Kaheawa Pastures Wind Energy Generation Facility
Habitat Conservation Plan

Year 2 HCP Implementation

July, 2007 – June, 2008

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I. EXECUTIVE SUMMARY

In June 2006 Kaheawa Wind Power, LLC (KWP) began operating the island of Maui's first commercial wind energy generation facility in the Kaheawa Pastures area of West Maui. The State Board of Land and Natural Resources approved a Conservation District Use Application (CDUA) for the proposed facility, which is situated on State conservation lands, in January 2003. Pursuant to Section 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973, as amended, and under a similar program, Chapter 195-D, Hawai`i Revised Statutes, KWP developed a project-specific HCP in cooperation with the USFWS, DLNR and the Hawai`i Endangered Species Recovery Committee (ESRC). Upon final approval of the HCP, the federal ITP (TE-118901-0) and state ITL (ITL-08) were issued in January 2006. Both permits have duration of twenty (20) years. This report summarizes how KWP has implemented the provisions of the HCP during the second full year of project operations (July 1, 2007 through June 30, 2008), as specified under the HCP.

The HCP anticipates that the incidental take of four listed species (Hawaiian Petrel, Newell's Shearwater, Nene, and Hawaiian Hoary Bat) may potentially occur as a result of the operation of the wind farm. No other listed, proposed or candidate species are known or believed to be present in the project area.

There were three downed wildlife incidents that involved fatality of HCP-covered avian species at KWP during the Year 2 reporting period. A single adult Hawaiian Petrel carcass and the partial remains of two full grown Nene were documented. Each of these incidents were treated as authorized takes under the Incidental Take Permit (ITP) and Incidental Take License (ITL) issued to KWP by the USFWS and Hawaii DLNR, respectively. Ongoing SEEF and Carcass Removal trials provide a basis for estimating Adjusted Take for both Hawaiian Petrels and Newell's Shearwaters (although they are most comparable in size, color, and morphology to the Hawaiian Petrel). As discussed, although dissimilar in many respects to Nene, Wedge-tailed Shearwaters provide empirically derived values that we apply for purposes of estimating the Adjusted Take for Nene. Applying the results of monitoring and accounting for indirect take and loss of productivity, the estimated adjusted take for Hawaiian Petrels and Nene are 3.31 and 6.34, respectively. Using values from the literature for detectability and scavenging of larger carcasses more similar in size to Nene, we offer an alternative Adjusted Take estimate of 4.91 birds. From the effective date of the permit (January 2006) through the end of the reporting period (June 2008), the net annual Adjusted Take for covered species is estimated to be as follows:

Hawaiian Petrel – 1.37/yr
Nene – 2.62/yr (or 2.03/yr using the values from the literature for larger species)
Newell's Shearwater – 0/yr
Hawaiian Hoary Bat – 0/yr

The net Adjusted Take estimates we present for Hawaiian Petrels and Nene are consistent with annual take levels expected under the Baseline Take scenario for these covered species. Take levels for Hawaiian Hoary Bat and Newell's Shearwater remain within the Lower Take scenario.

Modified search techniques used to monitor downed wildlife in the search plot overlap areas adjacent to Papalaua and Manawainui Gulches (WTG 1-3) continue with no evidence of increased or cumulative impacts to the sensitive botanical resources in these areas.

KWP has been in regular contact with DLNR since summer 2005 regarding the requirement for construction and operation of a new Nene release facility on Maui. The DLNR has now selected the site and are securing agreements with the land owner. Subsequent to a request by the USFWS in December, 2007 KWP disbursed funds to the DLNR to begin supporting captive propagation of Nene goslings to compensate for take. DLNR has indicated that the necessary capacity for propagation and reintroduction is still lacking, however KWP has expressed interest in exploring interim or alternative options that would satisfy its compliance obligations for Nene under the HCP.

In spring of 2007, KWP biologists identified the first known Hawaiian Petrel nesting colony to be documented in West Maui near Makamakaole. Numerous visits and subsequent observations at the colony during the 2008 breeding season reveal consistent Hawaiian Petrel attendance patterns which support the conclusion that we have successfully located a substantially-sized breeding colony of Hawaiian Petrels. Hawaiian Petrel and Newell's Shearwater mitigation initiatives at the Makamakaole colony include live trapping and removal of cats and mongoose, marking the new ungulate fence immediately adjacent to the colony to reduce petrel collision risk, and exploring other practicable management options.

Unlike past seasons, no Hawaiian Hoary Bats were observed during nocturnal surveys for seabirds in West Maui, however observations will continue during all nocturnal and crepuscular field studies.

The Wildlife Education and Observation Program (WEOP) continues to be a valuable extension of the conservation initiatives being pursued under the HCP. We obtained about 254 independent records in the WEOP logbook significantly improving our ability to track and monitor the movements of Nene on site. WEOP also provides the training necessary to facilitate downed wildlife documentation, clearly demonstrating the success of this program.

A significant native plant reestablishment effort resulted in 7,500 young A`ali`i (*Dodonea viscosa*) propagated from seed collected at Kaheawa being successfully planted along cut and fill slopes and other open earth portions of the roadsides and turbine pads. KWP is planning an intensive out-planting in the fall and winter of 2008/2009 consisting of up to 25,000 native plants of about five species, again grown from seeds collected at Kaheawa. This effort also includes establishing Pili grass (*Heteropogon contortus*) in selected areas as a ground cover to facilitate soil stabilization.

This reporting period marks the end of the second full year of HCP implementation at KWP. The successes and challenges clearly demonstrate that KWP has achieved most, if not all of its obligations according to the terms of the HCP and, as always, we acknowledge the support and guidance offered by the DLNR, USFWS, and ESRC.

II. INTRODUCTION

In June 2006 Kaheawa Wind Power, LLC (KWP) began operating the island of Maui's first commercial wind energy generation facility in the Kaheawa Pastures area of West Maui. The State Board of Land and Natural Resources approved a Conservation District Use Application (CDUA) for the proposed facility, which is situated on State conservation lands, in January 2003. One condition of the CDUA was a requirement to "comply with the Incidental Taking Permit requirements of the U.S. Fish and Wildlife Service, including the preparation of the Habitat Conservation Plan."

Pursuant to Section 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973, as amended, the U. S. Fish and Wildlife Service (USFWS) may permit, under certain terms and conditions, the "taking" of a listed species that is incidental to, and not the purpose of, an otherwise lawful activity. To qualify for a federal Incidental Take Permit (ITP) an applicant must develop, fund, and implement a USFWS-approved Habitat Conservation Plan (HCP) to minimize and mitigate the effects of the incidental take. Under a similar program, Chapter 195-D, Hawai`i Revised Statutes authorizes the Hawai`i Department of Land and Natural Resources (DLNR) to issue an Incidental Take License (ITL).

In fulfillment of this condition, KWP developed a project-specific HCP in cooperation with the USFWS, DLNR and the Hawai`i Endangered Species Recovery Committee (ESRC). Upon final approval of the HCP, the federal ITP (TE-118901-0) and state ITL (ITL-08) were issued in January 2006. Both permits have a duration of twenty (20) years. Commercial operation of the project commenced in June 2006.

As described in Section VI of the HCP, KWP will provide annual monitoring and reporting on project activities. As specified in the federal permit, reporting will include a summary and discussion of incidental take, including adjusted take calculations pursuant to Section V of the HCP; results of searcher efficiency and carcass removal trials; results and discussion of seabird colony searches and management activities; results of nene nest surveys and protocols; vegetation monitoring of affected plant critical habitat areas; an overall summary of management activities; circumstances that triggered adaptive management and how the adaptive management was implemented; description of all occurrences of changed circumstances and how they were addressed; description of any unforeseen circumstances; progress made in achieving biological goals and objectives; any problems that occurred and how they were handled; description of cost expenditures and other information related to funding assurances; an annual work plan including an implementation schedule and entities responsible for implementation; and any other pertinent information such as actions taken by any State or Federal agencies related to implementation of the HCP.

KWP submitted its first annual report to the USFWS and DLNR in January, 2007 that summarized HCP implementation from initiation in late July, 2005 through December, 2006. A second annual report summarizing the results of the first year of HCP implementation was submitted in February, 2008. Following submission of both reports KWP met formally with representatives from both agencies on April 5, 2007 and again on February 27, 2008 to discuss

comments presented during the annual review process. Meetings with the State of Hawaii Endangered Species Recovery Committee (ESRC) were held in Honolulu on April 13, 2007 and again on April 23, 2008 to discuss the reports and specific elements of the monitoring program in greater depth. An amendment to the first report was submitted to the USFWS and DLNR in June, 2007 while responses to address comments provided by USFWS pertaining to the February 2008 report were submitted in early September, 2008.

This report summarizes how KWP has implemented the provisions of the HCP during the second full year of project operations (July 1, 2007 through June 30, 2008), as specified under the HCP. Year 2 activities have continued to include measures to minimize the risks of adverse effects on the four listed species (i.e., take), monitor the effects of the project, and mitigate potential take to accomplish a net ecological benefit to the species.

Covered Species and Summary of HCP Implementation

The HCP anticipates that the incidental take of four listed species (Hawaiian Petrel, Newell's Shearwater, Nene, and Hawaiian Hoary Bat) may potentially occur as a result of the operation of the wind farm. These species presently, or may, fly in the vicinity of the project site and could be injured or killed if they collide with a wind turbine. No other listed, proposed or candidate species are known or believed to be present in the project area.

The Hawaiian Petrel is known to nest primarily on Maui and, to a lesser extent, on Kaua`i, Lana`i, and Hawai`i. On Maui, these petrels are known to nest on Haleakala Crater on East Maui and studies undertaken by KWP biologists have ascertained that nesting is likely in West Maui. The anticipated direct take of the Hawaiian Petrel in conjunction with the operation of the wind energy generation facility is up to one individual per year. When indirect impacts are taken into consideration, the overall take is not expected to exceed 1.5 birds per year on average.

Field investigations to locate previously unknown nesting colonies of Hawaiian Petrels and Newell's Shearwaters in the West Maui mountains have provided encouraging results. The discovery of a highly probable Hawaiian Petrel breeding area (or colony) near lower Kahakuloa Valley in the vicinity of Makamakaole Stream has provided opportunities to develop and begin implementing mitigation initiatives on behalf of this covered species. Field surveys have also revealed that portions of the West Maui interior support Newell's Shearwater nesting activity based on strong audible cues. During the remainder of the 2008 seabird breeding season, we anticipate continuing to focus attention on identifying specific locations where Newell's Shearwater nesting is believed to occur in West Maui, alongside Hawaiian Petrel collision minimization and predator control initiatives. Given the results and status of our present work, we believe continuing to implement practicable and beneficial mitigation for Hawaiian Petrels and Newell's Shearwaters in West Maui, in consultation and cooperation with DLNR and USFWS, will be a top priority.

The Newell's Shearwater breeds on several of the main Hawaiian Islands, with indications that the species may also nest on Maui, although the status of the species on Maui is unclear at this

time. Like the Hawaiian Petrel, the anticipated take of the Newell's Shearwater is up to one individual per year. When indirect impacts are taken into consideration, the overall take is not expected to exceed 1.5 birds per year on average.

As part of the State and Federal plans for Nene recovery, Nene have been re-introduced onto the islands of Kaua`i, Maui, Moloka`i and Hawai`i; this recovery program includes a captive-release pen in the Hanaula area of the West Maui mountains, near the upper end of the project site. As of 2006, 104 Nene had been released from this pen since releases began in 1994, but little is known about their exact distribution and movements. The anticipated take of the Nene is up to two individuals per year. When indirect impacts are taken into consideration, the overall take is not expected to exceed three birds per year on average.

Previous systematic surveys and ongoing incidental WEOP observations of Nene at KWP have provided insights into the degree of risk, interaction, and avoidance behavior evident as birds interact with the site throughout the year. KWP biologists continue to work closely in cooperation with DLNR wildlife personnel on Maui to monitor Nene nesting and flocking activity both at KWP and in the surrounding region. In addition, KWP biologists routinely share important observations with DLNR Nene biologists and provide this agency with data it obtains on banded Nene and their distribution while providing assistance with banding and other efforts as requested. Nene mitigation initiatives have made significant progress during the Year 2 reporting period owing to strengthened ties with various constituents and it is anticipated that productive achievements will be forthcoming.

Little is known about the distribution or habitat use of the Hawaiian Hoary Bat. While it has been recorded on several islands, it is believed to be most abundant on Hawai`i and present in low numbers on Maui. While the species may occur in the project area, there have been no documented observations from the site. The anticipated take of the Hawaiian Hoary Bat in conjunction with the operation of the wind energy generation facility is up to one per year.

Efforts to ascertain the presence, activities and habits of Hawaiian Hoary Bats at KWP have not resulted in any confirmed observations of bats that would enable a better characterization of the species' occurrence or level of risk resulting from interaction with the wind facility. KWP biologists will continue to use passive auditory detection techniques to assess presence and activity patterns of Hawaiian Hoary Bats on site along with incidental observations during seabird colony searches and investigations elsewhere on Maui and incidental to all other activities at KWP.

The Downed Wildlife Monitoring Program is one of the most consistent and time consuming elements of the HCP. One Hawaiian Petrel and two Nene fatalities were documented during the present reporting period. Applying the results of monitoring, including seasonal Searcher Efficiency (SEEF) Trials, Carcass Removal Trials, and accounting for indirect take and loss of productivity, we estimated an adjusted take of 3.31 Hawaiian Petrels and 6.34 Nene during this reporting year, within the expected annual baseline levels as described in the HCP.

Our efforts to continue re-establishing native plants following site development are encouraging. This effort will be ongoing and in 2008-2009 will include the nursery propagation and outplanting of several thousand additional A`ali`i and a variety of other native species that commonly occur on the site. We continue to maintain a strict adherence to avoiding impact to sensitive native botanical resources where they occur.

This reporting period marks the end of the second full year of HCP implementation at KWP. The successes and challenges clearly demonstrate that KWP has achieved most, if not all of its obligations according to the terms of the HCP, as well as additional measures that go beyond strict adherence to the HCP. Table 1 provides the status of impact avoidance, minimization, and mitigation measures prescribed in the HCP.

TABLE 1. Kaheawa Wind Power, Habitat Conservation Plan principle implementation items and compliance timeline as of July, 2008.

Mitigation Measure	Compliance Period	Status †
Nene Interaction Surveys [3]	Year 1	Completed June, 2007
Nene Release Pen [4]	Permit Issuance	Pending
Nene Gosling Production or Translocation [4]	Years 1-5	Pending
Nene Contingency Fund [4]	Permit Issuance	Completed January, 2006
Seabird Colony Searches and Mitigation [4]	Year 1-2	In-Progress
Seabird Contingency Fund [4]	Permit Issuance	Completed January, 2006
Incidental Bat Observations [3]	Year 1-2	Completed June 2007
On-Site Bat Surveys [3]	Year 1	Completed June, 2007
Hoary Bat Research Fund [4]	Permit Issuance	Completed June, 2006
Hoary Bat Contingency Fund [4]	Permit Issuance	Completed January, 2006
Downed Wildlife Surveys [3]	Life of Project	In-Progress
Carcass Removal Trials [3]	Year 1-2	In-Progress
Searcher Efficiency Studies [3]	Year 1-2	In-Progress
WEOP Implementation [1, 2, 3]	Life of Project	In-Progress

1=impact minimization, 2=impact avoidance, 3=documentation and reporting, 4=mitigation

† Some compliance items are inherently ongoing but are referred to in the table as completed for compliance purposes.

The following narrative provides a summary of HCP implementation activities and results. Summary data derived from monitoring are contained in appendices at the end of the report. Monitoring protocols follow those prescribed in the HCP

III. AVIAN AND BAT FATALITY MONITORING

Monitoring Surveys for Downed Wildlife

KWP biologists have been implementing a year-round monitoring program to document downed (i.e., injured or dead) wildlife incidents involving HCP-listed and non-listed species on the project site since operations began in June, 2006. Protocols are specific concerning HCP-covered wildlife which, if encountered under any circumstances are immediately reported to DLNR/DOFAW and USFWS for response coordination and specimen recovery.

Presently, systematic foot searches are the standard method used to monitor for downed wildlife at KWP. Each of the 20 wind turbine (WTG) search plots measure 180x200 meters and are situated lengthwise in a NE-SW orientation centered on each turbine base. In addition, there are seven (7) meteorological (met) towers, each with their own search plot, similarly shaped but with smaller proportional dimensions that are included in the standard search effort. We established all plot boundaries using GIS files and a Trimble GPS Pathfinder Geo-XT handheld receiver and compass. The corners of plot boundaries are marked using heavy gauge steel fence posts and labeled for reference. We laid out transects parallel to each other using medium gauge 5-ft steel fence posts as transect markers. This layout scheme enables the searcher to maintain their position on a given transect visually without referring regularly to the GPS. The medium gauge steel and 5-ft height of the markers provide long-term durability, visibility, and low collision risk for wildlife. We must change the techniques we use for monitoring activities in the search plot overlap areas adjacent to Papalaua and Manawainui Gulches (WTG 1-3). During these searches we establish observation points from the opposing and surrounding sides of each gulch that afford a clear view of the Kaheawa site within the overlap parcels. We scan the adjacent canopy and as much of the cover as possible using a spotting scope, binoculars and the naked eye. Performing this task requires additional logistics and increases survey effort beyond the standardized foot search regime applied to the non-overlap portions of the search plots. We possess a Special Use Permit issued by the DLNR for access to and from plot overlap survey areas.

The downed wildlife monitoring program includes two types of monitoring periods. The year-round baseline monitoring regime consists of full site coverage once per week. During the Nene and seabird fledging seasons, May-June and October-November, search effort elevates to two searches of the site each week in order to provide more coverage during these presumably higher risk periods. KWP wildlife monitoring staff performed 972 systematic searches of the twenty WTG search plots on 52 consecutive weeks during the Year 2 reporting period. Each of the three met tower search plots (KWP-MET 1-3), located immediately adjacent to the WTG plot boundaries, were searched in conjunction with the turbine search plots. Four separate met towers (KWP II-MET 1,2,5, and 6) installed by Kaheawa Wind Power II (KWP II) in October, 2007 are searched in the same manner and frequency as described for the KWP site (Appendix 1).

Because characteristics of vegetation and ground cover are recognized as important factors influencing the estimation of fatality rates at wind energy facilities, vegetation management continues to receive consideration as a means to improve downed wildlife detection and searcher

efficiency. During the 2006 Annual Review, there was general agreement that KWP should proceed with establishing test vegetation management plots to evaluate techniques and assess the response of Nene.

Figure 1. A flock of four Nene passing between turbine towers and negotiating moving rotors at the Kaheawa Pastures Wind Energy Generation Facility, West Maui, Hawaii, June, 2006.

Following up on a recommendation we received from the USFWS following the February 2008 Annual Report, we have begun to establish a baseline set of search plot visibility classifications based on vegetation structure and landscape characteristics of the search plot areas (Pennsylnania Game Commission, 2007). While these efforts go beyond the scope of the HCP, the conditions at Kaheawa may be well-suited for conducting these studies and may inform our efforts.

Searcher Efficiency Studies

Searcher Efficiency (SEEF) Studies represent an important component of downed wildlife monitoring at KWP and provide an estimate of carcass detection probability. In February and April, 2007, we obtained permission from the DLNR and USFWS to use Wedge-tailed Shearwater carcasses as closely-related seabird surrogates to assess searcher efficiency at KWP. We performed seven SEEF exercises during the Year 2 reporting period in July and November, 2007 and in January, April, and June, 2008 (Appendix 3). Each trial is performed to correspond with a daily search plan and searchers are not informed in advance that a trial is being initiated. Prior to the arrival of searchers, specimens are placed inside selected search plot boundaries in a pseudo-random manner by tossing the carcass to a resting position, recording GPS position and

characteristics of the vegetation and general habitat, and photos. Searchers then perform their surveys as normal and report subsequent observations. Any carcasses not reported at the conclusion of a trial are immediately recovered and refrozen for subsequent use in Carcass Removal Trials. Each SEEF exercise is discussed afterward to assess the factors that may have affected detection probability.

Specimen detection probability averaged about 0.64 overall. Using the results of these trials to estimate adjusted take assumes that the detection rate for Wedge-tailed Shearwaters is representative of Hawaiian Petrels and Newell's Shearwaters, which is probably reasonable. Nene are probably more detectable than the seabird species due to their larger size.

Overall, experimental detection efficiency rates were lower in Year 2 compared to the results from Year 1 (0.68) of this monitoring program. KWP will continue to perform these studies with the aim of providing an ongoing basis for estimating searcher efficiency using Wedge-tailed Shearwaters. We also plan to continue to explore acceptable means to obtain carcasses of Nene or similar species as more suitable representatives of this species.

Carcass Removal Trials

The objective of performing carcass removal studies at KWP is to determine the average amount of time an avian or bat carcass remains visible to searchers before being removed by scavengers or otherwise rendered undetectable. The length of time (expressed in days) that a carcass remained visible to observers in the trial area (t_i) was calculated for each experimental carcass used in the trial. Mean carcass removal time (t) was calculated for each trial by summing t_i for all carcasses and dividing by the total number of carcasses.

During the initial reporting period, KWP biologists used fresh or frozen carcasses of avian species (House Sparrow, Common Myna, Spotted Dove) obtained from the USDA Wildlife Control branch in Kahului in the carcass removal trials. Though the best available alternative at the time, these species differ from HCP-covered avian species in size, shape, color, and taxonomy. The smaller species approximate the size of Hawaiian Hoary Bats and are therefore useful surrogates for this species. However, once we obtained the necessary permits from DLNR and USFWS in early 2007 we began procuring Wedge-tailed Shearwater carcasses for use in avian carcass removal trials.

Three 14-day, one 38-day, and one 6 day carcass removal trials were conducted at KWP during the Year 2 reporting period using Wedge-tailed Shearwater carcasses (Appendix 2). Each trial consisted of placing 3-4 individual shearwater specimens on the ground in a random manner that approximates what would be expected if a bird came to rest on the ground after having collided with a structure inside the boundaries of selected search plots, i.e., representative of different portions of the site consistent with protocols established in Appendix 9 of the HCP and as described in the February 2008 Annual Report. Day 1 represents the day a trial is initiated and establishes a baseline set of specimen condition data. The HCP recommends that specimens shall be observed daily for the first 7 days of the trial, then again on Days 10 and 14. Although

somewhat different than what is prescribed in the HCP, we chose to extend the duration of Trial 4 in April-May, 2008 at a time we suspect scavenger activity may be low. However, in the analyses we only account for carcass removal time through Day 14. On each day the status and condition of specimens are assessed regarding presence/absence, extent of apparent scavenging and/or decomposition, change in position/location, visibility and overall condition of the carcass.

During the fall and winter months we found that carcasses tended to be scavenged within the first week, whereas many carcasses remained undisturbed for nearly the full 14 days during spring and summer. Using the results of these trials to estimate adjusted take assumes that the carcass removal rate for Wedge-tailed Shearwaters is representative of the two seabird species, which is probably reasonable. However, because of their smaller size they are probably conservative for Nene (i.e., over-state removal/scavenging and under-state searcher efficiency). As mentioned, we intend to explore opportunities to obtain larger specimens as more representative of Nene, and will continue using small passerine species as bat surrogates.

Direct Observations of Incidental Take

There were three downed wildlife incidents that involved fatality of HCP-covered avian species at KWP during the Year 2 reporting period. On the afternoon of August 7th, 2007 KWP biologists discovered a single adult Hawaiian Petrel carcass in the WTG-5 search plot. On October 9, 2007 the partial remains of an apparently full grown Nene were discovered at a distance of about 35 m to the NW of WTG-13. Another Nene carcass was discovered adjacent to WTG-3 on the afternoon of Saturday, December 8th, 2007. Each of these incidents were treated as authorized takes under the Incidental Take Permit (ITP) and Incidental Take License (ITL) issued to KWP by the USFWS and Hawaii DLNR, respectively. Each specimen was documented, collected, and reported according to well-established protocols and terms outlined in the HCP. Incident reports were submitted to USFWS and DLNR and are attached to this report (Appendix 5).

The Hawaiian Petrel and Nene observed in August and October, 2007, were each found during routine search surveys for downed wildlife. The Nene observed in December, 2007 was reported by a contractor who followed Wildlife Education and Observation Program (WEOP) protocols and promptly reported the observation to KWP wildlife personnel. The last time the WTG 3 search plot was surveyed prior to the incident was December 3, just prior to the onset of storm conditions. It is reasonable to assume that this bird came down in the search plot sometime between December 4-8. This plot was searched immediately following the incident and again on December 10, 2007.

The location of each specimen suggested an exceedingly low probability of collision with meteorological structures. In the absence of any directly observed take during met tower searches, there is no basis for estimating adjusted take levels associated with these structures separately.

Information contained in the Incident Reports suggests that at least in the case of the Nene discovered in December, 2007 weather and climate extremes may have contributed to an increased collision risk for birds passing through certain portions of the site. A severe winter storm was the dominant weather feature affecting all of the Hawaiian Islands at the time of this incident. Each incident provides critical information necessary for assessing risk and evaluating the effectiveness of present take models in predicting estimated take levels.

Observed Direct Incidental Take (ODT) is a fundamental variable that enables take to be adjusted when considering values derived from Searcher Efficiency and Carcass Removal Studies, as described in Section V of the HCP. We presented a hypothetical exercise in the February 2008 annual report to demonstrate how ODT can be used to calculate adjusted take for Hawaiian Petrels and Nene and apply the same methods here using actual ODT data from systematic monitoring during the Year 2 reporting period.

Estimating Adjusted Take

At present there are three (3) Observed Direct Take (ODT) observations that can be applied to the Year 2 reporting period. Known fatalities were documented for one (1) Hawaiian Petrel and two (2) Nene. These are presumed to be project-related (there were no eye-witness accounts and the condition of the carcasses, though suggestive of a turbine collision, were not 100 percent definitive). Ongoing SEEF and Carcass Removal trials using Wedge-tailed Shearwaters provide a basis for estimating Adjusted Take for both Hawaiian Petrels and Newell's Shearwaters (although they are most comparable in size, color, and morphology to the Hawaiian Petrel). As discussed, although dissimilar in many respects to Nene, Wedge-tailed Shearwaters provide empirically derived values that we apply for purposes of estimating the Adjusted Take for Nene.

As presented in Section V of the HCP, the principle components that go into estimating the Adjusted Take are, a) Observed Direct Take, b) Unobserved Direct Take, c) Indirect Take, and d) Loss of Productivity. The SEEF and Carcass Removal results are used to estimate the Unobserved Direct Take (UDT). To calculate adjusted estimates of the number of HCP-covered avian fatalities that may have occurred at KWP during the present reporting period, we used an estimator, *m*, as proposed by Shoefeld (2004) and Kerns and Kerlinger (2003) to estimate fatality rates using the formula:

$$m = \left(\frac{N*I*C}{k*t*p}\right)\left(\frac{e^{I/t}-1+p}{e^{I/t}-1}\right)$$

where *I* represents the number of days between plot searches, *N* is equal to the number of turbine search plots, k is the number of plots searched (in the case of KWP, *N* and *k* are the same value), *t* is the mean carcass removal time, *p* is used to represent the detection probability, $e^{I/t}$ is an exponential value, and *C* is the actual number of carcasses observed (ODT) during routine downed wildlife monitoring.

Timing of each incident and necropsy reports indicate that the single Hawaiian Petrel fatality was an adult of unknown sex and breeding status taken during the breeding season. Veterinary examination indicated that neither of the Nene were young of the year and the sex was uncertain in both cases. Each of these incidents occurred during the ordinary breeding season for Nene.

To account for variability in search interval and carcass removal time we calculated mean values for these parameters based on the sampling season and for the entire year (Erickson et.al. 2004). For example, we apply baseline values that are representative of when takes for Hawaiian Petrel and Nene occurred to examine how adjusted take estimates vary depending on seasonal baseline parameters. We also present the overall average detection probability and present estimates of Adjusted Take for the entire year by combining seasonal point estimates:

Hawaiian Petrel

Baseline Values, July-September

Observed Direct Take , C = 1; Unobserved Direct Take, p = 0.64 and t = 13
Interval between searches, I = 8.64

Estimated Direct Take, m = **1.74**

Baseline Values, May-November

Observed Direct Take , C = 1; Unobserved Direct Take, p = 0.64 and t = 10.25
Interval between searches, I = 7.03

Estimated Direct Take, m = **1.77**

Baseline Values, July-June (entire year)

Observed Direct Take , C = 1; Unobserved Direct Take, p = 0.64 and t = 9.26
Interval between searches, I = 7.54

Estimated Direct Take, m = **1.92**

Nene

Baseline values, October-April

Observed Direct Take , C = 2; Unobserved Direct Take, p = 0.64 and t = 9.66
Interval between searches, I = 5.76

Estimated Direct Take, m = **3.76**

Baseline values, July-June (entire year)

Observed Direct Take , C = 2; Unobserved Direct Take, p = 0.64 and t = 9.26
Interval between searches, I = 7.54

Estimated Direct Take, m = **3.84**

The resultant values for m estimate that 1.92 Hawaiian Petrels and 3.84 Nene would have been taken as a result of collisions with turbines or immediately adjacent structures at KWP based on mean adjustment values representing the entire reporting year. The estimated direct take of Hawaiian Petrels can also be adjusted using baseline values corresponding to the time take occurred to estimate 1.74 petrels taken. Using seasonal values corresponding to the monitoring period in which each Nene was taken and encompassing the majority of the Nene breeding season the adjusted direct take is estimated to be 3.76 Nene.

As prescribed in the HCP, the product of the Direct Observed and Unobserved Take values are further adjusted by accounting for Indirect Take and Loss of Productivity to estimate Adjusted Take. For instance, if it is assumed that each of the birds were breeding birds then it can be assumed there will be an additional impact due to indirect loss of young and a reduction in annual productivity resulting from the loss of a reproductively active adult. For purposes of applying Loss of Productivity and Indirect Take in the absence of more definitive information upon which to determine maturity and/or breeding status, it will be assumed that each of the three birds was presently an active breeder during the year taken, and capable of contributing to annual productivity during subsequent breeding seasons. Section V of the HCP assumes a value of 0.5 for Indirect Take, regardless of species, and also discusses how, using then available demographic data for Hawaiian Petrels and Nene, estimates of Lost Productivity are derived (0.1/yr for Nene and 0.15/yr for seabirds).

Using these values, Estimated Adjusted Take for each species can be stated as:

Hawaiian Petrel July-September
(ODT + UDT = 1.74) (Indirect Take = 0.5) = 0.96 + 1.92 = 2.88

When Loss of Productivity (15%) is included, which applies to the year take occurs and accrues each subsequent year that mitigation is not present, we calculate an additional loss of 2.88 (0.15) = 0.43. After accounting for Indirect Take and Loss of Productivity, the Estimated Adjusted Take for Hawaiian Petrels is 3.31.

Nene October-April
(ODT + UDT = 3.84) (Indirect Take = 0.5) = 1.92 + 3.84 = 5.76

When Loss of Productivity (10%) is included, which applies to the year take occurs and accrues each subsequent year that mitigation is not present, we calculate an additional loss of 5.76 (0.10)

= 0.58. After accounting for Indirect Take and Loss of Productivity, the Estimated Adjusted Take for Nene is 6.34 birds.

Due to their larger size, Nene carcasses are probably easier for observers to detect and probably also more difficult for typical scavengers, such as mongoose and cats, to remove. Osborne et. al. (2000) found a steady increase in observer detection efficiencies as a function of increasing bird size class comparing Brown-headed Cowbirds, Rock Doves, and Snow Geese during a 2-year study conducted at the Buffalo Ridge Wind Resource Area in Minnesota. A similar study conducted at the Stateline Wind Project in Oregon and Washington report that overall observer detection efficiency was 78% for large birds compared to only 42% for small birds, while mean carcass removal time was estimated to be 35.7 days for large birds and 16.7 days for small birds with 62.4% of large specimens present by Day 14 of the trial compared with 43.3% for small carcasses, independent of season and habitat type (Erickson, et. al. 2004). Thus, the estimates of Adjusted Take for Nene presented above are probably biased upwards as a result of using the smaller surrogate species in SEEF and Carcass Removal trials. Substituting the value for detection probability reported by Erickson et. al. (2004) for large birds to estimate Adjusted Take of Nene at KWP during the Year 2 reporting period using values measured during the season in which take occurred (October-April), we can state baseline values for Nene as,

Observed Direct Take , C = 2; Unobserved Direct Take, p = 0.78 and t = 9.66
Interval between searches, I = 5.76

Estimated Direct Take, m = **2.98**

The only value we changed was the probability that the carcass was detectable to searchers. We propose that detection probability is higher and carcass retention time longer for Nene at Kaheawa because the size and habits of known scavengers in this portion of Maui is represented by small mammals (mongoose, cats, and rats) that have proportionally smaller mass than Nene. This may not be the case for small to medium sized specimens, like Wedge-tailed Shearwaters, which are more representative of HCP-listed seabirds. Also, the mammalian and avian scavenger communities that occur at many wind resource study areas in North America, such as raptors, turkey vultures, common ravens, and coyotes (Kerns and Kerlinger, 2004) are more likely to remove carcasses more efficiently than the scavenger species we encounter locally.

Under these circumstances, accounting for Indirect Take and Loss of Productivity estimated Adjusted Take for Nene would represent a net loss of 4.91 birds.

Balancing Mitigation against Adjusted Take

KWP is optimistic that mitigation initiatives for Nene, Hawaiian Petrels, and Newell's Shearwaters are proceeding toward achieving a net ecological benefit on behalf of these HCP-covered species.

The adjusted take values presented above, when examined over the 29 month period that KWP has been operational under the terms of the ITP and ITL, remain within the Baseline take levels anticipated for Nene and Hawaiian Petrels as described in Section IV of the HCP.

Below is an accounting of take and mitigation that can be generated at any time during the implementation of the HCP, in order to compare actual take with permitted annual levels, as well as provide an accounting of net conservation benefit to the species (Table 2).

TABLE 2. Accounting of Incidental Take and Mitigation Levels at Kaheawa as of June, 2008

Species	Take Year	Observed Direct Take	Adjusted Take	Mitigation Applied	Balance of Take	Average Annual Estimated Take to Date[1]	Take Level
HAPE	2007	1	3.31	0	-3.31	1.37	Baseline
NENE	2007	2	6.34	0	-6.34	2.62	Baseline
NENE[2]	2007	2	4.91	0	-4.91	2.03	Baseline
NESH	0	0	0	0	0	0.00	Lower
HHBA	0	0	0	0	0	0.00	Lower

HAPE = Hawaiian Petrel NENE = Nene (Hawaiian Goose) NESH = Newell's Shearwater
HHBA = Hawaiian Hoary Bat
[1] Based on 29 months since permit issuance (January, 2006) [2] Based on adjustment using values for large birds

IV. MITIGATION INITIATIVES

NENE

Construction and Operation of a New Nene Release Facility

KWP has been in regular contact with DLNR since summer 2005 regarding the requirement for construction and operation of a new Nene release facility on Maui. Upon permit issuance, KWP set aside funds internally to contribute to a Nene propagation and release or translocation program, as prescribed in the HCP. A new release facility was to be constructed within one year of beginning project operation which includes KWP support during the first year of project operations. At the request of the USFWS in December, 2007 KWP disbursed $100,000 to the DLNR to support the first year of this project. The DLNR has now selected the site and are securing agreements with the land owner.

Nene Captive Propagation

This component of the HCP is designed to provide a surplus of young birds as mitigation in advance of any actual take. As presented in the HCP, captive propagation of Nene goslings to compensate for take is closely tied to the construction of the new release pen. Subsequent to a

request by the USFWS in December, 2007 KWP disbursed funds to the DLNR to begin supporting this project. In part, because these funds have not yet been directed toward gosling production, KWP has not been able to fulfill this obligation, or to begin establishing the intended surplus of birds anticipated to meet mitigation goals.

KWP has inquired of DLNR whether there is an alternative way that additional captive propagation can proceed prior to construction of the pen. So far DLNR has indicated that this is not possible because the necessary capacity for propagation and reintroduction is still lacking. However, KWP has expressed interest in exploring interim or alternative options that would satisfy its compliance obligations under the HCP while providing innovative opportunities for Nene enhancement to proceed according to recovery objectives.

Other Mitigation Opportunities: Translocation and Reintroduction

KWP is committed to implementing reasonable and scientifically sound measures for meeting the goals set forth in the HCP for Nene mitigation on Maui. Gosling production appears to be something we can anticipate in the future. The regulatory and management framework for facilitating the new release pen in East Maui also holds promise. However, because of the unexpected time lag that has occurred to date, KWP feels obligated to pursue all available alternative options, especially if they may allow at least some mitigation to be accomplished sooner. One such measure may be translocation/relocation of Nene from situations where they are being exposed to threats elsewhere, to the new release site on Maui. Nene relocation, translocation, and reintroduction all have been successfully performed to assist management and as a species recovery initiative. We wish to begin immediately exploring the necessary process for designing and implementing a Nene relocation and translocation strategy, in consultation with DLNR, USFWS, the Nene Recovery Action Group (NRAG), ESRC, and other qualified experts.

HAWAIIAN PETREL AND NEWELL'S SHEARWATER

Nesting Colony Searches in the West Maui Mountains

In spring of 2007, KWP biologists identified the first ever West Maui assemblage of Hawaiian Petrels exhibiting breeding behavior that suggests the presence of a nesting colony (or localized aggregation of sub-colonies) located in an area adjacent to Makamakaole Stream (Fig. 2). Numerous visits and subsequent observations at the colony following this discovery in 2007 coupled with observations during the 2008 breeding season reveal consistent attendance patterns which support the conclusion that we have successfully located a substantially-sized breeding colony of Hawaiian Petrels. We invited DLNR/DOFAW wildlife biologists from Maui and seabird researchers from the USGS and H.T. Harvey and Associates to accompany us to the colony in 2007 to help corroborate our findings, resulting in an overall concurrence of the discovery.

Additional observations from survey points nearby in 2007 and 2008 resulted in detections of both Hawaiian Petrels and Newell's Shearwaters. Newell's Shearwaters were first heard exhibiting calls characteristic of colony attendance behavior from an area in the Kahakuloa NAR adjacent to Puu Kukui Watershed Preserve in 2007. During Year 2 we performed nocturnal audio and visual observations from several additional areas in lower Kahakuloa Valley near Makamakaole Stream and determined that both Hawaiian Petrels and Newell's Shearwaters are actively using portions of Kahakuloa to access colonies nearby and further interior. To evaluate the distribution of possible breeding colonies closer to potential threats, we chose to focus most of our attention during the 2008 breeding season in lower Kahakuloa Valley and the Makamakaole Stream drainage.

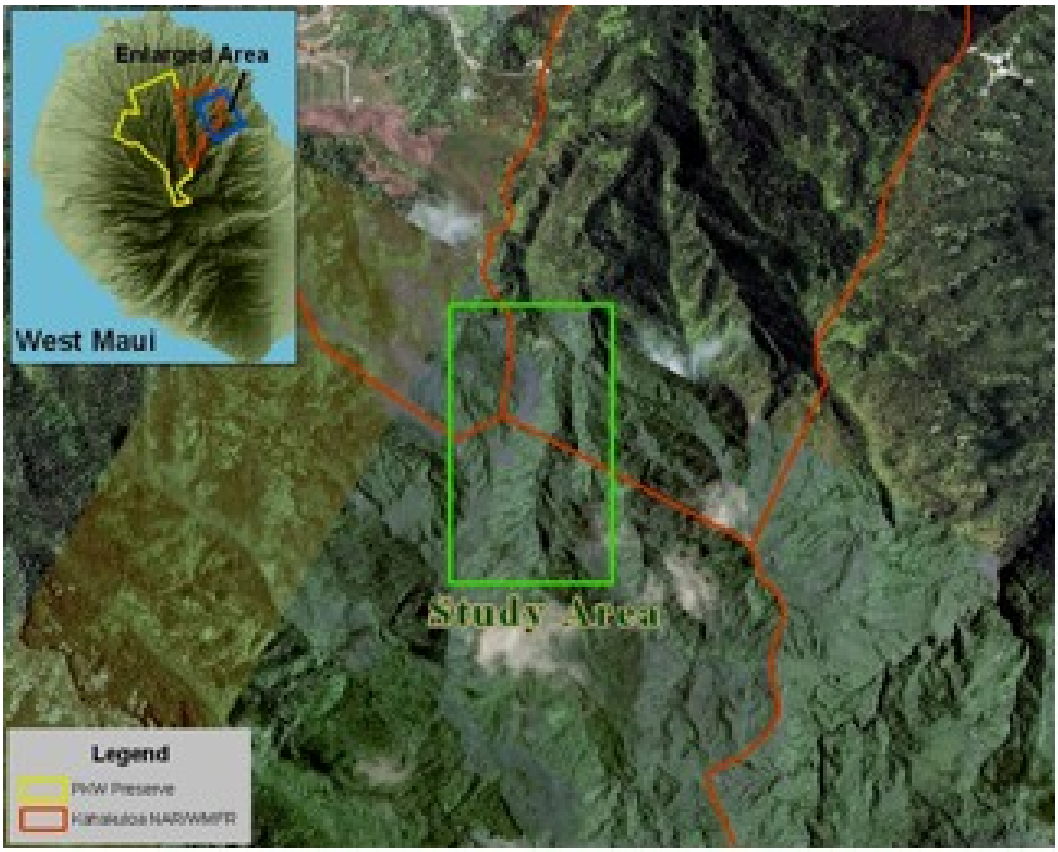

Figure 2. Map showing the land boundaries (red) of the Kahakuloa NAR and State Forest Reserve and a portion of the community (upper left) adjacent to the Makamakaole Hawaiian Petrel study area (green), West Maui, Hawaii.

We possess a Special Use Permit from the Natural Areas Reserve Commission to independently conduct work in Kahakuloa NAR and have similar authorization from the DLNR/DOFAW to work in the West Maui Forest Reserve. For the remainder of the 2008 seabird breeding season, KWP biologists will continue performing nocturnal observations at the Makamakaole study area to assess attendance patterns and better define the spatial distribution and boundaries of the colony. Because our work is intended to avoid impact, should the need arise to collect data for any reason in the immediate vicinity of the colony or any known nests, this would only be proposed following the fledging season, when the colony is no longer occupied, and in consultation with DLNR and USFWS. Additional efforts to gather data from Upper Kahakuloa will continue alongside searches for new colonies.

Endangered Seabird Mitigation Initiatives

KWP contacted DLNR and USFWS on or about June 4, 2007, promptly following the discovery of a breeding assemblage of Hawaiian Petrels near Makamakaole Stream, to initiate dialogue and begin evaluating opportunities for fulfilling seabird mitigation obligations under the HCP. The response from both agencies was that KWP should take the lead in coordinating with USFWS and DLNR to implement mitigation measures at Makamakaole. KWP biologists are working directly with Maui DLNR/DOFAW Forestry Branch and Wildlife personnel to ensure the scope of our mitigation initiatives are acceptable.

Based on field observations to date, the Makamakaole study area clearly possesses the key attributes of a suitable mitigation site based on the criteria outlined in the HCP. For instance:

1. The site is in close proximity to existing development and adjacent residential communities and pasture, which increases the potential for intrusion by alien predators and human disturbance; clear evidence of human activity continues to be observed in the vicinity of Makamakaole Stream;
2. Some DLNR-sponsored management activities have already been initiated in the area adjacent to Kahakuloa NAR and the West Maui Forest Reserve and a new section of ungulate exclusion fence was recently installed close to the immediate flight paths of petrels;

3. The site is reasonably accessible on foot and by helicopter, which will reduce logistical costs (and risk of unintended impacts) for research and management activities.

Threats from introduced mammalian predators and habitat degradation contribute to the belief that the Makamakaole study area should receive immediate attention as a candidate for Hawaiian Petrel and Newell's Shearwater mitigation under the HCP. Based on our observations, areas in upper Kahakuloa Valley, though more remote, are believed to be important Newell's Shearwater

breeding sites and options for mitigation should be evaluated there as well. It can be assumed that many of the same threats affecting Hawaiian Petrels are putting pressure on Newell's Shearwaters breeding in the Kahakuloa region and elsewhere. Moreover, mitigation actions we present for both species are in alignment with ongoing and proposed species recovery initiatives for the Hawaiian Petrel and Newell's Shearwater.

Mitigation measures presently proposed and anticipated for implementation during the 2008 seabird fledging season at the Makamakaole study area include a) live trapping and removal of cats and mongoose, b) installing strands of reinforced white poly-vinyl marking tape along the new ungulate fence immediately adjacent to the colony area to provide a visual stimuli to birds – a technique which has shown success in reducing and minimizing petrel collision fatalities elsewhere in the Hawaiian Islands (Lana'ihale, Hawaii Volcanoes National Park), and c) exploring management options that might lessen human incursion into the area during the seabird breeding season.

Cats and mongoose both are recognized as severe threats to the stability of burrow-nesting seabird populations in Hawaii and elsewhere and are well-documented predators of both HCP-covered species. Marking ungulate fences to enhance visibility near breeding seabird colonies has been shown to reduce collision mortality at the newly rediscovered Hawaiian Petrel breeding colony on the island of Lanai and adjacent to breeding petrels at Mauna Loa on the island of Hawaii. Human trails and activities adjacent to seabird breeding areas often create clear pathways of access for predators that can result in significant mortality for breeding seabirds.

Defining the value of each of these specific mitigation initiatives for Hawaiian Petrels and Newell's Shearwaters at the Makamakaole study area should be a priority. We are procuring live traps and are implementing a trapping and removal regime targeting cats and mongoose in the drainage corridor at Makamakaole. We foresee favorable success beginning during the 2008 seabird fledging season. In the spring of 2008, with the approval of local Natural Areas Reserve System (DLNR/NARS) managers, KWP biologists marked the fenceline running along the NAR boundary adjacent to the Makamakaole study area. Determining credit for this action is difficult because KWP biologists had not observed any petrel carcasses at this new fence prior to or after marking the fenceline. However, based on experience elsewhere and our observations of birds flying within a few precarious inches of the fence, it is likely our marking effort prevented one or more collision related fatality during the 2008 breeding season. Finally, public outreach or other jurisdictional approach to the community of users can often substantially change recreational and other use patterns to benefit the colonies. We intend to identify the most prevalent set of users along with traditional access points to determine how to implement a community-based solution to unencumbered access that is consistent with local needs.

HAWAIIAN HOARY BAT

Continued Monitoring to Assess Presence

KWP biologists performed systematic visual surveys directed at documenting the presence of Hawaiian Hoary Bats at Kaheawa through June, 2007 (i.e., 12 consecutive months following the start of operations in June, 2006). No bats were observed during any of the surveys. During Year 2 there were two separate bat sightings reported by contractors in the WEOP Log Book (Appendix 4). KWP biologists conducted interviews and in both cases the reports remained inconclusive.

Observations during Seabird Colony Searches

Observers paid attention to the potential occurrence of Hawaiian Hoary Bats during nocturnal seabird colony searches and observations of seabirds in the West Maui Mountains. These observations are incidental to the main task of making audible and visual detections of seabirds during colony searches and while collecting data on activity patterns observed at study areas. Nevertheless, bats have been observed in the past during nocturnal surveys as previously reported. Unlike past seasons, no Hawaiian Hoary Bats were observed during nocturnal surveys for seabirds in West Maui during the Year 2 reporting period. These observations will continue during any and all nocturnal and crepuscular field studies.

V. WILDLIFE EDUCATION AND OBSERVATION PROGRAM

Personnel Orientations, Information Exchange, and Reporting

The Wildlife Education and Observation Program (WEOP) continues to be a valuable extension of the conservation initiatives being pursued under the HCP at Kaheawa. Numerous staff, contractors, and visitors regularly perform activities at KWP. As prescribed in the HCP, KWP maintains an active and well coordinated wildlife orientation process for all new personnel on site, often combining them with refresher sessions for those present on a longer basis. Regular staff and visitor updates concerning wildlife observations, such as adult Nene pairs browsing in the vicinity of work zones or travel corridors and current levels of activity being observed on site, are communicated very effectively and among project operations staff, contractors, and field crews. Each project operations vehicle carries two laminated sheets that explain the natural history of each HCP covered species and procedures for reporting and handling a downed wildlife event. Throughout the year, and especially during the Nene breeding season, regular staff updates by KWP biologists in coordination with DLNR/DOFAW enable KWP personnel to anticipate the likelihood of encountering Nene on the site. As a result, project personnel are able to communicate and report observations promptly while minimizing the potential for disturbance to the birds.

KWP Operations and Maintenance staff are required to inform the Senior Wildlife Biologist in advance of new personnel arriving so that adequate wildlife orientations can be provided. A Wildlife Observations Logbook is posted on site and enables all staff and contract personnel to enter the details of their observations of HCP covered wildlife. The logbook contains fields for entering data that include:

- Observer Name, Date and Time of observations
- Species and Number of Individuals
- Location
- Proximity to Wind Turbine(s) and other Structures,
- Apparent Behavior
- if in flight, Estimated Height Above Ground in meters
- Flight Direction, and
- Pertinent Comments
- Weather

The Logbook has proven an effective means of obtaining observations that might otherwise have not been possible relying on verbal communication alone. Observations recorded in the WEOP logbook during the present reporting period are summarized in Appendix 4. During the present reporting period we obtained about 254 independent records of mostly Nene on and around the KWP site, including a number of observations of Nene flight interaction and turbine avoidance behavior. The WEOP guidelines and protocols have significantly improved our ability to track and monitor the movements of Nene on site, even when environmental staff can not directly observe their presence. Many of the operations and maintenance personnel and contractors have had few opportunities to view species like Nene in the wild. Thus, this program serves to promote a sense of responsibility for the resources, and has been a great asset in our efforts to care for the well-being of HCP covered species and continue to participate in valuable conservation exchange. Furthermore, the WEOP provided the training and clearly defined protocols necessary to facilitate the documentation of the Nene mortality incident in December,

2007 at a time and location where routine monitoring was not anticipated to immediately resume for a few days, clearly demonstrating the success of this program.

VI. BOTANICAL RESOURCES

Several systematic surveys of botanical resources have been performed at KWP and are discussed in the first two Annual Reports (January, 2007 and February, 2008). Botanical elements of the HCP that were addressed in those reports focused mainly on two specific subjects:

- Consideration of the potential for vegetation management to improve searcher efficiency in the downed wildlife search plots, preceded by test plots to evaluate Nene response, and;

- Protection of sensitive and ESA-listed species inside or in the vicinity of the search plot overlap areas with the adjacent plant sanctuaries at WTG 1-3.

No significant or apparent impacts have occurred in the search plot overlap portions of WTG 1-3. Because all of the downed wildlife monitoring in this area is performed from outside the sensitive overlap portions of these plots, there is no reason to believe that any increased or cumulative impacts to the sensitive botanical resources in these areas are occurring. No trials have yet been performed to evaluate the efficacy of selective vegetation management aimed at improving searcher efficiencies. KWP remains interested in exploring options for managing non-native vegetation in certain portions of the site in a manner that promotes a healthy landscape and may perhaps facilitate other HCP initiatives.

Native Plant Establishment

KWP has been implementing a native plant reestablishment program with significant success. During the present reporting period 7,500 young A`ali`i (*Dodonea viscosa*) propagated from seed collected at Kaheawa were planted along cut and fill slopes and other open earth portions of the roadsides and turbine pads. The results have been encouraging and have involved considerable coordination with other community conservation partners and volunteers. Even with the challenges of a harsh, often dry climate, survival has been high, on the order of 90 % overall for established transplants and seedlings alike. KWP is planning an intensive out-planting in the fall and winter of 2008/2009 consisting of up to 30,000 native plants of about five species, again grown from seeds collected at Kaheawa. In part, through successful long-term working relationships with Maui Cultural Lands, Inc., other conservation groups, including local native plant growers and restoration enthusiasts, we are seeing significant portions of the site becoming re-established with native species common in the area. These specimens, now well-established, have responded extraordinarily well and are not only becoming re-established in their natal habitat but are beginning to produce propagules. In addition, it appears natural recruitment processes are proceeding, which is encouraging both for re-establishing natural diversity and stabilizing soils.

Figure 3. A turbine pad slope planted with several native species common in the area at an elevation of approximately 3,100 ft near WTG-1 at the Kaheawa Pastures Wind Energy Facility, West Maui, Hawaii.

In partnership with the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Pili Grass (*Heteropogon contortus*) is being used to establish ground cover and promote erosion control and soil stability. We have conducted one field trial with Pili Grass and are planning to proceed with others. Pili was harvested and shipped from Molokai to Maui for this implicit purpose. Subsequent trials will proceed in coordination with the NRCS as the efficacy of this management technique continues to be demonstrated. In addition to addressing our own challenges we hope what is learned at Kaheawa will help enable the NRCS and the DLNR to make informed recommendations to other land owners across the state.

KWP is also working actively to minimize and reduce the ingress of certain undesirable invasive plant species. For instance, KWP biologists co-established the Fireweed Working Group to address the fireweed issue and its effect on the landscape of West Maui. The group is composed of representatives from the County of Maui, State of Hawaii, Maui Invasive Species Committee, KWP, and other concerned parties. This issue has been a considerable concern for rangeland managers throughout Hawaii and we have welcomed support and collaboration to address this invasive species since fireweed was first encountered at Kaheawa following the 2006 wildfires that swept through the region. In cooperation with the USDA Rangeland Extension Office, KWP helped facilitate field studies at Kaheawa to examine natural fireweed occurrence patterns in a non-pastoral setting, potential vulnerabilities, and growth-limiting factors. We also worked with the Plant Quarantine Division to provide researchers with an opportunity to make field observations necessary to facilitate fireweed bio-control planning initiatives. The hope among

Working Group participants and others is to evaluate the effectiveness of various field trials which do not specifically rely on chemical treatments, identify new management approaches based on the best available information, and share these findings with other land owners facing similar challenges with fireweed on Maui and elsewhere.
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VII. FUTURE DIRECTIVES

Successful implementation of the HCP provides a wide range of avoidance, minimization, and mitigation measures that will result in a net conservation benefit for the four covered species. KWP continues to implement these measures in accordance with the HCP and the recommendations provided by DLNR, USFWS, and the ESRC following the second full year of implementation. Several specific items have been presented that point to challenges and accomplishments that we have encountered during Year 2. Finding solutions and building on the successes thus far will continue to enable fine-tuning and improvement.

Mitigation offers a suite of new challenges not explicitly discussed in the HCP but which are still being developed and discussed with the aim of timely implementation. Our recent successes on Nene mitigation initiatives are very encouraging. KWP looks forward to exploring ways to facilitate Nene translocation and reintroduction, coupled with captive propagation in more depth. The timeliness of progress and relative assurances on the SHA are encouraging, suggesting that a new release pen for Nene reintroduction on Maui could accommodate these efforts in the near future. Securing a site to provide mitigation for Nene continues to be critical. KWP is working collaboratively with the DLNR and USFWS to facilitate a Safe Harbor Agreement (SHA) with the landowner that would enable this task to proceed to construction. On July 11, 2008 KWP met with DLNR and the interested land owner on Maui to discuss the scope of the proposed SHA. The meeting provided a sense of assurance that DLNR was committed to proceeding with the land agreements and it now appears promising that a Draft SHA will follow. This would enable the construction of the release pen to proceed, facilitating the achievement of this important Nene mitigation initiative.

KWP is now beginning the mitigation phase for seabirds. Establishing an agreeable framework for applying mitigation credits for Hawaiian Petrels and Newell's Shearwaters commensurate with predator removal and collision risk reduction is imperative and will require looking carefully at how the initiatives presently in place satisfy such requirements. With an emphasis on better defining what set of mitigation measures are most practicable and achievable for Hawaiian Petrels and Newell's Shearwaters at the Makamakaole study area, we are mapping and characterizing the physical and biotic features of the site while gathering pertinent information on apparent risks affecting the breeding area.

For future Searcher Efficiency and Carcass Removal trials we would also like to procure bird carcasses that are more taxonomically representative of Nene (e.g., Canada Geese, Nene mortalities from elsewhere) to better represent detection probability and carcass removal time of large vs. small to medium sized birds. Because observer detection and carcass retention are key

variables enabling the estimation of adjusted take, species specific differences in adjustment parameters should be a subject for future discussion.

We look forward, as always, to a series of productive follow up exchanges, meetings and discussions with the DLNR, USFWS, and ESRC as we continue to successfully implement this exciting HCP.

VIII. LITERATURE CITED

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Appendix 1. Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (crd)	Obs Initials	Man Hours	No. of Plots	Weekly Average
2-Jul-07	WTG 1-3, overlap, KWP-MET 1	10:00	15:45						GS,IB	11.50	3	
6-Jul-07	WTG 4-7, KWP-MET 2	8:30	12:00						IB	3.50	4	
									Summary	15.00	7	0.35
9-Jul-07	WTG 8-12	9:30	13:00						GS,IB	7.00	5	
10-Jul-07	WTG 13-15, KWP-MET 3	12:30	14:30						IB	2.00	3	
11-Jul-07	WTG 16-18	14:00	16:30						GS,IB	5.00	3	
12-Jul-07	WTG 19-3, overlap, KWP-MET 1	11:00	16:30						GS,IB	11.00	5	
									Summary	25.00	16	0.80
17-Jul-07	WTG 4-6	9:00	11:30						IB	2.50	3	
18-Jul-07	WTG 7-10, KWP-MET 2	7:30	10:30						IB	3.00	4	
19-Jul-07	WTG 11-14, KWP-MET 3	13:00	15:45						IB	2.75	4	
20-Jul-07	WTG 15-19	11:30	16:00						IB	4.50	5	
									Summary	12.75	16	0.80
23-Jul-07	WTG 20-2, overlap, KWP-MET 1	12:00	16:30						GS,IB	9.00	3	
									Summary	9.00	3	0.20
30-Jul-07	WTG 3-7, KWP-MET 2	10:00	14:00						IB	4.00	5	
31-Jul-07	WTG 8-13, KWP-MET 3	13:30	16:30						GS,IB	6.00	6	
1-Aug-07	WTG 14-17	8:30	12:15						IB	4.25	4	
2-Aug-07	WTG 18-20	9:45	12:30						IB	2.75	3	
									Summary	17.00	18	0.90
6-Aug-07	WTG 1-3, KWP-MET 1, overlap	13:30	17:30						IB	4.00	3	
7-Aug-07	WTG 4-7	12:00	14:45	**HAPE**	**1**	**WTG 5**	**50**	**SW**	GS,IB	5.50	4	
8-Aug-07	WTG 8-10, overlap, KWP-MET 2	10:00	16:30						IB	4.50	3	
9-Aug-07	WTG 11-14, KWP-MET 3	13:00	15:45						IB	2.75	4	

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
10-Aug-07	WTG 15-19	14:00	16:30						GS,IB	5.00	5	
									Summary	21.75	19	1.00
13-Aug-07	WTG 20-2, overlap, KWP-MET 1	13:00	17:00						GS, IB	8.00	3	
14-Aug-07	WTG 3-7, KWP-MET 2	11:30	14:00						IB	2.50	5	
15-Aug-07	WTG 8-13, KWP-MET 3	12:30	15:00						GS, IB	5.00	6	
16-Aug-07	WTG 14-19	13:00	16:30						GS, IB	7.00	6	
									Summary	22.50	20	1.00
20-Aug-07	WTG 20-5, overlap, KWP-MET 1	10:00	17:30						GS, IB	15.00	6	
21-Aug-07	WTG 6-9, KWP-MET 2	9:30	12:15						IB	2.75	4	
22-Aug-07	WTG 10-14, KWP-MET 3	12:30	16:00						GS, IB	8.00	5	
23-Aug-07	WTG 15-18	13:00	16:30						GS, IB	7.00	4	
24-Aug-07	WTG 19-20	12:00	14:00						IB	2.00	2	
									Summary	34.75	21	1.05
27-Aug-07	WTG 1-3, overlap, KWP-MET 1	10:15	15:00						GS	4.75	3	
28-Aug-07	WTG 4-8, KWP-MET 2	12:30	15:00						GS	2.50	5	
29-Aug-07	WTG 9-11	9:30	13:15						GS	3.75	3	
30-Aug-07	WTG 12-14, KWP-MET 3	14:30	16:00						GS	1.50	3	
31-Aug-07	WTG 15-18	12:15	14:45						GS	2.50	4	
									Summary	15.00	18	0.90
5-Sep-07	WTG 19-2, overlap, KWP-MET 1	11:00	16:30						IB	5.50	5	
6-Sep-07	WTG 3-6	11:45	14:30						IB	2.75	4	
7-Sep-07	WTG 7-11, KWP-MET 2	13:00	15:30						GS, IB	5.00	6	
									Summary	13.25	15	0.75

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
10-Sep-07	WTG 12-16, KWP-MET 3	12:45	16:30						IB,GS	7.50	5	
11-Sep-07	WTG 17-19	9:15	12:30						IB	3.25	3	
12-Sep-07	WTG 20-1, overlap, KWP-MET 1	13:00	17:00						IB	4.00	2	
13-Sep-07	WTG 2-5	8:30	11:00						IB	2.50	4	
14-Sep-07	WTG 6-10, KWP-MET 2	12:45	15:15						GS, IB	5.00	5	
									Summary	22.25	19	0.95
17-Sep-07	WTG 11-13	15:00	17:00						IB	2.00	3	
18-Sep-07	WTG 14-18, KWP-MET 3	11:00	14:40						IB	2.75	5	
20-Sep-07	WTG 19-20, overlap	10:30	16:00						IB,GS	11.00	2	
21-Sep-07	WTG 1-4, KWP-MET 1	13:30	16:15						IB,GS	5.50	4	
									Summary	21.25	14	0.70
24-Sep-07	WTG 5-7, KWP-MET 2	9:00	11:15						IB	2.25	3	
25-Sep-07	WTG 8-11	12:00	16:00						IB	4.00	4	
26-Sep-07	WTG 12-15, KWP-MET 3	9:45	16:00						IB	6.25	4	
27-Sep-07	WTG 16-20	10:30	16:30						IB	6.00	5	
28-Sep-07	WTG 1-3, overlap, KWP-MET 1	13:45	18:00						IB,GS	7.50	3	
									Summary	26.00	19	0.95
1-Oct-07	WTG 4-6	10:00	14:00						IB	4.00	3	
2-Oct-07	WTG 7-10, KWP-MET 2	13:45	15:15						IB	3.50	4	
3-Oct-07	WTG 11-16, KWP-MET 3	12:30	15:45						GS, IB	6.50	6	
4-Oct-07	WTG 17-20	11:15	14:00						GS, IB	5.50	4	
									Summary	19.50	17	0.43

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
8-Oct-07	WTG 1-8, overlap, KWP-MET 1-2	9:00	16:30						IB,GS	15.00	8	
9-Oct-07	WTG 9-14, KWP-MET 3	12:45	17:45	**NENE**	**1**	**WTG 13**	**35**	**NW**	IB,GS	10.00	6	
10-Oct-07	WTG 15-20	13:15	15:45						IB	4.50	6	
11-Oct-07	WTG 1-7, overlap, KWP-MET 1-2	10:00	16:45						IB,GS	13.00	7	
12-Oct-07	WTG 8-14, KWP-MET 3	12:45	16:00						IB,GS	6.50	7	
									Summary	49.00	34	0.85
15-Oct-07	WTG 15-20	13:00	17:00						IB	4.00	6	
16-Oct-07	WTG 1-5, overlap, KWP-MET 1	10:30	15:45						IB,GS	10.50	5	
17-Oct-07	WTG 6-12, KWP-MET 2	12:15	16:00						IB	3.75	7	
18-Oct-07	WTG 13-17 , KWP-MET 3	11:30	15:00						IB	3.50	6	
19-Oct-07	WTG 14-20	12:00	16:30						IB	4.50	7	
									Summary	26.25	31	0.78
22-Oct-07	WTG 1-8, KWP-MET 1-2	10:00	15:00						IB	5.00	8	
23-Oct-07	WTG 9-15, KWP-MET 3	9:45	15:45						IB	6.00	7	
24-Oct-07	WTG 16-20	13:00	16:45						GS, IB	7.50	5	
25-Oct-07	WTG 1-5, overlap, KWP-MET 1	11:00	15:15						IB	4.25	5	
26-Oct-07	WTG 4-10, KWP-MET 2	12:00	16:15						GS, IB	8.50	7	
									Summary	31.25	32	0.80
29-Oct-07	WTG 11-17, KWP-MET 3	12:30	17:00						GS, IB	9.00	7	
31-Oct-07	WTG 18-3, KWP-MET 1	10:30	15:30						GS, IB	10.00	6	
1-Nov-07	WTG 4-12, overlap	8:30	16:10						GS, IB	15.00	9	
2-Nov-07	WTG 13-20, KWP-MET 3	10:45	16:00						GS, IB	10.50	8	
2-Nov-07	KWPII-MET 1-2								GS, IB			
2-Nov-07	KWPII-MET 5-6								GS, IB			
									Summary	44.50	30	0.75

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
5-Nov-07	WTG 4-10, KWP-MET 2	10:00	16:00						GS, IB	12.00	7	
6-Nov-07	WTG 11-16, KWP-MET 3	9:00	16:30						GS, IB	15.00	6	
7-Nov-07	WTG 17-20, 1-3; KWP-MET 3; KWP-MET 1	8:30	16:00						GS, IB	15.00	7	
8-Nov-07	WTG 13-20	11:00	16:00						IB,GS	10.00	8	
8-Nov-07	KWPII-MET 5-6								IB			
9-Nov-07	WTG 4-8, overlap, KWP-MET 2	10:00	14:00						IB	4.00	5	
9-Nov-07	KWPII-MET 1-2								IB			
									Summary	56.00	33	0.83
12-Nov-07	WTG 9-12	9:30	13:00						GS, IB	7.00	4	
13-Nov-07	WTG 13-15, KWP-MET 3	9:00	15:00						IB	6.00	3	
14-Nov-07	WTG 15-1, KWP-MET 1	12:00	16:30						GS, IB	9.00	7	
15-Nov-07	WTG 2-8, overlap, KWP-MET 2	9:00	16:00						GS, IB	14.00	7	
16-Nov-07	WTG 9-11, KWPII-MET 1-2	10:00	14:00						GS, IB	8.00	3	
16-Nov-07	KWPII-MET 5-6								GS, IB			
									Summary	44.00	24	0.60
19-Nov-07	WTG 12-17, KWP-MET 3	9:00	15:00						GS, IB	12.00	6	
20-Nov-07	WTG 18-3, KWP-MET 1	10:30	14:30						GS, IB	8.00	6	
21-Nov-07	WTG 4-9, overlap, KWP-MET 2	11:15	15:30						GS, IB	8.50	6	
21-Nov-07	KWPII-MET 1-2								GS, IB			
									Summary	28.50	18	0.45

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
26-Nov-07	WTG 10-16	12:00	16:15						GS, IB	8.50	7	
27-Nov-07	WTG 17-1, KWP-MET 1,	8:00	12:00						IB	4.00	5	
27-Nov-07	KWPII-MET 5-6											
28-Nov-07	WTG 2-7, overlap, KWP-MET 2	11:00	17:00						GS, IB	12.00	6	
29-Nov-07	WTG 8-13, KWP-MET 2	9:45	14:00						GS, IB	8.50	6	
30-Nov-07	WTG 14-20, KWPII-MET 1-2	9:30	13:30						GS, IB	8.00	7	
									Summary	41.00	31	0.78
3-Dec-07	WTG 1-3, KWP-MET 1	10:00	14:30						IB	4.50	3	
12/4-12/7	**Kona storm rain-out**											0.20
8-Dec-07	WTG 3			**NENE**	**1**	**WTG 3**	**40**	**E**	GS		1	
10-Dec-07	WTG 1-4, overlap	11:00	16:00						GS, IB	10.00	4	
11-Dec-07	WTG 5-8, KWP-MET 2	11:00	14:00						GS, IB	6.00	4	
12-Dec-07	WTG 9-18, KWPII-MET 5-6	9:30	17:30						GS, IB	16.00	9	
									Summary	36.50	21	1.05
18-Dec-07	WTG 19-20, 1-4, overlap, KWP-MET 1	9:30	15:30						IB,KM,DM	18.00	4	
19-Dec-07	WTG 5-8, KWP-MET 2	10:30	14:00						IB,KM,DM	10.50	4	
20-Dec-07	WTG 9-12, KWPII-MET 1-2	11:15	14:45						IB,KM,DM	10.50	4	
21-Dec-07	WTG 13-19, KWP-MET 3	12:00	16:45						IB,KM,DM	14.25	7	
21-Dec-07	KWPII-MET 5-6								IB,KM,DM			
21-Dec-07	KWPII-MET 1-2								IB,KM,DM			
									Summary	53.25	19	0.95
27-Dec-07	WTG 16-18	12:30	15:30						IB,KM,DM	9.00	3	
28-Dec-07	WTG 19-20	9:00	12:00						IB,KM,DM	9.00	2	
									Summary	18.00	5	0.25

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
31-Dec-07	WTG 1-4, KWP-MET 1, overlap	9:00	14:45						DM,KM	11.5	4	
									Summary	11.50	4	0.20
2-Jan-08	WTG 4-7	11:30	15:00	WTTB	1	12	160	SW	DM,KM,IB	10.5	4	
3-Jan-08	WTG 12-14, KWP-MET 2-3	9:30	11:30						DM,KM	4.0	2	
4-Jan-08	WTG 7-14	11:00	14:00						IB,DM,KM	9.0	7	
4-Jan-08	KWPII-MET 1-2, 5-6								IB,DM,KM			
									Summary	23.50	13	0.65
7-Jan-08	WTG 15-20	12:30	15:30						DM,KM	6.0	6	
8-Jan-08	Safety Training											
9-Jan-08	Safety Training											
10-Jan-08	Safety Training											
11-Jan-08	WTG 20-2, overlap	12:00	15:00						IB,DM,KM	9.0	3	
									Summary	15.00	9	0.45
14-Jan-08	WTG 2-4	10:30	13:30						DM, KM	9.0	3	
15-Jan-08	WTG 4-8, KWP-MET 2	11:00	15:00						IB,DM,KM	16.0	4	
16-Jan-08	WTG 9-12	12:30	15:15						IB,DM,KM	6.75	4	
17-Jan-08	Site-Wide Nene Survey											
18-Jan-08	WTG 12-15, KWP-MET 3, KWP II-MET 1,2	10:30	14:30						KM,DM,IB	12.0	3	
									Summary	43.75	14	0.70
21-Jan-08	WTG 16-20	12:00	16:00						KM, IB, DM	12.0	5	
22-Jan-08	WTG 1-2, overlap	9:30	12:00						DM,KM	7.0	2	
23-Jan-08	KWP II-MET 1-2, 5-6; WTG 2-5	9:00	14:00						IB, DM, KM	15.0	4	
24-Jan_08	WTG 5-9	12:00	15:00						DM, KM, IB	9.0	5	
25-Jan-08	WTG 9-11	14:00	16:00						KM, IB	4.0	3	
									Summary	47.0	19	0.95

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
28-Jan-08	KWP II-MET 1-2; KWP-MET 3; WTG 12-15	11:00	15:30						DM,KM	9.0	4	
29-Jan-08	RAIN OUT											
30-Jan-08	RAIN OUT											
31-Jan-08	WTG 15-20	11:00	16:00						DM, KM, IB	15.0	6	
									Summary	24.0	10	0.50
4-Feb-08	KWP II-MET 5-6, overlap	13:30	15:00						DM,KM	3.0		
5-Feb-08	KWP-MET 1; WTG 1-4	12:00	16:45						DM,KM	9.5	4	
7-Feb-08	KWP-MET 2-3; WTG 5-10	12:00	15:00						IB, KM	6.0	6	
8-Feb-08	KWP II-MET 1-2; WTG 11-18	10:45	16:30						IB, KM	12.0	8	
									Summary	30.5	18	0.90
11-Feb-08	WTG 17-20	8:30	12:00						DM,KM	7.0	4	
12-Feb-08	overlap; KWP-MET 1; KWP II-MET 5-6	9:00	16:00						DM,KM	14.0		
13-Feb-08	WTG 1-6; KWP-MET 1; KWP II-MET 1-2	9:00	16:00						DM,KM	16.0	6	
15-Feb-08	overlap; WTG 7-12	9:00	16:00						DM,KM	12.0	6	
									Summary	49.0	16	0.80
19-Feb-08	KWP-MET 2; WTG 13-18	10:00	15:30						DM,KM	11.0	6	
20-Feb-08	WTG 19-20, KWP-MET 3	8:00	15:30						DM,KM	15.0	2	
21-Feb-08	DOI: B3-Helicopter Safety Operations									0.0		
22-Feb-08	KWP II-MET 1-2, 5-6	10:00	15:00						DM	5.0	3	
									Summary	31.0	11	0.55
25-Feb-08	WTG 1-3, overlap; KWP-MET 1	12:00	15:30						DM	3.5	3	
26-Feb-08	WTG 4-10; KWP II-MET 5-6	9:00	15:30						DM,KM	13.0	7	
27-Feb-08	WTG 11-15; KWP-MET 2-3	9:00	13:00						DM,KM	8.0	5	
28-Feb-08	WTG 16-20; KWP II-MET 1-2	9:30	11:30						DM,KM	5.0	5	
29-Feb-08	WTG 1-3; overlap; KWP-MET 1	9:00	16:00						DM,KM,IB	21.0	3	
									Summary	50.5	23	1.15

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
4-Mar-08	WTG 17-20; KWP II-MET 1-2	9:30	12:30						DM,KM	6.0	4	
5-Mar-08	WTG 1-6; overlap; KWP-MET 1	9:00	15:30						DM, KM, IB	19.5	6	
6-Mar-08	WTG 7-8, KWP-MET 2	13:30	14:30						KM	1.0	2	
7-Mar-08	WTG 9-15; KWP II-MET 5-6	9:00	15:00						DM,KM	12.0	7	
									Summary	38.5	19	0.95
10-Mar-08	WTG 16-20, KWP II-MET 1-2	10:00	15:00						DM,KM	10.0	5	
11-Mar-08	WTG 1-5; overlap; KWP-MET 1	10:00	15:00						DM,KM	10.0	5	
12-Mar-08	WTG 6-10	10:00	12:15						DM,KM,IB	6.75	5	
13-Mar-08	WTG 11-17, KWP-MET 3	9:30	16:00						DM,KM	13.0	7	
14-Mar-08	WTG 18-19; KWP II-MET 5-6	10:30	15:00						DM,KM	9.0	2	
									Summary	48.75	24	1.20
17-Mar-08	WTG 11-20, KWP II-MET 5-6	10:30	15:30						DM,KM	10.0	10	
18-Mar-08	WTG 1-4; overlap; KWP-MET 1	10:00	12:00						DM,KM,IB	6.0	4	
19-Mar-08	WTG 5-7, KWP-MET 2	9:30	12:00						DM,KM	5.0	3	
20-Mar-08	WTG 8-11, KWP II-MET 1-2	9:30	11:45						DM,KM	4.5	4	
21-Mar-08	WTG 12-14, KWP-MET 3	11:00	13:30						KM,DM	9.0	3	
									Summary	34.5	24	1.20
24-Mar-08	WTG 15-17, KWP-MET 3	12:00	15:00						DM,KM	6.0	5	
25-Mar-08	WTG 18-20, KWP II-MET 1-2	14:30	16:00						DM,KM,IB	7.5	3	
26-Mar-08	WTG 1-4; overlap; KWP-MET 1	10:30	11:30						DM,KM	2.0	4	
28-Mar-08	KWP-MET 2; KWP II-MET 5-6	9:00	14:30						DM,KM	11.0		
									Summary	26.5	12	0.60

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
31-Mar-08	WTG 5-7; KWP-MET 2; KWP II-MET 1-2	9:30	12:00						DM,KM,IB	7.5	3	
1-Apr-08	WTG 8-11	9:30	11:45						DM,KM,IB	6.75	4	
2-Apr-08	RAIN OUT											
3-Apr-08	WTG 12-15; KWP-MET 3	13:30	15:45						DM,KM	4.5	4	
4-Apr-08	WTG 16-20, KWP II-MET 5-6	10:30	15:00						DM,KM	11.0	5	
									Summary	29.75	16	0.80
7-Apr-08	WTG 1-6; overlap; KWP-MET 1	10:00	13:00						KM,DM	6.0	6	
8-Apr-08	RAIN OUT											
9-Apr-08	RAIN OUT											
10-Apr-08	WTG 7-9; KWP-MET 2; KWP II-MET 1-2	13:00	15:00						KM, DM	4.0	3	
11-Apr-08	WTG 10-12; KWP-MET 3; KWP II-MET 5-6	12:30	15:00						KM, DM	5.0	3	
									Summary	15.0	12	0.60
14-Apr-08	WTG 13-16; KWP-MET 2	13:30	15:00						DM,KM	3.0	4	
15-Apr-08	WTG 17-20; KWP II-MET 1-2	13:00	15:00						DM,KM	4.0	4	
16-Apr-08	WTG 1-4; overlap; KWP-MET 1	10:00	13:00						DM,KM	6.0	2	
17-Apr-08	WTG 5-7; KWP-MET 2	10:00	14:00						DM,KM	8.0	4	
18-Apr-08	KWP II-MET 5-6								DM,KM			
									Summary	21.0	14	0.70
21-Apr-08	WTG 8-11; KWP-MET 2	9:30	12:30						DM,KM,IB	9.0	4	
22-Apr-08	WTG 12-15; KWP-MET 3	10:00	12:00	PHEAS	1	18	2 m	N	DM, KM	4.0	4	
23-Apr-08	WTG 15- 18	12:00	15:00						DM,KM,IB	9.0	4	
24-Apr-08	WTG 19-20, KWP II-MET 1-2	10:30	15:30						DM,KM,IB	15.0	2	
25-Apr-08	WTG 1-3 overlap; KWP-MET 1	12:00	15:25						DM,KM,IB	9.8	3	
26-Apr-08	WTG 4-7; KWP-MET 2; KWP II-MET 5-6	10:30	11:30						DM	1.0	4	
									Summary	47.8	21	1.05

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
28-Apr-08	WTG 8-11; KWP-MET 2	13:00	15:00						DM,KM,IB	6.0	4	
29-Apr-08	KWP II-MET 1-2, 5-6	10:00	14:00						DM,KM,IB	12.0		
30-Apr-08	WTG 12-15; KWP-MET 3	9:30	13:00						DM,KM	7.0	4	
1-May-08	WTG 16-19	12:00	15:00						DM,KM,IB	9.0	4	
2-May-08	WTG 19-20, 1-3; overlap; KWP-MET 1	10:00	16:00						DM,KM	12.0	5	
									Summary	46.0	17	0.85
5-May-08	WTG 4-7, KWP-MET 2	10:30	12:30						DM, KM	4.0	4	
6-May-08	WTG 8-12, KWP II-MET 1-2	11:00	15:00						DM, KM	8.0	5	
7-May-08	WTG 13-18, KWP-MET 3	10:30	14:00						DM, KM	7.0	5	
8-May-08	WTG 19-20, 1-3,overlap; KWP-MET 1	9:00	16:15						DM,KM	22.0	5	
									Summary	41.0	19	0.48
12-May-08	WTG 4-10; KWP-MET 2	10:30	15:30						IB,KM	10.0	7	
13-May-08	WTG 11-18; KWP-MET 3	11:00	16:00						GS,IB,KM	15.0	8	
14-May-08	WTG 19-20, 1-2; KWP-MET 1	11:00	15:00						IB,KM	8.0	4	
15-May-08	WTG 3-8; KWP II-MET 5-6	8:45	15:00						IB,KM,GS	16.5	6	
16-May-08	WTG 9-14; KWP II-MET 1-2	9:30	15:45						IB,KM	12.5	6	
									Summary	62.0	31	0.78
19-May-08	WTG 15-18	11:00	14:00						KM	3.0	4	
20-May-08	WTG 18-20, 1, KWP-MET 1	9:00	14:00						KM	5.0	3	
21-May-08	WTG 1-4; KWP-MET 1; overlap	13:00	15:30						KM,IB	5.0	4	
22-May-08	WTG 5-7; KWP-MET 2	11:30	13:30						KM,IB	4.0	3	
23-May-08	WTG 8-15; KWP II-MET 5-6	10:00	15:00						KM,IB	10.0	8	
									Summary	27.0	22	0.55

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
27-May-08	WTG 16-20	9:00	15:00						KM, IB	12.0	5	
28-May-08	WTG 1-5; KWP-MET 1, overlap	9:00	14:30						KM,DM,GS	16.5	5	
29-May-08	WTG 6-8; KWP-MET 2	9:00	15:30						KM, DM	13.0	3	
30-May-08	WTG 9-15; KWP II-MET 5-6	9:15	18:30						KM, DM	14.5	7	
									Summary	56.0	20	0.50
2-Jun-08	WTG 12 -16; KWP-MET 3	9:15	15:00						KM,DM	11.5	5	
3-Jun-08	WTG 17-20; KWP II-MET 1-2	9:00	15:00						KM,DM	12.0	4	
4-Jun-08	WTG 1-7, KWP-MET 1-2	9:30	15:00						KM,DM, IB	16.5	7	
5-Jun-08	Site-wide DLNR Nene Survey	9:00	14:30						KM,DM, IB	16.5		
6-Jun-08	WTG 8-11, KWP II-MET 5-6	10:45	14:00						KM, DM	8.5	4	
									Summary	65.0	20	0.50
9-Jun-08	WTG 12 - 15; KWP-MET 2	9:00	13:00						KM,DM	8.0	4	
10-Jun-08	WTG 15-20	7:30	13:00						KM,DM	11.0	6	
11-Jun-08	WTG 1-4 overlap, KWP-MET 1	7:30	13:30						KM,DM	12.0	4	
12-Jun-08	WTG 5-10; KWP II-MET 1-2	7:45	14:30						KM, IB	12.5	6	
13-Jun-08	WTG 10- 13, KWP-MET 3, KWP II-MET 5-6	10:00	13:45						KM, IB	7.5	4	
									Summary	51.0	24	0.60
16-Jun-08	WTG 14-17; KWP-MET 2	7:30	12:30						DM, KM	10.0	4	
17-Jun-08	WTG 18-20, KWP II-MET 1-2	8:00	14:00						DM, KM	12.0	3	
18-Jun-08	WTG 1-3, overlap, KWP-MET 1	7:30	14:00						DM, KM	13.0	3	
19-Jun-08	WTG 4-7; KWP II-MET 5-6	10:00	15:00						DM, KM	10.0	4	
20-Jun-08	WTG 8-13	7:30	13:00						DM, KM	11.0	6	
									Summary	56.0	20	0.50

Appendix 1 (Continued). Downed Wildlife Monitoring, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Date	Search Plot ID	Start Time	End Time	Species ID	Number	Nearest WTG	Dist to WTG (m)	Dir from WTG (deg)	Obs Initials	Man Hours	No. of Plots	Weekly Coverage
23-Jun-08	WTG 14-17, KWP-MET 3	7:45	10:00						DM, KM	4.5	4	
24-Jun-08	WTG 18-20, KWP II-MET 1-2	8:00	12:30						DM, KM	9.0	3	
25-Jun-08	WTG 1-3; overlap; KWP-MET 1	7:45	12:00						DM, KM	8.5	3	
26-Jun-08	WTG 4-7, KWP-MET 2	7:30	12:30						DM, KM	10.0	4	
27-Jun-08	WTG 8-13, KWP II-MET 5-6	8:00	11:30						DM, KM	7.0	6	
									Summary	39.0	20	1.00

Average Interval (*I*) **Between Searches** (expressed in days)

July-September: **8.64**
October-November: **6.05**
December-April: **9.04**
May-June: **6.41**

Overall Average Weekly Search Interval (*1x*) = **8.97**
Overall Average Weekly Search Interval (*2x*) = **6.23**

Overall Average Interval = **7.54**

Appendix 2. Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 1, July 2007

Date	Trial Day	Specimen	Location	Status	Condition	Comments
12-Jul-07	1	A	80m south of WTG 2	P	Fr	Low shrubs
	1	B	KWP-MET 2	P	Fr	Scattered grasses
	1	C	Bare ground 18m west of WTG 14	P	Fr	Bare ground
	1	D	25m south of WTG 20 among A'ali'i	P	Fr	among A'ali'i shrubs
13-Jul-07	2	A	80m south of WTG 2	P	I, U	Some ants
	2	B	KWP-MET 2	S	R,G,F	Remains found several meters to W beneath grass clump
	2	C	Bare ground 18m west of WTG 14	S	R,G,F	Remains found a few meters S beneath molassass grass
	2	D	25m S of WTG 20 among A'ali'i	S	R,G,F	Remains found several meters S beneath A'ali'i bush
14-Jul-07	3	A	80m south of WTG 2	P	I, U	ants present
	3	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	3	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	3	D	25m S of WTG 20 among A'ali'i	S	R, F	Feather spot found several meters S along brush line
15-Jul-07	4	A	80m south of WTG 2	P	I, D, Des	ants, some drying/dessication
	4	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	4	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	4	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments
16-Jul-07	5	A	80m south of WTG 2	P	I, D, Des	ants, some decomposition/dessication
	5	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	5	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	5	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments
17-Jul-07	6	A	80m south of WTG 2	P	I, D, Des	ants, some decomposition/dessication
	6	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	6	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	6	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments

Status Codes: S = Scavenged; P = Present; A = Absent

Condition Codes: Fr = Fresh; I = Intact; U = Undisturbed; ; R = Remains discovered; D = Natural decomposition (insects usually visible); Des = Dessication evident

F = Feathers and Bone fragments; G = partially consumed

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 1 (Continued), July 2007

Date	Trial Day	Specimen	Location	Status	Condition	Comments
18-Jul-07	7	A	80m south of WTG 2	P	I, D, Des	ants, some decomposition/dessication
	7	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	7	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	7	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments
21-Jul-07	10	A	80m south of WTG 2	P	I, D, Des	ants, maggots, some decomposition/dessication
	10	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	10	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	10	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments
25-Jul-07	14	A	80m south of WTG 2	P	D, Des	ants, maggots, very decomposed, dessicated
	14	B	KWP-MET 2	S	R, F	Feathers/bone fragments
	14	C	Bare ground 18m west of WTG 14	S	R, F	Feathers/bone fragments
	14	D	25m S of WTG 20 among A'ali'i	S	R, F	Feathers/bone fragments

Days visible to observers: A(13), B(13), C(13), D(13)

t **=** 13.0

Status Codes: S = Scavenged; P = Present; A = Absent

Condition Codes: Fr = Fresh; I = Intact; U = Undisturbed; ; R = Remains discovered; D = Natural decomposition (insects usually visible); Des = Dessication evident

F = Feathers and Bone fragments; G = partialy consumed

Trial 2, November 2007

Date	Trial Day	Specimen	Location	Status	Condition	Comments
5-Nov-07	1	A	35m west of WTG 5	P	Fr	
	1	B	26m west of WTG 13	P	Fr	
	1	C	Bare ground 18m S of WTG 18	P	Fr	
6-Nov-07	2	A	35m west of WTG 5	P	I, U	some ants
	2	B	26m west of WTG 13	P	I, U	some ants
	2	C	Bare ground 18m S of WTG 18	P	I, U	
7-Nov-08	3	A	35m west of WTG 5	S	R,G,F	Carcass several meters to NW; mostly feathers and bones
	3	B	26m west of WTG 13	P	I, U	ants
	3	C	Bare ground 18m S of WTG 18	P	I, U	

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 2 (Continued), November 2007

Date	Trial Day	Specimen	Location	Status	Condition	Comments
8-Nov-08	4	A	35m west of WTG 5	S	R, F	Feathers and bones
	4	B	26m west of WTG 13	S	R,G,F	Carcass a few meters away in molasses grass
	4	C	Bare ground 18m S of WTG 18	P	I, Des	
	4	D †	50m SE of WTG 15	S	R,G,F	SEEF initiated 1.5 hours earlier; carcass scavenged almost immediately
9-Nov-07	5	A	35m west of WTG 5	S	R, F	Feather pile
	5	B	26m west of WTG 13	S	R, F	Just feathers remain
	5	C	Bare ground 18m S of WTG 18	A		Carcass absent; thoroughly searched the surrounding area
	5	D	50m SE of WTG 15	S	R, F	Additional scavenging; remains limited to wing, entrails, and the legs
10-Nov-07	6	A	35m west of WTG 5	S	R, F	Feather pile
	6	B	26m west of WTG 13	S	R, F	Feather pile
	6	C	Bare ground 18m S of WTG 18	A		No remains found despite further searches
	6	D	50m SE of WTG 15	S	R, F	Little but feathers and bone structure visible

Days visible to observers: A(5), B(5), C(4), D(2)

t = 4.0

† *This specimen was added to the CRT due to the timeliness of the intial set of observations.*

Trial 3, January 2008

Date	Trial Day	Specimen	Location	Status	Condition	Comments
14-Jan-08	1	A	45 m west of WTG 7	P	Fr	
	1	B	50m SW of WTG 17	P	Fr	
	1	C	60m north of KWPII-MET 1	P	Fr	
15-Jan-08	2	A	45 m west of WTG 7	P	I, U	
	2	B	50m SW of WTG 17	P	I, U	
	2	C	60m north of KWPII-MET 1	P	I, U	
16-Jan-08	3	A	45 m west of WTG 7	P	I, U	
	3	B	50m SW of WTG 17	P	I, U	
	3	C	60m north of KWPII-MET 1	P	I, U	

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 3 (Continued), January 2008

Date	Trial Day	Specimen	Location	Status	Condition	Comments
17-Jan-08	4	A	45m west of WTG 7	P	I, Des	
	4	B	50m SW of WTG 17	A	R, F	Small feather pile near bush 10m SE of placement site; carcass absent
	4	C	60m north of KWPII-MET 1	P	I, U	
18-Jan-08	5	A	45m west of WTG 7	P	I, D, Des	
	5	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	5	C	60m north of KWPII-MET 1	P	I, U	
19-Jan-08	6	A	45m west of WTG 7	P	I, D, Des	
	6	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	6	C	60m north of KWPII-MET 1	P	I, U	
20-Jan-08	7	A	45m west of WTG 7	S	R, D	Carcass moved 1 m west; part. consumed; head, pt. of torso, R wing remain
	7	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	7	C	60m north of KWPII-MET 1	A		Carcass absent despite thorough search
21-Jan-08	8	A	45m west of WTG 7	S	R, F, D	Carcass drawn further into grass; add'l scavenging; portion of torso present
	8	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	8	C	60m north of KWPII-MET 1	A		Carcass absent despite thorough search
24-Jan-08	11	A	45m west of WTG 7	A	F	Very dispersed, little to observe in deep grass.
	11	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	11	C	60m north of KWPII-MET 1	A		Carcass absent despite thorough search
27-Jan-08	14	A	45m west of WTG 7	A	F	Very dispersed, little to observe in deep grass.
	14	B	50m SW of WTG 17	A		Carcass absent despite thorough search
	14	C	60m north of KWPII-MET 1	A		Carcass absent despite thorough search

Days visible to observers: A(7), B(3), C(6)

t **=** 5.3

Status Codes: S = Scavenged; P = Present; A = Absent

Condition Codes: Fr = Fresh; I = Intact; U = Undisturbed; ; R = Remains discovered; D = Natural decomposition (insects usually visible); Des = Dessication evident

F = Feathers and Bone fragments; G = partialy consumed

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 4, April-May 2008

Date	Trial Day	Specimen	Location	Status	Condition	Comments
22-Apr-08	1	A	45 m E of WTG 3	P	Fr	
	1	B	50 m E ofWTG 18	P	Fr	
	1	C	50 m N of WTG 20	P	Fr	
23-Apr-08	2	A	45 m E of WTG 3	P	Fr, I, U	
	2	B	50 m E ofWTG 18	P	Fr, I, U	
	2	C	50 m N of WTG 20	P	Fr, I, U	
24-Apr-08	3	A	45 m E of WTG 3	P	D,Des,U	
	3	B	50 m E ofWTG 18	P	D,Des,U	
	3	C	50 m N of WTG 20	P	D,Des,U	
25-Apr-08	4	A	45 m E of WTG 3	P	D,Des,U	
	4	B	50 m E ofWTG 18	P	D,Des,U	
	4	C	50 m N of WTG 20	P	D,Des,U	
26-Apr-08	5	A	45 m E of WTG 3	P	D,Des,U	
	5	B	50 m E ofWTG 18	P	D,Des,U	
	5	C	50 m N of WTG 20	P	D,Des,U	
27-Apr-08	6	A	45 m E of WTG 3	P	D,Des,U	
	6	B	50 m E ofWTG 18	P	D,Des,U	
	6	C	50 m N of WTG 20	P	D,Des,U	
28-Apr-08	7	A	45 m E of WTG 3	P	D,Des,U	
	7	B	50 m E ofWTG 18	P	D,Des,U	
	7	C	50 m N of WTG 20	P	D,Des,U	
1-May-08	10	A	45 m E of WTG 3	P	D,Des,U	
	10	B	50 m E ofWTG 18	P	D,Des,U	
	10	C	50 m N of WTG 20	P	D,Des,U	
5-May-08	15	A	45 m E of WTG 3	P	D,Des,U	
	15	B	50 m E ofWTG 18	P	D,Des,U	
	15	C	50 m N of WTG 20	P	D,Des,U	Bird began losing feathers from head due to decomposition

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 4 (Continued), April-May 2008

Date	Trial Day	Specimen	Location	Status	Condition	Comments
6-May-08	16	A	45 m E of WTG 3	S	R, D,Des	Moved 2 ft E, ventral up; scavenged at abd. cavity, feath. Scatt. 1 ft rad.; vis. under*Lantana*
	16	B	50 m E ofWTG 18	P	D,Des,U	
	16	C	50 m N of WTG 20	P	D,Des,U	
7-May-08	17	A	45 m E of WTG 3	S	R, D,Des	Same position.
	17	B	50 m E ofWTG 18	P	D,Des,U	
	17	C	50 m N of WTG 20	P	D,Des,U	
12-May-08	23	A	45 m E of WTG 3	P	R, D,Des	Moved anoth. 12 in E into *Pukiawe* , carcass whole.
	23	B	50 m E ofWTG 18	P	D,Des,U	
	23	C	50 m N of WTG 20	P	D,Des,U	Additional feather loss, neck and head.
17-May-08	28	A	45 m E of WTG 3	S	R, D,Des	Scavenged further, more feathers scattered, more bones exposed
	28	B	50 m E ofWTG 18	P	D,Des,U	
	28	C	50 m N of WTG 20	P	D,Des,U	
19-May-08	30	A	45 m E of WTG 3	S,P	S, D,Des	Drying out.
	30	B	50 m E ofWTG 18	P	D,Des,U	
	30	C	50 m N of WTG 20	P	D,Des,U	Bones in neck/breast fully exposed, no sign of scavenging; insects
21-May-08	32	A	45 m E of WTG 3	S,P	S, D,Des	
	32	B	50 m E ofWTG 18	P	D,Des,U	
	32	C	50 m N of WTG 20	P	D,Des,U	
27-May-08	38	A	45 m E of WTG 3	S,P	S, D,Des	
	38	B	50 m E ofWTG 18	P	D,Des,U	Turned carcass over, body is whole, presence of ants underside.
	38	C	50 m N of WTG 20	P	D,Des,U	

Days visible to observers: A(14), B(14), C(14)

t **=** 14

Status Codes: S = Scavenged; P = Present; A = Absent

Condition Codes: Fr = Fresh; I = Intact; U = Undisturbed; ; R = Remains discovered; D = Natural decomposition (insects usually visible); Des = Dessication evident

F = Feathers and Bone fragments; G = partialy consumed

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 5, June 2008

Date	Day	Specimen	Location	Status	Condition	Comments
16-Jun-08	1	A	75m NE of WTG 07	P	I,U	
	1	B	55m N of WTG 10	P	I,U	
	1	C	substation slope	P	I,U	
17-Jun-08	2	A	75m NE of WTG 07	P	I,U	
	2	B	55m N of WTG 10	P	I,U	
	2	C	substation slope	P	I,U	
18-Jun-08	3	A	75m NE of WTG 07	P	I,U	
	3	B	55m N of WTG 10	S,P	R,G,I	carcass moved 7 ft W into veg.; breast part. consumed; tracks obs. nearby.
	3	C	substation slope	P	P,I	
19-Jun-08	4	A	75m NE of WTG 07	P	I,U	
	4	B	55m N of WTG 10	S,P	P,R	carcass moved 5 ft further into veg.; only right wing found.
	4	C	substation slope	P	I,U	
20-Jun-08	5	A	75m NE of WTG 07	P	U,I	
	5	B	55m N of WTG 10	A	F	Few feathers remain nearby.
	5	C	substation slope	P	P,I	
21-Jun-08	6	A	75m NE of WTG 07	S	P,G,R	Carcass was dragged 10 ft into molasses grass patch, chest part. eaten.
	6	B	55m N of WTG 10	A		
	6	C	substation slope	P	I,U	
22-Jun-08	7	A	75m NE of WTG 07	S	P,G,R	Still present in similar condition
	7	B	55m N of WTG 10	A		
	7	C	substation slope	P	I,U	
23-Jun-08	8	A	75m NE of WTG 07	S	P,R	Carcass dragged deeper into grass, nearly 1m.
	8	B	55m N of WTG 10	A		
	8	C	substation slope	P	U,I,D	
25-Jun-08	10	A	75m NE of WTG 07	S	F	Becoming less vis, though evident
	10	B	55m N of WTG 10	A		
	10	C	substation slope	P	U,I	

Appendix 2 (Continued). Results of Avian Carcass Removal Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Trial 5 (Continued), June 2008

Date	Day	Specimen	Location	Status	Condition	Comments
29-Jun-08	14	A	75m NE of WTG 07	S	F	Carcass remains visible, feathers spread some
	14	B	55m N of WTG 10	A		
	14	C	substation slope	P	P,I	

Days visible to observers: A(13), B(4), C(13)

t = 10.0

Status Codes: S = Scavenged; P = Present; A = Absent

Condition Codes: Fr = Fresh; I = Intact; U = Undisturbed; ; R = Remains discovered; D = Natural decomposition (insects usually visible); Des = Dessication evident

F = Feathers and Bone fragments; G = partialy consumed

Appendix 3. Results of Searcher Efficiency Trials, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Observers	Proctor	Date	Trial Plots	Begin	End	Specimens	Number Detected	Efficiency Rate
G. Spencer	I. Bordenave	13-Jul-07	WTG 6	13:00	14:00	2	2	1.00
I. Bordenave	G. Spencer	13-Jul-07	WTG 15	14:30	15:35	2	1	0.50
G. Spencer, I. Bordenave, B. Standley	J. Johnston	8-Nov-07	WTG 14, 16	9:00	16:00	2	1	0.50
D. Medrano, K. Mokross	I. Bordenave	15-Jan-08	WTG 7	8:30	12:00	1	1	1.00
D. Medrano, K. Mokross, I. Bordenave	G. Spencer	1-Apr-08	WTG 8, 9	9:00	12:30	2	2	1.00
D. Medrano, K. Mokross	I. Bordenave	19-Jun-08	WTG 3	9:45	12:00	2	1	0.50
D. Medrano, K. Mokross	I. Bordenave	27-Jun-08	WTG 7, 8	9:30	1:00	1	0	0.00

Overall Efficiency Rate **64%**

Detection Probability (p) **0.64**

Appendix 4. Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
JULY														
6-Jul-07	13:30	Kerry Wright (GE)	75			NENE	6	between WTG 8/9	B		gr	6.5		
6-Jul-07	11:30	GCS			20%	NENE	6	Base of WTG 6	B		gr	5	NE	75
6-Jul-07	13:00	GCS			40%	NENE	2	WTG 9/10	FA	E	18		NE	50
6-Jul-07	13:10	GCS			40%	NENE	5	Roadside WTG 9/10	I			5	NE	
6-Jul-07	15:00	GCS			40%	NENE	9	Roadside near WTG 9			n/a	5	NE	40
9-Jul-07	11:23	IB	68	Fog	80%	NENE	2	In flight betw WTG 3/4	FA	E	20	20-25	NE	30 S WTG 3
9-Jul-07	11:36	IB	68		80%	NENE	1	Between WTG 6/7	FA	NE	30	20-25	ENE	25 N WTG 7
11-Jul-07	9:30	IB	72		30%	NENE	3	overfl betw WTG 7/8	FA	N	15	20-25	ENE	30 N WTG 8
17-Jul-07	13:32	IB	78		clear	NENE	6	WTG 10 pad	B		gr	10	W	25 SW WTG 10
17-Jul-07	15:30	IB	76		40%	NENE	7	roadside WTG 9	S			10	NE	90-100 E WTG 9
AUGUST														
3-Aug-07	12:45	IB	67		90%	NENE	3	overflying O&M building	F	NE	15-20	20-25	NE	
6-Aug-07	13:40	IB	78		clear	NENE	7	WTG 6 pad	B			calm	var	less than 50
8-Aug-07	15:00	Nathan Bills	74		pt cl	NENE	1	North of WTG 7		N	0	12	N	40
8-Aug-07		Jared Lasalle	76		pt cl	NENE	5	O & M	B	NE	gr	calm	N	100
8-Aug-07	9:50	Mike Kelly				NENE	2	O & M						75
20-Aug-07	16:00	Jeremy James	79		pt cl	NENE	4	WTG 6			gr			30
28-Aug-07	16:45	R. Brooks (QCI)	75		light	NENE		Between WTG 6/7	S					10
SEPTEMBER														
5-Sep-07	9:44	IB	71		60%	NENE	2	Overfl betw WTG 8/9	F	W	30	5-10	NE	30
7-Sep-07	13:45	IB	70		70%	NENE	5	roadside S of WTG 7	S		gr	calm	var	130
2-Sep-07	14:26	IB	76		75%	NENE	2	String road near WTG 6	S		gr	10-15	NE	80

Behavior Codes: Browsing = B; Browsing/Resting = BR; Agitated = A; Browsing/Agitated = BA; Browsing/Took Flight = BF

In-Flight outside turbine area = F; In-Flight/Exibited Avoidance = FA; Idle = I; Secretive = S; Crossing road = CR; Moved away = M

Wind Direction = direction of origin by 8-point compass reference; Flight Direction = estimated flight heading on 8-point compass reference

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
OCTOBER														
10-Oct-07	14:00	IB	74		80%	NENE	3	roadside WTG 19	S		gr	15-20	NE	80 NE WTG 19
10-Oct-07	15:35	IB	74		70%	NENE	2	Overfl betw WTG 19/20	F	NE	35	15-20	NE	40
11-Oct-07	13:15	IB	80		clear	WTTR	1	Overfl betw WTG 6/7	F	E	100	10-15	NE	
16-Oct-07	7:30	Steve Trunkey	68		pt cl	NENE	3	roadside WTG 9/10	S		gr	22	NE	100
16-Oct-07	13:47	IB	72		30%	NENE	3	SW corner WTG 7 pad	B		gr	10-15	NE	45
23-Oct-07	13:47	IB	72		0%	NENE	2	In flight betw WTG 9/10	FA	NW	100	10-15	NE	30
30-Oct-07	5:15	J.Montano (GE)	68		15%	NENE	3	Behind O&M	S			26	N	200
NOVEMBER														
1-Nov-07	12:50	IB	80		0%	NENE	2	Overfl WTG 2/3	FA	NE	100	calm	var	45 N WTG 3
1-Nov-07	13:45	GS, IB	80		0%	NENE	3	roadside WTG 9	B		gr	calm	var	80-90
6-Nov-07	8:10	Levy Wood	71	mild fog	overcast	NENE	2	WTG 17/18 atop rocks	I	S		2	SW	20-30
14-Nov-07	13:45	Steve Trunkey	71		pt cl	NENE	2	300 SW ot WTG 17	B			22	NE	300 SW WTG 17
14-Nov-07	10:15	IB	74		30%	NENE	2	mile marker 1 1/2	S		gr	20	NE	
14-Nov-07	13:40	IB	76		0%	NENE	2	160 SE of MET 5	B			15-20	NE	
14-Nov-07	14:35	IB, GCS	76		0%	NENE	1	Below WTG 7 near road			gr	15-20	NE	100
21-Nov-07	14:00	Clinton Williams	70			NENE	2	Between WTG 17/18	F	NE	50	8	NE	200
18-Nov-07	13:42	GCS,IB	76		35%	NENE	2	W of WTG 12	F	N	50		var	30 from WTG
20-Nov-07	14:20	IB	74		40%	NENE	2	roadside W of WTG 17	B		gr		NE	> 200
DECEMBER														
13-Dec-07	morning	E. Hines				NENE	2	Between WTG 8/9	B		gr			20
20-Dec-07	12:45	DM			70%	NENE	2	MET 2	B	S	gr			500-800
21-Dec-07	12:23	KM,DM,IB	72		45%	NENE	2	At ironwood, WTG 15	B		gr			100 SW
28-Dec-07	9:48	KM,DM	78		45%	NENE	2	WTG 16	B		gr			50

Behavior Codes: Browsing = **B**; Browsing/Resting = **BR**; Agitated = **A**; Browsing/Agitated = **BA**; Browsing/Took Flight = **BF**

In-Flight outside turbine area = **F**; In-Flight/Exibited Avoidance = **FA**; Idle = **I**; Secretive = **S**; Crossing road = **CR**; Moved away = **M**

Wind Direction = direction of origin by 8-point compass reference; **Flight Direction** = estimated flight heading on 8-point compass reference

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist to/Dir fr WTG (m)
JANUARY														
3-Jan-08	8:00	Chris Ng (GE)				NENE	2	WTG 15 roadside						
3-Jan-08	9:10	KM,DM	72	fog	60%	NENE	2	WTG 13	B		gr	15	NE	50
7-Jan-08	15:50	KM,DM	75	raining	30%	NENE	2	2 1/4 mile marker	B		gr			
10-Jan-08	12:00	Chris Ng	70	0	clear	NENE	3	Near culvert	BF					
14-Jan-08	16:30	IB,KM,DM	72		80%	NENE	2	SW corner of O/M	B			20	NE	
16-Jan-08	9:00	KM,DM, IB	65	0	10%	NENE	2	200m from O/M	B		gr	20	NE	450
18-Jan-08	11:40	KM,DM	60	0	35%	NENE	2	WTG 14	B		gr	7	NE	100 SW
8-Jan-08	13:00	KM,DM			35%	NENE	2	2 1/4 mile marker	B		gr	5-10	NE	100
19-Jan-08	9:45	DM,KM			40%	NENE	2	WTG 17	B		gr	9	NE	20 SW
21-Jan-08	13:00	KM,DM			80%	NENE	2	WTG 15	B		gr	15	NE	150 SW
21-Jan-08	15:45	DM,KM			98%	NENE	1	SW corner O/M	B		gr	15-20	NE	7
23-Jan-08	13:45	Steve Trunkey	64	Fog	100%	NENE	1	4 meters W of O/M	S		gr	25	NE	
24-Jan-08	8:45	J. Johnston	70		pt cl	NENE	2	Below WTG 17 in road	B	E	gr	23	NE	75
25-Jan-08	15:45	KM,IB	60	0	60%	NENE	1	SW of O&M	S		gr	20	NE	80 NW WTG 8
28-Jan-08	7:15	J. Johnston	65	trace	pt cl	NENE	2	1 3/4 mile marker	S		gr	20	NE	
28-Jan-08	10:45	KM,DM	60	0	60%	NENE	1	North of WTG 11		S	gr	35	NE	70
31-Jan-08	11:05	KM, DM	50	raining	100%	NENE	2	North of WTG 16	B		gr	35	NE	8
31-Jan-08	14:45	KM,DM,IB	55	raining	100%	NENE	2	SW of WTG 18	B	S	gr	30	NE	65
FEBRUARY														
4-Feb-08	10:33	IB,DM,KM	60	0	100%	NENE	4	2 1/2 mile marker	B		gr	20	NE	400
4-Feb-08	14:05	DM, KM	70	0	98%	NENE	1	North of WTG 12	B		gr	15-20	NE	100
5-Feb-08	14:40	KM, DM	60	Drizzle	100%	NENE	2	North of WTG 4	B	NW	5	20	NE	60
7-Feb-08	14:20	KM,DM	65	0	35%	NENE	2	2 1/2 mile mark	B		gr	5	NE	400
8-Feb-08	13:03	KM,IB	60	0	45%	NENE	2	North of WTG 12	B		gr	15	NE	35
8-Feb-08	10:06	IB	66	0	50%	NENE	2	roadside at MECO lines	B		gr	10-20	NE	
11-Feb-08	8:45	KM,DM	60	0	20%	NENE	2	SE of WTG 15	B		gr	15	NE	20
11-Feb-08	9:45	DM,KM	80	0	50%	NENE	2	W of WTG 9	B		gr	5-10	NE	100

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
11-Feb-08	10:26	DM,KM	80	0	30%	NENE	2	North of WTG 16	B		gr	10-15	NE	100
11-Feb-08	10:45	DM,KM	80	0	25%	NENE	1	S of WTG 15	B		gr	10-15	NE	80
11-Feb-08	16:15	DM, KM	80	0		NENE	2	North of WTG 12	B		gr	10-15	NE	100
11-Feb-08	16:00	R. Brooks	80	0		NENE	2	Access road near culvert			gr			
12-Feb-08	10:00	R. Brooks	80			NENE	2	WTG 10			gr			100
12-Feb-08	11:12	DM	82	0	40%	NENE	2	West of WTG 17			gr	0-5	SW	18
12-Feb-08	11:38	DM,KM	80	0	40%	NENE	2	South of substation	B		gr	0-5	SW	20
12-Feb-08	11:46	DM,KM		0	15%	NENE	2	South of WTG 7	B		gr	0-5	SW	8-10
13-Feb-08	9:00	Richard				NENE	2	WTG 12			gr			100
13-Feb-08		Scott Rowland				NENE	2	culvert crossing hillside			gr			
13-Feb-08	10:24	KM,DM		0	80%	NENE	2	NW of WTG 15	B		gr	5-10	NE	15
14-Feb-08	9:00-11:(	GS		0	15%	NENE	2	roadside below sub	M		gr	5-10	ENE	
14-Feb-08	13:20	GS		0	20%	NENE	2	near mile 3	CR		gr	5	ENE	
15-Feb-08	13:00	GS		0	20%	NENE	4	WTG 9 pad	I		gr	0-5	var	< 30
15-Feb-08	9:22	KM,DM		0	clear	NENE	2	WTG 5; S pad edge	B		gr	0-5	SW	15
15-Feb-08	9:35	KM,DM		0	clear	NENE	2	N of WTG 1, pad edge			gr	0-5	SW	15
18-Feb-08	13:00	R. Brooks				NENE	2	O & M			gr			20
14-Feb-08	9:00	J. Johnston	72	none	clear	NENE	2	substation slope	B		gr	calm		50
19-Feb-08	9:50	KM,DM	78	0	0%	NENE	2	North of WTG 8	B		gr	0-5	SW	40
19-Feb-08	13:00	DM	80	0	0%	NENE	2	SE of substation	B		gr	5-10	SW	
19-Feb-08	13:51	DM	80	0	0%	NENE	0.02	North of WTG 19	B		gr	0-5	SW	30
19-Feb-08	14:01	DM	79	0	0%	NENE	2	West of O&M	B		gr	0-5	SW	40
19-Feb-08	16:00	R. Brooks				NENE	1	culvert crossing			gr			
20-Feb-08	12:30	J. Johnston	80	0	0%	NENE	4	substation	B		gr	calm		50
20-Feb-08	12:35	DM	80	0	0%	NENE	2	South of WTG 10			gr	var	SW	20
20-Feb-08	12:40	DM	80	0	0%	NENE	4	NE of substation			gr	var	SW	20
20-Feb-08	13:25	DM	80	0	5%	NENE	2	North of WTG 12			gr	0-5	SW	50
20-Feb-08	13:50	DM	80	0	5%	NENE	2	South of WTG 15			gr	var	SW	1-2
20-Feb-08	16:30	J. Johnston	67	0	clear	NENE	1	Substation slope	B		gr	calm		50

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
20-Feb-08	18:30	Lennie Rangel				BAT †	1	Before Pali trail	BF	SW	10	calm	var	
21-Feb-08	15:30	R. Brooks				NENE	2	Pali Trail			gr			
25-Feb-08	6:30	R. Brooks				NENE	1	culvert crossing			gr			
25-Feb-08	12:40	DM	75	0	98%	NENE	5	South of WTG 11			gr	0-5	NE	12
25-Feb-08	12:30	DM	75	1	100%	NENE	2	North of WTG 10	B	W	gr	0-5	NE	40
25-Feb-08	13:35	DM	78	0	90%	NENE	1	NW of MET 05	B		gr	0-5	SW	120 from MET
26-Feb-08	6:00	R. Brooks				NENE	2	culvert crossing			gr			
26-Feb-08	13:00	R. Brooks				NENE	2	WTG 11			gr			100
27-Feb-08	12:00	Chris Ng				NENE	2	roadside WTG 8/9						
24-Feb-08	11:32	DM	82		30%	NENE	2	North WTG 09	B		gr	0-5	NW	10
27-Feb-08	10:26	DM	79	0	25%	NENE	2	North of WTG 09	B		gr	0-5	NW	20
27-Feb-08	10:30	DM	79	0	25%	NENE	3	SW of WTG 11	B		gr	0-5	NW	25
27-Feb-08	11:24	DM	80	0	15%	NENE	2	South of WTG 07	B		gr	0-5	NW	15
MARCH														
3-Mar-08	17:03	IB	70	0	30%	NENE	2	overflight O/M	B	NE	4	calm	var	
4-Mar-08	11:30	IB	76	0		NENE	2	WTG 7; S pad edge	B		gr			15
4-Mar-08	10:30	T. Huggins (QCI)			0%	NENE	1	Between 17 and 18			gr	0-5	S	75
6-Mar-08	9:14	DM	78	0	0%	PUEO	1	West of WTG 5		SW	7	0-5	NE	120 from MET
7-Mar-08	12:40	DM	80	0	40%	NENE	1	North of WTG 15	B		gr	5-10	NW	100
7-Mar-08	13:20	KM,DM	80	0	40%	GRFR	2	South of WTG 20	FA	W	200	5-15	NW	100-200
7-Mar-08	13:25	KM,DM	80	0	40%	NENE	4	NE of WTG 16			gr	5-15	NW	100
10-Mar-08	9:25	KM,,DM	79	0	0%	WTTB	1	NW of WTG 14 & 15	FA	NW	100	0-5	NW	100
10-Mar-08	9:26	KM,DM	79	0	0%	PAGO	1	N of WTG 13/14	FA	W		0-5	NW	75
10-Mar-08	10:53	DM,KM	79	0	0%	PAGO	2	West of WTG 15	FA	N	1-2	0-5	NW	50
10-Mar-08	11:55	DM,KM	80	0	80%	NENE	1	North of WTG 12			gr	5-10	NW	70
10-Mar-08	11:56	DM,KM	80	0	80%	NENE	1	S of WTG 12			gr	5-10	NW	5
10-Mar-08	15:30	R. Brooks				NENE	2	above culvert crossing		S	gr			
11-Mar-08	8:00	M. Rosales	70	0		CAT	1	mile marker 1.5		S		20		

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
11-Mar-08	13:14	KM, DM	78	0	65%	PUEO	1	NW of WTG 1	F	NW	125	5-10	NW	200
11-Mar-08	13:46	DM	79	0	90%	NENE	2	N of MET 3	F	W	200	0-5	NW	300
11-Mar-08	13:00	R. Brooks				NENE	2	By WTG 12						100
11-Mar-08	14:00	A. Molina (GE)	75	0	80%	NENE	1	roadside WTG 12	I		gr	10		30
11-Mar-08	14:18	DM	79	0	85%	NENE	1	NW of MET 5			gr	0-5	NW	125
12-Mar-08	7:15	M. Rosales	65	0	0%	NENE	2	Mile marker 2				10	SW	
12-Mar-08	15:30	R. Brooks				NENE	2	above culvert crossing	CR		gr			
13-Mar-08	17:03		74	0	0%	NENE	2	Mauka of mile 2 1/4			gr	15-20	NE	
13-Mar-08	15:30	R. Brooks				NENE	2	Mile 3	B		gr			
13-Mar-08	17:00	M. Rosales	75	none	none	NENE	4	Mile 3		N		30	SE	
14-Mar-08	18:03	IB	68		70%	NENE	2	Pad at WTG 16			gr	15-20	NE	20
17-Mar-08	11:38	IB	73		90%	NENE		overfl betw WTG 7/8	F	E	30	calm	var	> 80
17-Mar-08	12:10	DM	78	drizzle	90%	NENE	1	NNW of WTG 12	B		gr	5-10	NE	20
17-Mar-08	12:30	DM		drizzle	95%	NENE	3	NNW of WTG 15	B		gr	0-5	NE	20
17-Mar-08	12:15	KM	70	0	45%	NENE	3	Between WTG 15/16	M		gr	5	S	90
17-Mar-08	11:21	K/M,DM	70	0	40%	NENE	2	20 m north WTG 15	B		gr	5	SE	20
18-Mar-08	15:00	IB,KM,DM		0	50%	NENE	2	roadway WTG 16/17			gr	30	NE	20-30
19-Mar-08	15:15	IB,KM,DM	60	0	85%	NENE	4	NW of MET 3	B		gr	25	N	190
20-Mar-08	10:00	T. Huggins	80		none	NENE	2	culvert crossing			gr	7	S	
20-Mar-08	14:00	S. Trunkey	65	light		NENE	2	culvert crossing	B		gr		W	
24-Mar-08	12:05	KM, DM	80		80%	NENE	4	North of WTG 11			gr	0-5	NE	120
24-Mar-08	12:19	KM,DM	80		80%	NENE	2	North of WTG 12			gr	0-5	NE	100
24-Mar-08	14:30	KM, DM	82		35%	PUEO	1	N of WTG 18/19	F	NW	15	5-10	NE	20-30
24-Mar-08	14:54	KM,DM	82		45%	NENE	2	N of WTG 16			gr	5-10	NW	200
25-Mar-08	13:20	KM, DM	82		30%	NENE	2	Mile 2 1/2			gr	5-10	NE	
25-Mar-08	14:12	IB	68		40%	NENE	2	flew betw WTG 8/9	FA	W	50	calm	var	< 50 S of WTG 8
25-Mar-08	15:50	IB, KM , DM	82		30%	NENE	2	N of WTG 10			gr	0-5	NW	80
26-Mar-08	11:40	KM, DM	65		60%	NENE	4	South of WTG 12			gr	10	NE	300
27-Mar-08	9:30	KM, DM	80		10%	NENE	2	NNW of WTG 8			gr	0-5	NE	175

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
27-Mar-08	12:00	T. Huggins	81			NENE	2	Flew over O&M		SW		12		
27-Mar-08	15:22	R. Brooks	0	0		NENE	1				gr			
27-Mar-08	15:27	R. Brooks		0		NENE	1		F	S				
27-Mar-08	15:30	R. Brooks				NENE	2				gr			
APRIL														
1-Apr-08	9:25	KM	65	0	80%	PAGO	1	Between WTG 7-8		S	15-20	25	NE	50
1-Apr-08	11:05	KM, DM				NENE	3	SW of Sub on slope	B		gr			
1-Apr-08	13:10	KM, DM	75	0	40%	NENE	2	SSW of WTG 6	B	SE	gr	25	NE	250
3-Apr-08	13:00	JJ	70		pt cl	NENE	2	SW of sub on slope	B		gr	22	NE	100
4-Apr-08	10:50	DM	78		0%	NENE	2	W of WTG 11 near sub	BA		gr	10-15	NE	150
4-Apr-08	11:40	DM	80		0%	WTTB	2	W of MET 3	F	W	300+	5-10	NE	
4-Apr-08	12:10	DM	80		0%	PAGO	2	W of WTG 8	F	SW	1	5-10	NE	100
4-Apr-08	12:20	DM	80		0%	PUEO	1	N of WTG 9	F	W	20	5-10	NE	50
7-Apr-08	7:10	S.Trunkey	66			NENE	3	Pad at WTG 10	F	S	150	18-20	NE	50
5-Apr-08	5:30	H. Winterhalter	54	light	fog	BAT †	1	At O&M building	F	SW	1-2	10-15	NE	
9-Apr-08	10:35	KM			10%	NENE	1	SW of WTG 1	F			5	var	300
9-Apr-08	10:35	KM, DM	65	0	80%	NENE	2	Between WTG 9-10	F	NW	35	5	NE	55 E, WTG 9
9-Apr-08	14:19	KM	70	0	80%	PUEO	1	South of WTG 8	F	S	25	5	NE	50
10-Apr-08	14:13	DM, JJ	80		95%	NENE	7	South of WTG 11			gr	0-5	ESE	3
11-Apr-08	5:00	H. Winterhalter	72	none		PUEO	1	150m below mile 2	F	NE		20-25	NE	> 1000
14-Apr-08	6:30	Eli Hines				CAT	1	Bottom of access road						
14-Apr-08	15:00	KM, DM	70	0	70%	NENE	2	WTG 12	F	N	20	10	NE	80 NE
15-Apr-08	4:00	Eli / Tony - CIC		none		NENE	6	WTG 9	B		gr			15
17-Apr-08	11:00	S.Trunkey	68	slight		NENE	3	WTG 8			gr	10	NW	1/4 mile
17-Apr-08	13:00	R. Brooks	75	none	clear	NENE	3	Near WTG 12	F			10		500
16-Apr-08	5:00	T. Huggins	84		clear	NENE	5	Flew over O&M	FA	S	12	15	S	50
16-Apr-08	10:35	DM,KM	70	none	65%	NENE	3	South of WTG 08			gr	10	NE	100
16-Apr-08	10:45	DM,KM	70	none	65%	NENE	3	Between WTG 6 and 7	F	NE	25	10	NE	50

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
16-Apr-08	13:45	Eli / Tony - CIC		none		DEER		Near 2 mile marker						
16-Apr-08	18:00	Dan Olson	80		20%	MONG	1	SE of O&M		S			NE	
17-Apr-08	8:45	DM,IB,KM	70	none	75%	MONG	1	2 1/2 mile mark	F	NE	300	10	var	300
17-Apr-08	9:00	H. Winterhalter	75	0	0%	NENE	3	WTG 9	B	SW	gr	calm	var	20
17-Apr-08	11:20	DM,KM	65	none	80%	BAOW	1	WTG 2/3 over Papalaua		W	15	5	var	80
17-Apr-08	13:15	DM,KM	75	none	85%	PUEO	2	near substation	F	N	20	10	var	110
17-Apr-08	13:30	DM,KM	70	none	70%	NENE	3	S of WTG 8	F	S	40	5	var	120
17-Apr-08	15:37	M. Windward	70			PUEO	1	Access road Mile 1	F	NW	20			>1,000
18-Apr-08	11:35	KM.DM	70	0	70%	NENE	3	NW from WTG 7-8	F	NW		5	var	25, WTG 8
18-Apr-08	14:00	KM, DM, IB	75	0	75%	NENE	1	Landed near WTG 9	F	SE		0-5	var	10, WTG 19
21-Apr-08	6:30	T. Huggins	75		clear	MONG	1	1 1/4 mile marker		W				
21-Apr-08	13:00	T. Huggins	82		clear	NENE	3	Landed by WTG 8	F	SW		6	S	
23-Apr-08	11:18	KM, DM, IB	70	0	50%	NENE	2	50m N of WTG 10	B		gr	5	SW	50
24-Apr-08	9:55	KM, DM	70	0	65%	PAGO	2	Between WTG 8 & 9			40	0-5	NE	35
24-Apr-08	10:45	KM, DM	70	0	85%	NENE	6	Vicinity of WTG 10			gr	0-5	SW	
25-Apr-08	9:50	A. Kinkead (QCI)	76	slight		NENE	3	WTG 10		S	gr	2	SW	500
26-Apr-08	9:30	DM	80		40%	NENE	6	N of WTG 7			gr	0-5	S	50
28-Apr-08	8:00	T. Huggins	77	none	clear	NENE	5	Mile 3		E			SW	
29-Apr-08	10:45	J. Guzman (GE)				NENE	3	WTG 8			gr	0-5	SW	100
29-Apr-08	14:40	KM, DM, IB	79		90%	NENE	3	SW of WTG 9			gr	0-5	SW	
MAY														
2-May-08	7:30	T. Huggins	76	none		NENE	6	WTG 8		F		15	S	120
5-May-08	6:00	Kerry Wright (QCI)	65	none	clear	NENE	3	Between WTG 8-9	FA	E	10	5	NE	10
7-May-08	7:30	T. Huggins	77	none	clear	NENE	3	overfl 1/4 mi below O&M	F	W	8	15	S	
9-May-08	6:30	T. Huggins	77	none	clear	PUEO	2	1 1/4 mile marker	F		Low	30	S	
12-May-08	11:13	KM	70	none	5%	NENE	2	roadside WTG 14		S	35-40	15	NE	160 NE,WTG 14
14-May-08	14:30	KM	65	foggy	100%	NENE	3	Overfl fr S betw WTG 4/5		N	50	15	SW	25, WTG 4
15-May-08	11:10	KM	70	none	40%	NENE	2	WTG 7	FA	W	15	10	NE	120, WTG 7

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
15-May-08	12:55	KM	70	none	50%	NENE	5	SW of WTG 8	FA	NE	30	15	SW	35, WTG 8
15-May-08	14:10	KM	70	none	50%	NENE	3	south of substation	B		gr	15	SW	
15-May-08	15:30	M. Rosales	70	drizzle	85%	NENE	3	WTG 6 on string rd	BR		gr	calm	var	100 N, WTG 6
15-May-08	15:40	KM, IB, DM	70	none	70%	NENE	3	North of WTG 2	B		gr	calm	var	70 N of WTG 7
15-May-08	15:58	M. Rosales	70	drizzle	85%	NENE	5				gr	calm	var	
19-May-08	10:05	KM	65	none	45%	NENE	2	WTG 9	BF	N	25	15-20	NE	20 E, WTG 9
20-May-08	10:00	KM	75	none	65%	GRFR	1	overfl south of site		SW	100+	10	var	200 S, WTG 20
20-May-08	12:23	KM	70	none	80%	NENE	7	SE of WTG 7 on pad	BR		gr	calm	var	10
21-May-08	7:20	J. Johnston	75	none		NENE	7	WTG 9			gr			70
21-May-08	7:20	Eric Hardie (QCI)	75	none	clear	NENE	5	Overflight O & M		N	15-20	calm	var	
22-May-08	12:23	KM	70	none	35%	NENE	5	access road at 1 3/4	B		gr	calm	var	
23-May-08	8:30	S. Trunkey	70	none		NENE	6	access rd at 1/2 mi	B		gr	calm	var	
23-May-08	10:15	KM	72	none	30%	NENE	4	SW of WTG 6	B		gr	15	SW	8
23-May-08	13:19	KM	70	none	50%	NENE	6	S of WTG 10	B		gr	15	SW	150
29-May-08	10:00	J. Johnston	80	none	30%	NENE	3	Overfl O & M		E	120	22	NE	
29-May-08	9:15	KM, DM	74	none	30%	NENE	3	overfl between WTG 5/6	F		10	20	NE	50
29-May-08	9:58	KM	75	none	30%	NENE	3	overfl between WTG 6/7		S	45	20	NE	45
JUNE														
3-Jun-08	14:16	DM, KM	80	none	30%	WTTR	1	Overfl access road	F	W	>120	calm	var	
4-Jun-08	13:45	KM, DM	75	none	20%	NENE	2	overfl between WTG 4/5	F	N	30	calm	var	50
4-Jun-08	13:51	KM, DM	75	none	20%	NENE	5	East of WTG 6	BR		gr	calm	var	15
4-Jun-08	14:05	DM, KM	75	none	20%	NENE	2	North of WTG 9	B		gr	calm	var	60
5-Jun-08	9:54	DM	80	none	78%	NENE	7	West of WTG 7	B		gr	10	NE	40
5-Jun-08	10:41	DM	80	none	50%	NENE	3	South of WTG 8	BR		gr		NE	20
6-Jun-08	10:50	KM	75	none	20%	WTTR	1	South of MET 6	F	E	8m		NE	70 to MET
6-Jun-06	11:35	KM, DM	75	none	20%	WTTR	2	MET 5	F	NE	150	calm	var	
6-Jun-06	12:35	KM, DM	75	none	45%	NENE	5	WTG 5	B		gr	calm	var	5
6-Jun-06	13:10	KM, DM	80	none	45%	NENE	4	South of WTG 8	B		gr	calm	var	60

Appendix 4 (Continued). Wildlife Education and Observation Program: Logbook Entries, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007 - June 2008)

Date	Time	Observer	Temp (F)	Precip	Cloud Cover	Species	Number	Location	Behav	Fl Dir	Fl Alt (m)	Wind Sp (mph)	Wind Dir	Dist/Dir to WTG (m)
9-Jun-08	14:20	KM	70	none	20%	NENE	6	south of WTG 6	B		gr	calm	var	15
9-Jun-08	14:23	KM	75	none	25%	NENE	3	WTG 6	B		gr	calm	var	45
9-Jun-08	9:51	KM	75	none	20%	NENE	2	SE of WTG 9	B		gr	10-20	W	30
10-Jun-08	9:51	DM, KM	75	none	clear	NENE	2	south of WTG 9	B		gr	20-25	NE	20
12-Jun-08	7:41	KM	75	none	20%	NENE	8	NW of WTG 6	B		gr	calm	var	35
12-Jun-08	8:25	KM	70	none	40%	NENE	3	overfl betw WTG 6/7	F	N	25	calm	var	50
12-Jun-08	9:00	J. Johnston	75	none	50%	NENE	5	3 at WTG 9, 2 nr substa	B		gr	calm	var	25
12-Jun-08	10:01	KM	70	none	40%	NENE	3	overfl between WTGs	F		30	calm	var	30
12-Jun-08	13:15	IB, KM	70	none	40%	NENE	1	South of WTG 8	B		gr	calm	var	40
13-Jun-08	11:05	KM	70	none	10%	NENE	3	NE of O & M on string rd	B		gr	calm	var	
16-Jun-08	5:25	J. Johnston	60	none	20%	Duck sp.	1	WTG 6	F	W	50	calm	var	100
16-Jun-08	9:11	IB	80	none	clear	NENE	2	overfl betw WTG 9/10	F	W	35	calm	var	20
16-Jun-08	15:44	IB	85	none	30%	NENE	4	below substation	B		gr	calm	var	
16-Jun-08	7:55	KM, DM	70	none	clear	NENE	2	overfl between WTGs	F		30	20-25	NE	<10
16-Jun-08	10:20	KM, DM	80	none	20%	NENE	3	NE of WTG 9	A		gr	20-25	NE	15
16-Jun-08	12:45	DM, KM	80	none	30%	NENE	2	downslope of substa	I		gr	20-25	NE	
24-Jun-08	14:35	GCS	75	none	30%	NENE	2	In kikuyu at WTG 8/9	I		gr	20-25	NE	60-80
24-Jun-08	16:24	GCS	65	none	30%	NENE	3	In kikuyu at WTG 8/9	I		gr	20-25	NE	60
24-Jun-08	16:25	GCS	65	none	30%	NENE	2	Overfl O & M, past MET	F	N	50	20-25	NE	
26-Jun-08	6:30	T. Huggins	70	none	clear	NENE	3	overfl between WTG 9/10	F	SW	10	calm	var	40
26-Jun-08	7:00	T. Huggins	70	none	clear	NENE	2	slope behind O & M	I		gr	calm	var	

Behavior Codes: Browsing = **B**; Browsing/Resting = **BR**; Agitated = **A**; Browsing/Agitated = **BA**; Browsing/Took Flight = **BF**

In-Flight outside turbine area = **F**; In-Flight/Exibited Avoidance = **FA**; Idle = **I**; Secretive = **S**; Crossing road = **CR**; Moved away = **M**

Wind Direction = direction of origin by 8-point compass reference; **Flight Direction** = estimated flight heading on 8-point compass reference

Species Codes: **NENE** = Hawaiian Goose; **WTTR** = White-tailed Tropicbird; **PUEO** = Hawaian Short-eared Owl; **GRFR** = Great Frigatebird

PAGO = Pacific Golden Plover; **BAOW** = Barn Owl; **MONG** = Mongoose; **DEER** = Axis Deer; **CAT** = Feral Cat; **Duck sp**. = unknown duck

† **BAT** = presumably Hawaiian Hoary Bat (after interviewing observers concluded possibility that reports may have been large moths)

KAHEAWA WIND POWER, LLC

August 8th, 2007

Downed Wildlife Incident Report

On the afternoon of August 7th, 2007, during routine searches for downed wildlife at the Kaheawa Wind Energy Facility (KWP) biologists discovered an adult Hawaiian Petrel carcass in the turbine 5 (WTG-5) search plot. This species is classified by the State of Hawaii and U.S. Endangered Species Act as Endangered and is listed as a covered species under the KWP Habitat Conservation Plan (HCP).

Condition of specimen and description of circumstances: The petrel was discovered at 1:45 pm about 137 ft SW of the base of WTG-5. The vegetation in the immediate vicinity of apparent deposition is dominated by a ground cover of bunch grass, or Kukuiu. Patches of moderate stature Christmasberry are also scattered throughout this portion of the site. The intact condition of the carcass suggested that no scavenging by feral mammals had occurred and there was no indication the carcass had been moved. It appeared to have been present for at least 1 week.

Probable cause of injuries and supportive evidence: Collision with the turbine structure appears possible based on the position and condition of the carcass relative to the structure and prevailing winds.

Distance and bearing relative to turbine structure: 137 ft measured (170 ft GPS-derived), SW from turbine base.

Environmental conditions at time of recovery: NE trade winds 15-25 mph, mostly fair and dry with cloud cover estimated at 30%. This has been the predominant weather pattern affecting the Kaheawa region for the preceding week.

Action taken: KWP biologists responded to this discovery according to guidelines outlined in the HCP under the Wildlife Casualty Monitoring Protocol. The Senior Wildlife Biologist immediately contacted DLNR/DOFAW Wildlife Biologists (Fern Duvall and John Medeiros) and coordinated official response and specimen collection. KWP biologists took photos, measured physical characteristics of the incident site, collected GPS data points and other documentation for inclusion in this report and the wildlife casualty monitoring database. John Medeiros responded to the scene at 3:00 pm, obtained some independent measurements and documentation, and collected the specimen.

Bill Standley (USFWS, Honolulu Field Office), the individual responsible for coordinating HCP administrative oversight, was informed by Gregory Spencer, Senior Wildlife Biologist with KWP, of the incident verbally by phone at about 10:00 am on the morning of August 8, 2007. This report was submitted to Bill Standley (USFWS) and Scott Fretz (DLNR/DOFAW) as official documentation of this incident.

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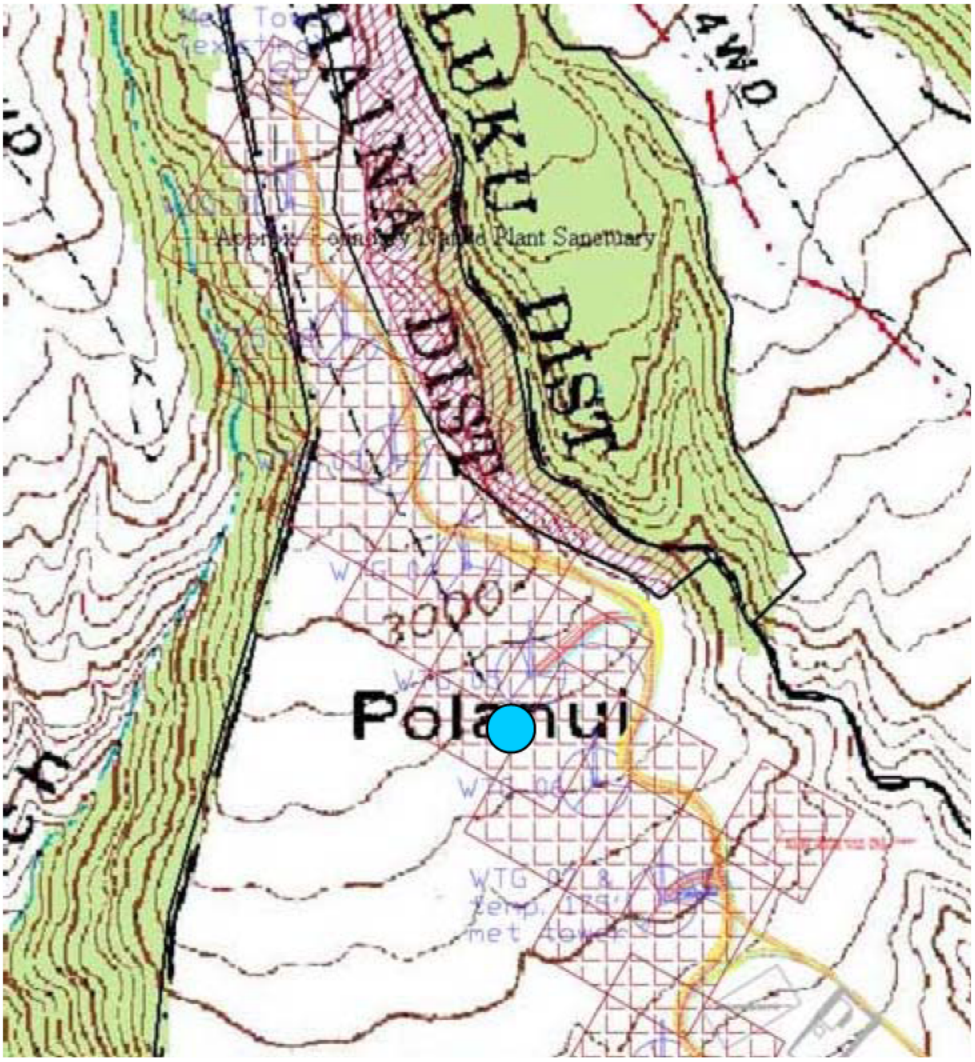

The blue dot on the map shows the location adjacent to WTG-5 where a Hawaiian Petrel specimen was discovered by biologists performing downed wildlife casualty monitoring at the Kaheawa Pastures Wind Energy Facility, West Maui, Hawaii, on August 7, 2007.

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The setting at the scene of a downed Hawaiian Petrel discovered during routine fatality monitoring at the Kaheawa Wind Energy Facility, West Maui, Hawaii, August 7, 2007.

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Downed Hawaiian Petrel discovered at the Kaheawa Pastures Wind Energy Facility on August 7, 2007. The dominant ground cover is the bunch grass, Kukuiu.

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Detail of downed Hawaiian Petrel discovered on August 7, 2007 at the Kaheawa Pastures Wind Energy Facility, West Maui, Hawaii.

For additional information or clarification, please contact:
Gregory Spencer, Senior Wildlife Biologist, First Wind and Kaheawa Wind Power
[redacted]

KAHEAWA WIND POWER, LLC

October 15th, 2007

Downed Wildlife Incident Report

At 14:20 h on the afternoon of October 9, 2007 the partial remains of an apparently full grown Nene were discovered at a distance of about 35 m to the NW of WTG-13 at the Kaheawa Pastures Wind Energy Generation Facility (KWP) on Maui. The specimen was discovered during routine downed wildlife monitoring at KWP. KWP biologists contacted John Medeiros, Maui Division of Forestry and Wildlife (DLNR), immediately to coordinate on response and specimen collection. John Medeiros arrived at the incident site at 16:51 h and assisted KWP biologists with an additional thorough search of the incident vicinity and performed measurements and documentation in addition to collecting the specimen for transfer to National Wildlife Health Center personnel in Honolulu for necropsy and evaluation. The incident was reported to USFWS in Honolulu within 20 minutes of confirmation on the response with DLNR.

Condition of specimen and description of circumstances: The specimen was located on the ground approximately 35 m NW of WTG-13 (Figures 1 and 2). Dominant ground cover in the immediate area is composed of low stature Molasses Grass and a variety of non-native weeds. The condition of the carcass can be described as partially intact, composed mostly of the lower abdomen, legs, portions of the tail and lower dorsal segment (Figure 2). The remaining portions of the body, including head, upper abdomen, and viscera were no longer attached. A thorough search of the vicinity and adjacent area were unsuccessful in locating the detached and unaccounted for portions of the specimen. The specimen appeared relatively fresh based on the condition of exposed tissues and lack of apparent rigor mortis. It was unclear whether predation or scavenging had occurred. A small feather spot was observed nearby within a few meters of the carcass (Figure 4). Weather conditions consisted of 15-25 mph NE trade winds and partial cloud cover. It was reported that the day prior to the discovery of the carcass that visibility was considerably limited due to low clouds throughout the site.

Probable cause of injuries and supportive evidence: Collision with the turbine structure appears possible based on the position and condition of the carcass relative to the structure and prevailing winds, however, due to the condition of the specimen and the magnitude of the apparent injuries it is possible that this bird was killed by a large, mammalian predator. Final conclusions concerning definitive causes of mortality await the results of the veterinary examination and subsequent Necropsy Report.

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Action taken: KWP biologists responded to this discovery according to guidelines outlined in the HCP under the Wildlife Casualty Monitoring Protocol. The Senior Wildlife Biologist immediately contacted John Medeiros, Wildlife Biologist with DLNR/DOFAW on Maui and coordinated official response and specimen collection. KWP biologists took photos, measured

physical characteristics of the incident site, collected GPS data points, and other documentation for inclusion in this report and the wildlife casualty monitoring database. John Medeiros and two assistants responded to the scene at 16:51 h, obtained independent measurements and documentation, and collected the specimen.

Bill Standley (USFWS, Honolulu Field Office), the individual responsible for coordinating HCP administrative oversight, was informed by Gregory Spencer, Senior Wildlife Biologist with KWP, of the incident verbally by phone within 20 minutes of coordinating response with DLNR.

This report was submitted to Bill Standley (USFWS) and Scott Fretz (DLNR/DOFAW) as official documentation of this incident.

For additional information or clarification, please contact:
Gregory Spencer, Senior Wildlife Biologist, First Wind and Kaheawa Wind Power
[redacted]

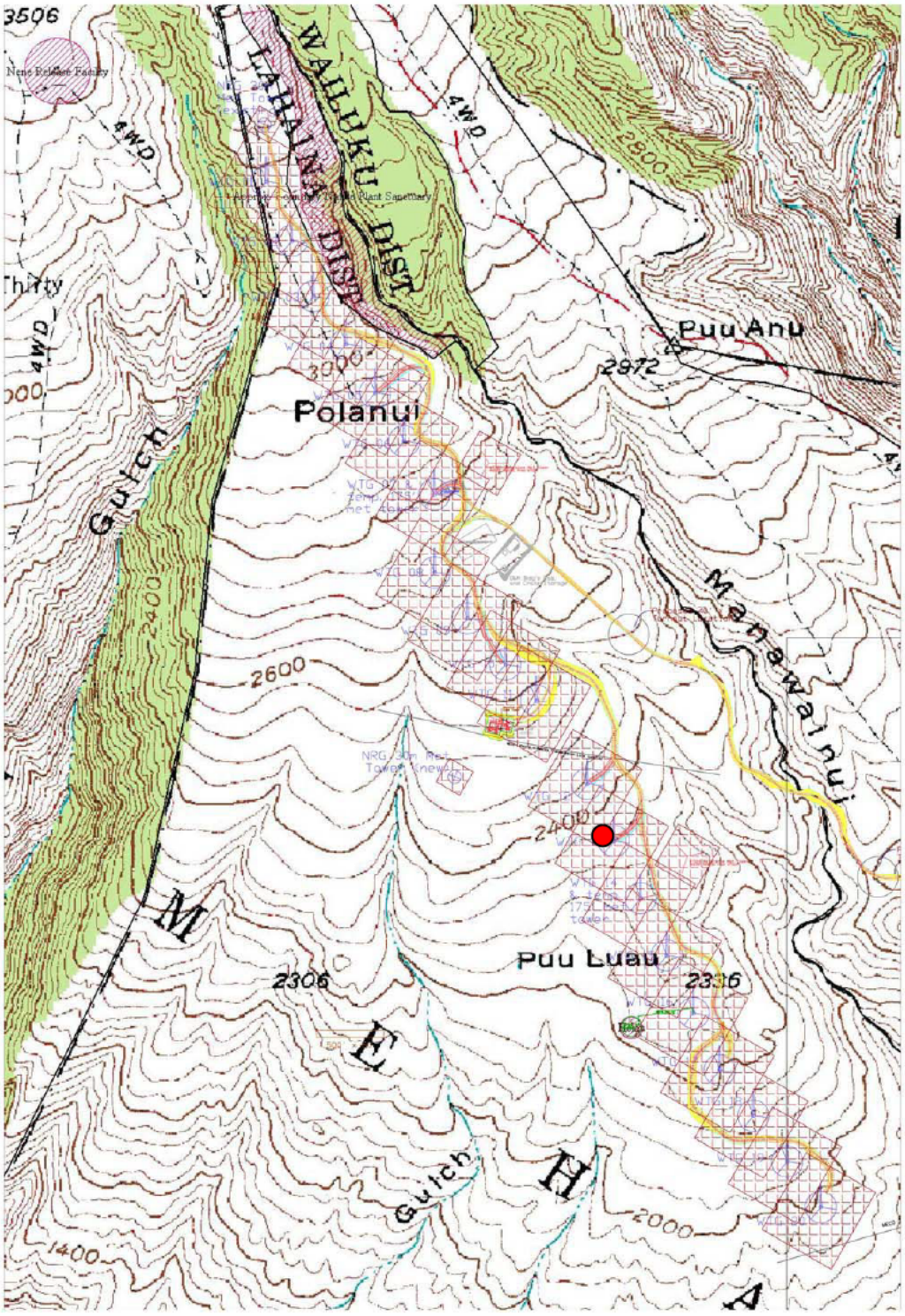

Figure 1. The red dot indicates the location of the Nene carcass discovered adjacent to WTG-13 on October 9, 2007.

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Figure 2. Fresh remains of a Nene carcass discovered near WTG-13 during routine downed wildlife monitoring at the Kaheawa Pastures Wind Energy Generation Facility, West Maui, October 9, 2007.

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Figure 3. Nene carcass at the site of deposition approximately 35 meters NW of a wind turbine structure (WTG-13) at the Kaheawa Pastures Wind Energy Generation Facility, West Maui, October 9, 2007.

Figure 4. A small feather patch evident a few meters from the site of Nene carcass deposition.

Downed Wildlife Incident Report, Kaheawa Wind Power, October 11, 2007.

KAHEAWA WIND POWER, LLC

December 11th, 2007

DOWNED WILDLIFE INCIDENT REPORT

At 15:20 h on the afternoon of Saturday, December 8th, 2007 a Nene carcass was reported to the Senior Wildlife Biologist in charge of managing all affairs related to the Habitat Conservation Plan (HCP) for the Kaheawa Pastures Wind Energy Generation Facility (KWP) in West Maui, Hawaii. The contractor responsible for reporting the observation followed protocols outlined in the Wildlife Observation and Education Program for reporting downed wildlife. An immediate subsequent documentation and reporting process was initiated by the Senior Wildlife Biologist according to guidelines clearly outlined in the HCP.

Condition of specimen and description of circumstances: The specimen was located on the ground, just off the edge of the roadway, approximately 116 ft ENE of WTG-3 (Figures 1 and 2). Dominant ground cover in the immediate area is composed of low to moderate stature native species such as Ohi`a, pukiawe, u`ule, a`ali`i, and a mix of mostly native grasses and shrubs. The condition of the carcass can be described as partially intact, composed of the head and neck, upper abdomen, and both wings (Figures 3 and 4). The lower, posterior section of the body had been severed, leaving the abdominal cavity open and several major internal organs visible and still attached to connective tissue and visceral tract. The entire area was searched intensively in an effort to locate any remaining portions of the specimen. No additional body portions, feathers, or evidence of scavenging was observed. The specimen appeared relatively fresh (1 day post-mortem) based on the condition of exposed tissues and minimal degree of apparent rigor. No clear evidence suggested that predation or scavenging had occurred.

Weather conditions at the time of discovery consisted of 5-15 mph west winds and 50-70% cloud cover. A powerful North Pacific storm system began affecting weather state-wide about a week earlier. By mid-week West Maui was experiencing heavy rainfall, storm-force SW winds, and the Kaheawa Pastures region was blanketed by dense cloud cover and extremely reduced visibility.

Probable cause of injuries and supportive evidence: Collision with the turbine structure appears possible based on the condition and location of the specimen. Final conclusions concerning definitive causes of mortality await the results of veterinary and forensic examinations and a subsequent Necropsy Report.

Action taken: Official response procedures were performed according to guidelines outlined in the HCP under the Wildlife Casualty Monitoring Protocol. After personally substantiating the downed wildlife report, the Senior Wildlife Biologist immediately left a numeric message on the

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State of Hawaii Wildlife Hotline Pager at 16:20 h. Dr. Fern Duvall (Wildlife Biologist, DLNR/DOFAW, Maui) returned the call at 16:30 h and agreed to contact John Medeiros (Wildlife Biologist in charge of Nene, DLNR/DOFAW, Maui). John Medeiros called and began response coordination with Gregory Spencer (Senior Wildlife Biologist, KWP) at 16:40 h. It was agreed that Gregory would perform the documentation and specimen recovery.

Documentation and recovery actions included a direct line measurement from the leading edge of the turbine tower base to the specimen, GPS coordinates, photographs of various aspects of the specimen and surrounding conditions, and observations of prevailing weather conditions and environmental circumstances. The specimen was carefully collected and placed in double-plastic bags and frozen at the KWP facility until DLNR/DOFAW personnel could coordinate pick up on Monday morning, December 10th, 2007. A label was prepared and placed along with the specimen in a zip-lock bag for reference.

In addition to notifying local DLNR authorities on Maui immediately after verifying the incident, Bill Standley (Fish and Wildlife Biologist, USFWS, Honolulu) was notified of the incident by telephone at 09:15 h on Monday morning, December 10th, 2007.

This report, submitted to USFWS and DLNR/DOFAW officials in Honolulu, Hawaii, on December 11, 2007, is intended to represent an official record and documentation of this incident.

For additional information or clarification, please contact:
Gregory Spencer, Senior Wildlife Biologist, First Wind and Kaheawa Wind Power
[redacted]

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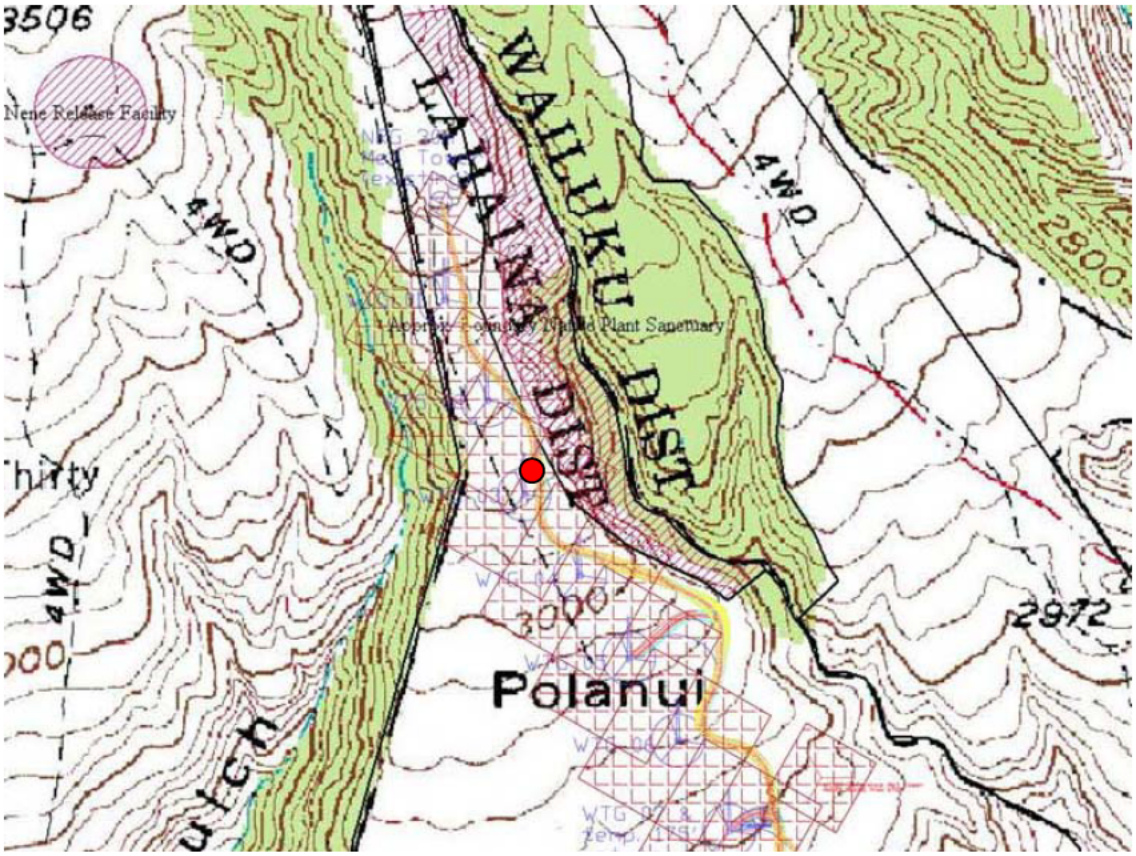

Figure 1. Location of a Nene fatality discovered at the Kaheawa Wind Power facility east of turbine number 3 (WTG-3) at an elevation of about 2900 ft, December 8, 2007.

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Figure 2. Nene mortality discovered 116 ft east of WTG-3 in vegetation along the upper string road at the Kaheawa Wind Power facility, December 8, 2007, West Maui, Hawaii.

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Figure 3. Carcass of a Nene specimen discovered near turbine number 3 (WTG-3) in the upper portion of the Kaheawa Wind Power facility, West Maui, Hawaii, December 8, 2007.

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Figure 4. Detail of the breast, wings, and ventral profile of a Nene carcass discovered at the Kaheawa Wind Power facility, West Maui, Hawaii, December 8th, 2007.

Downed Wildlife Incident Report, December 11th, 2007.

Appendix 6. Annual Expenditures and Budget Structure, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Baseline Scenario assumes actual take is as expected	**Year 1 Budget**	**Year 1 Expenditures Aug, 2005 – Dec, 2006 (Previously Reported)**	**Year 1 Expenditures January – June, 2007 (Previously Reported)**	**Year 2 Budget**	**Year 2 Expenditures July 2007 – June 2008**	**Notes**
General Measures						
Annual vegetation management mowing around turbines to facilitate searches	$ 500.00			$ 500.00		
Wildlife Education and Observation Program (WEOP) and Downed Wildlife Protocol	$ 3,000.00			$ 500.00		
KWP Biologist (Greg Spencer)		$ 5,000.00	$ 1,000.00		$ 2,000.00	Developing and conducting on-site outreach programs and wildlife orientations
Consultant (Eric Nishibayashi)		$ 1,000.00				
KWP Staff (Ian Bordenave)			$ 800.00		$ 1,000.00	Assisting in the presentation of orientation materials
Wildlife Conservation signage		$ 300.00	$ 300.00		$ 300.00	Posted cautionary and wildlife conservation awareness signage as necessary throughout site
General Subtotal	**$ 3,500.00**	**$ 6,300.00**	**$ 2,100.00**	**$ 1,000.00**	**$ 3,300.00**	
Nene: Potential take of 3 per year						
Pre-construction surveys	$ 8,000.00					Combined with next item
On-site full-time/on-call environmental inspector during construction	$ 25,000.00					
KWP Biologist(s)		$ 15,000.00				
Eric Nishibayashi (Consultant)		$ 24,000.00				Construction-phase consultation
Spotting Scope and Accessories		$ 200.00				
Regular on-site observations of nene response to turbines - staff biologist/intern	$ 10,000.00					
KWP Staff (Greg Spencer)		$ 3,500.00	$ 4,000.00			
KWP Staff (Ian Bordenave)		$ 1,500.00	$ 3,000.00			
Construction of new release pen (DOFAW)	$ 50,000.00				$ 50,000.00	Year 1 funding disbursed to DOFAW, December 2007
New DOFAW truck	$ 9,000.00				$ 9,000.00	Year 1 funding disbursed to DOFAW, December 2007

Appendix 6 (Continued). Annual Expenditures and Budget Structure, Kaheawa Wind Power Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Baseline Scenario assumes actual take is as expected	**Year 1 Budget**	**Year 1 Expenditures Aug, 2005 – Dec, 2006 (Previously Reported)**	**Year 1 Expenditures January – June, 2007**	**Year 2 Budget**	**Year 2 Expenditures July 2007 – June 2008**	**Comments**
Labor for maintenance and predator control plus $1000 for helicopter logistics	$ 16,000.00				$ 16,000.00	Year 1 funding disbursed to DOFAW, December 2007
Cost of propagating 10 chicks/yr yrs 1-5, 4 chicks every 2 years thereafter	$ 25,000.00			$ 25,000.00	$ 25,000.00	Year 1 funding disbursed to DOFAW, December 2007
Contingency Fund	$ 264,000.00	$ 264,000.00		$ 6,600.00	$ 6,600.00	
Nene Subtotal	**$ 407,000.00**	**$ 308,200.00**	**$ 7,000.00**	**$ 31,600.00**	**$ 106,600.00**	**Year 1 funding disbursed to DOFAW, December 2007**
Seabirds: Potential take of 1.5 per year of each species						
Vehicle, radar, night-vision and related survey equipment, including training	$ 50,000.00					
2001 Ford F-150 incl. licensing, taxes, maintenance, and fees		$ 23,530.00			$ 10,000.00	
Furuno Radar (cost-share 50%)		$ 8,100.00				
IR Night-vision goggles		$ 3,500.00				
Miscellaneous support equipment and supplies		$ 500.00				IR spotlights, power sources, hardware, tools, etc.
Conduct on-site radar and night-vision/thermal surveys to document sea bird interaction and response to turbines; 2 surveys in June and October using staff biologist and assistant	$ 16,000.00					
KWP Biologist (Greg Spencer)		$ 8,000.00				Expenditures reflect personnel time on surveys, set-up, and logistics (2 surveys)
KWP Staff (Ian Bordenave)		$ 4,000.00				Expenditures reflect personnel time on surveys, set-up, and logistics (2 surveys)

APPENDIX 6 (Continued). Annual Expenditures and Budget Structure, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Baseline Scenario assumes actual take is as expected	**Year 1 Budget**	**Year 1 Expenditures Aug, 2005 – Dec, 2006 (Previously Reported)**	**Year 1 Expenditures January – June, 2007**	**Year 2 Budget**	**Year 2 Expenditures July 2007 – June 2008**	**Comments**
Conduct searches to identify West Maui colonies in need of protection and implement protection measures - assume colonies found in first two years by staff biologist and intern	$ 60,000.00			$ 60,000.00		
KWP Biologist (Greg Spencer)		$ 10,000.00	$ 10,000.00		$ 20,000.00	Includes coordination, logistics, and field studies, reporting
KWP Staff (Ian Bordenave)		$ 4,000.00	$ 4,000.00		$ 15,000.00	Includes coordination, logistics, and field studies
KWP Staff (Hank Oppenheimer)		$ 4,500.00				Preliminary field studies and historical reference material assemblage
Camping and Field Equipment		$ 4,000.00	$ 1,000.00		$ 200.00	Includes costs for equipment, supplies, and food
Flight Equipment		$ 400.00	$ 500.00		$ 500.00	Flight suits, gloves, boots, Personal Protective/Safety Equipment
Helicopter flights		$ 4,000.00	$ 6,000.00		$ 2,000.00	This cost does not include cooperating agencies' cost-share
Outreach and Cooperative Conservation Exchange		$ 3,000.00	$ 1,500.00			This expense applies to Senior Widlife Biologist's time developing collaborations, land access agreements, etc. (see above)
Colony Protection and Mitigation						
Contingency Fund	$ 100,000.00	$ 100,000.00		$ 2,500.00	$ 2,500.00	Included in Contingency Letter of Credit
Seabird Subtotal	**$ 226,000.00**	**$ 177,530.00**	**$ 23,000.00**	**$ 62,500.00**	**$ 50,200.00**	
Hawaiian Hoary Bat: Potential take of 1 per year						
Conduct monthly 2-night surveys - staff biologists/intern	$ 10,000.00					
KWP Biologist (Greg Spencer)		$ 4,000.00	$ 3,000.00			Actual cost of survey effort, logistics, etc.
KWP Staff (Ian Bordenave)		$ 2,000.00	$ 3,000.00			Actual cost of survey effort, logistics, etc.

APPENDIX 6 (Continued). Annual Expenditures and Budget Structure, Kaheawa Wind Power
Habitat Conservation Plan, Year 2 (July 2007-June 2008)

Baseline Scenario assumes actual take is as expected	**Year 1 Budget**	**Year 1 Expenditures Aug, 2005 – Dec, 2006 (Previously Reported)**	**Year 1 Expenditures January – June, 2007**	**Year 2 Budget**	**Year 2 Expenditures July 2007 – June 2008**	**Comments**
Up-front contribution to bat research cooperative	$ 20,000.00	$ 20,000.00				
Contingency Fund	$ 20,000.00	$ 20,000.00		$ 500.00	**$ 500.00**	Included in Contingency Letter of Credit
Bat Subtotal	**$ 50,000.00**	**$ 46,000.00**	**$ 6,000.00**	**$ 500.00**	**$ 500.00**	
Fatality Monitoring						
Systematic Downed Wildlife Searches, Searcher Efficiency, and Carcass Removal Studies	$ 65,000.00			$ 60,000.00		
KWP Biologist (Greg Spencer)		$ 20,000.00	$ 14,000.00		$ 18,000.00	Actual cost of personnel performing searches, coordinating trials, and reporting
KWP Staff (Ian Bordenave)		$ 12,000.00	$ 8,000.00		$ 20,000.00	Actual cost of personnel performing routine searches and coordinating trials
KWP Staff (David Medrano)					$ 15,500.00	Wildlife monitoring Technician
KWP Staff (Karl Mokross)					$ 15,500.00	Wildlife monitoring Technician
Support equipment and supplies		$ 2,000.00	$ 3,000.00		$ 1,000.00	Transect markers, Personal Protective Equipment, etc.
Northwest Wildlife Consultants (Training)		$ 3,200.00				Initial training and orientation to standard protocols and techniques
Fatality Monitoring Subtotal	**$ 65,000.00**	**$ 37,200.00**	**$ 25,000.00**	**$ 60,000.00**	**$ 70,000.00**	
Annual Subtotals	**$ 751,500.00**	**$ 575,230.00**	**$ 63,100.00**	**$ 155,600.00**	**$ 230,600.00**	

Cumulative Budgeted	$	907,100.00
Cumulative Expended	$	868,930.00