

**SAFE HARBOR AGREEMENT
WITH CHEVRON PRODUCTS COMPANY, HAWAII REFINERY
AT JAMES CAMPBELL INDUSTRIAL PARK, OAHU**

1. INTRODUCTION

This Safe Harbor Agreement (Agreement) is made and entered into on **[date]** by and among Chevron Products Company, Hawaii Refinery (Permittee); the U.S. Fish and Wildlife Service (Service); and the State of Hawaii, Department of Land and Natural Resources (DLNR), by its Board of Land and Natural Resources; hereinafter collectively called the “Parties.” This Agreement follows the Service’s Safe Harbor policy (64 FR 32717) and regulations (64 FR 32706), and implements the intent of the Parties to follow the procedural and substantive requirements of section 10(a)(1)(A) of the Endangered Species Act (ESA) and Hawaii Revised Statutes (HRS) §195D-22.

The Safe Harbor program encourages proactive management to benefit endangered and threatened species on non-Federal lands by providing regulatory assurances to landowners that no additional endangered species restrictions will be imposed on future land, water, or resource use on enrolled lands.

The biological goal of this Agreement is to manage nesting habitat for the endangered Hawaiian stilt or aeo (*Himantopus mexicanus knudseni*) at Rowland’s Pond, and provide predator-reduced foraging habitat for Hawaiian stilts and endangered Hawaiian coots or alae keokeo (*Fulica alai*) at the Impounding Basin and Oxidation Ponds. The Agreement covers proposed management activities affecting lands owned by the Permittee, and covers Hawaiian stilts and Hawaiian coots. Under this Agreement, the Permittee will maintain 6 acres of Hawaiian stilt nesting habitat at Rowland’s Pond and 5 acres of stilt and coot foraging habitat at the Impounding Basin and Oxidation Ponds for a period of 6 years, which may be extended with the concurrence of all parties. Habitat will be maintained by conducting the following activities during the breeding season of the Hawaiian stilt (mid February through August) and Hawaiian coot (March through September): 1) weekly monitoring of stilts and coots at Rowland’s Pond, Impounding Basin, and Oxidation Ponds; 2) water level management at Rowland’s Pond; and 3) predator control (i.e., mongoose, cats). Vegetation management (e.g., manual cutting or pulling of weeds, herbicide application, mechanical removal) will occur primarily during the non-breeding season and take place for the most part in and around Rowland’s Pond to maintain stilt habitat. However, vegetation management may occur during the breeding season if vegetation has become unmanageable and degrades stilt habitat within Rowland’s Pond. In addition, the Permittee will conduct an education program for employees and contractors about the Hawaiian stilt and Hawaiian coot at the refinery. The Permittee will also discourage coot nesting at the Oxidation Ponds and undesirable locations at the Impounding Basin (e.g., complete removal of vegetation and its debris from the periphery of these ponds and on the berm(s) separating the ponds) prior to nesting attempts. It is anticipated that the above methods will not exclude coots from nesting in these areas, but will at a minimum reduce the potential for them to nest in undesirable locations. If coots do nest in these areas, nests will not be disturbed, and predator control will be implemented. When signed, this Agreement will serve as the basis for the

Service and DLNR to issue a permit/license under ESA section 10(a)(1)(A) (Federal permit) and HRS §195D-4 (State license) for the incidental take of Hawaiian stilts and Hawaiian coots on the enrolled property. The Federal permit and State license will authorize the Permittee to incidentally take stilts and coots that have increased above the baseline established in this Agreement as a result of the Permittee's voluntary conservation activities. Permit/license issuance for take will not preclude the need for the Permittee to abide by all other applicable Federal, State, and local laws and regulations that may apply.

2. COVERED SPECIES AND COVERED ACTIONS

The Safe Harbor Agreement covers the Hawaiian stilt and the Hawaiian coot; hereafter collectively referred to as "covered species." Background on the covered species is provided in Appendix 1.

The Permittee plans to continue normal refinery operations and refinery maintenance activities that may result in incidental take of endangered species. The following is a list of actions to be covered by the permit/license regarding refinery activities and management activities that may result in the incidental take of the covered species: release of oil, or chemical product into Rowland's Pond from a tank rupture; release of oil or other petroleum product from a tank overflow; accidental crushing of stilt chicks by vehicles; accidental crushing of stilt eggs by humans; flooding of nests and eggs; and drowning of stilt chicks that fall into the Oxidation Ponds; stilts and/or coots may be harassed and their nest exposed to high temperatures and/or predators. The biggest risk to birds using Rowland's Pond is the release of oil, however, no significant release has occurred since the refinery was established in 1959.

3. DESCRIPTION OF ENROLLED PROPERTY

The enrolled property is the area over which Safe Harbor assurances apply and on which incidental take of the covered species is authorized. The Parties reasonably expect the covered species may occupy all or a portion of the enrolled property as a result of management actions undertaken through this Agreement.

The Chevron Products Company, Hawaii Refinery was established in 1959 to meet Hawaii's need for petroleum products. The refinery encompasses 248 acres and lies within the boundaries of the James Campbell Industrial Park, located along the southwestern coast of Oahu (Appendix 2, Figure 1). The refinery receives crude oil from overseas and transforms the oil into gasoline for automobiles, jet fuels for aircraft, diesel oil for ships, liquified petroleum gas for homes and light industry, and fuel oil for utilities and industrial plants. The Tax Map Key is 9-1-014-010.

The refinery maintains several open water ponds. These ponds include North Ocean Pond, South Ocean Pond, Oxidation Ponds, the Impounding Basin, and Rowland's Pond, (Appendix 2, Figure 2). The North and South Ocean Ponds are 6 acres and 5 acres in size, respectively, and serve primarily as temporary containment basins for storm water runoff. These ponds have steep side slopes and are generally filled with water. The Permittee cleaned the ponds and constructed nets

over these ponds as they were an attractive nuisance to migratory shorebirds and endangered waterbirds. The Oxidation Ponds and Impounding Basin are located adjacent to the North and South Ocean Pond. These ponds are part of the Effluent Area, which covers an area of approximately 5 acres. The Effluent Area is a component of the wastewater treatment system for the refinery. Rowland's Pond is a 6-acre area that after heavy rainfall or the intentional addition of water may provide open water and mudflat habitat. The pond is surrounded on three sides by 12 storage tanks containing crude oil and other petroleum products. Rowland's Pond was originally constructed to contain storm water runoff and the release of oil (or other petroleum product) from one or more of the surrounding tanks. Since 1989, Rowland's Pond is used as a containment area for the removal of nonhazardous sludge from the Effluent Area approximately every three years. Eleven acres of the refinery provides habitat for the covered species, however, the entire refinery will be enrolled in this Agreement.

4. BASELINE DESCRIPTION FOR COVERED SPECIES

Baseline for Hawaiian stilts

Since 1992, Rowland's Pond has been managed by the Permittee in cooperation with the Service to provide nesting and foraging habitat for the Hawaiian stilt during its breeding season (mid-February thru August) (refer to Appendix 3 Background on Hawaiian Stilts at the Chevron Hawaii Refinery). These management activities have attracted an increasing number of breeding Hawaiian stilts to the refinery over the years, and their numbers have fluctuated daily during the breeding and non-breeding seasons.

The baseline for Hawaiian stilt was determined from the average number of adults observed at Rowland's Pond, the Impounding Basin, and Oxidation Ponds during monthly site visits conducted during the non-breeding season from September 2001 to September 2002 when Rowland's Pond was dry. The dry conditions at Rowland's Pond simulated baseline conditions at the refinery (prior to human management of stilt habitat). As the observed number of adults fluctuates between monthly site visits, the average number of adult stilts occurring at the refinery best estimates the baseline for Hawaiian stilt. This average number of adult stilts from 7 site visits is 21 adults. Thus, the baseline for Hawaiian stilt is 21 adult birds for this Agreement. Table 1 provides the monthly data for months when Rowland's Pond was dry from September 2001 to September 2002.

Table 1. Monthly Counts of Adult Hawaiian Stilts Observed at the Refinery When Water is Not Maintained in Rowland's Pond (simulates baseline conditions at the refinery).

Date of Monthly Site Visit	# of Adult Stilts Observed at Rowland's Pond	# of Adult Stilts Observed at the Impounding Basin	# of Adult Stilts Observed at the Oxidation Ponds	Total # of Adult Stilts Observed
29 Sep 01	3	7	3	13
30 Oct 01	0	14	1	15
14 Dec 01	5	9	6	20
25 Jan 02	2	17	5	24
26 Feb 02	0	12	9	21
11 Mar 02	5	11	11	27
18 Sep 02	6	18	1	25
Averages	3	13	5	21

During the length of the Agreement and permit/license, the Permittee has an obligation to not take the population of Hawaiian stilts at the refinery below 21 adult birds through incidental take of birds or destruction of occupied habitat. However, during this time period, the Permittee is not responsible for any natural fluctuation in the number of stilts occurring at the refinery as long as the Permittee is meeting the requirements set forth in the Agreement. The number of adult stilts occurring at the refinery may vary and be influenced by external factors such as existing habitat conditions at Rowland's Pond (e.g., amount of available foraging and nesting habitat) and available conditions at other wetlands located throughout the island of Oahu (e.g., in rainy years there may be more wetland areas available and stilts may disperse to these sites).

Baseline for Hawaiian coots

Hawaiian coots were first observed at the refinery in 1997. Since 2000 two pairs of coots have nested at the Impounding Basin or Oxidation Ponds. Coots primarily occur at the Impounding Basin and Oxidation Ponds and have been observed at these ponds throughout the year. Coots rarely occur at Rowland's Pond since it does not contain water during the non-breeding season and is managed specifically for stilts during the breeding season (e.g., shallow, open water and mudflat habitat).

The baseline for Hawaiian coot was determined from the average number of adults observed at the Impounding Basin, Oxidation Ponds, and Rowland's Pond during site visits conducted from September 2001 to September 2002. As the observed number of adults fluctuates between site visits, the average number of adult coots occurring at the refinery best estimates the baseline for Hawaiian coot. This average number of adult coots from 29 site visits is 4 adults. Thus, the baseline for Hawaiian coot is 4 adult birds for this Agreement. Table 2 provides the data from September 2001 to September 2002.

During the length of the Agreement and permit/license, the Permittee has an obligation to not take the population of Hawaiian coots at the refinery below 4 adult birds through incidental take of birds or destruction of occupied habitat. However, during this time period, the Permittee is not responsible for any natural fluctuation in the number of coots occurring at the refinery as long as the Permittee is meeting the requirements set forth in the Agreement. The number of adult coots occurring at the refinery may vary and be influenced by available conditions at other wetlands located throughout the island of Oahu (e.g., in rainy years there may be more wetland areas available and coots may disperse to these sites).

Table 2. Adult Hawaiian Coots Observed at the Refinery from September 2001 to September 2002.

Date of Site Visit	# of Coots at Rowland's Pond	# of Coots at Impounding Basin	# of Coots at Oxidation Ponds	Total # of Coots
27-Sep-01	0	7	1	8
30-Oct-01	0	9	1	10
14-Dec-01	0	9	1	10
25-Jan-02	0	4	1	5
26-Feb-02	0	4	2	6
11-Mar-02	0	5	1	6
3-Apr-02	0	0	5	5
10-Apr-02	0	2	0	2
18-Apr-02	0	3	0	3
24-Apr-02	0	4	0	4
1-May-02	0	4	1	5
8-May-02	0	2	0	2
18-May-02	0	0	0	0
22-May-02	0	4	0	4
29-May-02	0	1	1	2
5-Jun-02	0	4	0	4
12-Jun-02	0	3	0	3
19-Jun-02	0	4	0	4
25-Jun-02	0	4	0	4
1-Jul-02	0	3	1	4
8-Jul-02	0	4	0	4
17-Jul-02	0	2	0	2
23-Jul-02	0	2	0	2
31-Jul-02	0	0	0	0
7-Aug-02	0	2	0	2
14-Aug-02	0	1	0	1
21-Aug-02	0	3	0	3
28-Aug-02	0	3	0	3
1-Sep-03	0	4	0	4
Averages	0.00	3.34	0.52	3.86

To return the enrolled property to baseline conditions (i.e., not managing enrolled lands to support habitat for stilts and coots), the Permittee must demonstrate that the agreed-upon baseline conditions were maintained and the activities identified in the Agreement as necessary to achieve a net conservation benefit were carried out for the duration of the Agreement.

5. MANAGEMENT ACTIVITIES FOR COVERED SPECIES

A. Hawaiian stilt and Hawaiian Coot

In order to manage habitat for Hawaiian stilts and Hawaiian coots at Rowland's Pond, the Impounding Basin, and Oxidation Ponds, the Permittee will conduct the following during each year of the Agreement:

1. Meet with the Service prior to preparing for the breeding season (prior to January 14th) to discuss coordination, communication, and management issues for the upcoming breeding season (e.g., initial water level for Rowland's Pond, start date for pumping water into Rowland's Pond).
2. Conduct biological monitoring for Hawaiian stilts and Hawaiian coots at the refinery ponds according to the monitoring protocol in Appendix 4. The individual(s) conducting the monitoring must be familiar with scientific literature (e.g., life history, biology) regarding stilts and coots and be trained by the Service to recognize nests/eggs and the developing plumage of Hawaiian stilt and coot chicks and minimize human disturbance when conducting nest searches;
3. If predator control is not conducted year-round, immediately initiate the process for predator trapping at the ponds once stilt courtship behavior is evident, but no later than February 1st. Predator traps should be maintained around Rowland's Pond, the Impounding Basin, and Oxidation Ponds to capture feral cats and mongoose that may prey on stilt nests. At a minimum, traps should be placed, maintained, and monitored during the breeding season for the Hawaiian stilts and the peak breeding season for Hawaiian coots and an additional month beyond to cover the breeding season for mongoose (mid February through October). The number and placement of traps and the bait used will depend upon trapping data from the previous year and the on-going breeding season. If coots nest beyond October, traps will be maintained in the area of the nest until the coot chicks are 21 days old. If other tools (e.g., leg holds) for predator control are incorporated into the predator control program they must be conducted in a manner consistent with applicable laws. If rodenticides (e.g., diphacinone) are used, they will be used according to the label. However, use of rodenticides is not covered for incidental take under this Agreement. If rodenticides are used according to labels, incidental take of listed species is not anticipated;
4. If personnel conducting the monitoring and/or predator control observe that predators other than cats and mongoose (e.g., feral dogs, rats, egrets, mynah birds) are found to prey upon stilts or coots (e.g., eggs, chicks), additional measures will be incorporated into the predator control program to remove them or reduce their numbers at the refinery. However, prior to incorporating additional measures into the predator control program, the Permittee will consult with the Service;
5. Inspect and maintain netting over unsuitable areas (e.g., North and South Ocean Ponds, the bermed areas adjacent to Rowland's Pond) on a monthly basis to deter waterbird

activity in these areas. If netting or supporting cables have been damaged or punctured, the Permittee will immediately initiate repair of the netting to avoid potential bird trapping under the netting. At all times, except for acts of nature, the water level within these areas must be maintained below the level of the net to prevent use by waterbirds. If a Hawaiian stilt, Hawaiian coot or other bird becomes trapped under such netting, the Permittee will immediately (within 24 hours) contact the Service and coordinate with the Service for retrieval and possible rehabilitation of the species;

6. To the extent practicable, discourage Hawaiian stilts and Hawaiian coots from nesting at the Oxidation Ponds and undesirable locations at the Impounding Basin because they are an attractive nuisance and a potential source for chemical contaminants to nesting stilts and coots. Possible methods include, but are not limited to, passive hazing (e.g., increasing amount of human activity within the area) of adult stilts or coots prior to egg laying, and reducing the availability of coot nesting material by completely removing vegetation (by manual pulling or cutting and/or proper herbicide application) and its debris from the periphery of these ponds and on the berm(s) separating the ponds by February 1st and throughout the breeding season as long as vegetation is removed prior to egg laying. The above methods will not exclude stilts or coots from nesting in these areas, but will at a minimum reduce the potential for them to nest in undesirable locations. Removal of vegetation will also aid in reducing the availability of nesting materials for the mallard/Hawaiian duck hybrids that have been breeding at the refinery. If coots do nest in these areas, nests are not to be disturbed;
7. Within six months after signing this Agreement work with the Service and DLNR to develop a protocol for responding to an oil or chemical spill that may affect stilts, coots, and migratory birds. This protocol should be incorporated into the Permittee's Emergency Response Plan within one year after signing this Agreement; and
8. Implement adaptive management strategies as identified in Appendix 7 if expected results of the management activities appear ineffective after a certain period of time (varies depending upon the management activity, but should be no more than one breeding season).

B. Hawaiian Stilt

In order to manage Rowland's Pond as nesting habitat for Hawaiian stilts, the Permittee will conduct the following for each year of the Agreement:

1. To maximize the amount of mudflat habitat available for nesting stilts and to minimize the amount of cover available for predators, strive to achieve the goal of managing vegetation within and surrounding (within 25 feet) Rowland's Pond to a maximum vegetation (includes live and dead) coverage of 10%. Vegetation control activities may include, but are not limited to, manual cutting or pulling of weeds, use of machinery to remove vegetation, and proper application of herbicide. The use of herbicides is not covered for incidental take under this Agreement. However, the Permittee will consult with the Service regarding the selection of an appropriate herbicide that will help achieve

vegetation management goals and avoid impacts to listed species and herbicides will be used according to labels. Therefore, incidental take of listed species is not anticipated. Vegetation control activities will occur during the non-breeding season (approximately October through the third week of January). However, the vegetation may become unmanageable (e.g., vegetation coverage of 50% within Rowland's Pond) and degrade stilt habitat within Rowland's Pond, which may reduce the survival of stilt chicks (e.g., lack of an adequate amount of foraging habitat). In this scenario, the pond may be kept dry during one breeding season to dry it out to enable machinery to remove vegetation from the pond, as well as implement other vegetation removal techniques to reduce the vegetation coverage to a manageable level and improve the degraded stilt habitat;

2. Pulse water into Rowland's Pond as necessary by February 1st, unless it is allowed to dry out for a breeding season to address the vegetation problem identified in item 5.B.1., to create an invertebrate prey base for nesting adults and future young. Monitor and manipulate water levels in Rowland's Pond from mid February through August to avoid flooding of nests and to promote providing an adequate invertebrate prey base for chicks, fledglings, juveniles, and adults. Also, consider implementation of other management actions recommended by the Service and DLNR to promote successful nesting of Hawaiian stilts at Rowland's Pond;
3. Drain Rowland's Pond leaving no standing water once the last stilt chick has fledged at the end of each breeding season. This measure will encourage stilt dispersal to other natural wetlands and islands. Rowland's Pond should remain dry during the non-breeding months (approximately September through January), except when needed for hydrostatic testing of the tanks (see 6.A.3.), or after a heavy rainfall, or as a vegetation management technique; and
4. Test sediments for contaminants if any are to be placed into Rowland's Pond. Sediments that meet the Environmental Protection Agency's (EPA) non-hazardous waste criteria or preliminary remediation goals or sediment quality/disposal standards may be placed in Rowland's Pond in a manner that encourages use by Hawaiian stilts. Sediments and/or sludge are not to be placed in Rowland's Pond between the months of January through September (prior to and through the Hawaiian stilt nesting season).

6. RESPONSIBILITIES OF THE PARTIES

- A. In addition to carrying out the Management Activities set forth in Section 5, the Permittee agrees to the following:
 1. Allow reasonable access to the enrolled property by the Service and DLNR for the purpose of ascertaining compliance with this Agreement (including relocation of covered species);
 2. Except in emergency situations (detailed under item 6.A.8.), agree to refrain from conducting activities (e.g., placement of sediment into Rowland's Pond, returning to

baseline conditions) likely to result in take of covered species during critical periods such as breeding seasons unless otherwise authorized to do so by the Service and DLNR;

3. When conducting hydrostatic testing of tanks, water may be drained from a tank into Rowland's Pond once all of the following conditions are met: 1) testing occurs outside of the stilt breeding season, unless the water is needed to maintain stilt breeding habitat, 2) water drained from the tank meets National Pollution Discharge Elimination System (NPDES) standards, 3) there is no alternative site to drain the tank, and 4) the water is a medium to enhance stilt breeding habitat (e.g., build invertebrate prey base, method of vegetation control). Typically tanks are on a 10 year rotation for cleaning and hydrostatic testing;
4. Notify the Service and DLNR 30 calendar days in advance of any planned land management activity (e.g., placement of sludge or sediment), including return to baseline conditions, that the Permittee reasonably expects may result in take of covered species or loss of occupied habitat on the enrolled property. The Permittee will provide the Service and/or DLNR the opportunity to capture and/or relocate any potentially affected individuals of the covered species before the activity takes place;
5. Notify the Service and DLNR within 3 working days of known diseases, injuries, and mortalities of covered species observed on the enrolled property. After reviewing the situation, the Service and DLNR may recommend procedures the Permittee can implement to prevent further injury or death and to avoid future incidental injuries or deaths;
6. Follow procedures detailed in Appendix 5 for handling injured individuals or carcasses of covered species; handling and rehabilitating oiled birds; and for collection and deposition of unhatched eggs;
7. If carcasses or unhatched eggs are to be submitted for analysis, the Permittee will be responsible for expenses associated with transport, testing, and analysis;
8. Emergency situations arising from natural disasters (e.g., hurricanes, excessive rainfall, extreme drought, lethal fire, insect infestations, or epidemic disease) may require the initiation of certain land management actions that may result in take of stilts and/or coots. The Permittee will notify the Service and make reasonable accommodations for survey and/or relocation of stilts and/or coots, possibly with the assistance of DLNR, prior to initiation of the land management action(s) in such an event. If prior notification is not possible, the Permittee will take into account known locations of stilts and coots, especially nests, and avoid impacts to the maximum extent possible during their emergency actions. The Permittee will notify the Service and DLNR within 10 working days of taking such action, including the measures taken to avoid impacts to stilts and/or coots;
9. Take actions to prevent the tanks surrounding Rowland's Pond from rupturing or overflowing. Should a tank rupture or any oil/chemical spill occur that presents a threat

of impacting Rowland's Pond, immediately implement the Permittee's Emergency Response Plan and notify the Service and DLNR within 3 hours of discovering the situation. Until the Permittee's Emergency Response Plan addresses item 10, carry out the following: initiate clean up actions to limit harm to Hawaiian stilts, coots, and migratory birds, and follow guidelines in Appendix 5 regarding the handling and rehabilitating of oiled birds;

10. In the case of an oil spill, follow item 9 above. In addition, halt all stilt management activities in Rowland's Pond during and following clean up of the site. Work with the Service and DLNR to rehabilitate and salvage survivors and lost nests, eggs, chicks, juveniles, and adults, and evaluate whether continued use of Rowland's Pond for Hawaiian stilts is safe and appropriate or whether stilt use at Rowland's Pond should be terminated. Although the Permittee is covered for a oil spill, it is still responsible for complying with the Oil Pollution Act;
11. Confer with the Service and DLNR within 5 working days of discovering new or unexpected situations that could adversely impact covered species, and develop measures to address remediation of the adverse conditions;
12. If the spotted-winged midge (*Polypedilum nubifer*) continues to be a nuisance problem for the Permittee's employees and for the adjacent landowner (Brewer Chemical), work with the Service and DLNR to develop a solution that does not adversely affect Hawaiian stilts or Hawaiian coots at the Impounding Basin during the term of the Agreement;
13. Provide a copy of the National Pollution Discharge Elimination System (NPDES) Permit and results of the chemical analyses performed to acquire the permit to the Service each time the NPDES permit is obtained;
14. Submit annual reports covering the non-breeding season and breeding season, approximately covering the period from October 1st to September 30th to the Service and DLNR on or before December 31st of each year the Agreement is in effect. Annual reports will include information as described in Appendix 6; and
15. Educate employees through the Permittee's employee newsletter, and/or refinery e-mail regarding ongoing activities to protect endangered Hawaiian stilts and Hawaiian coots, and migratory shorebirds at Rowland's Pond, the Impounding Basin, and the Oxidation Ponds. Also prohibit the Permittee's employees from feeding stray cats on Chevron property and explain why this policy is necessary to prevent predation to Hawaiian stilts and Hawaiian coots at the site. The Permittee may also incorporate test questions and basic information of covered species in the Permittee's required safety training courses for refinery staff and contractors. Finally, the Permittee may install signs or provide pocket size information cards indicating covered species and other migratory shorebirds that frequently visit the refinery. Contact information for staff at the refinery, the Service, or DLNR should be made available if an injured or oiled bird is observed on the refinery premises.

B. In consideration of the foregoing, the Service agrees to:

1. Upon execution of the Agreement and satisfaction of all other applicable legal requirements, issue a permit to the Permittee in accordance with ESA section 10(a)(1)(A) authorizing incidental take of the covered species as a result of lawful activities within the enrolled property. The term of the permit will be 6 years except as otherwise provided by this Agreement;
2. Provide technical assistance, to the maximum extent practicable, when requested, and provide information on Federal funding programs;
3. Ensure Permittee is implementing the terms of the Agreement. Visit the enrolled property at least three times per year (i.e., pre, during, and post stilt breeding season);
4. If warranted, recommend procedures to the Permittee in order to avoid future take based on any take described in past annual reports;
5. Follow all safety procedures required by the Permittee while at the refinery (e.g., attend safety training);
6. Provide recommendations to the Permittee on appropriate actions to discourage nesting at the Oxidation Ponds and the Impounding Basin by stilts, coots, and other waterbirds;
7. Provide recommendations to the Permittee on appropriate management actions (e.g., conduct predator trapping, manage water levels in Rowland's Pond) to promote successful nesting of Hawaiian stilts at Rowland's Pond;
8. Within six months after signing of this Agreement, cooperate with the Permittee to develop a protocol which will be incorporated into the Permittee's Emergency Response Plan addressing the handling of Hawaiian stilts, Hawaiian coots, and migratory birds in case of an oil/chemical spill; and
9. Assist the Permittee with the Annual Report.

C. In consideration of the foregoing, the DLNR agrees to:

1. Upon execution of the Agreement and satisfaction of all other applicable legal requirements, issue a license to the Permittee in accordance with HRS §195D-4 authorizing incidental take of the covered species as a result of lawful activities within the enrolled property. The term of the license will be 6 years except as otherwise provided by this Agreement;
2. Provide technical assistance, within available resources, when requested;
3. Ensure Permittee is implementing the terms of the Agreement;

4. If warranted, recommend procedures the Permittee can take to avoid future take based on any take described in past annual reports;
5. Follow all safety procedures required by the Permittee while at the refinery (e.g., attend safety training);
6. Provide recommendations to the Permittee on appropriate actions to discourage nesting at the Oxidation Ponds and the Impounding Basin by stilts, coots, and other waterbirds;
7. Provide recommendations to the Permittee on appropriate management actions (e.g., conduct predator trapping, manage water levels in Rowland's Pond) to promote successful nesting of Hawaiian stilts at Rowland's Pond;
8. Within six months after signing of this Agreement, cooperate with the Permittee to develop protocol which will be incorporated into the Permittee's Emergency Response Plan addressing the handling of Hawaiian stilts, Hawaiian coots, and migratory birds in case of an oil/chemical spill; and
9. Assist the Permittee with the Annual Report within available resources.

7. NET CONSERVATION BENEFIT

From 1993-2003, the Permittee and the Service implemented terms specified in a Cooperative Agreement to manage Rowland's Pond as temporary nesting habitat for Hawaiian stilts and implement a predator control program at Rowland's Pond, the Impounding Basin and Oxidation Ponds. As a result of this Cooperative Agreement, 361 stilts and 12 coots were added to the Statewide population. The annual number of stilt fledglings between 1992 through 2003 varied between 14 and 51, with an average of 30 stilt fledglings annually. The annual number of coot fledglings between 2000 and 2003, when coots have nested at the refinery, varied between 0 and 9. Based upon the above information, it is anticipated that an average of 30 stilts and 3 coots will be produced annually each year Rowland's Pond is managed to maintain water pursuant to this Agreement.

Implementation of the management activities identified in Section 5 contributes to recovery of the species by temporarily increasing available predator-reduced nesting and foraging habitat for stilts and coots. In addition, it provides a way to temporarily contribute offspring to the stilt and coot populations to achieve recovery goals. The management activity described in Section 5.A.6. involves discouraging stilts and coots from nesting at the Oxidation Ponds and undesirable locations at the Impounding Basin due to the potential presence of chemical contaminants. Until it is confirmed that these areas are harmful to stilts and coots, methods described in this section may be implemented to discourage nesting in these areas. However, in spite of vegetation being removed from these areas, coots have continued to nest and produce young in these areas (average of 3 coot fledglings produced annually). As stilts and coots continue to nest in these areas, predator control will be conducted; therefore, providing predator-reduced foraging and

nesting habitat and contributing to the species survival at the refinery and ultimately the species recovery.

The Permittee plans to continue normal refinery operations and refinery maintenance activities that may result in incidental take of endangered species. Incidental take may result from various activities or events (e.g., release of oil, or chemical product into Rowland's Pond from a tank rupture, release of oil or other petroleum product from a tank overflow, accidental crushing of stilt chicks by vehicles, flooding of nests and eggs). The biggest risk to birds using Rowland's Pond is the release of oil, however, this has not occurred since the refinery was established in 1959. If a release does occur, most if not all nests/eggs, chicks, and juveniles in Rowland's Pond may become severely oiled, will not immediately escape and will drown. Taking into account the potential for incidental take, the benefits (annual production of approximately 30 stilt fledglings and 3 coot fledglings) resulting from implementing this Agreement and minimization measures to reduce take, the fact that there has never been a oil release since the refinery was established, our successful management with the Permittee pursuant to the Cooperative Agreement, the benefits of entering into this Agreement outweigh this risk.

It is not intended that stilt and coots permanently be attracted to and managed at the Chevron Hawaii Refinery. The purpose of this Agreement is to temporarily provide habitat and help increase the number of stilts and coots until other natural wetland areas are protected, restored, and managed. The State of Hawaii has been working with various partners to restore the 70-acre Pouhala Marsh, which is located approximately 8 miles to the northeast of the refinery. To date, several tons of debris has been removed as well as several invasive plant species. A chain-link fence is planned to be constructed around the marsh within the next year and will help to keep dogs out of the marsh as well as reduce human traffic. Once the fence is in place, predator control will be implemented. To ensure the success of this project, funding has been acquired through various partners. It is likely Pouhala Marsh will be restored prior to the end of this Agreement. Therefore, when the Permittee is allowed to return to baseline conditions, the stilts and coots will likely relocate to Pouhala Marsh and be able to survive and breed successfully.

Based upon the information above, the 6-year duration of this Agreement is considered sufficient to maintain/increase existing numbers of the covered species and provides predator-reduced foraging and nesting habitat for the Hawaiian stilt and Hawaiian coot. The cumulative impacts of this Agreement and the activities it covers, which are facilitated by the authorized take, will provide a net conservation benefit to the species.

8. AGREEMENT AND PERMIT DURATION

Except as otherwise provided by this Agreement, the Agreement, including the obligations of the Parties and any commitments related to funding, will be in effect for 6 years following the date of its signing by the Parties. The rights to take will hold for the duration of the Federal permit and State license. Except as otherwise provided by this Agreement, the Federal permit and State license authorizing incidental take of the covered species will each have a duration of 6 years from its effective date. The Agreement and permit/license may be extended beyond their specified durations through amendment, with concurrence of all Parties.

9. ASSURANCES TO THE PERMITTEE REGARDING TAKE OF COVERED SPECIES

Provided that such take is consistent with maintaining the baseline conditions identified in Section 4 hereof, the Section 10(a)(1)(A) permit (Federal) and HRS §195D-4 license (State) shall authorize the Permittee to take the covered species incidental to otherwise lawful activities, except for the use of herbicides and pesticides, in the following circumstances:

1. Implementing the management activities identified in Section 5 hereof;
2. Carrying out any normal refinery activities on enrolled property after management activities identified in Section 5 have been initiated; and
3. Returning the enrolled property to baseline conditions after the terms of the Agreement have been fully implemented and prior to the expiration of the permit/license.

10. MODIFICATIONS

10.1. **MODIFICATION OF THE AGREEMENT.** Any party may propose modifications or amendments to this Agreement, as provided in 50 CFR 13.23 and HRS §195D-23, by providing written notice to, and obtaining the written concurrence of, the other Parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The Parties will use their best efforts to respond to proposed modifications within 60 calendar days of receiving such notice. Proposed modifications will become effective upon the other Parties' written concurrence.

10.2. **TERMINATION OF THE AGREEMENT.** As provided for in Part 12 of the Service's Safe Harbor Policy (64 FR 32717), the Permittee may terminate the Agreement for circumstances beyond the Permittee's control. However, HRS § 195D-22(b)(3) and HRS § 195D-22(d) provides that the above may occur 5 years after the signing of the Agreement and prior to its expiration. In such circumstances, the Permittee may return the enrolled property to baseline conditions even if the management activities identified in Section 5 have not been fully implemented, provided that the Permittee notifies the Service and DLNR as required by Section 6.A.4. above prior to carrying out any activity likely to result in the taking of the covered species. If the Permittee terminates the Agreement for any other reason, or prior to its fifth anniversary, the permit/license referenced in Section 6.B.1. and 6.C.1. above shall immediately cease to be in effect. According to HRS § 195D-22, the Permittee's right to terminate cannot be exercised until after the fifth anniversary of the date of approval and signing of the Agreement.

10.3. **PERMIT SUSPENSION OR REVOCATION.** The Service may suspend or revoke the permit referred in Section 6.B.1. above for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. The Service also, as a last resort, may revoke the permit if continuation of permitted activities would likely result in jeopardy to the covered species (50 CFR 13.28(a)). In such circumstances, the Service will exercise all possible

measures to remedy the situation. The Board of DLNR may suspend or revoke the State license for cause pursuant to HRS §195D-4(h).

10.4. **BASELINE ADJUSTMENT.** The baseline conditions set forth in Section 4 above, may by mutual agreement of the Parties, along with recommendations provided by the State of Hawaii Endangered Species Recovery Committee, be adjusted if, during the term of the Agreements and for reasons beyond the control of the Permittee, the utilization of the enrolled property by the covered species or the quantity or quality of habitat suitable for or occupied by the covered species is reduced from what was at the time the Agreement was negotiated.

11. OTHER MEASURES

11.1. **REMEDIES.** Each party shall have all remedies otherwise available to enforce the terms of the Agreement and permit/license, except that no party shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement, or any other cause of action arising from this Agreement.

11.2. **DISPUTE RESOLUTION.** The Parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by all Parties.

11.3. **SUCCESSION AND TRANSFER.** If the Permittee transfers his or her interest in the enrolled property to a non-Federal entity, DLNR will regard the new owner as having the same rights and responsibilities with respect to the enrolled property as the Permittee. Following receipt of an application by the Service from the new owner for a permit transfer, and provided that the new owner commits in writing to become a party to this Agreement and the permit referenced in Section 6.B.1. above in place of the Permittee, the Service will transfer the permit and regard the new owner as having the same rights and responsibilities with respect to the enrolled property as the Permittee.

11.4. **AVAILABILITY OF FUNDS.** Funds for the implementation of Sections 5.A., 5.B., and 6.A. will be provided by the Permittee. Implementation of this Agreement is subject to the requirements of the Federal Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the Parties to require the obligation, appropriation, or expenditure of any funds from the U.S. Treasury or the State of Hawaii. The Parties acknowledge that the Service and DLNR will not be required under this Agreement to expend any Federal or State agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

11.5. **RELATIONSHIP TO OTHER AGREEMENTS.** The Permittee has been managing Rowland's Pond as nesting habitat for Hawaiian stilts as well as providing predator-reduced areas for the Hawaiian stilt and Hawaiian coot at the Impounding Basin and Oxidation Ponds through Cooperative Agreements with the Service from 1993-2002. These Cooperative Agreements are the precursor to this Agreement.

11.6. **NO THIRD-PARTY BENEFICIARIES.** This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not

a party to this Agreement to maintain a suit for personal injuries or damages, injunctive or other relief pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing law.

11.7. OTHER LISTED SPECIES, CANDIDATE SPECIES, AND SPECIES OF CONCERN. Although the Service and DLNR regards it as unlikely, the possibility exists that other listed, proposed, or candidate species, or species of concern may occur in the future on the enrolled property as a direct result of the management activities specified in Section 5 above. If that occurs and the Permittee so requests, the Parties may agree to amend the Agreement and associated permit/license to cover additional species and to establish appropriate baseline conditions for such other species.

11.8. NOTICES AND REPORTS. Any notices and reports, including monitoring and annual reports, required by this Agreement shall be delivered to the persons listed below, as appropriate. Names and addresses may be changed by written notice to all Parties.

Refinery Manager
Chevron Hawaii Refinery
91-480 Malakole Street
Kapolei, HI 96707

Field Supervisor
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

Administrator
State of Hawaii, Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

12. REFERENCES CITED

U.S. Fish and Wildlife Service. 1993. Cooperative Agreement between Chevron U.S.A. Inc. Hawaiian Refinery and the U.S. Fish and Wildlife Service. Region 1, Honolulu, HI. 6 pp.

U.S. Fish and Wildlife Service. 1996. Cooperative Agreement between Chevron U.S.A. Inc. Hawaiian Refinery and the U.S. Fish and Wildlife Service. Region 1, Honolulu, HI. 6 pp.

U.S. Fish and Wildlife Service. 2001. Cooperative Agreement between Chevron U.S.A. Inc. Hawaiian Refinery and the U.S. Fish and Wildlife Service. Region 1, Honolulu, HI. 10 pp.

U.S. Fish and Wildlife Service. 2002. Cooperative Agreement between Chevron U.S.A. Inc. Hawaiian Refinery and the U.S. Fish and Wildlife Service. Region 1, Honolulu, HI. 10 pp.

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Safe Harbor Agreement to be in effect as of the date last signed below.

Refinery Manager
Chevron Products Company, Hawaii Refinery

Date

Chairperson
Board of Land and Natural Resources
State of Hawaii, Department of Land and Natural Resources

Date

Deputy Regional Director
U.S. Fish and Wildlife Service
Portland, Oregon

Date

APPROVED AS TO FORM

Deputy Attorney General
State of Hawaii

LIST OF APPENDICES

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- Appendix 2 Figures
- Appendix 3 Background on Hawaiian Stilts at the Chevron Hawaii Refinery
- Appendix 4 Hawaiian Stilt and Hawaiian Coot Monitoring Protocol
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Appendix 1 Description of Covered Species

The following excerpts for the Hawaiian stilt are from the USFWS September 2000 Revised Recovery Plan for Hawaiian Waterbirds Second Revision.

Aeo or Hawaiian stilt (*Himantopus mexicanus knudseni*)

Description

The Aeo or Hawaiian stilt is a slender wading bird, black above (except for the forehead), white below, and with distinctive long, pink legs. The Hawaiian stilt differs from the black-necked stilt by having black extending lower on the forehead as well as around to the sides of the neck, and by having a longer bill, tarsus (leg), and tail (Coleman 1981, Robinson et al. 1999). Sexes are distinguished by the color of the back feathers (brownish female, black male) as well as by voice (females having a lower voice). Downy chicks are well camouflaged, tan with black speckling. Immatures have brownish back, and white patches on their cheeks (Pratt et al. 1987). The total length of adult Hawaiian stilts is about 40 centimeters (cm) (16 inches (in)). A comprehensive summary of the current knowledge of stilts in North America has recently been published by The Birds of North America (Robinson et al. 1999).

Distribution

Stilts were historically known from all of the major islands except Lanai and Kahoolawe (Paton and Scott 1985). Prior to 1961, documented records of Hawaiian stilt on the island of Hawaii were limited to three collected by S.B. Wilson in the late 1800s and possibly one collected by Collett prior to 1893 (Banko 1979). Estimates of state-wide historic numbers are undocumented. However, extensive wetlands and aquatic agricultural lands provided a sizable amount of habitat. Loss of this habitat undoubtedly caused a decrease in stilt numbers. It has been suggested that the state-wide population had declined to approximately 200 birds by the early 1940s (Munro 1960). This number, however, may have been an underestimation of the population, as other estimates from the late 1940s place the population approximately 1,000 birds (Schwartz and Schwartz 1949). This number may still be a low estimate, as a sizable number of stilts can seasonally be found on Niihau, which was not surveyed in the 1940s. The Hawaiian stilt was a popular game bird, and hunting contributed to local population declines until waterbird hunting was prohibited in 1939 (Schwartz and Schwartz 1949).

Stilts are now found on all of the main Hawaiian Islands except Kahoolawe. The first stilts on Lanai were documented in 1989 at the Lanai City wastewater treatment ponds (M. Ueoka, pers. comm. 1993). Long term census data indicate that statewide populations have been relatively stable or slightly increasing for the last 30 years (Reed and Oring 1993). From 1983 to 1996, statewide surveys documented a minimum of 1,000 stilts in the State (Hawaii Department of Land and Natural Resources waterbird surveys 1983 to 1996, Appendix C4). Recent estimates place the population at approximately 1,200 to 1,600 birds (Griffin et al. 1989, Engilis and Pratt 1993). As with coots, census data show high year-to-year variability in the number of stilts observed (Appendix C4). This variability can be partially explained by rainfall patterns and

reproductive success (Engilis and Pratt 1993). Hawaiian stilts readily disperse between islands and constitute a homogenous metapopulation (Reed et al. 1994, Reed et al. 1998).

Threats

Threats to the species include the loss of wetland habitat, predation by introduced mammals, invasion of wetlands by alien plants and fish, disease, and environmental contaminants. Predation by introduced mammals is currently the most important factor limiting recovery for stilts.

Predators on Hawaiian stilts include the short-eared owl (*Asio flammeus*), black-crowned night heron (*Nycticorax nycticorax*), laughing gull (*Larus atricilla*), ruddy turnstone (*Arenaria interpres*), cattle egret (*Bubulcus ibis*), common mynah (*Acridotheres tristis*), mongoose (*Herpestes auropunctatus*), black rat (*Rattus rattus*), domestic cat (*Felis catus*), domestic dog (*Canis familiaris*), and the bullfrog (*Rana catesbeiana*) (Robinson et al. 1999).

Habitat Types

Stilts use a variety of aquatic habitats but are limited by water depth and vegetation cover. Stilts require early successional marshlands with water depth less than 24 cm (9 in); perennial vegetation that is limited and low growing such as nonnative pickleweed, California grass, and seashore paspalum or knot grass (*Paspalum* spp.); or exposed tidal flats. Native low-growing wetland plants associated with stilt nesting areas include water hyssop (*Bacopa monnieri*), sea purslane (*Sesuvium portulacastrum*), and the sedges makaloa (*Cyperus laevigatus*) and Kaluha (*Bolboschoenus maritimus*) (Robinson et al. 1999). They may also use taro (Araceae) ponds where the full grown vegetation forms a protective canopy. Stilts are rarely found in wetlands above 200 meters (m) (660 feet (ft)) elevation.

Ephemeral lakes on Molokai, Maui, and Niihau are important for stilts. Management techniques that mimic seasonal inundation and evaporation of freshwater mudflats would be beneficial to nesting stilts and provide invertebrate forage for their young. Insular mudflats are isolated from terrestrial predators, but are still susceptible to avian predation. On the island of Hawaii, anchialine ponds provide important foraging habitat for the Hawaiian stilt. Prawn farms, which have numerous ponds in perpetual drawdown and flood-up, provide excellent foraging habitat for adult birds.

Stilts generally forage and nest in different wetland sites, moving between areas daily. Adults with three day old chicks have been observed to move 0.5 kilometers (0.3 miles) from the nest site (Reed and Oring 1993). Nesting sites are adjacent to or on low-relief islands within bodies of fresh, brackish, or salt water. These bodies of water include irrigation reservoirs and settling basins, natural or man-made ponds, marshes, and taro patches.

Breeding Habitat

Stilts prefer to nest on freshly exposed mudflats, interspersed with low growing vegetation. The nest itself is a simple scrape on the ground. They have also been observed using grass stems and

rocks for nesting material (Coleman 1981; M. Morin, pers. comm. 1994). Nesting also occurs on low relief islands (natural and man-made) in fresh or brackish ponds (Shallenberger 1977). Higher nesting densities are found on large mudflat expanses interspersed with vegetation (U.S. Fish and Wildlife Service 1983). Stilts have also been observed successfully using man-made floating nest structures on Kauai (T. Telfer, pers. comm. 1988) and floating wooden platforms at Aimakapa Fishpond in Kona, Hawaii (Morin 1994 and pers. comm. 1999). Stilts defend an area 20-30 m (66 to 99 ft) around the nest and are semi-colonial. The nesting season normally extends from mid February through August. Peak nesting varies among years. Stilts usually lay 3 to 4 eggs that are incubated for approximately 24 days (Coleman 1981, Chang 1990). Chicks are precocial, leaving the nest within 24 hours of hatching. Young may remain with both parents for several months after hatching (Coleman 1981). Parents are extremely aggressive toward foreign young (Robinson et al. 1999).

Diet

Stilts are opportunistic feeders. They eat a wide variety of invertebrates and other aquatic organisms as they are available in shallow water and mudflats. Specific organisms taken include water boatmen (bugs in the family Corixidae), beetles (insects in the order Coleoptera), possibly brine fly (*Ephydra riparia*) larvae, polychaete worms, small crabs, Mozambique tilapia (*Tilapia mossambica*) and mosquito fish (*Gambusia affinis*), and tadpoles (*Bufo* spp.) (Robinson et al. 1999, Shallenberger 1977).

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- Ueoka, M., Hawaii Dept. of Land and Natural Resources.

Alae keokeo or Hawaiian Coot (*Fulica alai*)

Description

The Hawaiian Coot or alae keokeo (*Fulica alai*) is an endemic species (AOU 1993) of coot with a white frontal shield, a red lobe at the top of the white shield, or an all red shield (Pratt 1978). Coots have long legs with large, distinctly webbed toes. Males and females are similar in plumage with dark slate-gray body and wing feathers and white undertail feathers.

Distribution

Hawaiian coots were historically found on Kauai, Niihau, Oahu, Molokai, Maui, and the Island of Hawaii. Currently, they are found on all the main islands except Kahoolawe with 80 percent of the birds on Kauai, Oahu, and Maui (Engilis and Pratt 1993). The statewide coot population is estimated to range between 2,000 and 4,000 birds (Engilis and Pratt 1993). On Kauai, coots are most often found in lowland valleys such as Hanalei, Lumahai, and Opaekaa and in reservoirs. There is some evidence that Kauai birds fly to Niihau when rains fill ephemeral lakes on that island (Engilis and Pratt 1993).

Threats

The primary cause of the decline of Hawaiian waterbirds is loss of wetland habitat (USFWS 1999). The factors that have led to a significant loss of wetland habitat include, filling and modification, altered hydrology, and invasion of habitats by alien plants. Predation by dogs (*Canis familiaris*), cats (*Felis catus*), mongoose (*Herpestes auropunctatus*), and probably rats (*Rattus* spp.), is a threat to adult coots and predators also destroy nests (Tomich 1969). Predation may be the most important factor currently limiting recovery of waterbirds (USFWS 1999). Other threats include disease, and environmental contaminants (USFWS 1999). It is also believed that introduced fish, such as tilapia (*Oreochromis mossambicus*), compete with waterbirds for food (Marshall and Worthington 1996; Stinson et al. 1991).

Habitat Types

Coots are usually found on the coastal plain of islands where wetland habitats are more common and they are generally found below 400 meters (m) (1,320 feet (ft)) (USFWS 1999). They prefer habitat with a suitable mix of open water and emergent plant growth and are usually found in fresh or brackish water. Coots have been observed in upland plunge pools above 1,500 m (4,922 ft) elevation on Kauai (USFWS 1999).

Breeding Habitat

The optimum nesting habitat is in wetlands with a 50:50 to 75:25 mix of dense emergent vegetation and open water (USFWS 1999). Coots nest on open water and in small openings in marsh vegetation (Shallenberger 1977, Udvardy 1960). Taro ponds provide some of the best habitat because of shallowness, presence of vegetation, and constant water levels. They usually construct floating nests of aquatic vegetation or semi-floating nests anchored to emergent

vegetation (Byrd et al. 1985). Nesting occurs primarily between March and September although nests have been documented from all months (Shallenberger 1977).

Diet

Coots usually forage in water that is less than 30 centimeters (cm) (11.8 inches (in)) deep although they can dive up to 120 cm (47.2 in) deep (USFWS 1999). Coots prefer more open habitat than the Hawaiian subspecies of the common moorhen (*Gallinula chloropus sandvicensis*). Coots are generalists and utilize food sources on the water surface, by diving, by foraging in mud or sand, and also by feeding in upland grassy areas near wetlands, including golf courses (USFWS 1999). Diet items include seeds and leaves of aquatic plants, invertebrates including snails, insects, and crustaceans, tadpoles, and small fish (Schwartz and Schwartz 1949).

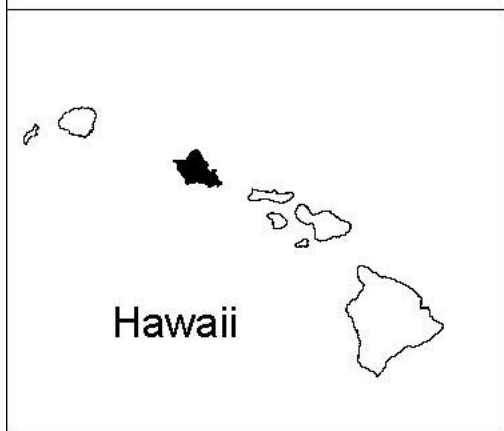
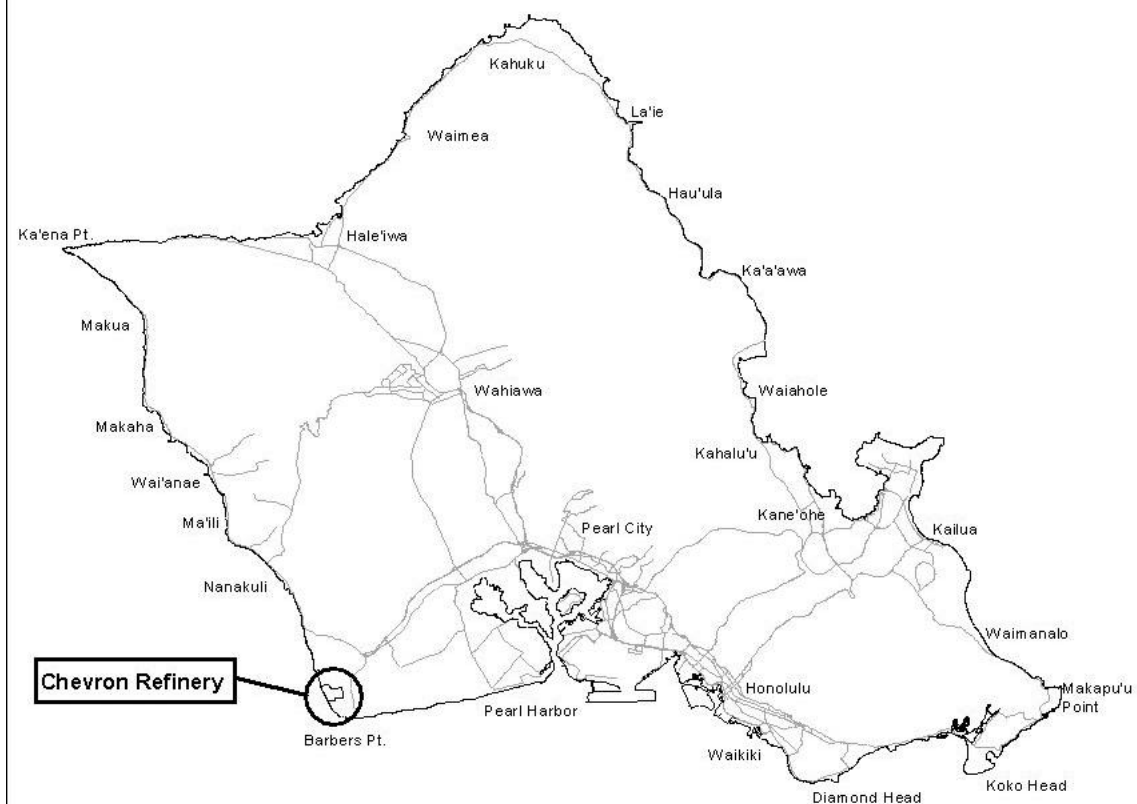
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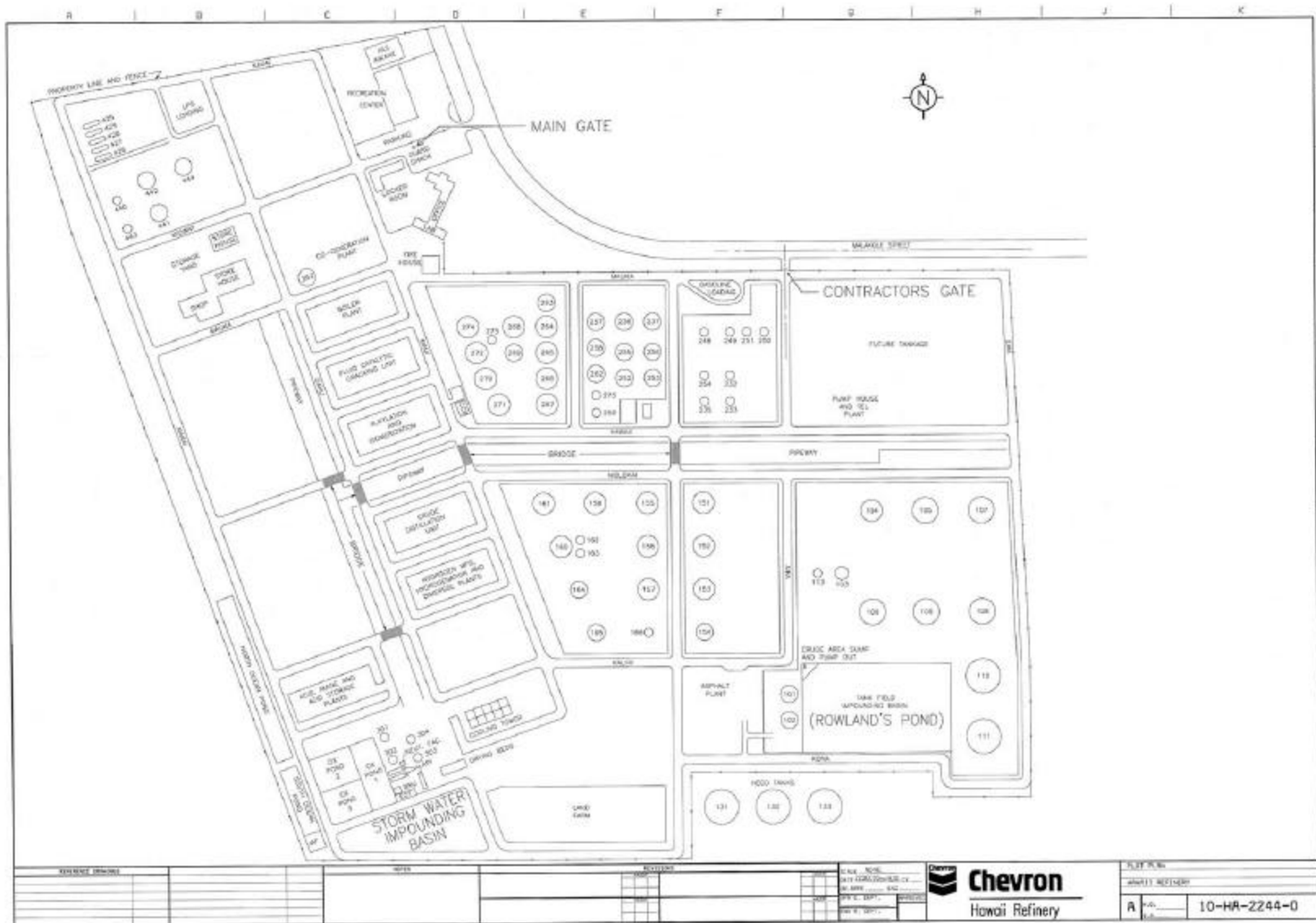
Appendix 2 Figures

Appendix 2 Figure 1
PROJECT LOCATION MAP



Oahu





Appendix 2 Figure 2. Map of the Chevron Hawaii Refinery, Campbell Industrial Park, Oahu

Appendix 3 Background on Hawaiian stilts at the Chevron Hawaii Refinery

In 1959, the Chevron Products Company, Hawaii Refinery was constructed upon a coral peninsula and included the excavation of a 6-acre catchment known as Rowland's Pond. Rowland's Pond was a depression designed to catch a spill or release from petroleum tanks in the tank farm. Although Rowland's Pond has been dry throughout most of its history, the pond occasionally collected water during infrequent rains. However, the water would quickly evaporate and percolate out of the semi-impervious bottom. Stilts occasionally were observed foraging at Rowland's Pond, generally after a rain event.

In August 1989, dredged material from the Impounding Basin and Oxidation Ponds at the effluent area were placed into Rowland's Pond. This placement of material reduced the porosity of the pond, making it impervious and capable of holding water for longer periods of time. The sludge material also provided nutrients and the free water from the dredging activities attracted opportunistic Hawaiian stilts flying over the refinery to forage in the pond. As stilt breeding season runs from mid February through August, it is highly likely stilts were initially attracted to Rowland's Pond for foraging.

According to the Permittee's employees, Hawaiian stilts have always been observed in low numbers at the refinery. However, in early 1992, following pumping of the nonhazardous sludge from the Impounding Basin and Oxidation Ponds into Rowland's Pond, a dramatic increase in the number of Hawaiian stilts using Rowland's Pond was noted. The sludge, which included a high percentage of algae as well as sediment and water, provided the necessary substrate and nutrients to support a stable invertebrate population upon which the Hawaiian stilts and shorebirds could feed.

At approximately the same time period, a wetland located outside of the refinery and less than one mile from Rowland's Pond was filled as part of the overall industrial park development. The action was authorized through the U.S. Army Corps of Engineers Permits Number PODCO 2229 and NW98-062. This action reduced the available, natural wetland habitat in the area, which is extremely rare on the west side of Oahu.

On March 4, 1992, the Permittee alerted the Service to the presence of 34 Hawaiian stilts at the refinery and sought guidance to haze the birds away from the refinery. The Service inquired about the recent use of Rowland's Pond and was informed the pond was used as a containment area for non-hazardous sediment from the refinery's wastewater treatment plant. The pond also contained surface run-off from the surrounding refinery and was designed to contain crude oil in the event of a oil spill from adjacent refinery tanks. At that time, the Permittee was informed of the endangered species status for the Hawaiian stilts and that the Service needed to conduct a site visit to the pond before making any recommendations. At the time, the Service did not deem this an emergency situation as the Permittee did not indicate that the pond presently contained oil. As harassment of birds away from the refinery was a possibility, the Service's Law Enforcement staff would participate at the scheduled meeting.

On March 16, 1992, the Service contacted the Permittee and scheduled a field meeting for March 19, 1992. During the March 19, 1992, visit, the following specific information on oil refinery

operations and the use of the storm water collection pond, known as Rowland's Pond was provided to the Service. Standard oil products such as crude oil, gasoline, and fuel oil occurred at the refinery. Oil products are piped or pumped into storage tanks adjacent to Rowland's Pond. Surface runoff from the tank yard runs into Rowland's Pond when rainfall exceeds 1 inch. The pond is also designed to contain crude oil or other oil products in the event of a oil spill from adjacent refinery tanks. When the adjacent tanks are cleaned and hydrostatically tested, brine or fresh water (between 1,344,000 to 8,400,000 gallons) is pumped into the tanks and then released into Rowland's Pond. According to the Permittee, the brine or fresh water is not contaminated with oil because the tanks must be free of oil and oil residue in order to be properly tested. From 1989-1991 non-hazardous sediment and water from the Impounding Basin had been pumped into Rowland's Pond. Hawaiian stilts and several species of migratory shorebirds were observed using the refinery ponds.

Immediately upon Service and the Permittee's staff arrival at Rowland's Pond, stilts were observed foraging along the edges of the pond. The Pond was divided into four separate areas: the main pond area, a small triangle section, and two small square ponds along the corner of the main pond designated as pond A and B for reference purposes. Approximately one half of the main pond was covered by surface water. The remaining portion of the main pond consisted of dried, cracked mudflat habitat. Surface water was also present in the triangle pond and the two smaller back ponds. The triangle pond regularly receives oil runoff from refinery operations. An oily sheen was seen on the water surface. Oil was present on exposed sediment within the pond and along the bank of the pond. Pond A appeared free of oil. Pond B had an oily sheen on the water surface and an abundance of large and small globs of oil on exposed sediment along the banks of the pond. The Permittee explained that an oil spill from an adjacent tank had occurred during January of 1992. The oil was routed into Pond B and contained. The oil seen that day along the bank of the pond should have been removed after the spill. The Permittee stated it would report the oil to the maintenance department for further cleanup action.

Over 20 ruddy turnstones, a wandering tattler, several plovers, several flocks of sanderlings, and approximately 16-25 Hawaiian stilts were observed at Rowland's Pond. Approximately six stilts were observed at the Impounding Basin and three stilts at the South Ocean pond. At the Impounding Basin of the effluent treatment plant, the Permittee's staff occasionally observed stilt loafing on the berm, which separates the pond into two section. The settling basin is approximately six feet deep and did not appear to be suitable stilt habitat because the basin lacks exposed mudflat or other shallow water feeding areas.

The Service noticed and inquired about the three other open ponds adjacent to Pipeway Road. The Permittee stated that the two larger ponds were known as North and South Ocean ponds and that runoff from the plant was routed through pipes to these ponds. The third pond is the IAF pond, which is the last storage pond before water from the sewage treatment plant is discharged into the ocean. North Ocean pond was heavily oiled. A thick layer of oil covered over one half of the surface water in the pond. It was evident from the oil marks on the banks of the pond that oil has been continually discharged into this pond over many years. South Ocean Pond was less oiled but a sheen of oil could be seen on the surface water within the pond. As with the North Ocean Pond, it was evident from the oil stained bank that oil has been frequently discharged into this pond. The source of the oil is from run-off from the plant, which includes oil spilled in day

to day operations of the oil refinery. The run-off is stored at these ponds (primarily North Ocean Pond; however, at a certain fixed level North Ocean Pond spills into South Ocean Pond) temporarily until it can be processed through the sewage treatment plant. No oil was seen in the IAF pond. During Service examination of these three ponds, three Hawaiian stilt landed within South Ocean Pond on a small exposed sandflat within the pond. Relevant issues raised by these observations included predicted stilt nesting, incidental take, and oiled birds. Other topics discussed were the duration of stilt nesting season (approximately four months), time frame for eggs to hatch (approximately 20 days), and chick banding. The only recommendation from the Service to the Permittee at that time was for the Permittee to net off ponds with oil so that stilts would not have access to contaminated ponds.

Stilt nesting was not recorded in the refinery ponds until stilt nesting behavior was observed on March 26, 1992, by the Permittee's staff. On March 27, 1992, two stilt nests were recorded in Rowland's Pond. Since Hawaiian stilts had already begun nesting at Rowland's Pond, the Service could not recommend hazing of stilts and recommended the Permittee allow the stilts to complete their nesting cycle. The Service decided to monitor stilt nesting activity through the 1992 breeding season without implementing actions to prevent or discourage use of Rowland's Pond by stilts or migratory shorebirds. From April to May 1992, the Permittee coordinated with the Service regarding habitat management activities for Hawaiian stilts at the refinery.

At the Service's recommendation, the Permittee cleaned and then constructed nets over North and South Ocean Ponds and areas adjacent to Rowland's Pond to prevent use by waterbirds. The Permittee also protected Rowland's Pond from excessive disturbance, manipulated water levels in the pond to enhance feeding and nesting habitat for the birds and maintained predator traps around nesting and rearing areas at the refinery. As a result, 24 stilts fledged from Rowland's Pond, which may be more stilts raised than any other comparably sized wetland on Oahu during 1992. Throughout the 1992 breeding season for the Hawaiian stilts (March through August), Rowland's Pond supported a population of Hawaiian stilts, as well as ruddy turnstones, golden plovers, sanderlings, and wandering tattlers. At the end of the breeding season, Rowland's Pond was allowed to dry up to encourage stilt dispersal to other suitable natural wetland sites (e.g., Pouhala Marsh) or to other islands.

Following the 1992 breeding season, the Permittee was not obligated to continue management of Rowland's Pond for Hawaiian stilts and had the option of implementing measures to discourage stilt attraction to the refinery (such as netting off accessible ponds). Nevertheless, the recruitment success of 24 stilts from active management for maximum stilt productivity encouraged the Service and the Permittee to continue managing Rowland's Pond in lieu of hazing the stilts away from the area or netting Rowland's Pond. The Service and the Permittee entered into a Cooperative Agreement in 1993, with the understanding that active management of Rowland's Pond be a temporary measure until the state-protected Pouhala Marsh has been restored by the state government. In September 1992, Service and DLNR biologists were developing a management plan for Pouhala Marsh and considered restoration of the marsh as replacement habitat for Rowland's Pond should the pond be netted and no longer be managed for stilts. To date, restoration of Pouhala Marsh has not been completed.

The 1993 Cooperative Agreement was renewed in 1996, 2000, 2001, 2002, and 2003. Since 1992, 361 stilts were added to the State-wide population as a result of this Cooperative Agreement: 24 in 1992, 31 in 1993, 51 in 1995, 26 in 1995, 42 in 1996, 23 in 1997, 31 in 1998, 37 in 1999, 37 in 2000, 21 in 2001, 14 in 2002, and 24 in 2003. In 2003, 37 fledglings were produced, however, 13 did not survive. The 13 mortalities were attributed to starvation; the fledglings did not have an adequate amount of foraging habitat within its territory. The decreased amount of foraging habitat was due to the exponential growth of vegetation within Rowland's Pond from the past couple years. Currently, the Permittee and the Service are working together to provide adequate stilt foraging habitat in Rowland's Pond by implementing various vegetation management techniques (e.g., flooding of the pond with brine water, herbicide application, manual removal) to reduce the amount of vegetation coverage.

The majority of these fledglings have been produced at Rowland's Pond. In addition to using Rowland's Pond, Hawaiian stilts and several species of migratory birds have begun to use the Impounding Basin and Oxidation Ponds at the refinery for feeding, loafing, and/or nesting. Stilts have nested at the Impounding Basin since 1996 and at the Oxidation Ponds since 1999. If the Permittee had not implemented the Service's recommendations since 1992 and implemented the terms of the Cooperative Agreement, stilts would not have been encouraged to breed at the refinery and stilt recruitment would not have occurred in the interim.

Appendix 4 Hawaiian Stilt and Hawaiian Coot Monitoring Protocol

Introduction/Purpose

The purpose of this monitoring plan is to determine the nesting success (represented by the number of fledglings produced) of Hawaiian stilts (*Himantopus mexicanus knudseni*) and Hawaiian coots (*Fulica alai*) at the Chevron Products Company, Hawaii Refinery. This will aid the Chevron Hawaii Refinery (Permittee), the U.S. Fish and Wildlife Service (Service) and State of Hawaii Department of Land and Natural Resources (DLNR) in assessing the habitat conditions and the response of stilts and coots to the conservation measures being implemented by the Permittee under their Safe Harbor Agreement. Understanding the response of stilts and coots to the conservation measures being implemented will ensure that management practices are effective and that a net conservation benefit is achieved. The information collected may trigger the need to implement adaptive management strategies as described in Appendix 7 of the Safe Harbor Agreement.

The individual conducting the biological monitoring must be familiar with scientific literature (e.g., life history, biology) regarding stilts and coots and be trained by the Service and/or DLNR to recognize nests/eggs and the developing plumage of Hawaiian stilt and coot chicks and minimize human disturbance when conducting nest searches. It is also recommended that the same individual monitor the stilts and coots throughout the season. The Service will train the individual(s) conducting the monitoring.

Methods

Breeding Season Monitoring

Hawaiian stilt and Hawaiian coot nesting and foraging activity will be monitored primarily at Rowland's Pond, Oxidation Ponds, and the Impounding Basin. Monitoring will occur once a week beginning no later than February 14th of each year and will continue through the breeding season until all stilt and coot chicks have fledged. To minimize disturbance to covered species, biological monitoring during the breeding season is limited to two visits per week. Site visits may increase from once a week to twice per week when the number of active nests increases in order to track the outcome of each nest.

During each site visit, monitoring should begin primarily at Rowland's Pond, as it is the main stilt-breeding site at the refinery, and then move to the Oxidation Ponds and Impounding Basin. It is recommended that arrival at Rowland's Pond occur just after sunrise in order to track stilt chicks, especially 1-2 week old chicks, which may be brooding under parents (hint: look for stilts with more than two legs), or before sunset.

To minimize disturbance to the birds, the individual conducting the monitoring should use a high-powered spotting scope that is placed outside of the primary nesting habitat (e.g., from on top of Tank 110) when observing bird behavior, visually locating nests, observing nesting activity, tracking success of stilt chicks from hatching to fledging, and identifying band combinations. As much as possible, observations should be made using the spotting scope to minimize the amount of time needed to walk within the nesting area when physically locating nests.

Observations & Data Sheet

1. Scan the area for several minutes and mentally note the major groupings of stilts or any behavior suggesting the birds have a nest or chicks (see behavior).
2. Fill out the general information on the Data Sheet (see attached):
 - a) Date of site visit;
 - b) Name of individual(s) conducting the monitoring;
 - c) Start and finish time of monitoring at each area (i.e., Rowland's Pond, Oxidation Ponds, Impounding Basin);
 - d) Draw a rough sketch of Rowland's pond (i.e., portion covered with water, vegetation, islands, topography of the pond). The sketch should indicate the approximate coverage of dead and live vegetation within Rowland's Pond and the portion of exposed sediment in Rowland's Pond that is dry versus wet;
 - e) Estimate the water level in Rowland's Pond (water measuring stick located midway along the edge of the pond adjacent to the road); and
 - f) Miscellaneous (e.g., physical deformations of bird species due to bands, unusual behavior).
3. Visually locate nests by observing stilt and coot behavior and note its approximate location (verify when the nest is physically located and marked).
4. Count the number of Hawaiian stilts and Hawaiian coots (i.e., adults, juveniles, fledglings, and chicks).

Marking and Tracking Nests From Incubation to Fledglings

1. Each nest should be marked with a survey flag placed approximately one-foot away in the primary direction in which water could possibly flood the nest. The number assigned to the nest should be marked on the flag using a permanent marker. These markers identify each nest and are used to manage the water level.
2. A Nest Record form (instructions are on the back of the form) is to be filled out for each stilt and coot nest (see attached). It is recommended that a master data sheet be maintained that tracks each nest from incubation to fledgling. This master data sheet would mark the locations of each nest. Next to each nest location record the date of each site visit and summarize the observations for each visit (e.g., number of eggs, number of chicks, number of fledglings).
3. Nests should be checked each week to observe the number and condition of the eggs and number and age of chicks from hatching to fledgling. If this information is obtainable through a high-powered scope, visiting the nest is not necessary.
4. It is important that the individual conducting the monitoring track each individual nest from egg to fledgling stage as much as possible. Also, record and monitor any stilt nests that occur outside of the normal nesting areas (e.g., Fire Training Facility, the area south of the bermed areas at Rowland's Pond).

Photo Points at Rowland's Pond

1. To assist in monitoring vegetation, topography, and other unusual events at Rowland's Pond, photos should be taken from on top of Tank 110 at least once a month. As much as possible, take one photo that displays as much of Rowland's Pond at one time. If needed take additional photos.

2. If access to Tank 110 is not available, four photo points have been established around Rowland's Pond (see attached). Photo point A, is located on a berm (south end) overlooking the pond. Photo point B is located in the southeast corner of the pond, Photo point C is located near the watering stick on the north side of the pond, and Photo point D is located in front of Tanks 101 and 102 at the west end of the pond. Photo points B, C, and D are taken from the road adjacent to Rowland's Pond. Taking the photo at point D may be challenging due to the direction and angle of the sun. If this is the case, Photo point D may be skipped.
3. If access to Tank 110 is not available, photos should be taken from photo point A on a monthly basis at a minimum. If there are drastic changes in the topography, vegetation, or other unusual events occurring at Rowland's Pond, photos may be taken from B, C, and D on a weekly basis. Otherwise photos from points B, C, and D, may be taken on a monthly basis.
4. Use the same settings (e.g., camera, angle from which the photo is taken) each week so the photos may be compared over time.

Removal of Eggs

1. If stilt or coot eggs do not hatch by the estimated hatch date (instructions on Nest Record Form), the individual conducting the monitoring should assess the viability of the eggs by checking for signs of predation, cracks, or determine whether the eggs have been abandoned and therefore, no longer viable. If an egg appears to have been abandoned, infertile or addled, it should be collected to minimize predator attraction to the eggs.
2. Federal and State permits, or other appropriate Federal and State Authorization, are required for any person handling live or dead specimens.

Guidelines for Collection and Deposition of Unhatched Eggs

1. If it has been determined that an egg(s) will be collected from a stilt or coot nest due to predation, infertility, etc., it will be placed into an egg carton and immediately refrigerated. Service personnel will be responsible for obtaining eggs from the refinery. If the Service is unable to obtain the eggs within two days of collection, freeze the eggs as soon as possible to reduce decomposition. Provide information identified in item 4 with the eggs.
2. The Service will obtain the above eggs from the refinery and submit it for chemical analysis or send them to an appropriate scientific or conservation organization for research or educational purposes. At a minimum, one egg from each of these nests will be submitted for chemical analysis. The other eggs may be sent to the Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93012-8506, Attn: Rene Corado, Collections Manager, via next day or second day air. Each egg should be individually wrapped in a strip of cotton and packed in an egg carton. Empty spaces in the carton and the top and bottom of the carton should be lined with cotton. The egg carton should be reinforced and packed with dry ice or blue ice packed within a larger container with sturdy walls (e.g., styrofoam cooler). Some buffering material should be placed between the wall of the box and the larger container. Send information identified in item 4 along with eggs.

3. If eggs are cracked, crushed, rotten and not salvageable, descriptive information identified in item 4 should still be gathered and kept for the annual report. In this case, the Service will have discretion to dispose of the eggs/fragments.
4. Record the following information for all stilt and coot eggs collected:
 - \$ Date egg collected
 - \$ Location or collection site
 - \$ Nest number
 - \$ Number of eggs collected per nest
 - \$ Species
 - \$ Reason for collection of egg (e.g., predation, infertile)
 - \$ Additional comments
 - \$ Name, address, and telephone number of submitter.

Behavior

The following stilt behaviors may be observed to indicate a nest location or presence of chicks:

1. Stilts with nests and eggs typically move away from the nest and exhibit “broken wing” behavior as an attempt to distract the person or predator from the nest.
2. Birds with young are more aggressive and will swoop down and sometimes come into physical contact with the person or predator.
3. These behaviors are accompanied by continuous warning vocalizations by the adults.

Equipment Needed

- 1) Binoculars;
- 2) High-powered spotting scope and tripod;
- 3) Clipboard;
- 4) Monitoring protocol;
- 5) Data sheets;
- 6) Nest Record forms;
- 7) Camera;
- 8) Nest identification flags and a sharpie to put the nest number on the flag;
- 9) Pencils;
- 10) First aid kit;
- 11) Safety gear (e.g., nomex suit, boots, hard hat, safety glasses);
- 12) Bird identification books (e.g., “A Field Guide To The Birds of Hawaii and the Tropical Pacific” by Pratt et al. 1987);
- 13) Table 1. Plumage characteristics of wild Hawaiian stilt chicks according to weekly age classes from Reed et al. 1999, “Growth Patterns of Hawaiian Stilt Chicks.”
- 14) Robinson et al. 1999, “Black-necked Stilt.”
- 15) Egg cartons in case eggs are collected;
- 16) Plastic bags (gallon and ½ gallon size) in case a carcass is collected;
- 17) Cooler and blue ice;
- 18) Nitrile gloves for collecting carcasses;
- 19) Zip ties to patch holes in netting;

- 20) Container to float stilt or coot eggs; and
- 21) Water to float stilt or coot eggs (see Alberico 1995).

Non-breeding Season Monitoring

Biological monitoring will be conducted once a month. During each site visit record the following information at Rowland's Pond, Impounding Basin, and Oxidation Ponds to verify bird use of the refinery's ponds during the non-breeding season (approximately September through January):

1. Date of site visit;
2. Name of biologist(s) conducting the monitoring;
3. Start and finish time of monitoring at each area; and
4. Number of stilts and coots observed at each area.

Results

All data will be entered into a database using Access. Nesting success (fledgling success) will be determined for stilts and coots every year data is collected using the Mayfield (1961, 1975) method as modified by Klett et al. (1986). Results will be included in the Annual Report as described in Appendix 6 of the Safe Harbor Agreement.

Literature Cited

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- Mayfield, H. 1961. Nest success calculated from exposure. *Wilson Bull.* 73: 255-261.
- Mayfield, H. 1975. Suggestions for calculating nest success. *Wilson Bull.* 87: 456-466.
- Pratt, H.D., P.L. Bruner, and D.G. Berrett. 1987. *A Field Guide to The Birds of Hawaii and the Tropical Pacific*. Princeton University Press, Princeton, New Jersey. 409 pages.
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NEST RECORD

Study Area: Chevron Hawaii Refinery	Year:
Nest No.:	Nest Location:
Species:	
Band Combinations of Adults (parents):	

Nest Visitation Record			
Date	Number of eggs	Incubation Stage or Age	Egg Status – Nest Fate

Chick & Fledgling Observations				
Date	Number of chicks	Age of chicks	Date chicks fledged	Comments

Key Dates and Information to Compute Nest & Fledgling Success		
# eggs present at start of incubation:	Incubation stage when found:	Initiation date:
Est. hatch date:	Actual hatch date (if known):	# eggs present at hatching:
Exposure days during incubation:	Exposure days during chick stage:	

Comments

Codes for Nest Record

Nest No.: Number assigned to nest using the current year. (e.g., 2003-01, 2003-02)

Nest Location:	Use the following codes: RP= Rowland's Pond IP = Impounding Basin OP = Oxidation Ponds OT = Other location	Species:	HAST= Hawaiian Stilt HACO = Hawaiian Coot
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Still Band Combinations: Left leg: top/bottom, Right leg: top/bottom Example: G/A W/G
Color Codes: A= Aluminum O = Orange
 K= Black R= Red
 B = Blue W= White
 G= Green Y = Yellow

Nest Visitation Record

Date: Date of site visit

Incubation stage or age: If an egg is floated, identify incubation stage as defined in Floating eggs to estimate incubation stage does not affect hatchability (Alberico 1995). Egg floatation is not needed if able to identify when nest was initiated (e.g., observed when first egg was laid). In this case, estimate age of the egg according to the number of days it has been incubated. This information is needed to determine hatch date.

Egg status – Nest Fate: Note if eggs have been predated, abandoned, determined infertile, or if they have hatched. If egg(s) are predated, note date and if a predator was identified. Note any potential reasons for abandonment (e.g., cracked eggs) and any accompanying behavior of adults and the date.

Chick & Fledgling Observations

Date: Date of site visit

Age of chicks: Estimate age of chicks (i.e., weeks) using tables in Growth Patterns of Hawaiian Stilt Chicks (Reed et al. 1999)

Date chicks fledged: Date chick is able to fly. (Approximately 6 weeks or less)

Key Dates and Information to Compute Nest & Fledgling Success

Initiation date: Estimate date in which eggs were initially incubated.

Estimate hatch date: Estimate hatch date based upon starting date of incubation and length of incubation period (25 days for stilts and 25 days for coots). If a stilt nest is initially found with 3-4 eggs, use the egg floatation method (Alberico 1995) to estimate the hatch date. If a stilt nest is found prior to all the eggs being laid, the hatch date may be determined using the following information, stilts incubate after the 3rd or 4th egg is laid and coots begin incubating after the first egg is laid.

Exposure days during incubation (Mayfield 1961, 1975): The amount of time the nest is under observation. A nest seen on 2 consecutive days represents an exposure of one nest-day. A nest in existence 5 days after it was found represents an exposure of 5 nest-days whether it was visited many times or only at the end of that interval. A nest lost during an interval of several days is arbitrarily assumed to have been lost on the day at the middle of the interval. All days spanned by observation are included even though no change occurs. Other examples, 2 nests both under observation for periods spanning 6 days represent an observed exposure of 12 nest-days; this is equivalent to 3 nests observed for 4 days or one nest for 12 days. Nests seen only once are not counted because they do not span any period of time.

Exposure days during chick stage: Same as above but applies to the time period from when the egg hatches to when the chick fledges.

Date:

Time Period:

Bird Count at the Oxidation Ponds

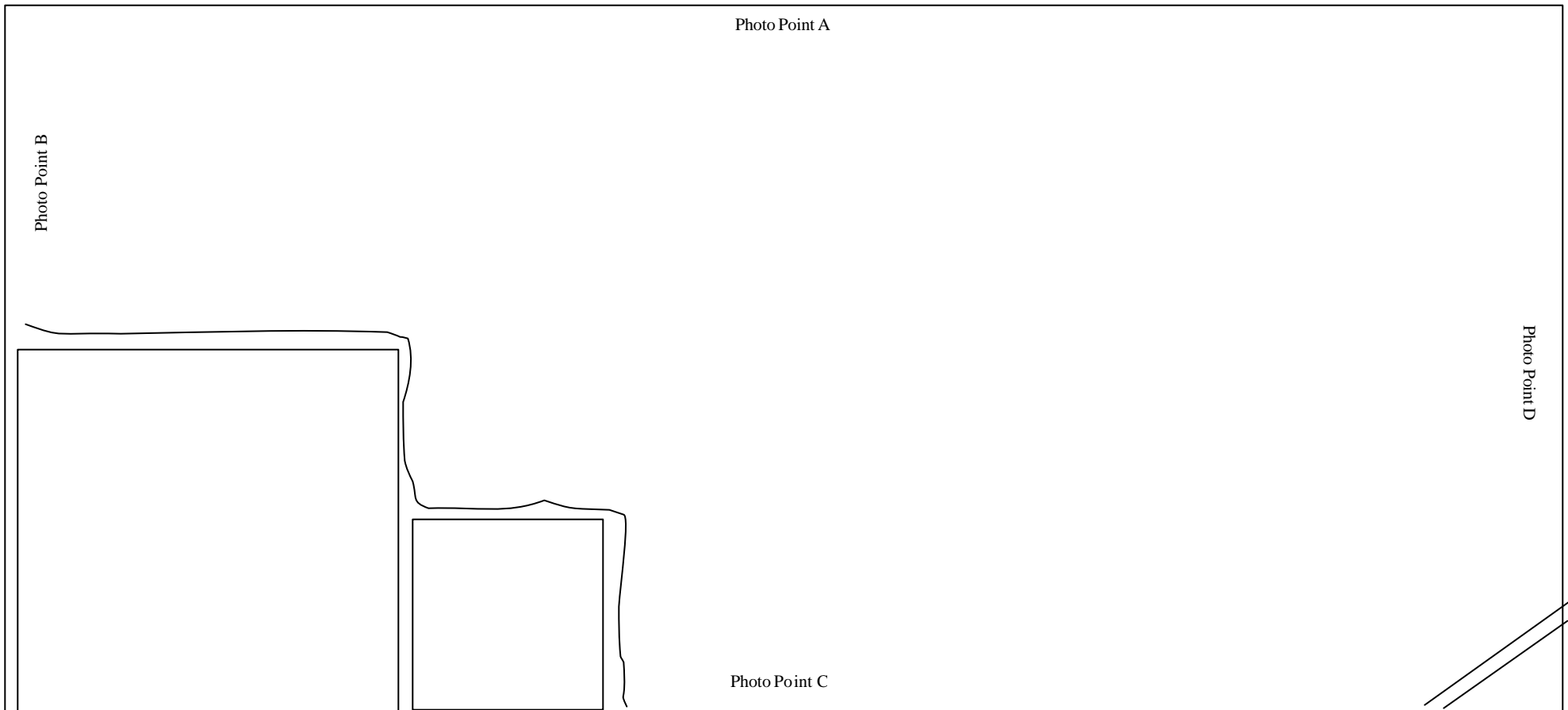
Species	Adults	Juveniles	Fledglings	Chicks
HAST				
HACO				
DUCK				
RUTU				
SAND				
PGPL				

Bird Count at the Impounding Basin

Species	Adults	Juveniles	Fledglings	Chicks
HAST				
HACO				
DUCK				
RUTU				
SAND				
PGPL				

Comments:

Codes: HAST=Hawaiian Stilt RUTU=Ruddy Turnstone WATA=Wandering Tattler
 HACO=Hawaiian Coot PGPL=Pacific Golden-Plover SAND=Sanderling



Date: _____ Time period: _____ Observers: _____ Water level: _____

Bird Count at Rowland's Pond				
Species	Adults	Juveniles	Fledglings	Chicks
HAST				
HACO				
DUCK				
RUTU				
SAND				
PGPL				
WATA				

Comments:

N ?

CODES: HAST=Hawaiian still RUTU=Ruddy Turnstone SAND=Sanderling
 HACO=Hawaiian coot PGPL=Pacific Golden Plover WATA=Wandering Tattler

Appendix 5 Guidelines for Handling Injured Species and Carcasses, Handling and Rehabilitating Oiled Birds, and Deposition of Unhatched Eggs

The purpose of these Guidelines is to provide the Permittee's personnel with sufficient information to correctly determine the disposition of injured Hawaiian stilt or Hawaiian coot or their carcasses that they encounter on lands owned or otherwise controlled by the Permittee. The Permittee's personnel may contact the Service's Pacific Islands Fish and Wildlife Office, Conservation Planning and Permits Program, at 808-792-9400. All injured or dead birds found at the refinery must be noted in the Permittee's annual report to the Service and DLNR.

Federal and State permits, or other appropriate Federal and State authorization, are required for any person handling live or dead specimens. Injured, ill, or oiled Hawaiian stilts or Hawaiian coots may only be captured and handled by personnel who have been trained in the capture and collection of live stilt or coot and after approval is received from Service personnel.

Criteria for Handling Injured or Ill Birds

1. See if the bird can fly. If the bird can fly, do not remove from the field. Report the incident to Service personnel as soon as possible. Continue to monitor bird if possible. Record and provide the following information to the Service:

- \$ Date
- \$ Location (description and site map)
- \$ Species
- \$ Banded/Unbanded (If banded, record band number if possible.)
- \$ Condition of bird (e.g., type of injury). Be specific in describing injury (left vs. right, where exactly on bird is the injury). Also indicate if a predator is evident in the environment and all measures to eliminate the predator should be taken if the injured bird will be left in the field.
- \$ Additional comments

2. If an injured or ill bird cannot fly, do the following:
 - a. Immediately notify Service personnel.
 - b. Mark area and monitor if possible until Service personnel arrive.
3. All injured or ill stilts and coots will be taken to the following personnel for treatment, in order of availability:
 1. Maui Veterinary Services Office
2600 Piihola Road
Makawao, HI 96768
Phone: (808) 572-3502
Cell: (808) 870-4274
Fax: (808) 573-8794

2. Dr. Thierry Work
 U.S. Geological Survey-Biological Resources Division
 National Wildlife Health Center
 300 Ala Moana Blvd., Rm. 8-132
 Honolulu, HI 96850
 Phone: (808) 792-9522
 Fax: (808) 792-9596

Stabilization Measures and Transportation of Oiled Birds

Stabilization Measures

1. The person responsible for monitoring must maintain a stabilization kit for a small incident (2-3 birds) involving oiled Hawaiian stilts and/or Hawaiian coots. See below for a list of contents for the stabilization kit.
2. If the bird is heavily oiled, remove large amounts of oil from eyes, nares, and glottis.
3. If transport time will exceed 2 hours, hydrate the bird(s) using warm electrolyte solution (e.g., Pedialyte: 30cc/kg of body weight) via a gavage tube prior to transporting.
4. Observe birds for signs of hypo- or hyperthermia. If a problem is suspected, take cloacal temperature (n. 102-106F). Treat accordingly by providing heat (e.g., hand warmers, hot bottles), or cooling (e.g., swabbing the feet and legs with isopropyl alcohol) and providing ventilation.
5. Place birds in approved containers with one animal per container (e.g., airline travel kennel, pet carrier or cardboard box). Place containers in a well ventilated, quiet, warm and darkened area. Each container should have lots of ventilation openings with enough space between all containers for air to circulate. The container should be large enough for a bird to comfortably stand upright (approximately twice the size of the animal). The bottom of the container should be well padded with sheets, towels, or absorbent pads. Minimize visual and auditory stresses.
6. Keep a record of the following information and send it along with the chain of custody form for each bird:
 - \$ Date
 - \$ Name, address, and telephone number of submitter
 - \$ Specific area where oil stains are located on the bird
 - \$ Approximate amount of the body surface area covered in oil
 - \$ Specific location of bird (description and site map) so that follow-up surveys maybe conducted.

- \$ If bird is associated with a nest, note nest number and check to see if eggs are oiled
- \$ Any treatment provided or important behavioral observations
- \$ Take photographs of the oiled bird

Interisland commercial transport

1. All animals must pass agricultural inspection prior to transport. Containers must be labeled with a signed inspection sticker.
2. Clearly label containers: “CAUTION! LIVE BIRD: Handle carefully and keep away from face.”
3. Notify the Maui Veterinary Services Office via cellular phone: 808/870-4274 or facsimile: 808/573-8794 with the flight number, scheduled arrival time, number and type of birds being shipped.
4. If a bird’s condition deteriorates during transport, call the Maui Veterinary Services Office.

Small Oiled Wildlife Stabilization Kit

Quantity	Description	Quantity	Description
1	Stabilization & Transport Information	1	Scissors and/or Pocketknife
1	Small Animal Kennel	2 boxes	Nitrile Gloves (Medium and Large Size)
1	Capture Net	1	Thermometer
2	Pillow Cases (queen or king size)	1 tube	KY Jelly
2	Flat Sheets	3	60cc Catheter Tip Syringes
2	Bath Towels	3	Feeding Tubes (18F)
1	Knapsack	1 bottle	Isopropyl Alcohol
3	Trash Bags (35 Gallon)	1 pack	4x4 Gauze Sponges
1	First Aid Kit	1 pack	Cotton Swabs
1	Field Log Book & Pens/Pencils	1 bottle	Eye Wash
10	Chain of Custody Forms	1 bottle	Oral Electrolyte Solution
	Bird Identification Forms	1 roll	Aluminum Foil
	Copies of Applicable Permits	2 pairs	Safety Goggles or Glasses
1	Permanent Marker	3	Particulate Face Masks
1 roll	Masking Tape		

Criteria for Collecting Stilt and Coot Carcasses

1. All stilt or coot carcasses in suitable condition (e.g., those from birds that contain more than just bones and feathers) will be collected for necropsy in order to determine cause of death, where possible, and to provide information about general movements.
2. If a bird is found dead and determined to be fresh (less than two days), put the bird in a sealed plastic bag, double bag, and place in refrigerator or on ice and contact the Service personnel. Freshly dead birds are those without large numbers of maggots in the abdominal or oral cavity, with eyes intact, or that are not desiccated or otherwise decomposed. If unable to contact these personnel within two days, place the bird in a sealed plastic bag, double bag and place in a freezer. In a separate plastic bag but enclosed with the bird, insert paper indicating date and location of collection and any other pertinent history (see 4 below). Birds will be collected by Service personnel and submitted to the U.S. Geological Survey-Biological Resources Division, National Wildlife Health Center at the Federal Building, Honolulu, Hawaii (Dr. Thierry Work) for necropsy.
3. If bird is obviously in a state of decay and poses little to no necropsy value/information, exercise discretion for adequate disposal of the bird. However, prior to disposal, contact Service personnel regarding the condition of the specimen

for confirmation of disposal or whether unusual features warrant collection for necropsy. In any event, record descriptive information specified under Item 4 and if possible, take a photo for the file.

4. Record the following information for both dead and injured birds and provide a copy to the Service:
 - Date
 - Location or collection site (description and site map)
 - Species
 - Banded/Unbanded (If banded, record band numbers.)
 - Condition of bird
 - Whether the bird was found dead
 - Additional comments (e.g., history surrounding the carcass or mortality)
 - Name, address, and telephone number of submitter

Guidelines for Collection and Deposition of Unhatched Eggs

1. If it has been determined that an egg(s) will be collected from a stilt or coot nest due to predation, infertility, etc., it is to be placed into an egg carton and immediately refrigerated. Service personnel will be responsible for obtaining eggs from the refinery. If the Service is unable to obtain the eggs within two days of collection, freeze the eggs as soon as possible to reduce decomposition. Provide information identified in item 4 with the eggs.
2. The Service will obtain the above eggs from the refinery and submit it for chemical analysis or send to an appropriate scientific or conservation organization for research or educational purposes. At a minimum, one egg from each of these nests will be submitted for chemical analysis. The other eggs may be sent to the Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93012-8506, Attn: Rene Corado, Collections Manager, via next day or second day air. Each egg should be individually wrapped in a strip of cotton and packed in an egg carton. Empty spaces should be filled with cotton and the top and bottom of the carton should be lined with cotton. The egg carton should be reinforced and along with dry ice or blue ice packed into a larger container with sturdy walls (e.g., styrofoam cooler). Some buffering material should be placed between the wall of the box and the larger container. Send information identified in item 4 along with eggs.
3. If eggs are cracked, crushed, rotten and not salvageable, descriptive information identified in item 4 should still be gathered and kept for the annual report. In this case, the Permittee will have discretion to dispose of the eggs/fragments.
4. Record the following information for all stilt and coot eggs collected:
 - \$ Date egg collected

- \$ Location or collection site
- \$ Nest number
- \$ Number of eggs collected per nest
- \$ Species
- \$ Reason for collection of egg (e.g., predation, infertile)
- \$ Additional comments
- \$ Name, address, and telephone number of submitter

Appendix 6 Annual Report Requirements

The Permittee, with the assistance of the Service and/or DLNR, will prepare a report to cover the non-breeding and breeding season, which covers the period from October 1st to September 30th every year and will submit the report to the Parties by December 31st of each year the Agreement is in effect. Reports will follow the format (i.e., Introduction, Methods, Results/Discussion, and Conclusion) of the 2001 Monitoring Report and include the following information:

- 1) Description of the overall condition (e.g., percentage covered with vegetation, average height of the vegetation, percentage covered with standing water, percentage of pond with mudflat habitat) of Rowland's Pond prior to site preparation for the stilt breeding season, mid-breeding season (approximately the end of May) and post stilt breeding season (after all the chicks have fledged). If possible, include photographs;
- 2) Description of vegetation management activities (e.g., methods used to remove vegetation from the ponds) and timing of the activities;
- 3) Description of water management activities at Rowland's Pond (e.g., source of water, date water was pulsed into Rowland's pond in preparation for the stilt breeding season, date water was stopped being pumped into the pond at the end of the stilt breeding season);
- 4) Description of the methods used and results from the predator control program (e.g., start and end date of predator control activities, baits used, type of trap used, location and number of traps, total number of each species of predator caught, recommendations to improve overall effectiveness of trapping regime);
- 5) Description of deterrent methods used to haze birds from the Oxidation Ponds and/or Impounding Basin, the results of each method used, and recommendations to modify the current method to increase its effectiveness or identify other methods that should be used;
- 6) Identification of the number of and description of circumstances involving injury, mortality and incidental take of stilts or coots and information regarding the collection of unhatched eggs (e.g., date of collection, nest egg(s) collected from, reason for its collection, results of necropsy, depository of egg(s));
- 7) Description of methods and results of the biological monitoring (see Appendix 4 Monitoring Protocol for Hawaiian Stilts and Hawaiian Coots) and how it relates to baseline conditions;
- 8) Number of eggs collected, date collected, nest number eggs collected from, assumed fate of egg, infertile or if contained embryo, depository of egg(s); and

- 9) Description of adaptive management measures implemented in response to ongoing activities that were deemed by the Parties to be ineffective for the covered species or in response to new circumstances not anticipated following signing of this Agreement.

Appendix 7 Adaptive Management Strategies

Adaptive management allows for mutually agreed-upon changes to the Agreement's management activities in response to changing conditions or new information. If the expected results of the management activities appear ineffective after a certain period of time (will vary dependent upon conservation measure, but should be no more than one breeding season), management activities can be changed or alternative activities undertaken to achieve desired results. Adaptive management will be based upon results from the compliance and biological monitoring described in Appendix 4 and provide for readjustment of management activities that have shown to be ineffective and/or amendment of the Agreement to achieve the Agreement's biological goal. Potential adaptive management measures may include, but are not limited to the following:

- 1) Net monitoring/maintenance activities. If the net design or the netting material does not prevent birds from using certain ponds, then the Permittee will work with the Service and DLNR to modify the netting until it is effective at keeping all birds out of the area;
- 2) Contaminant issue. If it appears that stilts or coots are born with deformities or egg-shell thinning, etc., immediately conduct a contaminant study to determine cause of deformity or egg-shell thinning, etc. Once the cause has been identified, the Permittee will work with the Service and DLNR to correct the situation;
- 3) Predator control program. If it appears that fewer predators are being caught midway through the stilt breeding season compared to previous seasons, the Permittee, USDA Wildlife Services (contracted by Permittee to conduct predator control program), Service, and DLNR will work together to evaluate the data collected and revise the program to increase effectiveness of trapping method. If a predator (e.g., cattle egret (*Bubulcus ibis*), rat (*Rattus* spp.), feral dog (*Canis familiaris*)) not previously included in the predator control program has been shown to prey upon stilts or coots at the refinery, Parties will work together to address these additional predators through the predator control program;
- 4) Vegetation control activities. If vegetation management activities described in Section 5.A.6 and 5.B.1 of the Agreement do not reduce or maintain the coverage of vegetation in or around Rowland's Pond or around the Impounding Basin and Oxidation Ponds at the desired level, modify management activities to achieve desired results (i.e., minimum amount of vegetation coverage);
- 5) Water source for Rowland's Pond. If the water source(s) used for Rowland's Pond becomes unacceptable for stilts, an alternate source will be found;
- 6) Implement measures to address the mallard/Hawaiian duck hybridization issue once the Service and State have identified the appropriate measures; and
- 7) If new information identifies other additional management activities are necessary, all parties will confer and develop the appropriate response as needed.