (1.0) x parental contribution (0.5) = 0.325.

- Hawaiian Coot: Studies indicate that average number of fledglings produced per pair per year is 0.9. The nesting season (concentrated from March to August, though can occur other times of the year) constitutes 50% of the calendar year. An adult killed during the breeding season will be assumed to have been breeding. Males and females care for their young fairly equally. Consequently, the amount of potential indirect take is calculated as follows:

  Fledglings per pair (0.9) x likelihood of mortality during breeding season (0.5) x likelihood of breeding (1.0) x parental contribution (0.5) = 0.225

- Hawaiian Duck: Studies indicate that average number of fledglings produced per pair per year is 1.225. The nesting season (March to June) constitutes 33% of the calendar year. An adult killed during the breeding season will be assumed to have been breeding. Since males do not provide any parental care for eggs or ducklings, the "parental contribution" factor for males would be zero, while the factor for females would be 1.0, so the average parental contribution value is 0.5. Consequently, the amount of potential indirect take is calculated as follows:

  Fledglings per pair (1.225) x likelihood of mortality during breeding season (0.33) x likelihood of breeding (1.0) = 0.40; 50% of that value (to account for males providing no parental care, thus an indirect effect would only occur if a female is killed during the breeding season, and for calculation purposes the on-site population is assumed to be equally divided between males and females) results in an indirect take factor of 0.20.

- Hawaiian Stilt: Studies indicate that average number of fledglings produced per pair per year is 0.9. The nesting season (February to August) constitutes approximately 60% of the calendar year. An adult killed during the breeding season will be assumed to have been breeding. Males and females care for their young fairly equally. Consequently, the amount of potential indirect take is calculated as follows:

  Fledglings per pair (0.9) x likelihood of mortality occurring during breeding season (0.60) x likelihood of breeding (1.0) x parental contribution (0.5) = 0.27.

4.3.2.5 Summary of Total Estimated Take

- Hawaiian Moorhen: Direct lethal take (1.0 per year) + indirect take (1.0 x 0.325) = lethal take of 1.325 Hawaiian Moorhen per year, plus 1.0 non-lethal injury per year (based on 5-year running average).

- Hawaiian Coot: Direct lethal take (3.0 per year) + indirect take (3.0 x 0.225) = lethal take of 3.675 Hawaiian Coots per year, plus 6.0 non-lethal injuries per year (based on 5-year running average).

- Hawaiian Duck: Direct lethal take (1.0 per year) + indirect take (1.0 x 0.20) = lethal take of 1.20 Hawaiian Ducks per year, or 1.0 non-lethal injuries per year (based on 5-year running average).

- Hawaiian Stilt: Direct lethal take (1.0 per year) + indirect take (1.0 x 0.27) = lethal take of 1.27 Hawaiian Stilt per year, or 1.0 non-lethal injuries per year (based on 5-year running average).

4.3.3 Seabirds

This section assesses the potential impact of the Covered Activities on the three Covered Seabird Species (Hawaiian Petrel, Newell's Shearwater and Band-rumped Storm-Petrel).

There is no suitable nesting habitat on the Resort property for any of the three listed seabird species that KL is seeking Coverage for. From ancillary information gathered by the SOS Program, and numerous avian radar studies it is safe to surmize that these species do over-fly the Resort during the breeding season. To date (i.e, through the end of 2011) none of the covered seabirds have been reported as downed on the property due to Resort lighting or other features, likely due to the fact that currently there is very little nighttime lighting associated with the site.[21] As new buildings are constructed and occupied at the Resort in the future, the potential that Resort lighting might attract seabirds and that seabird fallout might occur at the Resort may increase.

4.3.3.1 Direct Impacts – New Construction

Since the principal threat that the Resort poses to the covered seabird species is associated with nighttime illumination which may disorient birds flying through the airspace above the Resort resulting in fallout, and since no nighttime construction will occur within this development, it is not expected that new construction will result in any direct impacts to any of the three seabird species identified above.

4.3.3.2 Direct Impacts – Resort Operations

As newly constructed structures are occupied within the Resort development in the future, the potential that lighting associated with the buildings could attract nocturnally flying seabirds, and that a small proportion of birds over-flying the site therefore could fallout, will increase. Whether any actual fallout will occur as a result of such new buildings is unknown. Beyond

[21] The SOS Program did report that one downed Newell's Shearwater was found on the Resort property during the 2009 SOS season. This bird was found along a lightly traveled road (Kalapaki Circle), in an undeveloped portion of the property, between two golf hole fairways. There are no lights, buildings, or structures in the vicinity. The spot where the bird was found is approximately 0.25 miles from a nearby industrial park, 0.30 miles from the Marriott hotel, 0.45 miles from the end of Runway 3, 0.5 miles from Vidinha Stadium, and 0.75 miles from a new building recently constructed as part of the Resort development project.

reducing and designing lighting from a bird friendly perspective, little more can be done to reduce the potential for direct impacts to seabirds. To ensure that the impacts are as minimal as possible KL will implement the following measures:

- KL will develop an endangered seabird awareness program similar to those implemented elsewhere on the Island.
- All Resort personnel will be required to attend a seabird awareness training session.
- During the seabird fallout season Resort personnel from the Department of Safety and Security will thoroughly monitor the grounds and buildings for downed seabirds on a daily basis.[22] In addition, a Biological Monitor will also conduct effective monitoring for downed birds during the expected peak of seabird fallout, which is from one week prior to one week after the new moon, and will include a report on such monitoring in the Annual Report required by Section 4.5.
- All Department of Safety and Security personnel will be required to attend not only the seabird awareness training program, but also an SOS seabird handling workshop.
- Department of Safety and Security personnel will maintain a detailed log of all seabirds recovered, with location, condition, time of day, and other pertinent information recorded.
- KL will request that a DOFAW/KHS SOS Aid Station be placed on-site during the fallout season each year.
- A pet carrier will be maintained on site at all times, and will be used to temporarily hold any downed seabird recovered in the Resort.
- If a downed seabird is found within the Resort it will be retrieved and placed in the pet carrier and maintained in a shady location until it can be placed in the on-site or other nearest SOS Aid-Station.
- DOFAW and/or the SOS program will be contacted immediately upon recovery of any downed bird.

Given the lighting-specific avoidance and minimization measures described above, the numbers of downed seabirds at the nearby Marriott hotel in recent years (see footnote below), the relatively smaller light attraction potential of the new low-rise Resort buildings relative to the much larger nearby Marriott hotel, the seabird-friendly lighting changes recently instituted at nearby Nawiliwili Harbor and Vidinha Stadium, and the fact that no downed seabirds occurred at the Resort despite the completion and partial occupation of the new Kalanipu'u complex (2 buildings, total of 78 units) beginning in 2009 and full use and occupation of the complex during the Fall 2011 seabird fallout season,[23] KL estimates that upon completion of the additional planned new construction (Marriott Vacation Club complex of 7 buildings in three phases, with

[22] Given the relatively small and confined areas that will be developed and lit (e.g., the Kalanipuu complex), the easy access to and across those areas, and the likelihood that any downed bird would be readily observable in those areas due to their developed nature (e.g., pavement, mowed grass areas, closely cropped landscaping, etc.), searcher efficiency is expected to be 100%. As described in Section 4.5.5, KL will evaluate searcher efficiency and carcass removal rates in Fall 2012 and report the results in the next Annual Report required by Section 4.5.

[23] 54 of the 78 units were fully occupied during the Fall 2011 seabird fallout season, and the remaining units were opened in early 2012.

the first phase of three buildings comprising approximately 75 units currently projected to be completed in 2015), take of seabirds in the form of light-attraction fallout may occur at the average rate of one Newell's Shearwaters per year, and less than one per year for Hawaiian Petrel and Band-rumped Storm Petrel.[24] However, since no take of covered seabirds is presently occurring, whether any take of covered seabirds will occur in the future, and how many, is purely speculative.

4.3.3.3 Indirect Impacts – Loss of Dependent Young

Newell's Shearwater, Hawaiian Petrel and Band-rumped Storm-Petrel: Approximately 97% of these seabirds which fallout on Kaua'i due to light attraction and are retrieved by the SOS program are fledglings, which do not have dependent young. It is therefore assumed that any light-attraction take of seabirds which might occur at the Resort in the future would be fledgling fallout, and there would be no indirect impact in the form of loss of dependent young.

4.3.3.4 Summary of Total Estimated Annual Take

- Newell's Shearwater: 1.0 (based on 5-year running average).
- Hawaiian Petrel and Band-rumped Storm Petrel: <1.0 each (based on 5-year running average).

4.3.4 Summary

In summary, KL expects that the Covered Activities, coupled with implementation of the avoidance and minimization measures described in this HCP, will result in the following maximum levels of incidental take (expressed as a per-year average, based on a 5-year running average):

Species	Direct Take (avg.per year)	Indirect Take (avg. per year)	Total Take (avg. per year)	Total Take (30 years)
Nēnē	Years 1-4: 1.0 mortality or non-lethal injury Years 5-30: 0.33 mortality or non-lethal injury	Years 1-4: 0.36 mortality Years 5-30: 0.12 mortality	Years 1-4: 1.36 mortality or non-lethal Years 5-30: 0.45 mortality or non-lethal	17 mortality or non-lethal injury

[24] This estimate of potential future take is based on Newell's Shearwater fallout documented during the most recent six-year (2006 to 2011) time period at the nearby Kaua'i Marriott Resort (average of 5.75 birds per year for the period 2006 through 2009, and zero downed birds in both 2010 and 2011), where the buildings are both substantially taller and larger and exist as part of a much larger lighted resort complex than those to be built at Kaua'i Lagoons, and substantially closer to other significant light attraction sources such as Nawiliwili Harbor and Vidinha Stadium. Source: Kaua'i Seabird Habitat Conservation Plan office (2012). Over a 30-year period, SOS retrievals of Hawaiian Petrels numbered less than 1% of Newell's Shearwater retrievals, and Band-rumped Storm-Petrel retrievals numbered less than 0.1%..

Hawaiian Moorhen	1 mortality 1 non-lethal injury	0.325 mortality 0.0 non-lethal	1.325 mortality 1.0 non-lethal	40 mortality 30 non-lethal
Hawaiian Coot	3 mortality 6 non-lethal injuries	0.675 mortality 0.0 non-lethal	3.675 mortality 6.0 non-lethal	110 mortality 180 non-lethal
Hawaiian Duck	1 mortality or non-lethal injury	0.2 mortality or non-lethal	1.20 mortality or non-lethal	36 mortality or non-lethal
Hawaiian Stilt	1 mortality or non-lethal injury	0.27 mortality or non-lethal	1.27 mortality or non-lethal	38 mortality or non-lethal
Newell's Shearwater	1	0.0	1.0	27[25]
Hawaiian Petrel	<1	0.0	<1	1
Band-rumped Storm-Petrel	<1	0.0	<1	<1[26]

4.4 Measures to Mitigate Unavoidable Impacts to Covered Species

KL has implemented a significant number of measures to enhance the habitat present on the Resort property and to reduce predator pressure on the nesting waterbirds that have colonized the Resort property. Although these efforts have principally been directed at enhancing the area for Nēnē, these same efforts have been beneficial for the other four listed waterbird species that utilize resources on the property. These programs and efforts are detailed in the following sections of this chapter.

4.4.1 Nēnē

4.4.1.1 General On-Site Habitat Management and Maintenance

Over the past 20 years, KL and its predecessors developed the golf courses, lagoons and associated landscaping at the Resort, which areas were subsequently colonized by several of the Covered Species. Over the past ten years, KL and its predecessors have worked closely with DOFAW to manage the vegetation, lagoons, and surrounding areas to benefit Nēnē. The rapidly increasing population, and nesting success of the resident birds described in Section 3.9.1, is a testament to the success of these efforts.

However, as explained previously, there is now a general recognition by DOFAW, USFWS and the airport agencies that the Nēnē population at KL has become too large with respect to presenting a potential hazard to aircraft, and that the population should be drawn down by translocating birds to other locations. KL will facilitate that process (also described in Section 3.9.1) through implementation of the measures described in Sections 4.4.1.4 and 4.4.1.5, below.

[25] As discussed above, no take is expected under current conditions, and until the new Marriott Vacation Club complex is constructed. Phase 1 of the Vacation Club is projected to be completed in 2015. The maximum amount of projected take (1 per year) over the remaining term of the HCP (27 years) would therefore be result in a total take of 27.

[26] Per footnote 18, the take estimates for Hawaiian Petrel and Band-rumped Storm Petrel are based on SOS retrievals data.

While such translocations are in progress, and thereafter to accommodate any remaining Nēnē on the property, KL will continue to manage the property primarily for golf course and resort operations, and will only maintain suitable Nēnē nesting areas as necessary to accommodate any Nēnē that return to breed. Under the proposed action, KL will not purposefully enhance habitat that would further encourage Nēnē breeding at the Resort.

4.4.1.2 Maintenance of Enhanced On-Site Nesting Areas

From 2007 to 2009, in consultation with the USFWS and DOFAW, KL used various strategies and methods to enhance areas on the Resort for Nēnē nesting. KL also selectively enhanced specific areas on the property to create additional habitat, and/or to redirect Nēnē nesting from areas in which they may be at risk from resort development activities. As has been previously discussed, these efforts were successful, with 2008-09 and 2009-10 being the most productive Nēnē nesting seasons to date on the property.

At the recent direction of the wildlife agencies, KL will not continue prior efforts to enhance Nēnē nesting habitat. Also, KL will not provide supplemental grain feeders on the lagoon islands. KL will take appropriate actions, as determined and directed by DOFAW and USFWS in conjunction with DLNR's translocation efforts, to manage and maintain limited areas of the Resort grounds for Nēnē nesting.

4.4.1.3 On-Site Predator Control

Predation by introduced mammalian species (e.g., cats and rats) is believed to be the greatest factor limiting Nēnē populations generally, and developing effective and economical predator control will likely play a key role in the recovery of the species. USFWS (2004), p. 27-28.[27] To control that threat for the Kauaʻi Lagoons population, KL designed, implemented and monitored the success of a predator control program during the 2008/09 Nēnē nesting season. This program consisted of deploying 20 Havahart® live traps around the Resort from approximately September 15, 2008 to February 22, 2009. Trap placement locations were based on observed Nēnē nest sites, and proximity to trash receptacles and other areas on the Resort property that may attract cats and rats. KL biological monitors checked the traps on a daily basis. In addition KL biological monitors deployed 15 rat snap traps. Larger trapped mammals (cats and dogs) were delivered to the Kauaʻi Humane Society; trapped rats were exterminated and buried. During the 2008-09 season, KL trapped for cats on 458 trap nights using wet cat food as bait. These efforts succeeded in trapping 23 cats and 1 dog. KL also trapped for rats on 393 trap nights using coconut as bait and trapped 66 rats. During the 2009-10 season KL switched out the snap traps and started using 20 Harugami® live rodent traps. During the 2009-10 season KL trapped for cats on 533 trap nights and rats on 693 trap nights, and removed a total of 27 cats and 127 rats from the property.

In February 2009, Cattle Egrets (*Bulbucus ibis*) started roosting in several ironwood trees within the Resort. By the end of February the flock had grown to over 100 animals, and at least one incident of predation of Hawaiian Moorhen by a Cattle Egret was documented by one of the

[27] In its most recent Draft of the Recovery Plan for Nēnē, the USFWS also states that in order for Nēnē populations to survive they must be provided with generally predator-free breeding areas and sufficient food resources. With specific respect to Nēnē populations on Kauaʻi, which all appear to be self-sustaining, the USFWS recommend that it may be most productive to increase management efforts for those populations, such as controlling established predators. USFWS (2004), pp. 47-48.

biological monitors. KL secured a state wildlife depredation permit (WCP 09-28) from DOFAW at the end of March and began initiating control measures against both Cattle Egrets and feral chickens (*Gallus gallus*).

As noted previously, the Nēnē population at the Resort experienced its most prolific breeding seasons ever in 2008-09 and 2009-10, during which 131 and 144 eggs hatched, respectively. KL biologists attribute the predator control program as one reason for this success.

Kauaʻi Lagoons will continue on-site predator control efforts, in order to continue to accommodate any Nēnē that return to KL to breed, both during and after completion of DLNR's five-year translocation effort. As the Nēnē population at KL decreases due to translocations, KL's predator control efforts will focus primarily on the other waterbird Covered Species in terms of the timing and placement of predator traps, as described below in Section 4.4.2. Any remaining Nēnē on the property will continue to benefit from these efforts.

4.4.1.4 Emergency Response Protocol

During the 2008/09 Nēnē nesting season, Kauaʻi Lagoons, USFWS and DLNR developed a site-specific protocol for responding to injured or dead birds, disturbed nests, and birds, eggs or nests in imminent danger. A copy of this protocol is attached as Appendix 1. Kauaʻi Lagoons will continue to implement this protocol for the duration of this HCP and the associated incidental take authorizations. Kauaʻi Lagoons will cover the reasonable private veterinary costs associated with any necessary care provided to injured Covered Species.

4.4.1.5 Facilitate DOFAW/USFWS Translocation and Population Management

In 1927 the Hawaiʻi Board of Agriculture and Forestry attempted to establish a captive flock of Nēnē. By 1935 the flock was broken up due to fear of disease. Facing "imminent extinction" (Schwartz and Schwartz 1949), captive breeding efforts resumed in 1949 at about the time when the estimated statewide population was a mere 30 birds.

Until recently, the USFWS and DOFAW continued to fund and implement Nēnē captive breeding efforts at both the Maui Bird Conservation Center and the Keauhou Bird Conservation Center, each of which housed four breeding pairs. USFWS (2004), p. 36.

Kauaʻi Lagoons has for several years effectively supplemented the agencies' recovery efforts by facilitating on-site breeding success for returning Nēnē through the measures described above, resulting in the most prolific flock of Nēnē in the world, and enabling DLNR to translocate Nēnē to other locations annually since 2005. As described previously, the Nēnē population at the Resort property is now too large given long-standing concerns about this population posing a risk to aircraft operating at the adjacent Līhuʻe Airport.

As detailed in Section 3.9.1, DLNR has begun the process of translocating all Nēnē from KL to off-island locations. KL is facilitating this effort, which will result in the establishment of significant new populations on several other Hawaiian islands, which will contribute to the recovery of the species.

During DLNR's translocation effort, for the benefit of any birds which do remain at the Resort, KL will continue to support and facilitate on-site Nēnē nesting through the measures described above.

As more thorougly described in Section 4.5 below, KL will closely monitor Nēnē nest activity each nesting season, and regularly report the results to both agencies. As appropriate, KL will lend appropriate on-site support to the agencies for their translocation efforts by providing and facilitating site access, providing information about recent bird locations and behavior, etc. The capture, handling, relocation, care and feeding, and ultimate release of translocated birds will be performed solely by DOFAW, the USFWS or the airport agencies, and will not be funded or implemented by Kauaʻi Lagoons.

4.4.1.6 Predator Control and/or Management for Translocated Nēnē

In its Draft HCP, KL agreed to the request of DOFAW and USFWS that it retain a professional consultant to work closely with the agencies and other stakeholders to develop a comprehensive draft Kauaʻi Nēnē Action Plan, which would establish a management plan and protocols for translocations of Nēnē from KL to other locations. Alternatively, KL had agreed that if the agencies so requested, KL would make a contribution of funds to one of the agencies (or half the amount to each agency) for their use in developing such a Plan.

Since the time the Draft HCP was developed, however, DLNR has prepared and begun to implement a comprehensive translocation plan pursuant to the Governor's April 14, 2011 Proclamation. As a result, the need for KL to prepare or fund the development of a Kauaʻi Nēnē Action Plan no longer exists.

Instead of funding the development of a translocation plan, KL has agreed to provide funds to DLNR to be used to control predators and/or manage Nēnē at a translocation site(s). Specifically, KL will make a one-time, up front contribution of $85,000 to the DLNR Endangered Species Trust Fund, for use by DLNR (with approval by the USFWS) after completion of the five-year translocation project to conduct predator control and/or Nēnē management operations at one or more off-island locations where Nēnē from Kauaʻi Lagoons are translocated to. KL would make such payment within 30 days of issuance of the ITL and ITP.

4.4.1.7 Summary of Nēnē Measures

As documented in Section 3.9.1 above, on-site monitoring has demonstrated that the habitat management and maintenance, predator control, and emergency response measures developed in consultation with DOFAW and USFWS and implemented over the last several years have resulted in a significant net benefit to Nēnē at the Resort. The prolific population now present at Kauaʻi Lagoons has enabled DOFAW to translocate birds to other locations to establish new populations annually since 2005. Pursuant to the Governor's Proclamation, DLNR will now greatly expand that effort, and establish new populations on multiple islands using Nēnē from KL, with KL's facilitation. KL will also continue to accommodate any remaining birds at the Resort in terms of nesting habitat and predator control. Further, KL will contribute funds as described in Section 4.4.1.6 to be used to control predators at one or more of the locations where DLNR translocates Nēnē to. Given the very low level of anticipated direct and indirect take from the Covered Activities, and the success of the measures implemented to date, the collection of mitigation measures described in this Section 4.4.1 will provide a substantial net benefit to Nēnē.

4.4.2 Waterbirds

Similar to the Nēnē, the covered waterbird species began to colonize the Resort property in the 1990's, apparently attracted to the Resort's large lagoons and adjacent grassy areas. These waterbird species have maintained a significant, and sometimes seasonal, presence at the Resort.

The presence and maintenance of the approximately 35-acres of lagoons and the surrounding habitats at the Resort provide a substantial benefit to all of the covered waterbirds, especially Hawaiian Coots. In years of average or better rainfall, coots observed at the Resort appear to spend a large portion of the year on Niʻihau, but then relocate to the perennial lagoons at the Resort beginning in the spring or summer when the ephemeral surface waters they utilize on Niʻihau begin to dry up as the dry season progresses. In drier winters when those ephemeral waterbodies on Niʻihau fail to hold sufficient water, the winter population of coots at the Resort increases dramatically. U.S. Fish and Wildlife Service, Draft Revised Recovery Plan for Hawaiian Waterbirds, Second Draft of Second Revision, 2005, p. 15; citing Engilis, A., Jr. and T.K. Pratt, 1993, Status and population trends of Hawaii's native waterbirds, 1977-1987. Wilson Bulletin 105:142-158. Thus, Kauaʻi Lagoons provides important seasonal, dry season habitat for the coots, and critically important aquatic habitat in drier winters when suitable is not available on Niʻihau.

The Nēnē-focused predator control efforts to date, described above, also provided a substantial benefit to all of the covered waterbird species. Researchers have long recognized that predation by cats and rats constitutes a significant threat to all of the covered Hawaiian waterbird species. Impacts of Feral and Free-Ranging Cats on Bird Species of Conservation Concern - A five-state review of New York, New Jersey, Florida, California, and Hawaii, American Bird Conservancy, 2006; Pratt, H. Douglas and I. Lehr Brisbin Jr. 2002. Hawaiian Coot (*Fulica alai*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology (http://bna.birds.cornell.edu/bna/species/697b); Byrd, G. V., R. A. Coleman, R. J. Shallenberger, and C. S. Arume, 1985, Notes on the breeding biology of the Hawaiian race of the American Coot.,'Elepaio 45:57-63; Pyle, R. L., 1985, The nesting season: Hawaiian Islands region, Am. Birds 39:964-965; Berger, A. J., 1981, Hawaiian birdlife, 2nd ed. Univ. of Hawaii Press, Honolulu.

The USFWS and DOFAW have likewise concluded that cats, rats and other introduced mammals predate on and constitute a significant threat to the covered waterbirds. U.S. Fish and Wildlife Service. 2005. Draft Revised Recovery Plan for Hawaiian Waterbirds, Second Draft of Second Revision. U.S. Fish and Wildlife Service, Portland, Oregon (p. 44: predation by introduced animals may be the greatest threat to the coot, moorhen, and stilt; p. 46: the introduction of alien predators has had a negative impact on populations of all four endangered waterbirds, birds on the Hawaiian Islands evolved in the absence of mammalian predators, and are consequently highly vulnerable to these introduced animals; p. 46: feral cats may have a significant effect on waterbird recovery, dogs have become a serious problem in some wetlands particularly near urban areas, rats most likely have a negative effect on the waterbirds as well); Hawai`i Department of Land and Natural Resources (DLNR), Comprehensive Wildlife Conservation Strategy (http://www.state.hi.us/dlnr/dofaw/cwcs) (predation by feral cats, dogs and rats constitutes a threat to each of the covered waterbird species); DLNR, Division of Forestry and Wildlife, 2009 brochure entitled "Hawaii's Wetlands"

(http://pcjv.org/hawaii/wetlands/wetlandsbrochure.pdf) (feral cats and rodents eat native Hawaiian waterbirds).

Control of mammalian predators has proven effective in dramatically increasing waterbird breeding success in Hawai`i. In 1994 the USFWS funded a study to evaluate the effect of predator control on waterbird (specifically Hawaiian Coot, Stilt and Duck) breeding success at the Kanaha Pond Wildlife Sanctuary on Maui. The study consisted of a 10 week trapping program designed to reduce the predator population, evaluate predator diets with respect to bird predation, document the significance such predation has on the endangered waterbird population, and develop a strategy for a long term trapping program. The trapping effort captured 45 roof rats, 33 Polynesian rats, 8 Norwegian rats, 28 mongooses and 22 cats. Predator abundance (not mongooses) declined significantly over the course of the project. As an outstanding result, Stilt fledging success increased by more than 400% compared to both 1992 and 1993. Fifty percent of all examined feral cats, 24% of all mongooses, and 21% of all rats (combined results of all 3 rat species) contained bird material in their stomachs or intestines. The Hawaii Conserver (Newsletter of the Hawaii Conservation Council), Vol 45, Winter 1994 (http://www.hear.org/articles/gassmannduvall1994c/pdfs/gassmanduvall1994ccharticle.pdf).

Thus the USFWS, in its draft Recovery Plan for Hawaiian Waterbirds, identifies the control of feral cats and dogs, and rats as a "Priority 1" recovery action – meaning "An action that must be taken to prevent extinction or prevent the species from declining irreversibly in the foreseeable future." U.S. Fish and Wildlife Service, Draft Revised Recovery Plan for Hawaiian Waterbirds, Second Draft of Second Revision, 2005, pp. 82, 104.

Given the imminent sharp reduction in the Nēnē population at KL, under this HCP the KL predator control effort will now be focused on waterbirds, to ensure they continue to receive the same level of predator control benefit which they were receiving indirectly as a result of the Nēnē-focused predator control efforts of the last several years.

Specifically, KL will under this HCP implement the following predator control efforts directed primarily at the waterbird Covered Species:

- KL will deploy 10 Havahart® live traps in those areas of the property most frequented by the waterbird Covered Species, from September 15 to March 15 for each calendar year that the HCP remains in effect.
- KL will check these live traps at least every 48 hours, and trapped cats will be delivered to the Kauaʻi Humane Society along with a request that such cats not be released into nearby areas.
- KL will also deploy rodent bait stations in the same areas during this same timeframe each year.
- If Cattle Egrets persist on the site, or re-colonize Resort property after they have been removed, they will be controlled using air rifles.
- KL will also continue to control feral chickens on the property.
- KL will continue to report all predator control efforts to the USFWS and DOFAW, and will continue to have in force any necessary state wildlife depredation permits.

It should be noted that this "pulse trapping" approach is a proven wildlife management technique that is likely more effective at reducing predators on site than a year-round trapping program would be. The actual results of KL's trapping efforts demonstrate that, as fewer feral cats were trapped during the 2009-10 effort than were trapped during the 2008-09 effort.

In summary, the combination of providing and maintaining important habitat for the covered waterbirds, and controlling predation through predator control trapping, combined with the low level of anticipated take, means that implementation of the HCP will result in a significant net benefit to each of the covered waterbird species.

4.4.3 Seabirds

As discussed in section 4.3.3, no take of covered seabirds is occurring at the Resort, despite completion and occupation of the new 2-building, 78-unit Kalanipu'u complex. However, the future construction and occupation of additional new buildings at the Resort will increase the *potential* for the Resort to cause light-attraction take. Whether such take will actually occur in the future, and if so at what frequency, is unknown. Nevertheless, Sections 4.3.3 and 4.5 detail seabird minimization and monitoring measures which KL will implement, and this section describes the mitigation KL will implement based on an assumption that take could occur in the future once additional Resort buildings are constructed and occupied.

The next phase of project construction will be Marriott Vacation Club timeshare units, comprising a total of 292 units. Phase 1 of these timeshare units consists of three buildings, with a total of 75 units, surrounding a new pool/water feature. These three buildings are located just above the number "14" on the Master Plan figure contained in Section 2.1.1, above. Construction of Phase 1 is currently anticipated to begin in 2013, and completion and occupancy (and thus internal and external illumination) is projected to occur prior to the fall 2015 seabird fallout season. Thus, based on current Resort development projections, the increase in potential for light-attraction take at the Resort will increase beginning in September 2015. Phases 2 and 3 of the Marriott Vacation Club (each are two-building complexes located on either side of Phase 1) are projected for completion and occupancy prior to the fall 2017 and fall 2018 seabird seasons, respectively.

Although eventual build-out of the Resort will include the construction of additional condominiums, townhomes, single family homes and other facilities, for purposes of providing a conservative estimate of potential future seabird take KL assumes for purposes of this HCP that the potential for light-attraction take at the Resort will increase incrementally with the completion and occupancy of each of the three phases of the Marriott Vacation Club project, and reach its maximum level upon the completion of Phase 3.

To mitigate this potential take (estimated in Section 4.3.3), KL will make a financial contribution to the mitigation program being created by the Kaua'i Seabird Habitat Conservation Plan (KSHCP) currently being developed by DLNR. The exact amount of that financial contribution is currently unknown because the KSHCP has not been finalized, but KL commits to pay whatever final per-bird per-year amount that is finally established by the KSHCP and approved by DLNR/DOFAW and the USFWS. The KSHCP intends to pool mitigation payments from

numerous applicants, and utilize that money to perform habitat management and predator control work in several seabird breeding colonies on Kaua'i. The KSHCP is expected to be finalized and approved by the agencies by late 2012, well in advance of KL's need to mitigate for potential take which will not arise until at least the fall of 2015. [28]

KL will make its mitigation payments to whatever entity is established by the KSHCP. KL will phase-in its mitigation payments in accordance with the phasing of Vacation Club construction, as each phase will increase the potential for seabird take, with the completion of all three phases being projected to result in the average annual take of one Newell's shearwater. This phasing will occur as follows:

- When Phase 1 of the Marriott Vacation Club is completed (currently projected to occur in 2015), KL will make a payment immediately prior to that Phase being occupied to whatever entity is established by the KSHCP in the amount of 50% of the KSHCP-established per-bird mitigation price.[29] KL will continue making annual payments in that amount until Phase 2 is completed.
- When Phase 2 of the Marriott Vacation Club is completed (currently projected to occur in 2017), KL will make a payment immediately prior to that Phase being occupied in the amount of 75% of the KSHCP-established per-bird mitigation price. KL will continue making annual payments in that amount until Phase 3 is completed.
- When Phase 3 of the Marriott Vacation Club is completed (currently projected to occur in 2018), KL will make a payment immediately prior to that Phase being occupied in the amount of 100% of the KSHCP-established per-bird mitigation price. KL will continue making annual payments in that amount for the duration of the term of the HCP and ITP/ITL, unless the seabird obligations in the HCP are modified as described below.[30]

In recognition of the fact that no seabird take has occurred or is occurring at KL and is not expected to occur under current conditions, that potential future take following additional construction is speculative, that additional on-site and local seabird monitoring data will become available in coming years, and that seabird mitigation options as of the date of this HCP (January 2012) are extremely limited, KL can seek modifications to the HCP and ITP/ITL at a later date based on the best available information then available to (a) surrender its incidental take authorization for seabirds and eliminate the associated seabird Conservation Program (HCP Chapter 4.0) measures, (b) modify the requested amount of take and modify the mitigation

[28] http://www.kauai-seabirdhcp.info/index.html For financial assurances purposes in this HCP, it is assumed based on prior and preliminary KSHCP estimates that the per-bird KSHCP mitigation fee will be $10,000. KL's financial assurances will be updated once the KSHCP program is finalized and approved, and a final per-bird mitigation fee is established. If the KSHCP program is not available, KL would instead contribute $10,000 (or whatever amount is determined by KL and approved by DOFAW and USFWS at that time as providing adequate mitigation) per fledgling seabird take per year to a dedicated escrow account, and KL would then apply such funds to a seabird-benefitting mitigation project determined in consultation with and subject to the approval of USFWS and DOFAW.

[29] In the event that the KSHCP is not able to receive such partial payments, KL would make periodic payments in the amount of 100% of the KSHCP-established per-bird mitigation price, but such payment would be good for some period greater than one year (depending upon which Phases of the Vacation Club had been completed at that time). For example, upon the completion of Phase 1, KL could make such a 100% payment, but it would cover KL's mitigation obligation for two years. It would then continue to make such payments every other year until Phase 2 is completed.

[30] Any such amendment would be processed as a Minor Amendment under Section 6.5.1, below, since the mitigation standard (payment of the per fledgling mitigation fee established by the KSHCP) has already been established.

amount proportionately subject to approval by the agencies, or (c) provide alternate mitigation that provides at least as much conservation benefit as the mitigation described herein subject to approval by the agencies. Such modifications would be considered to be a Minor Amendment.

4.5 Monitoring

Ongoing monitoring of management efforts, bird presence, nesting, recruitment, predator control and incidental take of the Covered Species is a key component of the HCP. The monitoring program will provide the information that KL and the regulatory agencies will need to measure the success and the results of the various management actions that KL is implementing, and will continue to implement, on the site.

KL will design, and implement the following monitoring efforts that will be used not only to monitor the HCP implementation but will also provide an all-important reporting loop to be used if it is deemed that adaptive management changes need to be developed and implemented, either with on-ground management efforts or with specific provisions of the permits. Additionally, KL will include any suggestions that their biological monitors develop to improve or change the following year's program. KL will produce and submit an annual HCP compliance and monitoring report to the agencies by September 30 each year.[31]

4.5.1 Habitat Management

As discussed above the overarching goal of on-site habitat management is to ensure that on-ground management actions associated with maintaining the vegetation on the Resort property as well as on the golf course continues to provide nesting and foraging habitat for the four waterbird Covered Species.

Any future changes to the general habitat management and maintenance activities on the property will depend upon future decisions by the USFWS and DOFAW, in conjunction with the airport agencies, regarding the degree to which the on-site Nēnē population should be reduced.

The results of the Nēnē and other waterbird species monitoring and reporting will serve as the main indicator as to whether approriate habitat management is occuring.

4.5.2 Predator Control

The onsite biological monitors will keep a detailed log of predator control efforts and results (see Section 4.4.2), which will be submitted in the annual HCP implementation and monitoring report.

[31] HRS 195D-21 requires annual monitoring reports to be submitted within 90 days of June 30.

4.5.3 Nēnē

For as long as Nēnē remain on the property, the onsite biological monitors will monitor Nēnē nesting activity, and nesting success, on a daily basis starting September 15 and ending on March 31 each year (or later if that year's nesting season is protracted), following banding of the last hatch year goslings. The monitoring will include band numbers (all banding, however, is to be performed by DOFAW or USFWS), pair bonds, nest location, eggs laid, eggs hatched and goslings fledged, as well as all recorded mortalities. All data collected will be entered into a database that will be included in the annual HCP implementation and monitoring report. KL will use the database and data sheets recommended by DOFAW and USFWS.

In addition to this daily monitoring during the nesting season, KL will also perform monthly monitoring during the remainder of the year (April through August). Monitors will record the number of Nēnē observed on the property, and observed band numbers. The resulting data will likewise be entered into a database and be included in the annual HCP implementation and monitoring report.

4.5.4 Waterbirds

As part of the comprehensive Nēnē monitoring described above, the onsite biological monitors will also record information about all observed covered waterbird species on the Resort property on a weekly basis between September 15 and ending on March 31 each year, and on a monthly basis from April through August. This will include observations and data regarding waterbird numbers, nest locations, and where possible the number of eggs laid, eggs hatched and goslings fledged, as well as all recorded mortalities. All data collected will be entered into a database that will be included in the annual HCP implementation and monitoring report.

4.5.5 Seabirds

The KL security staff, who will receive training as described in Section 4.2.1.1 as well as supplemental training by the Biological Monitors specifically regarding seabirds and their proper care and handling, will record all downed seabirds recovered on the Resort property. The Biological Monitors will evaluate security staff search efficiency, and carcass removal rates, in Fall 2012 and report the results in the next Annual Report. The Biological Monitors will similarly record the results of their own additional searches performed during the expected peak of the seabird fallout season as described in Section 4.3.3.2. These records will include location, time, condition of the bird (i.e., apparently unharmed, injured, dead), and any apparent proximal cause of the individual downing incident. These data will be entered into a database, which will be included in the annual HCP implementation and monitoring report.

4.6 Adaptive Management

The onsite management measures described in this HCP are intended to maintain on the Resort property the very favorable conditions for the resident Covered Species which has attracted them and enabled them to continue to prosper. These measures are based on extensive actual experience with these species on this property – in contrast to most HCPs in which the proposed habitat to be conserved and the measures to be employed to manage that habitat are new and untried. The measures described in this HCP are what KL has determined to be most effective for the Covered Species, based on actual site-specific experience. While KL is certainly

committed to adapt is management measures in the future based on monitoring results, based on its site-specific experience KL does not anticipate that any significant changes in management measures are likely to be warranted.

KL will meet with the DOFAW and USFWS, either in person or via conference call following the agencies review of KL's annual HCP implementation and monitoring report to discuss and agree upon any adaptive management changes to the next season's on-ground management and monitoring activities.

5.0 Alternatives

Section 10(a)(2)(A) of the ESA requires applicants to consider alternative actions to the take of federally listed species and explain the reasons why those alternatives were not selected. The *Endangered Species Consultation Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1996) identifies two alternatives commonly considered in HCPs: (1) an alternative that would take below levels anticipated for the proposed project, and (2) a no action alternative, in which no permit would be issued and take would be avoided. This Section of the HCP discusses three alternatives. None of these alternatives were selected for the reasons described below.

5.1 Alternative #1 – No Action Alternative

Under the no action alternative the status quo would continue. Specifically, KL would not further pursue its new construction activities, it would continue to operate the Resort and its existing facilities, and it would not pursue this HCP or seek incidental take authorizations. This alternative was not selected because (1) unavoidable take of Covered Species may occur as a result of ongoing and necessary Resort operations (e.g., grounds management and maintenance, golf operations), but would neither be minimized, mitigated nor authorized; and (2) the new construction activities are required for the continued financial viability of the Resort. This alternative would also fail to address the existing, and increasing, risk which the growing population of resident Nēnē poses to aircraft safety at the adjacent Līhu‘e Airport.

5.2 Alternative #2 – No Take Alternative

Under the no take alternative, KL would make adjustments to its Covered Activities necessary to ensure that no take of Covered Species would occur, and in turn KL would not pursue this HCP or seek incidental take authorizations. At a minimum, this would require that the Resort cease new construction activities, turn off all exterior and interior lighting during the fall seabird fallout season (approximately September 15 to December 15 each year), and cease golf operations. This alternative was not selected because such adjustments are not financially feasible, and with respect to lighting restrictions they would unduly compromise public health and safety. This alternative would also fail to address the existing, and increasing, risk which the growing population of resident Nēnē poses to aircraft safety at the adjacent Līhu‘e Airport.

5.3 Alternative #3 – No Habitat Enhancement/Management Alternative

Under the no habitat enhancement/management alternative, KL would pursue a HCP and incidental take authorizations, but the HCP’s conservation program would not include any habitat enhancement measures (e.g., predator control), which have proven very effective at increasing Nēnē breeding success. In short, this approach would be a passive means of reducing breeding success, and ultimately reducing the Nēnē population at the Resort, which would help ameliorate the risk, which the currently growing population of resident Nēnē poses to aircraft safety at the adjacent Līhu‘e Airport. This alternative was not selected because it would fail to address the aircraft safety issue in a systematic and scientifically appropriate manner, and it would greatly reduce and perhaps eliminate the production of Nēnē for translocation to other locations which is inconsistent with the USFWS Recovery Plan for the species.

6.0 Plan Implementation

6.1 Responsibilities/Implementing Agreement

An Implementing Agreement, which specifies the obligations of Kaua'i Lagoons, the USFWS and DLNR with respect to this HCP, has been executed, and is attached as Appendix 3.

6.2 Scope and Duration

Once approved by the USFWS and DLNR, this HCP, and the associated incidental take authorizations, will be effective for thirty years.

6.3 Assurances and Changed/Unforeseen Circumstances

6.3.1 Background

USFWS regulations provide that once an incidental take permit has been issued, and so long as the associated HCP is being properly implemented, the USFWS shall not require the commitment of additional conservation or mitigation measures by the permittee (including additional land, water, or financial contribution, or additional restrictions on the use of land, water, or other natural resources) beyond the level provided in the HCP, without the permittee's consent. 50 CFR 17.22, 17.32.

To implement these assurances, an HCP must identify and analyze reasonably foreseeable "Changed Circumstances" that could affect a species or geographic area during its term. Should such a Changed Circumstance occur, the permittee is required to implement the measures specified in the HCP to respond to such change. In contrast, "Unforeseen Circumstances" are events affecting a species or geographic area covered by the HCP that could not reasonably have been anticipated by the applicant or USFWS during the development of the HCP, and that result in a substantial and adverse change in the status of a Covered Species. If an Unforeseen Circumstance occurs during the term of the HCP, and if the USFWS determines that additional conservation and mitigation measures are deemed necessary to respond to such Unforeseen Circumstances, then the USFWS may require more conservation measures of the permittee, but only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and if such measures maintain the original terms of the HCP to the maximum extent possible. (50 CFR 17.22).

The State of Hawai'i provides generally similar and consistent assurances, but without differentiating between Changed Circumstances and Unforeseen Circumstances. HRS 195D-23.

6.3.2 Changed Circumstances

The following sections identify the Changed Circumstances, which are reasonably foreseeable by KL, the USFWS and DLNR.

6.3.2.1 Hurricane

Hurricanes periodically strike or affect the island of Kaua'i. The two most recent hurricanes to affect the island were Iwa in 1982, and 'Iniki in 1992. Hurricane 'Iniki caused devastating damage. As a result, it is appropriate to treat hurricanes as a Changed Circumstance.

A hurricane could affect the Resort and the Covered Species at the Resort in several ways. First, a hurricane could damage or destroy existing habitat elements at the Resort which Nēnē and the waterbird species rely upon for breeding, feeding and/or sheltering, namely the lagoons, the islands within the lagoons, adjacent grassy areas, and areas which offer protective vegetation. Second, a hurricane could directly kill Covered Species (adults, juveniles, and eggs). Third, a hurricane could damage or destroy buildings and infrastructure, the repair of which would involve construction activities which could in turn result in direct take of Covered Species.

In the event of a hurricane, KL will promptly assess the damage inflicted by the hurricane to the Covered Species at the Resort and the habitat elements at the Resort on which they depend. KL will then promptly prepare a damage assessment report, and provide that to the USFWS and DOFAW along with recommendations for any appropriate active or passive remedial measures necessary to restore suitable habitat conditions for the Covered Species. If construction activities are necessary to restore such habitat, or to repair or replace damaged infrastructure, buildings or facilities, in performing such construction activities KL will employ the avoidance and minimization measures specified in Chapter 4 of this HCP.

6.3.2.2 Bird Illness or Disease

Given the large number of Nēnē and waterbird species at the Resort, the possibility exists that one or more species could contract a fatal illness or disease that could spread through these populations.

In the event that KL observes or suspects that a serious illness or disease may be present among the Covered Species at the Resort, it will immediately notify the USFWS (Honolulu), and DOFAW (Honolulu, and Kauaʻi Program Manager) by telephone and email, and consult with them regarding any appropriate measures that should be taken in response.

6.3.2.3 Invasive Predator Species

As described in this HCP, invasive mammalian species such as rats, cats and dogs pose a substantial threat to Nēnē and the waterbird species, both generally and also at the Resort. Nevertheless, Kauaʻi has to date been fortunate in apparently not having been colonized by mongoose, an especially voracious predator which has become established on other islands.

Were mongoose to become present at the Resort, they could have a devastating impact on the Covered Species at the Resort, and elsewhere on the island. To guard against that occurring, KL will implement the predator control program described in Chapter 4 of this HCP. Should KL capture a mongoose during these efforts, or otherwise observe a mongoose at the Resort, it will immediately notify both the USFWS (Honolulu), and DOFAW (Honolulu, and Kauaʻi Program Manager) by telephone and email. KL will then immediately consult with both agencies and institute any additional predator control measures mutually agreed upon, and cooperate fully in any agency efforts to search for and control the species.

6.4 Funding

Implementation of the obligations contained in this HCP will result in the following estimated one-time and annual costs:

One-Time Costs:

4.4.1.6 Predator Control for Translocated Nēnē	$85,000
TOTAL	**$ 85,000**

Annual Costs:

4.2.1.1 Endangered Species Awareness Program (update and training)	$ 3,000
4.2.1.3 Pre-construction surveys	$ 2,000
4.2.1.4 Biological monitor(s)	$ 36,667
4.2.1.5 Construction monitor	$ 52,000
4.2.1.6 Fencing	Covered by contractors
4.2.1.7/4.2.2.1 Signs	$ 500
4.2.2.4 Television programming, brochures	$ 1,000
4.4.1.2 Maintain enhanced on-site nesting areas	$ 1,000
4.4.2 Predator control	$ 25,000
4.4.3 Seabird mitigation payments to KSHCP	$ 10,000[32]
4.5 Annual HCP implementation report	$ 5,000
4.5.3 Monitoring during Nēnē nesting season	Covered under 4.2.1.4
4.5.3 Monitoring outside of Nēnē nesting season	$ 5,000
----- DOFAW monitoring	$ 10,000
----- Equipment maintenance, miscellaneous supplies	$ 2,500
TOTAL	**$ 153,667**

Kauaʻi Lagoons commits to including a line item for complete HCP implementation into its annual operating budget for the life of the HCP. In addition, pursuant to HRS 195D-4(g), Kauaʻi Lagoons will post a bond to ensure funding will be available to perform the implementation tasks and obligations noted above.

6.5 Revisions and Amendments

There are two types of changes, which may be made to the HCP and/or the incidental, take authorizations: Minor Amendments and Major Amendments. All revisions and amendments shall be processed in accordance with all applicable legal requirements.

6.5.1 Minor Amendments

Minor Amendments are changes to the HCP provided for under the operating conservation program, including adaptive management changes and responses to Changed Circumstances. They also include revisions, which do not significantly modify the scope, or nature of activities

[32] As explained in 4.4.3, the exact amount will be determined by the KSHCP, and will be phased in with an anticipated start date of September 1, 2015. Financial assurances will be adjusted based on the final per-bird mitigation amount later determined by the KSHCP and approved by DOFAW and the USFWS.

or actions covered by the incidental take permits in terms of their effect on the Covered Species. Minor amendments may include, but are not limited to, the following:

- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the HCP and/or incidental take authorizations.
- Modifying existing measures or establishing new measures to further minimize or avoid take of the Covered Species.
- Modifying reporting protocols for Annual Reports.
- Minor changes to monitoring or reporting protocols.
- Minor changes to the amount of authorized take based on the results of monitoring.
- The changes described in Section 4.4.3
- Any other modifications that are consistent with the biological goals and objectives described in this HCP that will not result in operations under the HCP that are significantly different from those analyzed in connection with the HCP as approved, adverse impacts on the environment that are new or significantly different from those analyzed in connection with the HCP as approved, or take of Covered Species not analyzed in connection with the HCP as approved, including but not limited to the approval or execution of agreements to facilitate execution and implementation of the HCP, or actions by Kauaʻi Lagoons to delegate any of its duties under this HCP to a third party under its direct control.

Kauaʻi Lagoons may submit a proposed minor revision to the USFWS and DLNR for review. The USFWS and DLNR shall each respond in writing to the proposal within sixty (60) calendar days of receipt of the request, or the request will be deemed to have been approved. The responses shall either (1) concur in the proposed revision; (2) identify additional information necessary to enable the agency to evaluate the revision, or (3) disapprove the revision. If either the USFWS or DLNR disapproves the revision, it shall convey its disapproval in writing to Kauaʻi Lagoons, stating the reasons for the disapproval. If either the USFWS or DLNR disapproves the requested revision, then the revision must be processed as a Major Amendment, as described below.

6.5.2 Major Amendment

A Major Amendment includes but is not limited to the following:

- Adding a species to the list of Covered Species covered by the HCP and/or the incidental take authorizations.
- Changes to the Covered Activities that were not addressed in the HCP as originally adopted, and which otherwise do not meet the criteria for a Minor Amendment as discussed above.
- Extending the term of the incidental take authorizations.

A Major Amendment requires submittal to the USFWS and DLNR of a written application and implementation of all permit processing procedures applicable to an original incidental take authorization. The specific documentation required to comply with the ESA, Chapter 195D, and the National Environmental Policy Act may vary based on the nature of the amendment.

6.6 Suspension/Revocation

The USFWS or DLNR may suspend or revoke their respective incidental take authorizations if Kauaʻi Lagoons fails to implement the HCP or the terms of the incidental take authorizations. Suspension or revocation of the permits shall be done in accordance with applicable federal or state law.

6.7 Permit Transfer

In the event of sale or transfer of ownership of Kauaʻi Lagoons or any of its facilities during the term of the permits, a new permit application, permit fee, and an Assumption Agreement will be submitted to the USFWS and DLNR by the new owner(s). The new owner(s) will commit to all requirements regarding the take authorization and mitigation obligations of this HCP unless otherwise specified in the Assumption Agreement and agreed to in advance by the USFWS and DLNR.

Appendix 1 (Emergency Response Protocol)

Kaua‘i Lagoons

Threatened and Endangered Species

Emergency Response Protocols

For Injured or Dead Birds, Disturbed Nests,

and Birds, Eggs or Nests in Imminent Danger

Kaua‘i Lagoons has been developing a Memorandum of Agreement (MOA) with the U.S. Fish and Wildlife Service (USFWS) regarding the implementation of certain conservation measures on the Kaua‘i Lagoons property. As part of that MOU, Kaua‘i Lagoons and the USFWS, in cooperation with the Hawai‘i Division of Forestry and Wildlife (DOFAW), have agreed to develop these protocols, which Kaua‘i Lagoons will implement should it discover any injured or deceased threatened or endangered bird species on the property, including but not limited to Nēnē (Hawaiian goose), ae‘o (Hawaiian stilt), ‘alae ke‘oke‘o (Hawaiian coot)‘alae ‘ula (Hawaiian moorhen), or koloa (Hawaiian duck).

I. Emergency Contacts

Upon discovery of an injured bird, or a bird, egg, or nest in imminent danger, or carcass of a threatened or endangered species, all work in the area should be stopped immediately. Kaua‘i Lagoons staff should immediately contact consulting biologists Reggie David (office: 808-329-9141; cell: 808-937-0124) or Al Silva (cell: 651-8100, if during his non-DOFAW hours or on his off days), *and* the Kaua‘i Division of Forestry & Wildlife (DOFAW) Wildlife Management Staff, as listed below. If the first contact on the priority list is not available, leave a voicemail message, but then call the next person on the contact list. It is essential that person-to-person contact be made with Kaua‘i DOFAW staff – simply leaving a voicemail message is not adequate.

1. Thomas Kaiakapu, DOFAW Kaua‘i Wildlife Manager 274-3433 or 645-1576
2. Lindsey Ibara, DOFAW Wildlife Biologist 645-1649
3. Jason Vercelli, DOFAW Wildlife Biologist 212-4505
4. Brian Andrade, DOFAW Forestry & Wildlife Technician 212-4492

If unable to reach the Kaua‘i DOFAW contacts identified above, call Kaua‘i Police Dispatch at 241-1711 and request that they contact “Wildlife”. If the Kaua‘i DOFAW staff cannot be reached in an emergency, the closest State- permitted wildlife rehabilitator should be contacted:

Joanne Woltman DVM, Kaua‘i Veterinary Clinic, 1864 Haleukana Street, Puhi Industrial Park, Lihue, Kaua‘i (office 247-4748; cell 651-0531).

The Kaua‘i DOFAW Wildlife Management staff, or if they cannot be reached, the closest State-permitted wildlife rehabilitator, have authority to make decisions concerning the disposition and care of injured birds. DOFAW has the authority to make decisions concerning the disposition and care of birds, eggs, or nests in imminent danger. In case of emergency, their direction should be followed immediately, without further consultation. (See Item III below for details).

After contacting the consulting biologist or Al Silva, and the Kaua‘i DOFAW staff, or in the case that Kaua‘i DOFAW staff cannot be reached, the closest State-permitted wildlife rehabilitator, Kaua‘i Lagoons staff or their designated representative should notify the DOFAW HCP Coordinator (808-347-6740) or Wildlife Manager (808-227-3403), and the USFWS HCP Coordinator (Jeff Newman, office: 808-792-9442, cell: 808-551-5122) or USFWS Office of Law Enforcement (Keith Swindle, 808-791-0853) to inform them of the situation, and what action has been taken. Such notification to the USFWS is required by federal regulation. Emergency response should proceed as directed by the Kaua‘i DOFAW Wildlife Management staff, and should not wait for notification of these additional contacts.

II. Procedures for Handling Injured Birds and Bird Carcasses

Federal and State permits, or other appropriate Federal and State authorization, are required for any person handling live or dead specimens. Injured or ill protected species may only be captured and handled by personnel who have been trained in the capture and collection and after approval is received from USFWS and DOFAW personnel.

A. Equipment

Kaua‘i Lagoons will keep the following equipment on hand for use in responding to injured or dead birds:

- Pet carriers – 2 large
- Pieces of artificial turf/outdoor carpeting to place on floors of pet carriers
- Gloves
- Tent stakes (6)
- Digital camera
- Large plastic bags (4+)

B. Procedures for Injured or Ill Birds

If an injured or ill bird cannot fly, do not immediately remove it from the field. Notify Kaua‘i DOFAW Wildlife Management staff or the nearest State-permitted wildlife rehabilitator as soon as possible, as described in Section I. Alternatively, Reggie David and Al Silva are authorized to capture and transport the bird to Dr. Woltman’s office, following the Kaua‘i DOFAW or authorized rehabilitator’s instructions. Mark the area and monitor the bird if possible until DOFAW staff arrive. Record the following information, and photograph the bird (if possible):

- Date
- Location
- Band numbers (if banded)
- Condition of bird (e.g., type of injury). Be specific in describing injury type, and location on bird. Also indicate if a predator is evident in the vicinity. All reasonable measures to eliminate the predator should be taken.
- Additional comments
- Name, address, and telephone number of observer

Injured birds may be captured only by personnel trained and authorized for the capture and collection of live birds. The following procedures must be employed:

1. Gently pick up and place bird into carrier equipped with turf/carpet. Place only one bird in a carrier.
2. Mark exact spot of find(s) with tent stake(s)
3. Transport the bird pursuant to instructions received from DOFAW or Dr. Woltman, as described above.

After contacting the consulting biologist or Al Silva, and the Kauaʻi DOFAW staff, or the closest State-permitted wildlife rehabilitator, Kauaʻi Lagoons staff or their designated representative should notify the DOFAW HCP Coordinator (or Wildlife Manager), and the USFWS HCP Coordinator, to inform them of the situation, and what action has been taken. Emergency response should proceed as directed by the Kauaʻi DOFAW Wildlife Management staff, and should not wait for notification of these additional contacts.

C. Procedures for Dead Birds and Disturbed Nests

Dead birds and disturbed nests must be left in place. Notify Kauaʻi DOFAW Wildlife Management staff and USFWS Law Enforcement (cell: 808-221-3558 or office: 808-791-0853), as soon as possible. Mark the area and monitor the bird or nest until DOFAW personnel arrive. If DOFAW is unable to respond, Kauaʻi Lagoons consulting biologists may receive verbal permission from DOFAW or Dr. Woltmon to place the specimen in a sealed plastic bag, transport the carcass to a refrigerator for later retrieval, after they record the following information:

- Date
- Location (collection site)
- Band numbers (if banded)
- Condition of bird (e.g., type of injury)
- Whether the bird was found dead, or died subsequent to discovery
- Additional comments
- Name, address and telephone number of observer
- Photograph showing, at a minimum, the condition and location of the bird, nest, or eggs

Kauaʻi Lagoons staff will cooperate with Kauaʻi DOFAW and USFWS staff in their investigations of any dead birds or disturbed nests, and follow their direction.

After contacting the consulting biologist or Al Silva, the Kauaʻi DOFAW staff, and USFWS Law Enforcement, Kauaʻi Lagoons staff or their designated representative should notify the DOFAW HCP Coordinator (or Wildlife Manager), and the USFWS HCP Coordinator, to inform them of the situation, and what action has been taken. Emergency and/or law enforcement response should proceed as directed by DOFAW and/or USFWS Law Enforcement staff, and should not wait for notification of these additional contacts.

III. Procedures for Birds, Nests, or Eggs in Imminent Danger

If the biological monitors observe or are informed of any birds, nests, or eggs of threatened or endangered species in imminent danger unrelated to construction-related activities, they will immediately contact Kauaʻi DOFAW Wildlife Management staff. DOFAW has the authority to make decisions concerning the disposition and care of birds, eggs, or nests in imminent danger. In case of emergency, their direction should be followed immediately, without need for additional consultation.

In these situations if eggs or nests are to be manipulated: (1) prior to cross-fostering attempts, confirm synchrony between foster female and egg(s) to be moved, and (2) all attempts will be made to avoid splitting eggs of a single clutch among multiple foster parents.

Details of the incident, including documentation and description of the subsequent management action, will be reported by Kauaʻi Lagoons to the DOFAW and USFWS HCP Coordinators.

IV. Modifications

This protocol may be modified if new biological information becomes available or by agreement among the DOFAW and USFWS.

<u>Appendix 2</u> (Endangered Species Awareness Program)

Appendix 3 (Implementing Agreement)