STATE OF HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
Honolulu, Hawai'i

September 14, 2012

Board of Land and
Natural Resources
State of Hawai'i
Honolulu, Hawai'i

REGARDING: Conservation District Enforcement File OA 13-07
Erosion Protection Structure (Structure)

BY: 4615 Kahala Avenue Corporation
C/O Gregory Kugle and Mathew T. Evans
Damon Key Leong Kupchak Hastert
1003 Bishop Street, Suite 1600
Honolulu, Hawaii 96813-6452

LOCATION/
Tax Map Key: Kahala Beach, Island of Oahu
(1) 3-5-005:015

SUBZONE: Resource

Description of the Area:

The subject area is located on the shore of Kahala Beach, East Honolulu, Oahu, TMK: (1) 3-5-005:015 (**Exhibits 1, 2 &3**). The property is located in the State Land Use Urban District up to the highest wash of the waves. Lands seaward of the shoreline are located in the Conservation District, Resource subzone. Kahala Beach has a narrow wet beach with a low slope. Some sections of beach have been completely lost due to coastal development and widespread armoring along eroding shorelines.

Encroaching vegetation blocking lateral shoreline access has been a persistent problem along Kahala Beach. The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) has been conducting enforcement efforts along Kahala Beach by implementing Act 160, Hawaii Session Laws, 2010. Act 160 provides the DLNR with specific authority to seek removal of vegetation that encroaches seaward of the shoreline. Many property owners have complied with Act 160 by removing encroaching vegetation, including 4615 Kahala Avenue Corporation. This has resulted in a measurable improvement in lateral public beach access.

However, Kahala Beach shows signs of serious erosion stress. There is a strong erosional signature for the western half of Kahala Beach. Much of the beach in this area has disappeared, most likely due to

extensive seawall construction. The shoreline is eroding at a rate of between .5 and 1 foot per year in front of the subject parcel (**Exhibit 4**)[1]. The sandy beach largely disappears west of the subject parcel.

Chronology:

A temporary erosion control structure ("the Structure") using biodegradable erosion blankets, stabilizing sand bags, and sand placement of up to 50 cubic yards of imported sand was approved by DLNR on December 30, 2009 (Site Plan Approval (SPA) OA-10-16) **(Exhibit 5)**. The Structure was permitted as a temporary measure to help stabilize the slope after the vegetation was removed, and to provide the landowner with some time to find a long-term solution. These types of structures are typically designed to provide temporary erosion protection for a year or so, while longer-term plans are developed. The temporary Structure, installed in early 2010, is beyond its expected lifespan and should be removed.

On April 10, 2012, Office of Conservation and Coastal Lands (OCCL) conducted a site visit to evaluate the situation. On April 16, 2012, we sent a letter to 4615 Kahala Avenue Corporation indicating that there had been complaints about the Structure **(Exhibit 6).** Our April 16 letter explained why we thought that the Structure should be removed.

On June 14, 2012, attorneys representing 4615 Kahala Avenue Corporation submitted a written response to our April 16 letter **(Exhibit 7)**. The response included a number of statements and issues that staff addressed in a letter back to them on June 24, 2012 **(Exhibit 8)**. OCCL received a second letter from them on July 24 **(Exhibit 9)**. In summary:

1. It is true that the landowner agreed to remove vegetation growing over the beach as one of the terms for approval of the Structure. However, staff notes that there are many other landowners at Kahala Beach who removed vegetation and who did not seek erosion protection.
2. It is true that removal of the Structure might result in an increase in property erosion, but no habitable structures are currently threatened, and erosion of the sand bank will release sand to the beach system thereby reducing erosion on the abutting properties and improving lateral public access. It appears that the landowner may need to relocate some landscaping features.
3. The attorneys' claim that the Hunakai Storm Drain is somehow contributing to their client's erosion problem is unsubstantiated. They refer to comments made by County authorities and a former OCCL staff member in regards to the storm drain. We have reviewed a series of e-mails (provided to us by the County) that were exchanged between our former OCCL employee, the City, and the contractor who built and maintained the Structure. It is true that the employee had concerns about the storm drain, and even was supportive of fixing the situation, but he never suggested that it is responsible for the erosion of the 4615 Kahala Avenue Corporation parcel. Moreover, OCCL staff inspected the storm drain on August 22, 2012 with the assistance of our Coastal Geologist. We walked the length of the storm drain to inspect it for potential sand sink holes and sand deposits at its terminus offshore. We found no evidence of sand leaking into the storm drain.

Discussion of unauthorized use of conservation land:

The Department and Board of Land and Natural Resources has jurisdiction over land lying makai of the shoreline as evidenced by the upper reaches of the wash of the waves other than storm and seismic

[1] Red bars indicate erosion. Blue bars indicate accretion.

waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limits of debris left by the wash of the waves, pursuant to §205A-1, Hawai'i Revised Statutes (HRS).

Staff notes that the highest wash of the waves currently washes against and up the face of the Structure. Thus, the Structure is within the Conservation District and within State of Hawaii submerged land. The Structure is causing flanking erosion of the adjacent properties, and is impeding public lateral shoreline access. The landowner has not abided by all of the terms and conditions of the Site Plan Approval (see OCCL letter dated June 24, 2012), and they have no land disposition to be on public property. There is no imminent threat to the residence. It appears that the Structure is protecting the landowner's yard at the expense of the beach. The OCCL believes there is sufficient cause to bring this matter to the Board since it is evident that the landowner is not willing to cooperate with us to remove the Structure **(Exhibit 10, photographs of Structure)**.

Chapter 13-5, HAR and Chapter 183C, HRS, regulate land uses in the Conservation District by identifying a list of uses that may be allowed by a Conservation District Use Permit (CDUP). The chapters also provide for penalties, collection of administrative costs and damages to state land for uses that are not allowed or for which no permit has been obtained. HAR §13-5-2 defines "land use" as follows:

> *The placement or erection of any solid material on land if that material remains on the land more than fourteen days, or which causes a permanent change in the land area on which it occurs.*

Hawai'i Coastal Erosion Management Plan:

On August 27, 1999, the Board adopted the Hawai'i Coastal Erosion Management Plan (COEMAP) as an internal policy for managing shoreline issues including erosion and coastal development in Hawai'i. COEMAP still serves as the primary shoreline policy for the DLNR and recommends a number of strategies to improve our State's management of coastal erosion and beach resources.

However, COEMAP's scope is of a general nature, more focused on broader government policy than erosion management practice. The COEMAP effort is guided by the doctrine of sustainability, promoting the conservation, sustainability, and restoration of Hawai'i's beaches for future generations. When assessing cases involving unauthorized shoreline structures that affect the shoreline that are constructed after the 1999, there is a "no tolerance" policy and the customary policy is to remove the structure before other actions are considered.

Discussion:

Coastal erosion occurs as a result of the following phenomena: 1) Seasonal changes in waves and currents that shift sand within the system; 2) Long-term (chronic) erosion due to natural deficits in sand supply or oceanographic processes such as sea level rise; and 3) Human impacts to sand availability through sand impoundment and supply disruption as a result of shoreline modifications including seawalls. The attorneys for the landowner suggest that the cause of his client's erosion is the storm drain. We have reviewed erosion hazard maps for Kahala Beach, which do not support the attorneys' claim **(See Exhibits 4 and 4a)**. The erosion hazard maps indicate low rates of erosion at the landward end and immediately downdrift of the drain pipe, relative to the beach adjacent to the

seawalls. We would expect increased erosion around the pipe if it was a substantial contributor to sand loss in the area. The highest rates of erosion are found at the east end of the Kahala seawalls, indicating that flanking effects of the seawalls are a more likely contributor to the beach erosion problem in the area.

Development on beaches and dunes has contributed to serious erosion of these areas, resulting in loss of recreational areas, habitat, and the storm protection that 'healthy' beaches and dunes provide. Beach narrowing and loss, and shoreline hardening (the construction of vertical seawalls or sloping stone revetments along a shoreline to protect coastal lands from marine erosion), also severely restrict public access to State Conservation land and the natural resources. In heavily armored sectors, sand impoundment mauka of walls can lead to reduction in sand supply increasing regional erosion trends.

Unfortunately, many of Hawai'i's beaches have been degraded or lost from a combination of natural erosion and inappropriate coastal development including shoreline armoring, shallow beachfront lot subdivisions, and development too close to the shoreline. This is clearly the situation within the highly-developed Kahala shoreline area.

In a 2012 study published by Romine/Fletcher in the Journal of Coastal Research, 70 percent of all beaches measured in the Hawaiian Islands (244 km) indicated an erosion trend. More than 21 km or 9 percent of the total length of the beaches studied were lost to erosion. In nearly all cases, the beaches were replaced with seawalls or other coastal structures. The west side of Kahala Beach is a prime example of the effects of constructing shoreline armoring on an eroding beach, with extensive beach loss fronting the seawalls and accelerated erosion along the adjacent beach (flanking erosion).

The OCCL seeks the Board's approval to terminate the use of the Conservation District area by the landowner. A Site Plan Approval (SPA) was granted 4615 Kahala Avenue Corporation for the Structure referred to in this report. The SPA was intended to serve as a temporary erosion control structure and was NOT intended for long-term use. There are a number of conditions of the SPA that have not been complied with or allow the Department to terminate the authorization. Should the Board approve this action, staff recommends that 4615 Kahala Avenue Corporation be granted thirty (30) days to remove the Structure including removal of all debris and fabric.

Under the Penalty Guideline Framework (**Exhibit 11**) this action is considered "Major" since the identified land use would normally require a Board Permit under the permit prefix "D"[2] This violation follows a penalty range of $10,000 to $15,000. The comparable identified use in the Hawaii Administrative Rules (HAR-13-5) would be "Shoreline Erosion Control" for which a Board Permit is normally required

Therefore under the Penalty Guideline Framework this unauthorized land use is considered:

1. a *Major* harm to resource or potential harm to resource; and
2. a *Major* comparable harm to resource.

Lastly, the attorneys for the landowner indicate that they are seeking a long term solution to this problem. Staff believes that this is admirable and is ready to assist them in our capacity as coastal lands specialists. However, other than what the attorneys claim on paper, staff has not been provided

[2] The SPA was intended to serve as a temporary authorization. The landowner has not cooperated with our request to terminate the use of the structure, so this is comparable to a permanent erosion control structure.

with any evidence that the landowner is seeking long term erosion management solutions. Long term solutions along this portion of Kahala Beach that protect the land and the beach simultaneously will be challenging to achieve. Until recently, the accepted paradigm has been to protect the land at the expense of the sandy beach by armoring the shoreline. Ideally, sustainable erosion management alternatives at Kahala would include beach and dune nourishment. We are not surprised that the landowner has decided to maintain the Structure indefinitely given the chronic erosion situation. However, we remind the Board that the landowner's residence is not currently threatened or in danger of erosion damage, so there is no longer cause to maintain the structure beyond the time for which it was intended[3].

This submittal and notice of the Board's meeting shall be sent to the landowner's representatives by certified mail to the representatives' address on record.

As such, staff recommends as follows:

That under the authority of Chapter 183C-7, Hawaii Revised Statues, the Board order removal of the Structure at 4615 Kahala Avenue, subject to the following:

1. The Landowner has thirty (30) days to remove the Structure;

2. The Landowner shall remove all materials from the shoreline area upon demolition of the Structure;

3. That in the event of failure of the landowner to comply with this order, the landowner shall be fined $15,000.00 per day until the order is complied with; and

4. That in the event of failure of the landowner to comply with any order herein, the matter shall be turned over to the Attorney General for disposition, including all administrative costs.

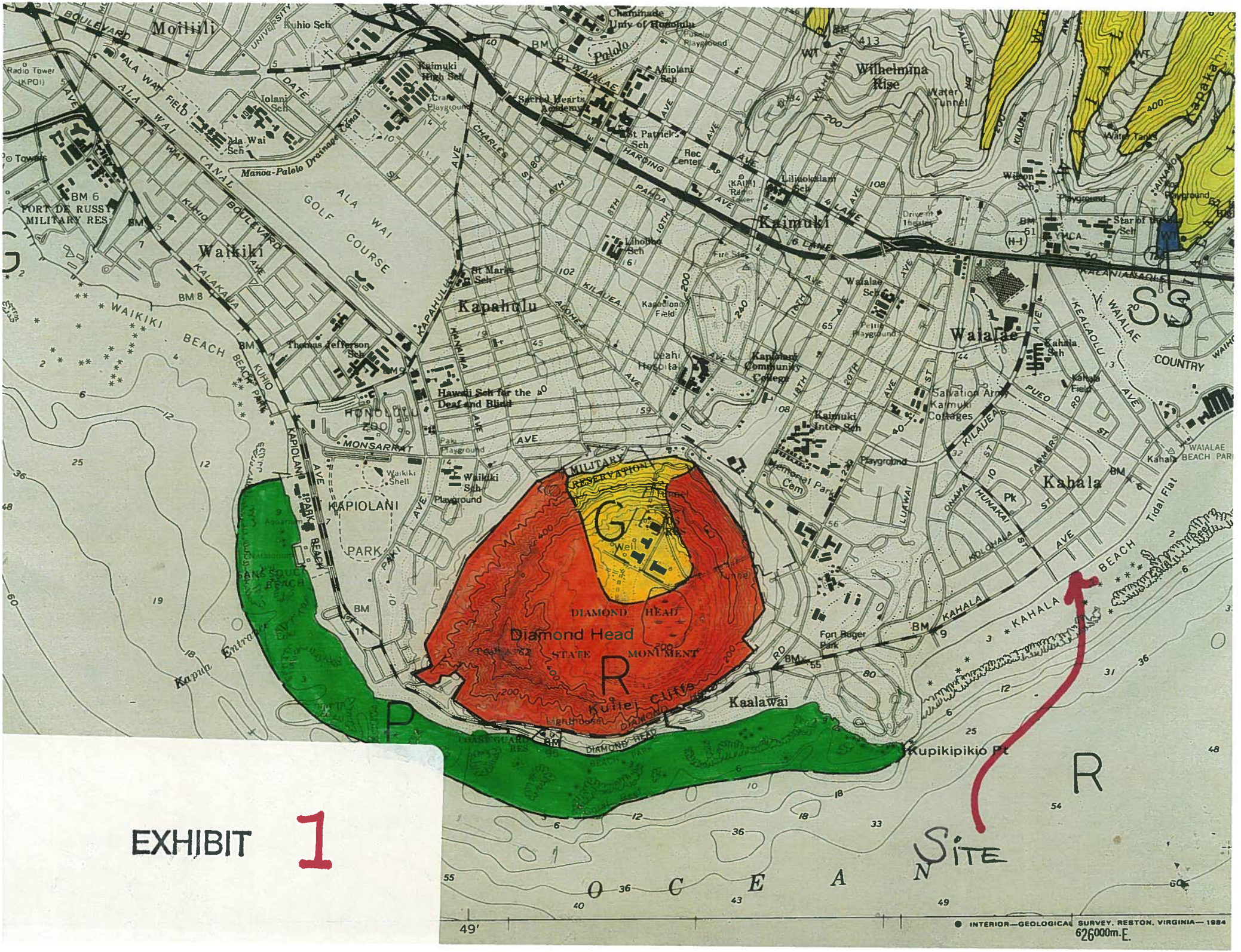
Respectfully submitted,

Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

Approved for submittal:

for William J. Aila, Jr., Chairperson
Board of Land and Natural Resources

[3] The structure was not intended to protect the residence. It was intended as a stopgap measure to temporarily replace the unauthorized vegetation that the landowner removed.


Moiliili
Waikiki
Kapahulu
Kaimuki
Wilhelmina Rise
Palolo
Waialae
Kahala
Diamond Head
STATE MONUMENT
Kaalawai
Kupikipikio Pt
Site
OCEAN
EXHIBIT 1


PLAT 33
PLAT 31
KAHALA BLOCK
SUBDIVISION 15
PLAT 34
BLOCK
AUKAI AVE.
HUNAKAI
KAHALA AVENUE
KOLOA ST.
PLAT 61
PLAT 06
EXTENSION
BLOCK
WAIALAE BEACH LOTS
SEA.
EXHIBIT 2

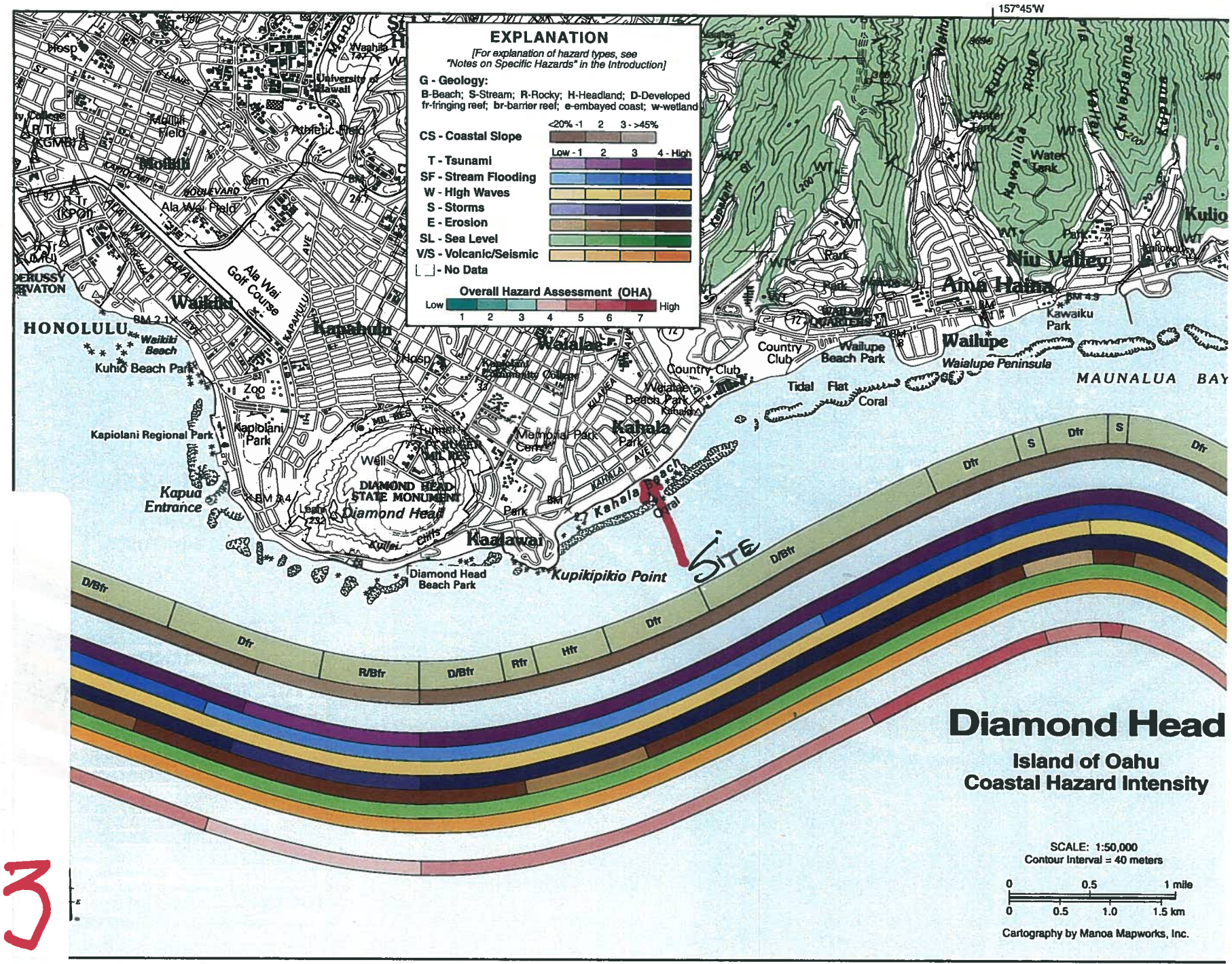
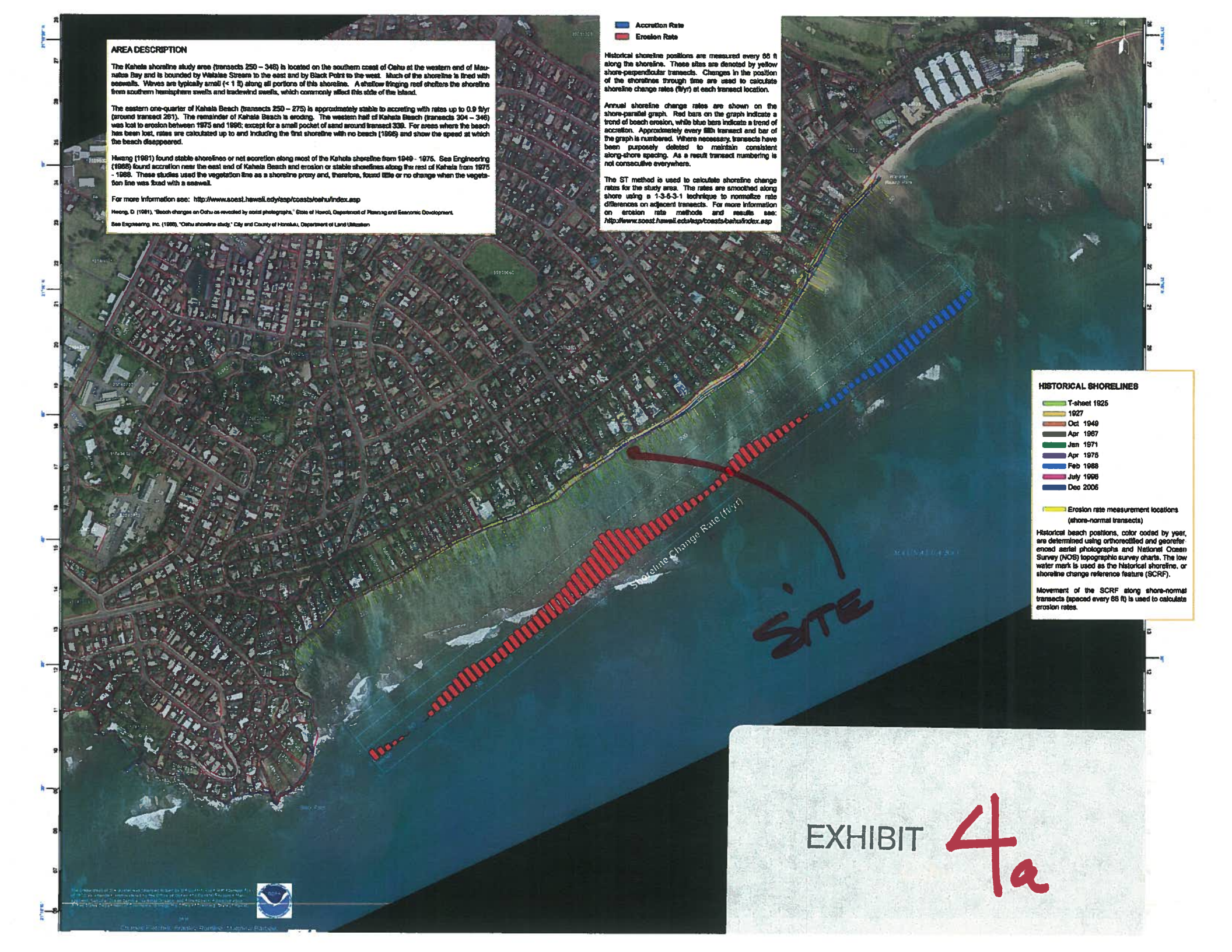


EXHIBIT 3

: USGS 1:50,000 Honolulu, Hawaii 5420 IV W733 Edition 1-DMA and USGS 1:50,000 Koko Head, Hawaii 5420 I W733 Edition 1-DMA


AREA DESCRIPTION
The Kahala shoreline study area (transects 250 – 346) is located on the southern coast of Oahu at the western end of Maunalua Bay and is bounded by Waialae Stream to the east and by Black Point to the west. Much of the shoreline is lined with seawalls. Waves are typically small (< 1 ft) along all portions of this shoreline. A shallow fringing reef shelters the shoreline from southern hemisphere swells and tradewind swells, which commonly affect this side of the island.
The eastern one-quarter of Kahala Beach (transects 250 – 275) is approximately stable to accreting with rates up to 0.9 ft/yr (around transect 261). The remainder of Kahala Beach is eroding. The western half of Kahala Beach (transects 304 – 346) was lost to erosion between 1975 and 1996; except for a small pocket of sand around transect 339. For areas where the beach has been lost, rates are calculated up to and including the first shoreline with no beach (1996) and show the speed at which the beach disappeared.
Hwang (1981) found stable shorelines or net accretion along most of the Kahala shoreline from 1949 - 1975. Sea Engineering (1988) found accretion near the east end of Kahala Beach and erosion or stable shorelines along the rest of Kahala from 1975 - 1988. These studies used the vegetation line as a shoreline proxy and, therefore, found little or no change when the vegetation line was fixed with a seawall.
For more information see: http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp
Hwang, D. (1981), "Beach changes on Oahu as revealed by aerial photographs," State of Hawaii, Department of Planning and Economic Development.
Sea Engineering, Inc. (1988), "Oahu shoreline study," City and County of Honolulu, Department of Land Utilization
Accretion Rate
Erosion Rate
Historical shoreline positions are measured every 66 ft along the shoreline. These sites are denoted by yellow shore-perpendicular transects. Changes in the position of the shorelines through time are used to calculate shoreline change rates (ft/yr) at each transect location.
Annual shoreline change rates are shown on the shore-parallel graph. Red bars on the graph indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted to maintain consistent along-shore spacing. As a result transect numbering is not consecutive everywhere.
The ST method is used to calculate shoreline change rates for the study area. The rates are smoothed along shore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects. For more information on erosion rate methods and results see: http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp
HISTORICAL SHORELINES
T-sheet 1925
1927
Oct 1949
Apr 1967
Jan 1971
Apr 1975
Feb 1988
July 1996
Dec 2006
Erosion rate measurement locations (shore-normal transects)
Historical beach positions, color coded by year, are determined using orthorectified and georeferenced aerial photographs and National Ocean Survey (NOS) topographic survey charts. The low water mark is used as the historical shoreline, or shoreline change reference feature (SCRF).
Movement of the SCRF along shore-normal transects (spaced every 66 ft) is used to calculate erosion rates.
Shoreline Change Rate (ft/yr)
SITE
EXHIBIT 4a


Kamala Ave
Site
Shoreline Change Rate (ft/yr)
EXHIBIT 4b

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

Office of Conservation and Coastal Lands
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL: DE

File: SPA OA-10-16

December 30, 2009

Joe Correa
Shoreline Restoration Hawaii
C/O 4615 Kahala Ave. Corporation
P.O Box 188
Waimanalo, Hawaii 96795

Dear Mr. Correa

Subject: **NOTICE OF APPROVAL OF SITE PLAN (OA-10-16)**
Temporary Shoreline Erosion Control Biodegradable Erosion Blanket
4615 Kahala Ave, Honolulu. TMK: (1) 3-5-05:15 (Seaward).

The DLNR, Office of Conservation and Coastal Lands (OCCL) has reviewed your November 29, 2009 request for a site plan approval for temporary shoreline erosion control. On May 7, 2008 the Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) sent a letter to the landowner regarding coastal vegetation growing seaward of the shoreline requesting their cooperation in removing the material. Since then, OCCL staff conducted several follow up site visits to the subject property including December 11, 2009 and confirmed the subject vegetation still severely restricts lateral public beach access. (Figure 1). In addition recent site visits to the area reveal the presence of an erosion scarp approximately 10-12 feet within the shoreline vegetation (Hau Bush). This erosion scarp roughly defines the shoreline location as depicted on the submitted map dated October 31, 2009. The erosion trend and proposed response are essentially identical to the temporary erosion control efforts employed next door at 4623 Kahala Ave under DLNR Site Plan Approval (OA-09-43).

Your November 29, 2009 letter requests a site plan approval for temporary bio-degradable Coconut fiber erosion control blanket. The erosion control plan has been found to be complete. The request was evaluated for potential negative impact to the local nearshore ecosystem and recreational uses of the beach and dune area. The purpose of the proposed project is to provide temporary erosion control and dune restoration from damaging seasonal high tides that threaten existing trees and landscaping. The proposed project is seaward of the shoreline (top of erosion scarp) and appears to be above the high tide line. It is the OCCL's understanding that a long-term erosion-control plan is being developed to assess various alternatives including beach restoration. The development of a

EXHIBIT 5

long-term plan is absolutely critical since the acceptance of repeated site plan approvals for temporary erosion control is limited to episodic events (rather than annual requests) and is justified as a means to provide temporary relief while a long-term plan is being developed.

EROSION CONTROL PLAN:

1. Trimming of existing Hau bush vegetation seaward of erosion scarp (approximately 10-12ft for the length of the property).
2. Upon completion of the vegetation trimming, restoration of the seaward face of the dune escarpment by adding sand and grading the seaward dune face with approximately 17 cubic yards of beach-quality sand in a 1:1 slope.
3. Installation of a 100% coconut fiber blanket (33 x 36" wide by 54" long sections) along the existing eroded sand bank in a 1:1 slope (Figure 2). 133 square yards of single layer coconut blanket will be underlain by 410 feet of 6" diameter coconut fiber Coir wattles embedded into the slope and secured to the blanket at 6ft intervals. The blanket shall be secured to the top of the wattles and the wattles will secure the toe of the blanket at the base.
4. The blanket is designed to extend approximately 8 feet seaward of the top of the bank (approximate shoreline).
5. One row of Coir sandbags will be installed at the base of the dune to secure the toe of the Coir blanket as an anchoring measure and filled with approximately 13 cubic yards of imported sand. 36 bags 54"L x 36"W x 12" high.
6. Installation of one row of Coir Seabags to act as beach access stairs. The stairs will serve as temporary access to/from the beach. The bags will consist of 8, 56" X 28" or similar size coconut fiber sandbags and will require approximately 3 cubic yards (CY) of sand to fill. The bags shall be filled with sand from the proposed sand source.
7. Up to 20 cubic yards of clean sand will be used to cover the newly placed Coir blanket.
8. A total of up to 50 cubic yards of beach quality sand will be utilized for the project.
9. The proposed landscape plan includes native dune landscaping as indicated in the submitted plans. The dune restoration landscape plan includes approximately 100 sprigs of Akiaki along the dune face with hand-irrigation only. No landscaping is authorized by this plan.
10. The Coir blanket is to be installed so that the landward edge of the structure aligns with the top of the erosion scarp. The eastern end of the blanket will tie into the existing Coir blanket placed on the adjacent property.
11. The blanket and all proposed materials will consist of 100% biodegradable coconut fiber material. It is expected this material will naturally degrade but may provide temporary erosion protection for up to a year. The entire structure will be covered with a thin layer of sand to cover the coco-blanket for protection and aesthetic purposes. The blanket may be periodically maintained with a sand cover to the best practical extent possible with previous authorization from the DLNR.

The sequence of events shall be as proposed in the submittal (Figures 2 & 3) which includes:

1. Access shall be provided from the City and County (C&C) public beach access 133 along Kahala Ave. A right of entry may be required by the C&C for this access.
2. All work will occur above the high tide line and below the shoreline.
3. Face of the dune excavated and smoothed to a 1:1 slope to allow proposed material to be placed as planned.
4. Coconut Coir wattles embedded into slope and Coir blanket installed and secured to each other. The top and toe of the structure shall be securely embedded into the bank and anchored beneath the surface with a 6" Coir Wattle.

5. The proposed blanket structure shall be embedded in the existing slope (or alternatively embedded into the excavated and leveled slope).
6. Temporary beach access sand bag stairs installed using 8, 56" X 28" coconut fiber sandbags.
7. As a finishing measure up to 10 CY of excavated dune sand (from the proposed swimming pool excavation) may be placed **on top of** the embedded blanket to secure it in place and for aesthetic reasons.
8. Up to 100 sprigs of Aki Aki grass used to plant along the seaward face of the dune.
9. Additional screening of beach sand to remove approximately 1 cubic yard of basalt gravel that has formed as a lag deposit on the beach fronting the subject property.

Landscaping Conditions:

It is understood you intend to provide natural dune vegetation by planting low-lying native grass such as Aki Aki. The intention of the dune landscaping is to assist in the protection of the newly formed dune and will not restrict access on the beach.

1. Only native grass such as Aki Aki is to be planted on the seaward dune face.
2. No shrubs such as Naupaka are allowed to be planted on the dune face.
3. No use of soil or non-beach material is allowed on the dune face.
4. Vegetation will not encroach down the beach below the base of the dune.
5. No fencing, cloth or other material is allowed on the dune face.
6. No use of vegetative debris is allowed on the seaward dune face.
7. No permanent watering systems are allowed seaward of the shoreline (dune crest).

Authorization Expiration

The proposed construction date window is January 1, 2010 to February 15, 2010 or extended as applicable and with authorization from the Department. This authorization shall expire one year from the date of issuance. No other maintenance or repair is allowed without prior approval from the DLNR. Activities shall be initiated within 6 months of issuance and completed within one year. It is understood that the Coir materials are a temporary response to assist in maintaining the dune system. After completion, the proposed sandbag project shall be reviewed for consistency and accuracy to the plans by DLNR staff. The sandbags are intended to be a temporary measure for seasonal erosion and are not considered a long-term erosion control strategy.

Mitigation Measures (Best Management Practices)

Typical Best Management Practices shall be implemented to ensure that water quality and marine resources are protected and preserved with no discharge of material into state waters. The applicant proposes to conduct activities above the high tide line and will ensure silt is contained during construction activities. Excessive silt and turbidity shall be contained or otherwise minimized through the use of silt containment devices and barriers (as necessary). Silt and dust containment should be practiced for the duration of construction activities.

The applicant will prepare a completion report for the project. It will summarize the construction and detail any deviation from the proposed plans within 90 days of completion of the project. The report shall outline the condition of the structure, any repair or replacement that occurred and provide a summary of the beach conditions including an overview of the shoreline and dune bank behavior trend since installation. The report will also include a photo summary of the bank and beach conditions with documentation of any alterations or repairs.

Based on the information provided, the Department has made the following determinations:

1. The biodegradable Coir fiber blanket and sandbags will provide temporary protection as a temporary alternative "soft" erosion control measure with a limited lifespan until a longer-term beach restoration project is initiated.
2. The proposed activities fall seaward of the shoreline within the Resource sub-zone of the State Conservation District.
3. This Site Plan Approval by DLNR is valid only for the portions of the project seaward of the shoreline.
4. We have determined that this project constitutes a Site Plan Approval pursuant to Section 13-5-24, (B-1), "Landscaping.....in an area ten thousand square feet or less" and is in accordance with Section 13-5-38 *Site Plan Approvals.*
5. The proposed work is minor in scope and may be considered an exempt action under State environmental laws under Section 11-200-8, Hawaii Administrative Rules (HAR).

Your request to install a biodegradable Coconut fiber erosion control blanket and associated stabilizing sandbags utilizing up to 50 yd^3 of imported beach-quality sand fronting the subject property is approved as a site plan approval (SPA OA-10-16). This approval is conditional on all the proposed material meeting state requirements for quality and composition. The placement of sand will be subject but not limited to all of the following terms and conditions.

TERMS AND CONDITIONS:

Therefore, we have no objections to the proposed activities, subject to the following:

1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments for projects approved under this authorization and applicable parts of Chapter 13-5, HAR including obtaining an appropriate land disposition such as a right of entry. Department authorization of the proposed project does not eliminate this responsibility.

2. All work shall be conducted landward (above) the high tide line and seaward of the shoreline (HRS 205A), no material shall be discharged into state waters from this project.

3. Any work or construction authorized under this authorization shall be initiated within six (6) months of the approval of such use, and shall be completed within one (1) year of the approval. The applicant shall notify the DLNR in writing 1 week before construction activity is initiated and when it is completed.

4. All activities shall be performed in accordance with the submitted plans and within the lateral boundaries of the subject property.

5. *Minor* maintenance and repair may be considered with prior approval from the OCCL. Minor repair is defined as retaining the original material and reinforcing or repairing to maintain the structural integrity of the structure. Any replacement or repair of more than 25% of the structure is not considered maintenance and not allowed under this Site Plan Approval.

6. No other erosion control, landscaping or land uses are authorized without prior written consent from the DLNR.

7. Work shall be conducted at low tide to the most practical extent possible and no work shall occur during high surf or ocean conditions that will create unsafe work or beach conditions.

8. Appropriate safety and notification procedures shall be carried out. This shall include high visibility safety fencing, tape or barriers to keep people away from the active construction site and a notification to the public informing them of the project. All barriers shall be removed once the project is complete to allow full public access laterally along the beach and above the dune.

9. To avoid encroachments upon the area, the applicant shall not use artificially accreted areas due to nourishment or hardening as indicators of the shoreline. To facilitate any future applications for shoreline certifications, the applicant should conduct a shoreline survey for state certification.

10. The applicant shall submit a summary report to the DLNR within 90 days of the completion of the project describing what maintenance actions took place and include photographic or other quantitative evidence (beach profiles or volume calculations) of the beach condition.

11. Transfer of ownership of the subject property includes the responsibility of the new owner to adhere to the terms and conditions of this authorization.

12. The applicant shall take measures to ensure that the public is adequately informed of the project work once it is initiated and the need to avoid the project area during the operation and shall notify all abutting property owners and community organizations that may be affected by the proposed action.

13. The applicant shall implement standard Best Management Practices (BMPs), including the ability to contain and minimize silt in nearshore waters and clean up fuel; fluid or oil spills immediately for projects authorized by this letter. Equipment must not be refueled in the shoreline area. If visible petroleum, persistent turbidity or other unusual substances are observed in the water as a result of the proposed operation, all work must cease immediately to ascertain the source of the substance.

14. The applicant shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of the all appropriate agencies, through silt containment devices or barriers, high sand quality and selective sand placement.

15. All placed material shall be free of contaminants of any kind including: excessive silt, sludge, anoxic or decaying organic matter, turbidity, temperature or abnormal water chemistry, clay, dirt, organic material, oil, floating debris, grease or foam or any other pollutant that would produce an undesirable condition to the beach or water quality.

16. Where any interference, nuisance, or harm may be caused, or hazard established by the proposed measures, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.

17. The activity shall not adversely affect a Federally listed threatened or endangered species or a species proposed for such designation, or destroy or adversely modify its designated critical habitat.

18. The activity shall not substantially disrupt the movement of those species of aquatic life indigenous to the area, including those species, which normally migrate through the area.

19. When the Chairperson is notified by the applicant or the public that an individual activity deviates from the scope of an application approved by this letter, or activities are adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the applicant to undertake corrective measures to address the condition affecting these resources. The applicant must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect.

20. When the Chairperson is notified by the U.S. Fish and Wildlife Service, the National Marine Fisheries Service or the State DLNR that an individual activity or activities authorized by this letter is adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the applicant to undertake corrective measures to address the condition affecting these resources. The applicant must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect.

21. Where any interference, nuisance, or harm may be caused, or hazard established by the activities authorized under this letter, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.

22. No contamination of the marine or coastal environment (trash or debris) shall result from project-related activities authorized under this letter.

23. No motorized construction equipment is to be operated in the water at any time.

24. In the event that historic sites, including human burials are uncovered during construction activities, all work in the vicinity must stop immediately and contact the State Historic Preservation Division at (808) 692-8015.

25. At the conclusion of work, the applicant shall clean and restore the site to a condition acceptable to the Chairperson.

26. The DLNR reserves the right to impose additional terms and conditions on projects authorized under this letter, if it deems them necessary.

27. Failure on the part of the applicant to comply with any conditions imposed under this letter shall render the letter null and void.

28. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury or death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this action or relating to or connected with this action.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. Please sign two copies. Retain one and return the other within thirty (30) days. Please notify the OCCL in advance of the anticipated construction dates and notify the OCCL immediately if any changes to the scope or schedule are anticipated.

Should you have any questions on any of these conditions, please contact Dolan Eversole at the Office of Conservation and Coastal Lands (OCCL) at (808) 587-0377 or dolan.eversole@hawaii.gov.

Sincerely,

Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

I concur with the conditions of this letter:

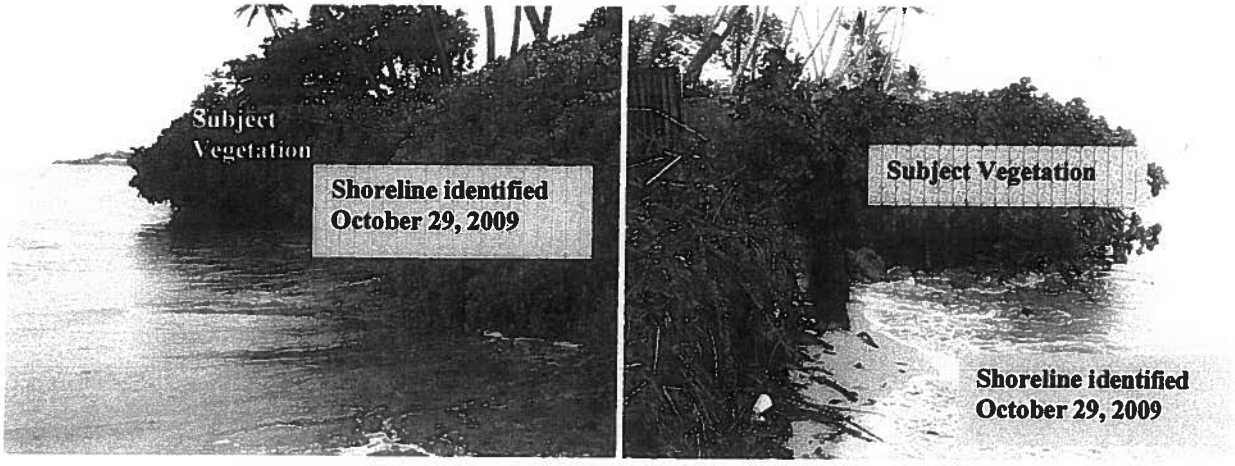
_____
Applicant's Name (Print)

_____ Date_____
Applicant's Signature

Attachments: Figure 1, 2&2b.

Cc: Chairperson
Oahu Board Member
4615 Kahala Ave. Corporation 4615 Kahala Ave. Honolulu HI 96816
ACOE/OHA/CZM
City and County of Honolulu Planning and Permitting
Waialae-Kahala Neighborhood Board Kelley Roberson *(Chair)* 1414 Hoakoa Place 96821

Figure 1. Site Photo May 5, 2008



Site Photo December 11, 2009
Note installation of Coir blanket next door

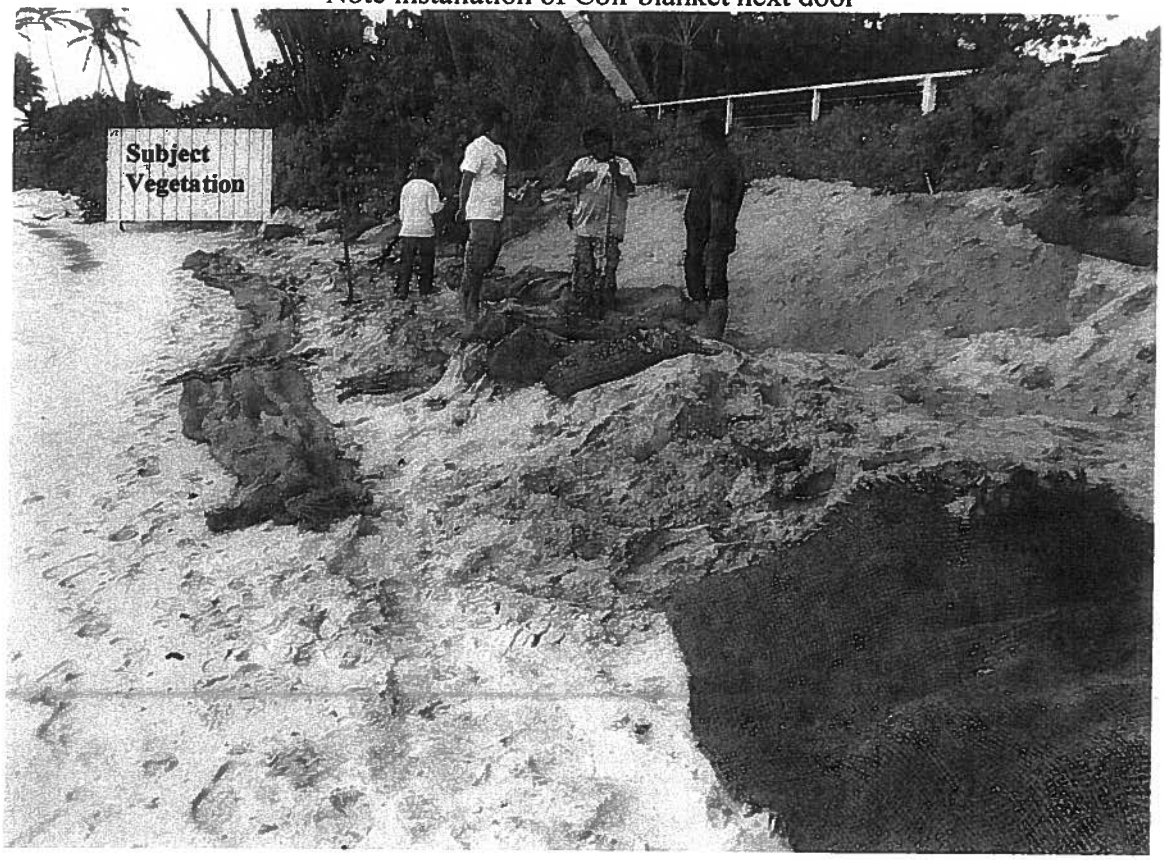
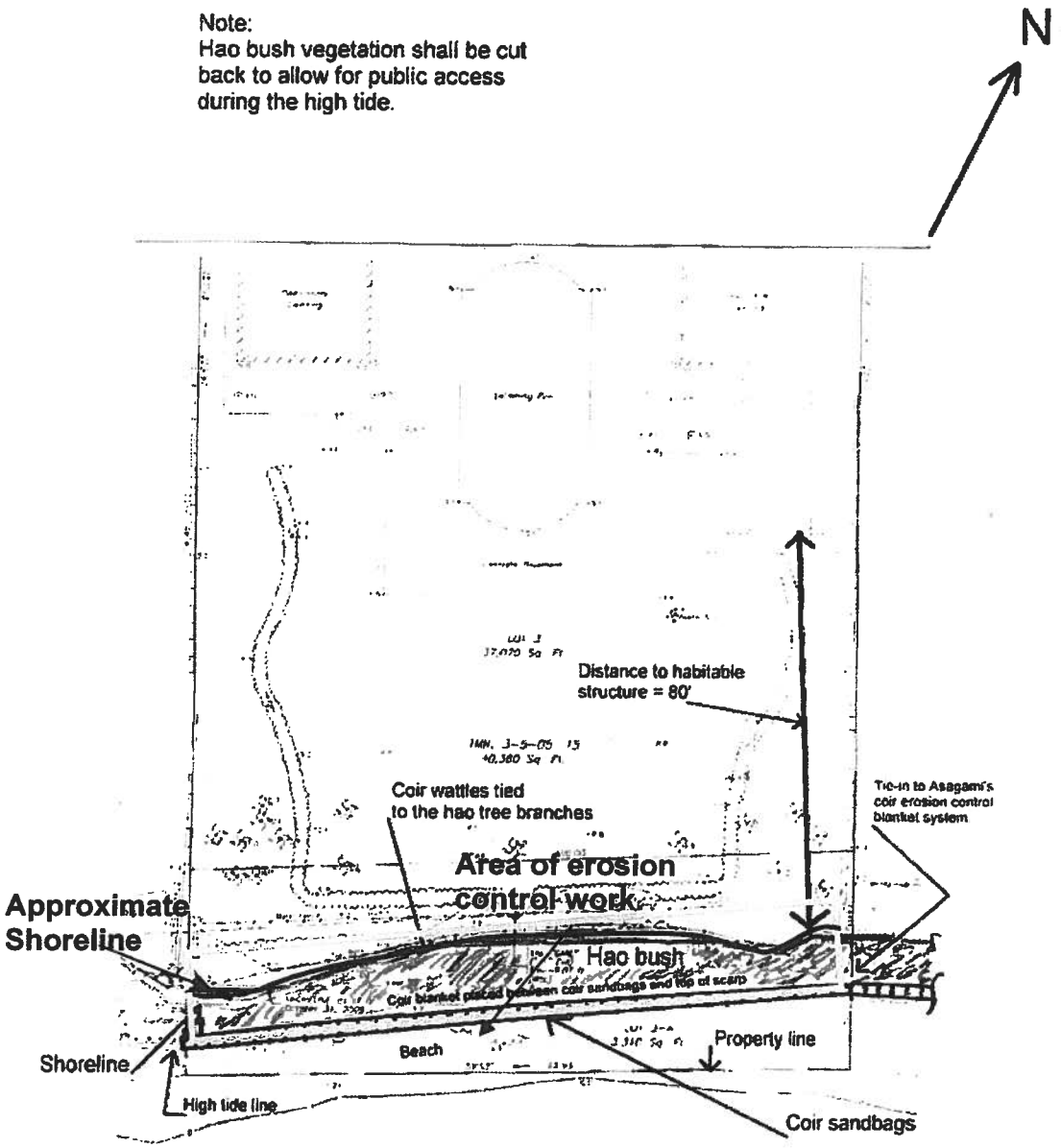
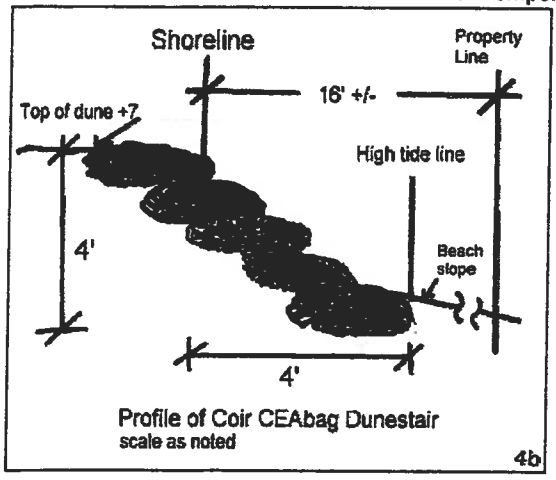


Figure 2. Erosion Response Plan
TMK: (1) 3-5-05:15 (Seaward)

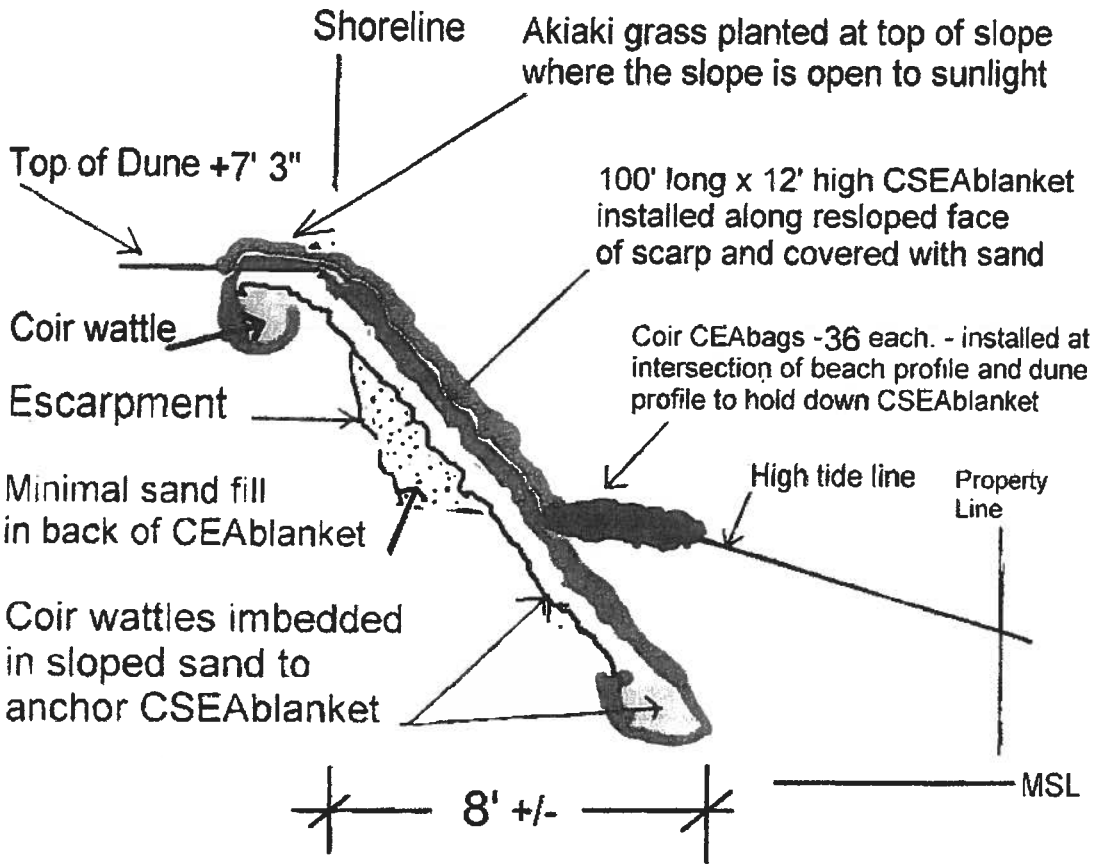


Plan View of Temporary Biodegradable Erosion Control Blanket
scale: 1" = 20'



4615 Kahala Avenue Corporation
4615 Kahala Avenue
Kahala, HI 96816
IMK: (1) 3-5-005:015

Figure 3. Erosion Response Plan



Profile of Coir CSEAblanket Dune Protection
Scale: 1/2" = 1'- 0"

4615 Kahala Avenue Corporation
4615 Kahala Avenue
Kahala, HI 96816
TMK: (1) 3-5-005:015

5

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

APR 16 2012

4615 Kahala Avenue Corporation
P.O. Box 188
Waimanalo, Hawaii 96795

To whom it may concern:

Subject: Temporary Shoreline Erosion Control Biodegradable Erosion Blanket at 4615 Kahala Avenue – TMK: (1) 3-5-005:015 (Seaward)

The Department of Land and Natural Resources (DLNR) has been receiving complaints about the temporary shoreline erosion control structure seaward of your property. In response to these complaints DLNR staff recently conducted a site inspection. Based on this site inspection, we would like to bring our concerns to your attention. The first thing that we noticed was that two (2) small flanking groins have been installed at each end of the sand bag structure. These groins extend into the water. These groins have not been authorized. Secondly, it appears that the structure is contributing to some flanking action on the adjoining properties. Our biggest concern is that there is no dry sandy beach at the toe of the structure and the shoreline on each side of the structure appears to be eroding. This lack of sand is common in these types of situations as the structure is preventing sand from being released onto the beach. Third, upon closer inspection of the situation, it does not appear that the erosion control structure is appropriate. According to our Administrative Rules (Tile 13-5-2, HAR), "Imminently Threatened" means an inhabited dwelling, essential cultural or natural resources, or other (non-movable) major structure or public facility that is in danger of destruction or severe damage due to natural hazards. For coastal erosion, "imminently threatened" shall mean a distance of twenty feet of less from an actively eroding shoreline or erosion that will threaten the structure in less than six months. Based upon our recent inspection it does not appear that any dwelling meets this definition.

In addition we believe that the structure is pinching the sandy beach and may potentially interfere with lateral beach access and is potentially accelerating shoreline erosion on the adjacent parcels. As this structure was intended to be temporary, we hereby request that you remove the structure and materials from the shoreline area within sixty (60) days of the date of this letter.

EXHIBIT 6

Please feel free to contact me at 587-0377 should you wish to discuss the matter.

Sincerely,

Samuel J. Lemmo, Administrator

cc: City and County of Honolulu,
Department of Planning and Permitting

hawaiilawyer.com®

DAMON KEY LEONG KUPCHAK HASTERT
A LAW CORPORATION

June 20, 2012

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(1929-2008)

[1]Admitted in Texas
[2]Admitted in Hawaii and California
[3]Admitted in District of Columbia

LAW FIRMS WORLDWIDE MERITAS

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Mr. Samuel Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

Re: Temporary Shoreline Erosion Control Biodegradable Erosion Blanket at 4615 Kahala Avenue

Dear Mr. Lemmo:

Thank you for your telephone message of June 18, 2012, indicating that your office was examining the issues raised in our correspondence dated June 14, 2012.

As your office investigates this matter, it is important to focus on the new information that was perhaps not known by the Department of Land and Natural Resources at the time of its April 16, 2012 correspondence. In recent days, the CSEA structure at the beach fronting 4615 Kahala Avenue has been subjected to very strong trade winds, high waves and high tides, with continued beach loss. In addition, the CSEA structure has been weakened due to several episodes of vandalism, for which repairs will be made to prevent obstruction of the beach and further erosion. Furthermore, all of the sand placed as part of the approved CSEA project has eroded, and neither our client, nor possibly your Department, was aware at the time of the adverse and un-natural effect that the Hunakai Street drain line was having on the beach in the immediate area of the project, essentially mining sand from the beach and moving it far offshore. These are all significant reasons why the CSEA can and must remain in place during the investigation and until a long-term solution can be found among all the stakeholders (private owners, beach users, State of Hawaii and City and County of Honolulu).

We also have a request. As indicated in our prior correspondence, the City and County of Honolulu has been aware for at least thirty (30) years that the Hunakai Street drain line, in its cracked and unrepaired state, was transporting sand from the beach and near-shore environment, and flushing it hundreds of feet off-shore, past the reef. Please advise us of what permits or approvals the State of Hawaii has granted to the City and County of Honolulu concerning (1) the initial installation of the pipe and (2) the continued presence of the pipe on State land. As

the Department of Land and Natural Resources is responsible for uses in the Conservation District and for encroachments onto State Land, please also provide us with copies of any correspondence, records or reports concerning the construction, placement, maintenance, operation, ownership of and responsibility for the Hunakai Street drain line.

Thank you in advance for your continued cooperation in this matter. As previously indicated, we would be willing to meet with you to discuss your concerns about the beach, the CSEA, the Hunakai Street drain line and the long-term plan to address erosion occurring at Kahala Beach.

Very truly yours,

DAMON KEY LEONG KUPCHAK HASTERT

Gregory W. Kugle
Matthew T. Evans

GWK/MTE:ds
cc: 4615 Kahala Avenue Corp.
169683

hawaiilawyer.com®

DAMON KEY LEONG KUPCHAK HASTERT

A LAW CORPORATION

June 14, 2012

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(1929-2008)

[1]Admitted in Texas
[2]Admitted in Hawaii and California
[3]Admitted in District of Columbia

HAND DELIVER

Mr. Samuel Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

2012 Jun 15 A 10:00

Re: Temporary Shoreline Erosion Control Biodegradable Erosion Blanket at 4615 Kahala Avenue

Dear Mr. Lemmo:

We represent 4615 Kahala Avenue Corp. ("Owner"), which owns the above-captioned property ("Property"). Please direct further correspondence to us.

We are in receipt of your correspondence dated April 16, 2012, suggesting that the coir shoreline erosion arrestor ("CSEA") blanket system which was approved by the Department of Land and Natural Resources ("DLNR") on December 30, 2009, should be modified or removed. We write to request a meeting with you to discuss the need for continued shoreline protection in the face of accelerated erosion on Kahala Beach, and our client's efforts to develop a long-term solution to the erosion at the Diamond Head end of Kahala Beach.

By way of background, Kahala Beach has been experiencing erosion for many years, at least since the 1970's at this location. Most of the properties between 4615 Kahala Avenue and Black Point are already armored with seawalls. Not surprisingly, there is little or no beach left in front of these properties. Today, the sandy beach begins a few lots away from the Property, and continues from there to Waialae Beach Park. In other words, the Property is located at the juncture of the armored shoreline and the unprotected beach.

The makai boundary of the Property, *i.e.*, the coastal dune, had historically been protected by naturally occurring vegetation, including naupaka and hau bushes. By 2008, the beach in front of the Property had eroded to the point that, at high tides, there was little, if any, dry sand between the vegetation and the ocean. Apparently in response to complaints by beach users, DLNR sent letters to many Kahala beachfront owners requesting the voluntary cutting or removal of vegetation, knowing that the likely result of removing vegetative dune protection would be the accelerated erosion of the exposed and unprotected sand.

EXHIBIT 7

On May 7, 2008, DLNR sent a letter to the Owner requesting that it voluntarily remove the vegetation that had been securing the coastal dune and its property. Before agreeing to do so, the Owner sought and received official assurances from DLNR that it would be allowed to install the CSEA system to protect and secure the to-be-exposed dune from the anticipated increased erosion (an identical plan had been approved by DLNR for the immediate neighbor located at 4623 Kahala Avenue, OA-09-43). Accordingly, on December 30, 2009, DLNR approved the site plan for the CSEA protection, OA-10-16, which authorized the property owner to remove the existing vegetation and to install the CSEA system. A copy is enclosed herein as Exhibit "1."

This correspondence provides the DLNR with an update on the progress toward a longer-term solution that would obviate the need to continue to maintain the CSEA system authorized under AO-10-16, and justifying the continued maintenance of the system until such time.

. First, the Owner agreed to remove the vegetation on the condition that it be allowed to install the CSEA system, which was necessary to protect the dune from the known increase in erosion that was expected to follow vegetation removal. It is patently unfair to ask the Owner to first remove the naturally occurring vegetation which protected its property, and then to request that it remove the temporary protective cloth that was allowed in place of the vegetation. The Owner relied in good faith on the fact that it would be allowed to protect its property with the CSEA system.

Second, removing the CSEA will certainly cause further erosion to the shoreline at 4615 Kahala Avenue, undermining the hollow tile wall, the metal fence, and many large coconut trees. This will create a hazard, impede access, and possibly expose the State to liability. These conditions are already occurring at the two properties immediately Diamond Head of 4615 Kahala Avenue. If erosion is allowed to occur at 4615 Kahala Avenue, public access across the beach and in the water would be impaired, while in its current condition the public can cross the beach on the CSEA system or on the exposed sand or shallow water.

Third, following the news broadcasts describing and quoting DLNR's April 16, 2012 correspondence, which aired even before the Owner had received the correspondence, its property has been subjected to repeated acts of vandalism. Most recently, during the night of June 7, 2012, vandals cut open the

authorized coir sandbags and cloth, cut down existing vegetation on the property, and damaged the metal fence at the rear of the property. We believe these attacks have been encouraged by the publicity surrounding the DLNR's letter. These criminal acts are undermining the effectiveness of the system.

In addition to the foregoing reasons to retain the CSEA system at 4615 Kahala Avenue, we have discovered new information as to the source of the non-natural, aggravated erosion occurring at the Property. Specifically, immediately off-shore from 4615 Kahala Avenue is the City and County of Honolulu's Hunakai Street drain line. This drain line is made from 48-inch reinforced concrete pipe that runs diagonally from the Hunakai Street right of way into the ocean for a distance of 830 feet. It was built in 1952. Although the City abandoned two similar drain lines at Ulipi Street and Elepaio Street in or about 2000, it continues to use and operate the Hunakai Street drain line.

The Hunakai Street drain line contains numerous loose joints, especially seaward of manhole DMH #8 at Station 10+35. *See* Ocean Engineering and Environmental Reconnaissance Study of the Elepaio, Ulili and Hunakai Streets Relief Drains, prepared by Sea Engineering Services, Inc. for Wilson Okamoto & Associates, dated February 1981, at page 6, attached as Exhibit "2.". The gaps are approximately 1 – 1 ½ inches wide. The Hunakai Street drain line contains approximately 12+ inches of sand throughout its approximately 800 foot length. *Id.* at 5.[1] The sand enters the pipe through the gaps in the joints. *Id.* at page 28. The sand is flushed out of the pipe during periods of heavy storm water discharge, and the sand is deposited in a channel in the reef. *Id.* at page 29. In this manner, sand is removed from the beach and near-shore waters, and is deposited outside of the reef, and thereby removed from the normal littoral processes.

The loose and misaligned condition of the Hunakai Street drain line is essentially mining sand from the beach and near shore waters fronting 4615 Kahala Avenue. The pipe fills with sand to a depth of 12+ inches over its entire length, and this sand is flushed out of the pipe during heavy storm water events. The sand is deposited 800 feet away, beyond the reef. No beach re-nourishment project or other long term beach repair can take place until the City's drain line is repaired and maintained because the sand mining through the gaps in the pipe will continue as long as the pipe is operated in its unrepaired condition.

---

[1] This is true today as well. Recent inspections of this pipe have revealed sand on the bottom of the pipe to a depth of 12 to 20 inches.

Informal efforts and inquiries to the City have been unsuccessful; the City has not acknowledged responsibility for maintaining its Hunakai Street drain pipe. Formal written demand is being made upon the City. It is hoped that the DLNR will encourage the City to repair and maintain the Hunakai Street drain line, which is located on State land and which the State permitted and continues to permit to remain on State land, so that (1) the sand mining will cease and (2) all stakeholders can assess a longer-term solution to the erosion occurring on Kahala Beach.

The Hunakai Street drain line was installed to ease drainage problems and reduce flooding on approximately 98 acres of Kahala properties mauka of Kahala Avenue. However, due to its present state of disrepair, the impact of this public works project is falling disproportionately on 4615 Kahala Avenue and the Owner. Although the pipe is owned by the City, it is located on State land. The State, and particularly DLNR, is responsible for impacts on the beach, structures on State land, and discharges into the ocean. As such, it would be improper and unfair for DLNR to prevent 4615 Kahala Avenue Corporation from protecting its property from erosion being caused by others.

We respectfully request a meeting with your office to further discuss the status and effect of the drain on the erosion.[2]

Very truly yours,

DAMON KEY LEONG KUPCHAK HASTERT

Gregory W. Kugle
Matthew T. Evans

GWK/MTE:ds
Enclosures
cc: 4615 Kahala Avenue Corp.
169213

[2] We did not understand the Department's correspondence to be an order. To the extent it was intended to be such, the Owner intends to and hereby does appeal it.

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

Office of Conservation and Coastal Lands
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL: DE

File: SPA OA-10-16

December 30, 2009

Joe Correa
Shoreline Restoration Hawaii
C/O 4615 Kahala Ave. Corporation
P.O Box 188
Waimanalo, Hawaii 96795

Dear Mr. Correa

Subject: **NOTICE OF APPROVAL OF SITE PLAN (OA-10-16)**
Temporary Shoreline Erosion Control Biodegradable Erosion Blanket
4615 Kahala Ave, Honolulu. TMK: (1) 3-5-05:15 (Seaward).

The DLNR, Office of Conservation and Coastal Lands (OCCL) has reviewed your November 29, 2009 request for a site plan approval for temporary shoreline erosion control. On May 7, 2008 the Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) sent a letter to the landowner regarding coastal vegetation growing seaward of the shoreline requesting their cooperation in removing the material. Since then, OCCL staff conducted several follow up site visits to the subject property including December 11, 2009 and confirmed the subject vegetation still severely restricts lateral public beach access. (Figure 1). In addition recent site visits to the area reveal the presence of an erosion scarp approximately 10-12 feet within the shoreline vegetation (Hau Bush). This erosion scarp roughly defines the shoreline location as depicted on the submitted map dated October 31, 2009. The erosion trend and proposed response are essentially identical to the temporary erosion control efforts employed next door at 4623 Kahala Ave under DLNR Site Plan Approval (OA-09-43).

Your November 29, 2009 letter requests a site plan approval for temporary bio-degradable Coconut fiber erosion control blanket. The erosion control plan has been found to be complete. The request was evaluated for potential negative impact to the local nearshore ecosystem and recreational uses of the beach and dune area. The purpose of the proposed project is to provide temporary erosion control and dune restoration from damaging seasonal high tides that threaten existing trees and landscaping. The proposed project is seaward of the shoreline (top of erosion scarp) and appears to be above the high tide line. It is the OCCL's understanding that a long-term erosion-control plan is being developed to assess various alternatives including beach restoration. The development of a

EXHIBIT "1"

long-term plan is absolutely critical since the acceptance of repeated site plan approvals for temporary erosion control is limited to episodic events (rather than annual requests) and is justified as a means to provide temporary relief while a long-term plan is being developed.

EROSION CONTROL PLAN:

1. Trimming of existing Hau bush vegetation seaward of erosion scarp (approximately 10-12ft for the length of the property).
2. Upon completion of the vegetation trimming, restoration of the seaward face of the dune escarpment by adding sand and grading the seaward dune face with approximately 17 cubic yards of beach-quality sand in a 1:1 slope.
3. Installation of a 100% coconut fiber blanket (33 x 36" wide by 54" long sections) along the existing eroded sand bank in a 1:1 slope (Figure 2). 133 square yards of single layer coconut blanket will be underlain by 410 feet of 6" diameter coconut fiber Coir wattles embedded into the slope and secured to the blanket at 6ft intervals. The blanket shall be secured to the top of the wattles and the wattles will secure the toe of the blanket at the base.
4. The blanket is designed to extend approximately 8 feet seaward of the top of the bank (approximate shoreline).
5. One row of Coir sandbags will be installed at the base of the dune to secure the toe of the Coir blanket as an anchoring measure and filled with approximately 13 cubic yards of imported sand. 36 bags 54"L x 36"W x 12" high.
6. Installation of one row of Coir Seabags to act as beach access stairs. The stairs will serve as temporary access to/from the beach. The bags will consist of 8, 56" X 28" or similar size coconut fiber sandbags and will require approximately 3 cubic yards (CY) of sand to fill. The bags shall be filled with sand from the proposed sand source.
7. Up to 20 cubic yards of clean sand will be used to cover the newly placed Coir blanket.
8. A total of up to 50 cubic yards of beach quality sand will be utilized for the project.
9. The proposed landscape plan includes native dune landscaping as indicated in the submitted plans. The dune restoration landscape plan includes approximately 100 sprigs of Akiaki along the dune face with hand-irrigation only. No landscaping is authorized by this plan.
10. The Coir blanket is to be installed so that the landward edge of the structure aligns with the top of the erosion scarp. The eastern end of the blanket will tie into the existing Coir blanket placed on the adjacent property.
11. The blanket and all proposed materials will consist of 100% biodegradable coconut fiber material. It is expected this material will naturally degrade but may provide temporary erosion protection for up to a year. The entire structure will be covered with a thin layer of sand to cover the coco-blanket for protection and aesthetic purposes. The blanket may be periodically maintained with a sand cover to the best practical extent possible with previous authorization from the DLNR.

The sequence of events shall be as proposed in the submittal (Figures 2 & 3) which includes:

1. Access shall be provided from the City and County (C&C) public beach access 133 along Kahala Ave. A right of entry may be required by the C&C for this access.
2. All work will occur above the high tide line and below the shoreline.
3. Face of the dune excavated and smoothed to a 1:1 slope to allow proposed material to be placed as planned.
4. Coconut Coir wattles embedded into slope and Coir blanket installed and secured to each other. The top and toe of the structure shall be securely embedded into the bank and anchored beneath the surface with a 6" Coir Wattle.

5. The proposed blanket structure shall be embedded in the existing slope (or alternatively embedded into the excavated and leveled slope).
6. Temporary beach access sand bag stairs installed using 8, 56" X 28" coconut fiber sandbags.
7. As a finishing measure up to 10 CY of excavated dune sand (from the proposed swimming pool excavation) may be placed **on top of** the embedded blanket to secure it in place and for aesthetic reasons.
8. Up to 100 sprigs of Aki Aki grass used to plant along the seaward face of the dune.
9. Additional screening of beach sand to remove approximately 1 cubic yard of basalt gravel that has formed as a lag deposit on the beach fronting the subject property.

Landscaping Conditions:

It is understood you intend to provide natural dune vegetation by planting low-lying native grass such as Aki Aki. The intention of the dune landscaping is to assist in the protection of the newly formed dune and will not restrict access on the beach.

1. Only native grass such as Aki Aki is to be planted on the seaward dune face.
2. No shrubs such as Naupaka are allowed to be planted on the dune face.
3. No use of soil or non-beach material is allowed on the dune face.
4. Vegetation will not encroach down the beach below the base of the dune.
5. No fencing, cloth or other material is allowed on the dune face.
6. No use of vegetative debris is allowed on the seaward dune face.
7. No permanent watering systems are allowed seaward of the shoreline (dune crest).

Authorization Expiration

The proposed construction date window is January 1, 2010 to February 15, 2010 or extended as applicable and with authorization from the Department. This authorization shall expire one year from the date of issuance. No other maintenance or repair is allowed without prior approval from the DLNR. Activities shall be initiated within 6 months of issuance and completed within one year. It is understood that the Coir materials are a temporary response to assist in maintaining the dune system. After completion, the proposed sandbag project shall be reviewed for consistency and accuracy to the plans by DLNR staff. The sandbags are intended to be a temporary measure for seasonal erosion and are not considered a long-term erosion control strategy.

Mitigation Measures (Best Management Practices)

Typical Best Management Practices shall be implemented to ensure that water quality and marine resources are protected and preserved with no discharge of material into state waters. The applicant proposes to conduct activities above the high tide line and will ensure silt is contained during construction activities. Excessive silt and turbidity shall be contained or otherwise minimized through the use of silt containment devices and barriers (as necessary). Silt and dust containment should be practiced for the duration of construction activities.

The applicant will prepare a completion report for the project. It will summarize the construction and detail any deviation from the proposed plans within 90 days of completion of the project. The report shall outline the condition of the structure, any repair or replacement that occurred and provide a summary of the beach conditions including an overview of the shoreline and dune bank behavior trend since installation. The report will also include a photo summary of the bank and beach conditions with documentation of any alterations or repairs.

Based on the information provided, the Department has made the following determinations:

1. The biodegradable Coir fiber blanket and sandbags will provide temporary protection as a temporary alternative "soft" erosion control measure with a limited lifespan until a longer-term beach restoration project is initiated.
2. The proposed activities fall seaward of the shoreline within the Resource sub-zone of the State Conservation District.
3. This Site Plan Approval by DLNR is valid only for the portions of the project seaward of the shoreline.
4. We have determined that this project constitutes a Site Plan Approval pursuant to Section 13-5-24, (B-1), "Landscaping.....in an area ten thousand square feet or less" and is in accordance with Section 13-5-38 *Site Plan Approvals.*
5. The proposed work is minor in scope and may be considered an exempt action under State environmental laws under Section 11-200-8, Hawaii Administrative Rules (HAR).

Your request to install a biodegradable Coconut fiber erosion control blanket and associated stabilizing sandbags utilizing up to 50 yd^3 of imported beach-quality sand fronting the subject property is approved as a site plan approval (SPA OA-10-16). This approval is conditional on all the proposed material meeting state requirements for quality and composition. The placement of sand will be subject but not limited to all of the following terms and conditions.

TERMS AND CONDITIONS:

Therefore, we have no objections to the proposed activities, subject to the following:

1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments for projects approved under this authorization and applicable parts of Chapter 13-5, HAR including obtaining an appropriate land disposition such as a right of entry. Department authorization of the proposed project does not eliminate this responsibility.

2. All work shall be conducted landward (above) the high tide line and seaward of the shoreline (HRS 205A), no material shall be discharged into state waters from this project.

3. Any work or construction authorized under this authorization shall be initiated within six (6) months of the approval of such use, and shall be completed within one (1) year of the approval. The applicant shall notify the DLNR in writing 1 week before construction activity is initiated and when it is completed.

4. All activities shall be performed in accordance with the submitted plans and within the lateral boundaries of the subject property.

5. *Minor* maintenance and repair may be considered with prior approval from the OCCL. Minor repair is defined as retaining the original material and reinforcing or repairing to maintain the structural integrity of the structure. Any replacement or repair of more than 25% of the structure is not considered maintenance and not allowed under this Site Plan Approval.

6. No other erosion control, landscaping or land uses are authorized without prior written consent from the DLNR.

7. Work shall be conducted at low tide to the most practical extent possible and no work shall occur during high surf or ocean conditions that will create unsafe work or beach conditions.

8. Appropriate safety and notification procedures shall be carried out. This shall include high visibility safety fencing, tape or barriers to keep people away from the active construction site and a notification to the public informing them of the project. All barriers shall be removed once the project is complete to allow full public access laterally along the beach and above the dune.

9. To avoid encroachments upon the area, the applicant shall not use artificially accreted areas due to nourishment or hardening as indicators of the shoreline. To facilitate any future applications for shoreline certifications, the applicant should conduct a shoreline survey for state certification.

10. The applicant shall submit a summary report to the DLNR within 90 days of the completion of the project describing what maintenance actions took place and include photographic or other quantitative evidence (beach profiles or volume calculations) of the beach condition.

11. Transfer of ownership of the subject property includes the responsibility of the new owner to adhere to the terms and conditions of this authorization.

12. The applicant shall take measures to ensure that the public is adequately informed of the project work once it is initiated and the need to avoid the project area during the operation and shall notify all abutting property owners and community organizations that may be affected by the proposed action.

13. The applicant shall implement standard Best Management Practices (BMPs), including the ability to contain and minimize silt in nearshore waters and clean up fuel; fluid or oil spills immediately for projects authorized by this letter. Equipment must not be refueled in the shoreline area. If visible petroleum, persistent turbidity or other unusual substances are observed in the water as a result of the proposed operation, all work must cease immediately to ascertain the source of the substance.

14. The applicant shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of the all appropriate agencies, through silt containment devices or barriers, high sand quality and selective sand placement.

15. All placed material shall be free of contaminants of any kind including: excessive silt, sludge, anoxic or decaying organic matter, turbidity, temperature or abnormal water chemistry, clay, dirt, organic material, oil, floating debris, grease or foam or any other pollutant that would produce an undesirable condition to the beach or water quality.

16. Where any interference, nuisance, or harm may be caused, or hazard established by the proposed measures, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.

17. The activity shall not adversely affect a Federally listed threatened or endangered species or a species proposed for such designation, or destroy or adversely modify its designated critical habitat.

18. The activity shall not substantially disrupt the movement of those species of aquatic life indigenous to the area, including those species, which normally migrate through the area.

19. When the Chairperson is notified by the applicant or the public that an individual activity deviates from the scope of an application approved by this letter, or activities are adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the applicant to undertake corrective measures to address the condition affecting these resources. The applicant must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect.

20. When the Chairperson is notified by the U.S. Fish and Wildlife Service, the National Marine Fisheries Service or the State DLNR that an individual activity or activities authorized by this letter is adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the applicant to undertake corrective measures to address the condition affecting these resources. The applicant must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect.

21. Where any interference, nuisance, or harm may be caused, or hazard established by the activities authorized under this letter, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.

22. No contamination of the marine or coastal environment (trash or debris) shall result from project-related activities authorized under this letter.

23. No motorized construction equipment is to be operated in the water at any time.

24. In the event that historic sites, including human burials are uncovered during construction activities, all work in the vicinity must stop immediately and contact the State Historic Preservation Division at (808) 692-8015.

25. At the conclusion of work, the applicant shall clean and restore the site to a condition acceptable to the Chairperson.

26. The DLNR reserves the right to impose additional terms and conditions on projects authorized under this letter, if it deems them necessary.

27. Failure on the part of the applicant to comply with any conditions imposed under this letter shall render the letter null and void.

28. The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury or death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors and agents under this action or relating to or connected with this action.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. Please sign two copies. Retain one and return the other within thirty (30) days. Please notify the OCCL in advance of the anticipated construction dates and notify the OCCL immediately if any changes to the scope or schedule are anticipated.

Should you have any questions on any of these conditions, please contact Dolan Eversole at the Office of Conservation and Coastal Lands (OCCL) at (808) 587-0377 or dolan.eversole@hawaii.gov.

Sincerely,

Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

I concur with the conditions of this letter:

Joseph Correcta
Applicant's Name (Print)

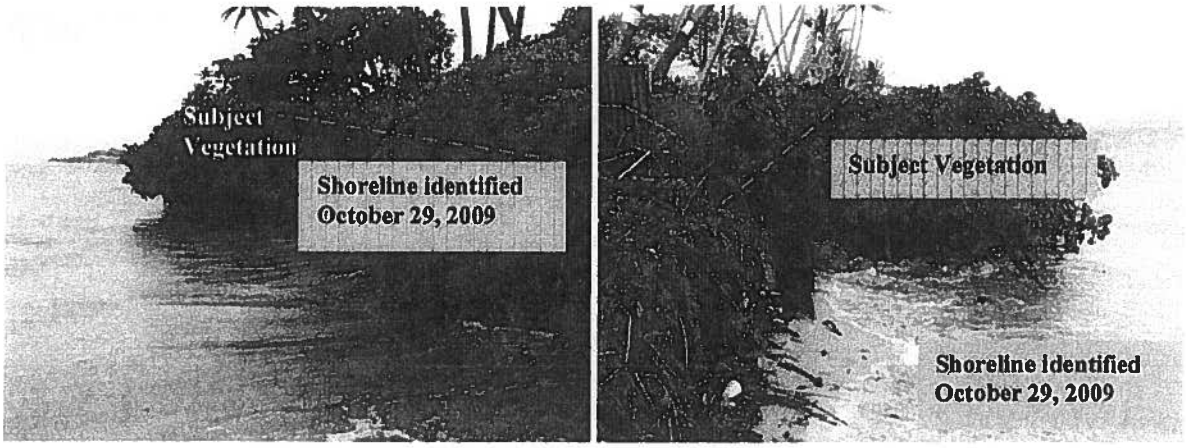
Joseph Correcta
Applicant's Signature

Date_____

Attachments: Figure 1, 2&2b.

Cc: Chairperson
Oahu Board Member
4615 Kahala Ave. Corporation 4615 Kahala Ave. Honolulu HI 96816
ACOE/OHA/CZM
City and County of Honolulu Planning and Permitting
Waialae-Kahala Neighborhood Board Kelley Roberson *(Chair)* 1414 Hoakoa Place 96821

Figure 1. Site Photo May 5, 2008



Site Photo December 11, 2009
Note installation of Coir blanket next door

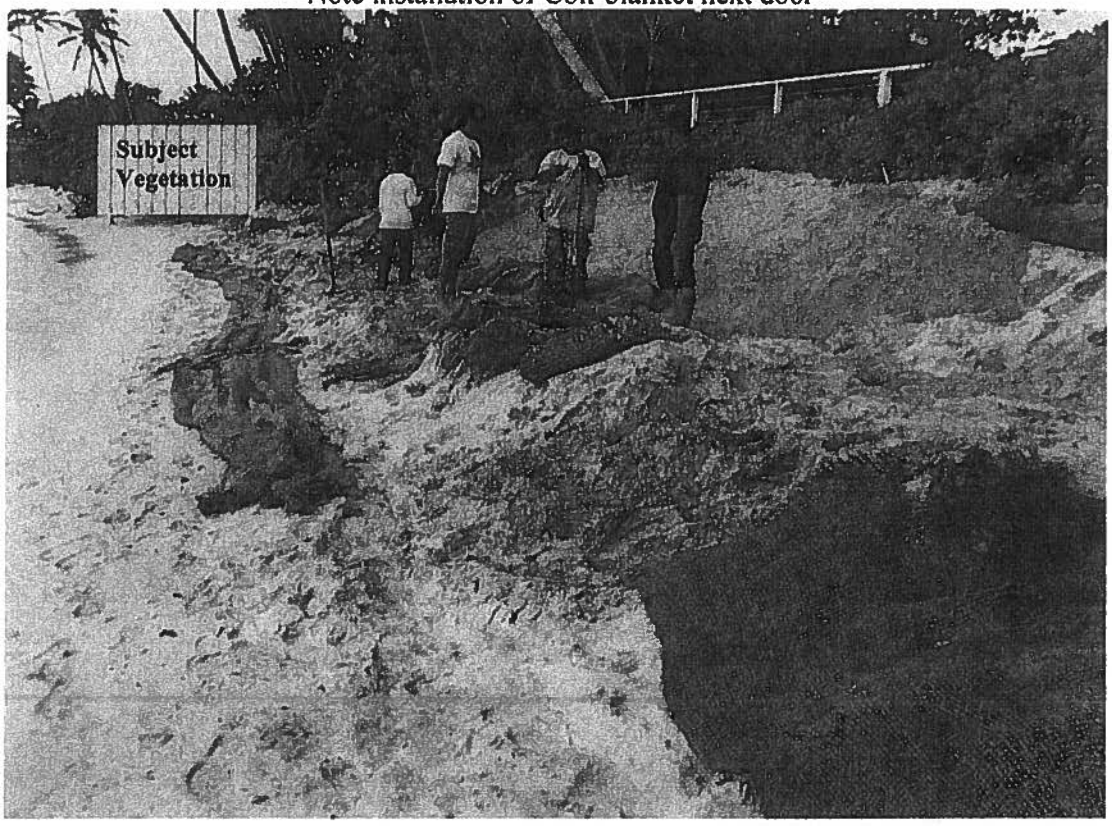
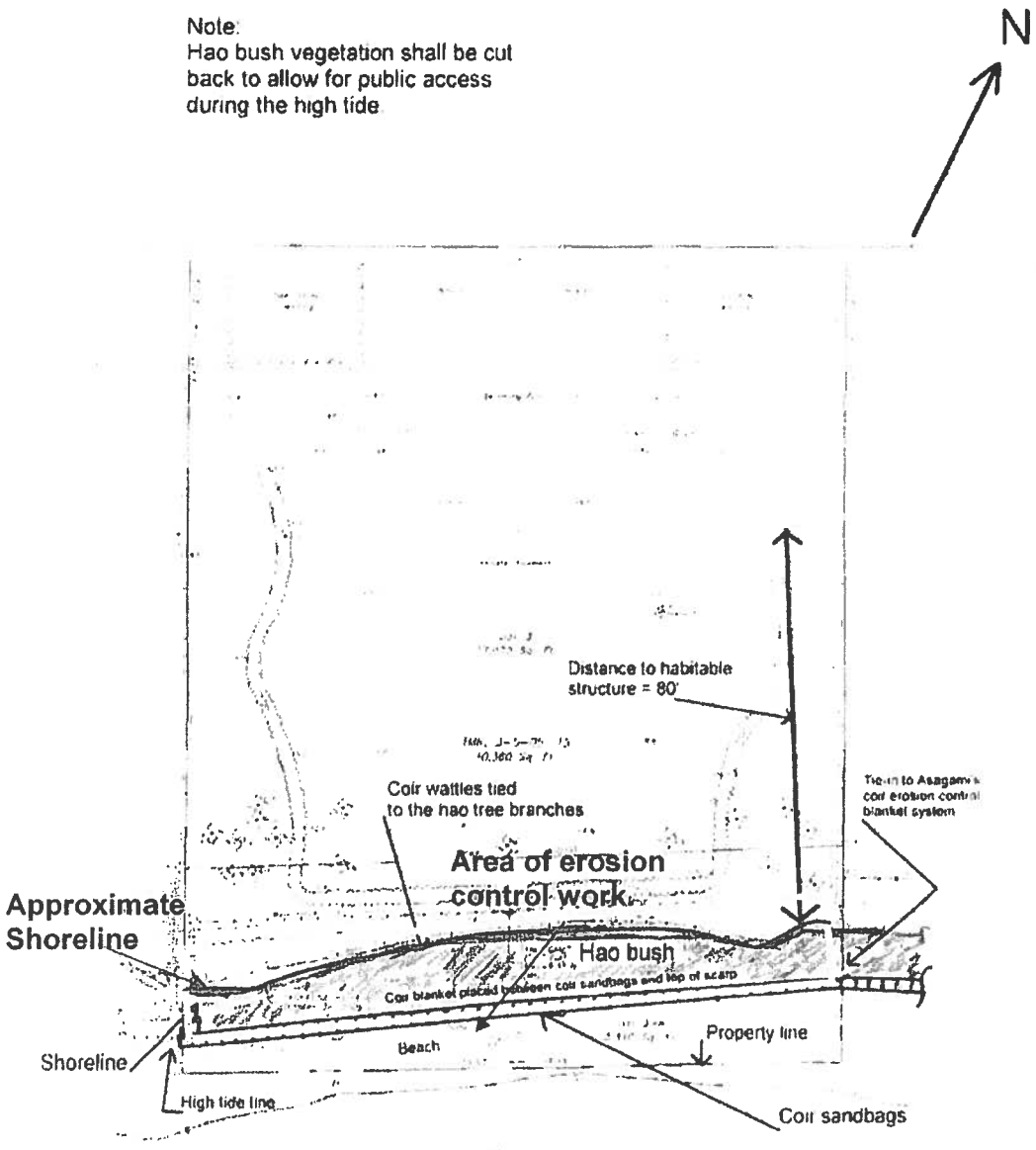
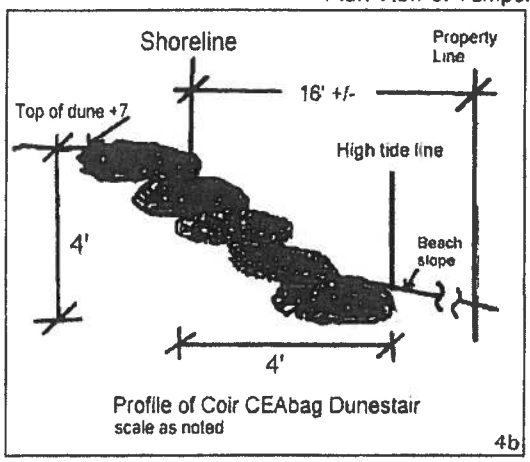


Figure 2. Erosion Response Plan
TMK: (1) 3-5-05:15 (Seaward)



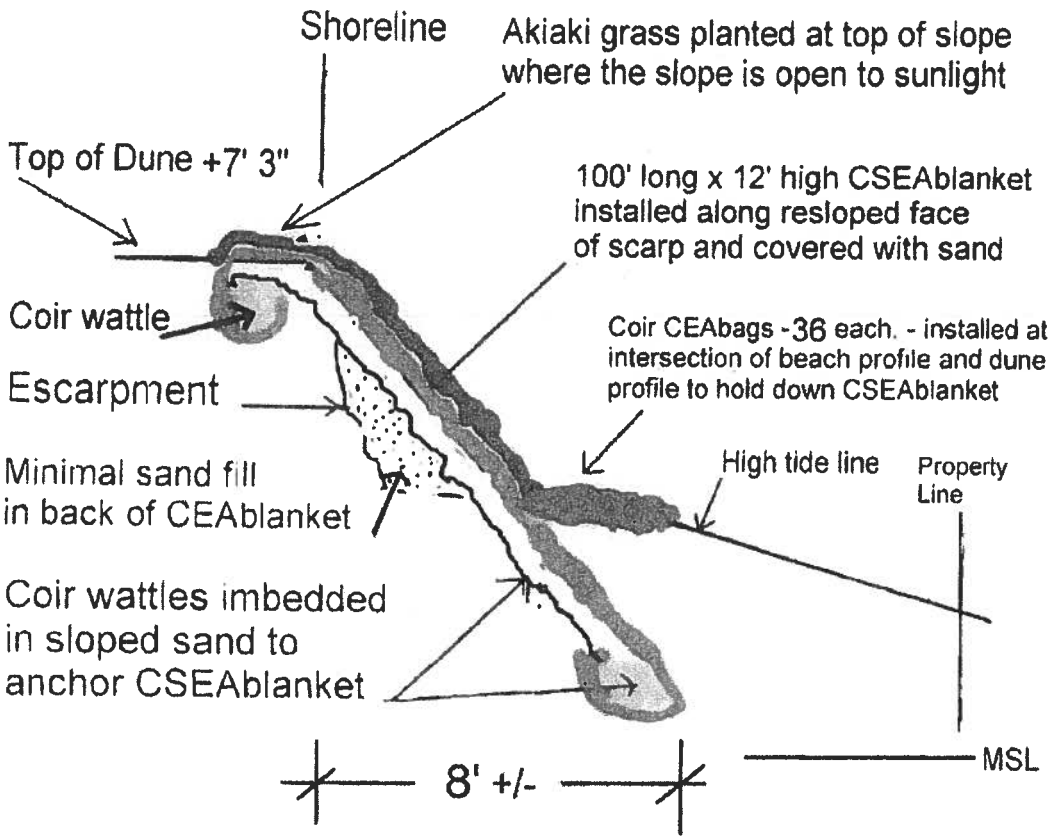
Plan View of Temporary Biodegradable Erosion Control Blanket
scale: 1" = 20'



Profile of Coir CEAbag Dunestair
scale as noted
4b

4615 Kahala Avenue Corporation
4615 Kahala Avenue
Kahala, HI 96816
IMK: (1) 3-5-005:015

Figure 3. Erosion Response Plan



Profile of Coir CSEAblanket Dune Protection
Scale: 1/2" = 1'- 0"

4615 Kahala Avenue Corporation
4615 Kahala Avenue
Kahala, HI 96816
TMK: (1) 3-5-005:015

5

OCEAN ENGINEERING AND ENVIRONMENTAL RECONNAISSANCE STUDY OF THE ELEPAIO, ULILI AND HUNAKAI STREETS RELIEF DRAINS KAHALA, OAHU, HAWAII

Prepared for:

WILSON OKAMOTO & ASSOCIATES
1150 South King Street
Honolulu, Hawaii 96814

February 1981

EXHIBIT "2"

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INTRODUCTION

Study Scope and Objectives

An engineering and environmental reconnaissance study of the relief drains at Elepaio, Ulili and Hunakai Streets, Kahala, Oahu, Hawaii, was conducted to determine their existing condition and to obtain engineering and environmental information pertinent to the design and assessment of possible relief drain improvements. The study included: (1) a detailed inspection of the existing relief drains from the shoreline seaward to their terminous on the fringing reef flat; (2) a biological reconnaissance in the vicinity of the existing drains to note the substratum type and dominant algae, fishes, corals, and other invertebrates; (3) water quality and circulation measurements on the reef flat during ebb and flood tide and tradewind, Kona, and light and variable wind conditions; and (4) an assessment of design wave conditions.

Study Area

The study area includes the shoreline and reef flat in the vicinity of Kahala, Oahu, between Kupikipikio Point (Black Point) and the Hunakai Street relief drain approximately 4,000 feet east of the point. Water quality and circulation measurements were also made on the reef seaward of the drainage canal and Waialaenui stream east of the primary study area. The general study area is shown on Figure 1, and a detailed vicinity map is shown on Figure 2.

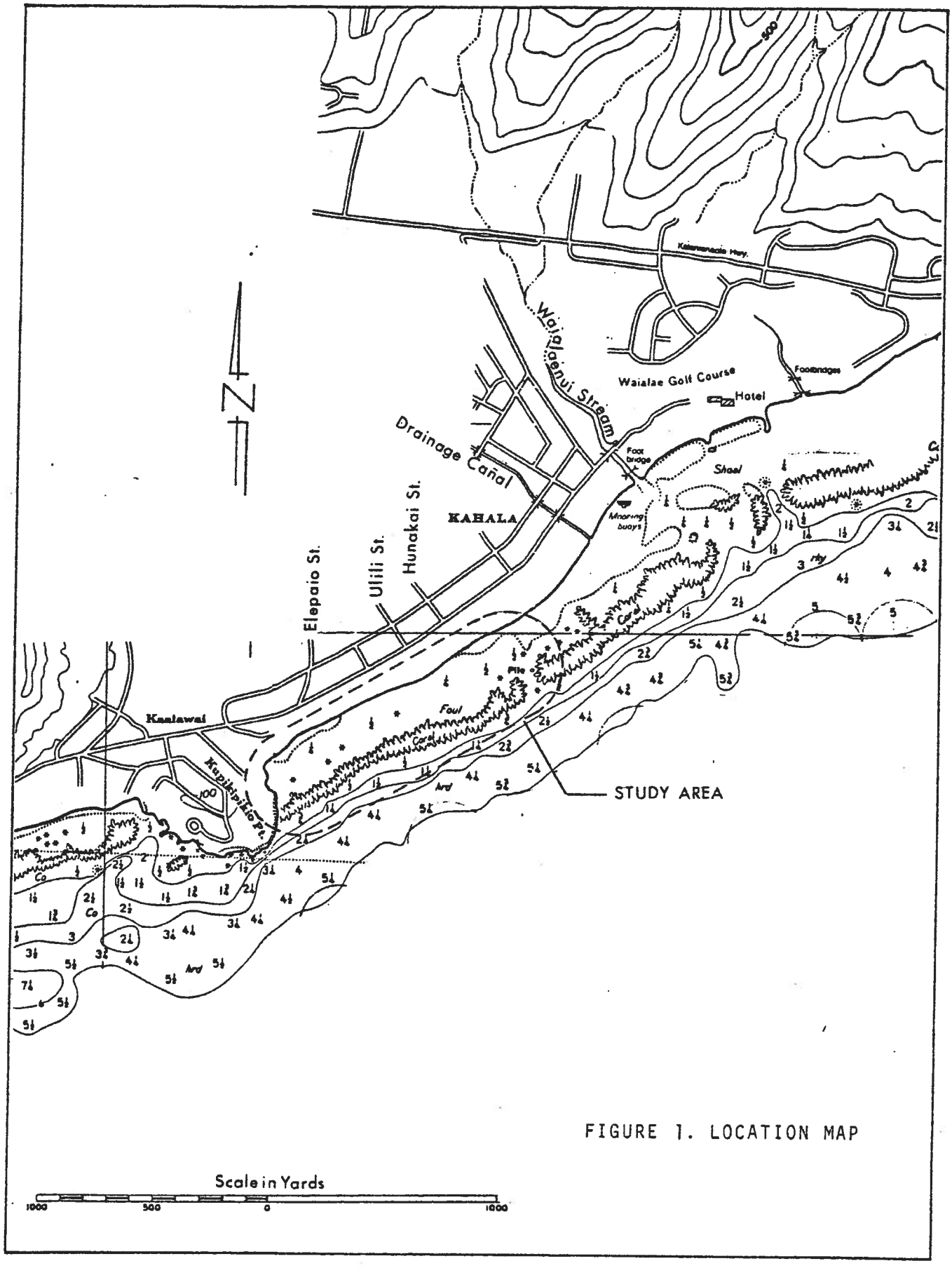

FIGURE 1. LOCATION MAP

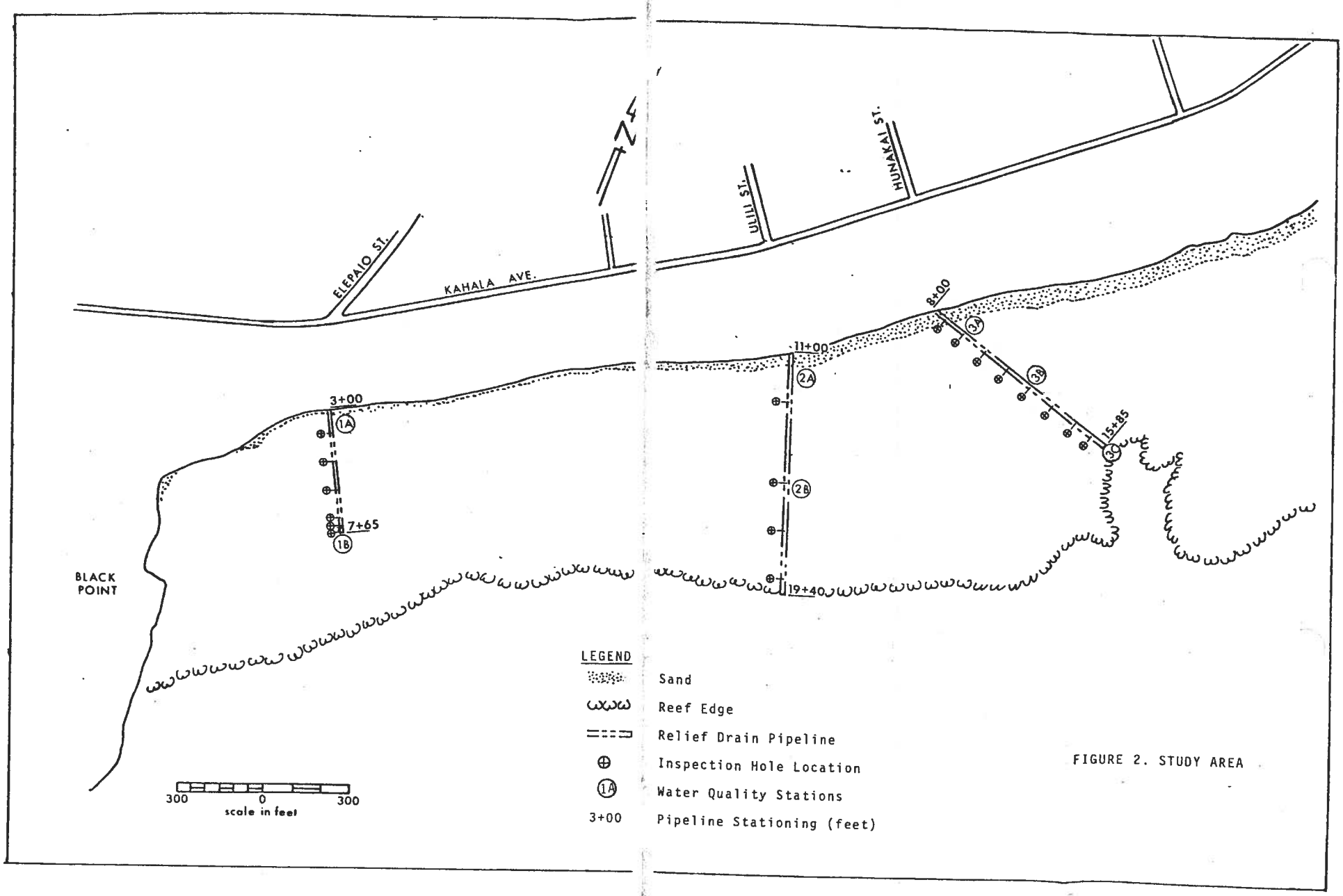

FIGURE 2. STUDY AREA

INSPECTION OF EXISTING RELIEF DRAINS

Methodology

Existing stormwater relief drains extend seaward across the reef flat from the public rights-of-way located at the intersection of Kahala Avenue and Elepaio, Ulili, and Hunakai Streets. The drains are constructed of 42 to 54 inch reinforced concrete pipe, with a wall thickness of approximately 7 inches.

The location and extent of sand/sediment blockage in each drain was determined by drilling a series of 1-1/4-inch holes along the length of the concrete pipe. A Stanley HD-20 "Hammer-Drill", with a 1-1/4-inch carbide tipped bit was used. The drill was powered by a small hydraulic power pack. The size of the drill unit and power supply was limited by the necessity to mount the rig on a boat small enough to be pulled onto and over the reef at high tide. A pneumatic system was considered, but was impractical due to the large size of the air compressor required.

Steel reinforcing bars in the concrete pipe were encountered on most holes drilled. The procedure followed was either to shift the location of the hole slightly or slowly grind through the rebar. The average drilling time per hole was 1-1/2 hours.

After the hole was drilled, a one-inch PVC pipe was inserted into the hole and lowered until resistance was encountered. A point on the PVC pipe even with the top of the concrete pipeline was marked, the PVC pipe was removed and the distance measured. This established the distance from the top of the pipeline to the sediment level. The depth of clear passageway in the drain, or "clear depth",

was then determined by subtracting the drain pipe wall thickness from the measured distance.

A sediment sample was then collected by driving the one-inch PVC pipe further into the drain pipe, to the point of refusal. The PVC pipe was then capped and withdrawn from the drain. The samples were stored in one-quart plastic bags.

The holes in the drain pipe were repaired with "Water-Plug", a quick-setting patching concrete. The concrete is suitable for use underwater and can be used to plug holes even if there is a discharging stream of water. Prior to placing the "Water-Plug", an oversize plastic disc was driven into each hole to form a base for the plug and prevent the plug from extending into the drain pipe.

Inspection Results

Elepaio Street Drain. The Elepaio Street drain is a 42-inch RCP pipe extending approximately 430 feet out from the shoreline. The top of the pipeline is just exposed above the level of the reef flat along most of its length, becoming more exposed with distance from shore.

Six holes were drilled in this pipeline at the locations shown in Figure 2. The results are summarized below.

Drilling Log, Elepaio St. Drain

Hole #	Station	Clear Depth (Inches)	Comments
1	7+45	15	No water flow observed
2	7+25	10	"
3	7+05	3	"
4	6+05	3	"
5	5+05	0	"
6	4+05	0	"

The Elepaio Street drain is completely blocked. The seaward 40 or 50 feet has some clear space at the top of the pipe, but this may be just due to wave scour. No water was observed flowing from any of the drilled holes or from the end of the pipeline. The manhole at the juncture of the drain and the shoreline overflows during heavy rains, however; thus, the drain effectively discharges at the shoreline.

Unlike the other two pipelines, the joints on the Elepaio pipeline appeared to be well-constructed.

The sediment in the pipe ranged from fine calcareous sand at the seaward end to terrestrial sand and grit mixed with calcareous sand at the shoreward end.

Ulili Street Drain. The Ulili Street drain is a 54-inch RCP pipe extending approximately 860 feet from the shoreline. The top of the pipeline is buried approximately two feet below the surface of the reef, except for the seaward 50 feet, which is exposed. The material on top of the pipe consists of coral rubble and calcareous sand and gravel, which had to be removed prior to drilling. This task was best accomplished at low tide and during light to moderate tradewinds.

Four holes were drilled in this pipe at the locations shown in Figure 2, and a pipe joint was cleared for inspection at a fifth location. The results of the drilling are summarized below.

Drilling Log, Ulili St. Drain

Hole #	Station	Clear Depth (Inches)	Comments
1	18+90	5	No water flow observed
2	17+17	22	"
3	15+50	21	"
4	12+60	1	"

The drain is blocked at the seaward end by calcareous sand, evidently carried into the outlet by wave action. The rest of the drain is filled with dark sand/silt which is apparently of terrestrial origin, intermixed with calcareous sand. The material is much finer than that in the Hunakai and Elepaio Street drains.

The sand over a pipeline joint at Station 13+88 was cleared away to expose the joint. The bell and spigot

joint had a gap of approximately two inches, and it was possible to slide one's hand sideways completely through the gap and into the pipe interior. This gap could well have been another source of sand entering the drain. Because of the overburden of sand and rock, the number of defective joints is not known. Since the pipe is buried, apparently stable, and exposed to little wave action along the inner reaches, it is difficult to theorize any causative factor for the gap other than faulty construction.

In summary, the Ulili Street drain is extensively blocked. The pipe was completely filled at two of the four checkpoints. The other two points had some clear space (approximately 21 to 22 inches) in the upper part of the pipe cross-section, but no flow was observed at these locations. The drain can be considered completely blocked, with some gaps where the sediment has not completely filled the pipeline.

Hunakai Street Drain. The Hunakai Street drain is a 48-inch RCP pipe extending approximately 750 feet from the shoreline. The pipe is exposed along most of the length, with approximately one-third to one-half the pipe cross-section above the level of the reef.

Eight holes were drilled in this pipeline at the locations shown in Figure 2. The results are summarized below.

Drilling Log, Hunakai St. Drain

Hole #	Station	Clear Depth (Inches)	Comments
0	8+50	35	) Water was observed
1	9+50	38	) flowing through
2	10+50	37	) all drilled holes
3	11+50	36	)
4	12+50	33	)
5	13+50	32	)
6	14+50	33	)
7	15+23	34	)

The clear depth in the pipe ranged from 33 to 39 inches. There is some sediment deposited at the bottom of the pipeline, but it is not restricting flow through the drain. The sediment is primarily coarse calcareous sand,

with some terrestrial material intermixed. Water was observed flowing through all the drilled holes, as well as out the discharge end of the drain.

There are numerous loose joints in the pipeline, especially seaward of manhole DMH #8 at Station 10+35. The joints are approximately 1 to 1-1/2 inches wide, and freshwater could be seen flowing out through three or four of these joints.

BOTTOM CHARACTERISTICS AND BIOLOGICAL RECONNAISSANCE

General

The general physiography and flora and fauna of the shoreline and fringing reef in the study area is described in the report "Oahu Reef Inventory" (1980) prepared by AECOS, Inc. for the U.S. Army Corps of Engineers. The following general description is extracted from that report, which summarizes the available information supplemented by investigations conducted by AECOS for the reef inventory study.

The Kahala coastal plain is comprised of ancient beach and dune sand, emerged reef, and alluvium. Kahala beach is a long, narrow strip of sand along the shore, which has a history of marked erosion and accretion. The reef flat off Kahala Beach is an area of consolidated limestone separated by large sand deposits. The outer reef margin and upper reef front is a continuous structure undercut by deep sand-bottom channels.

The inner reef flat is dominated by algae, which cover about 40 percent of the hard bottom areas. Seventeen species were noted, with Acanthophora spicifera, Dictyota acutiloba, Dictyota sp., and Lyngbya majuscula being most abundant. Two popular edible seaweeds occur in low abundance. Corals cover less than one percent of the bottom, with coral cover increasing and algal cover decreasing with distance seaward across the reef. Pocillopora damicornis is the most common coral species on the reef flat. Seaward of the reef margin coral coverage is as high as 30 percent, with Porites lobata the dominant species. Only eight species of fish were recorded on the shallow reef platform. Larger fishes are more abundant along the reef face. The Kahala reef area is reported to be heavily utilized for pole and net fishing, torch fishing and squidding. Two popular edible seaweeds, limu

manauea and ogo are collected on the inner reef flat.

Biological Reconnaissance Investigations

On September 21, 1980, qualitative marine biological observations were completed along each of the alignments of the three drain pipes crossing the Kahala reef. Observations of the substratum type, dominant algae, fishes, corals and other invertebrates were recorded on underwater slates while swimming parallel to the pipelines.

Elepaio Street Drain

Near the shoreline the substratum consists of sand, coral rubble and eroded coral blocks that provide relief of approximately one foot. The frondose alga, Ulva, is present in this nearshore area and indicates increased nutrient levels in the water. Other algae common in the area include Padina, Dictyota and a fine filamentous red alga. Very few small fishes belonging to the surgeon (Acanthuridae) and wrasse (Labridae) families were observed associated with the eroded coral blocks and the pipe hold-down straps. Anemone-like soft corals of the genus Palythoa and sea cucumbers of the genus Holothuria were sparsely distributed throughout the area. No live hard corals were observed.

Approximately 100 feet seaward from the shoreline the substratum consists of coral rubble and sand. Little change was noted in the substratum characteristics with increasing distance from shore to the drainage pipe terminus. The alga, Padina, is dominant. The fishes and sea cucumbers are present but few in number. No live hard corals or soft corals were observed adjacent to the drainage pipe or seaward from the pipe terminus.

Ulili Street Drain

The pipeline appears to have been completely buried during construction. Marine biological observations were completed along an alignment indicated by the manholes that extend above the surface of the water.

The substratum near the shoreline and seaward to the first manhole consists of sand and coral rubble. Seaward of the first manhole and continuing to the reef ridge, the substratum is composed primarily of coral rubble with little sand present. The ridge zone consists of relatively large eroded coral blocks that provide relief of up to 8 feet. Sand and coral rubble are present in the depressions between the coral blocks.

The most common frondose alga observed was Acanthophora which was noted on the coral rubble between the two pipe markers. Fishes were extremely sparse from the shoreline to the reef ridge most probably a result of the uniform reef top and lack of habitat space. A few surgeon fishes were observed associated with the coral blocks in the reef ridge zone. Live hard corals and other common reef top invertebrates were noted only rarely. Even in the reef ridge zone where conditions are good for coral growth (hard substratum and good water circulation) only three colonies of Pocillopora meandrina and five colonies of Porites lobata were observed. Sea urchins were the only other invertebrate observed (Echinometra mathaei- three specimens and Echinothrix diadema - one specimen).

Hunakai Street Drain

The pipe is only partially buried and is exposed starting 20-30 feet seaward from the beach. Near the shoreline the substratum is composed of sand and coral rubble. In the general area of the first manhole, the substratum contains a few eroded coral blocks that protrude approximately one foot above the coral rubble and sand thus providing habitat space for a greater variety of marine organisms.

Between the shoreline and the first manhole six genera of algae were commonly observed (Padina, Acanthophora, Ectocarpus, Dictyota, Sargassum and Gracilaria). The dominant algal genera are Padina and Acanthophora. Fishes, although not abundant, were noted from five different families including the surgeon fishes (Acanthuridae), wrasses (Labridae), butterfly fishes (Chaetodontidae), sharp nose puffers (Canthigasteridae) and the lizard fishes (Synodontidae). As noted previously the surgeon fishes and wrasses are the most abundant. Small colonies of two species of hard corals (Pocillopora meandrina and Montipora verrucosa) and one species of soft coral (Palythoa tuberculosa) were observed but are very sparsely distributed. Other invertebrates observed included two cone shells (Conus), one auger shell (Terebra), three sea cucumbers (Holothuria) and approximately 30 sea urchins (Echinometra and Echinothrix).

Continuing seaward to the reef ridge and drain pipe terminus, the substratum is characterized by a greater amount of eroded coral protruding above the coral rubble and sand. The sea urchin, Echinometra mathaei, is very numerous in this area yet fishes, live hard corals and other invertebrates were rarely observed.

The reef ridge zone is similar to that described for the Ulili Street drain. The substratum consists of large eroded coral blocks that provide relief of up to 8 feet. Sand and coral rubble are present in the depressions between the blocks. Within the reef ridge zone, the only organisms noted were several surgeon fishes (Acanthuridae) and three colonies of live hard coral (Pocillopora meandrina).

WIND, WAVES AND CURRENTS

Wind

The prevailing winds in the study area are the northeast tradewinds, which generally are present 80 to 90 percent of the time during the summer season from about April to November with speeds of 10 to 20 mph. During the winter months, there is a general weakening of the trade wind system and the appearance of southerly and westerly winds due to frontal influences from the north temperate zone and local low pressure systems. These westerly winds are known as Kona storms and are often represented by strong winds and high waves from the southwest quadrant. The year-to-year variation in "Kona" conditions is very large, both in frequency and intensity.

The prevailing tradewinds are altered as they cross the island by the irregular Koolau mountains, so that in the Kahala area the wind tends to be somewhat erratic and gusty as it is funneled around the mountain peaks and through the valleys. However, during tradewind conditions the winds are generally offshore, with an alongshore component. During Kona conditions, which may occur as much as 15 percent of the time in the winter months of December to March, the winds generally blow onshore, again with an alongshore component.

Waves

The Kahala reef is exposed to deepwater waves generated from the northeast clockwise to the west. Three primary wave types affect the study area: (1) the prevailing tradewind generated waves from the northeast which refract and diffract around the island; (2) south swell; and (3) Kona storm waves.

Tradewind waves may be present throughout most of the year but are most frequent between April through October, the summer season, when they usually dominate the local wave climate. They result from the strong tradewinds blowing from the northeast quadrant over long fetches of open ocean. Typically, these deepwater waves have periods ranging from 6 to 10 seconds and heights of 4 to 12 feet. Generally, tradewind waves are present from 80 to 90 percent of the time during the summer season and from 60 to 70 percent of the time during the remainder of the year.

South swell is generated by southern hemisphere winter storms blowing over long fetches in the South Pacific and Indian oceans and after traveling over thousands of miles of open ocean arrive at the southern shores of the Hawaiian Islands as long period swell. South swell is most common between April and October and approaches from the sector southeast through southwest. Wave periods typically range between 12 and 22 seconds, and deepwater wave heights are generally one to four feet, although they may be considerably larger.

Kona storm waves are generated by local storms and fronts which generally cause winds and waves from the south through the west. These storms are neither frequent nor consistent; however, they may generate large waves which can directly affect the study area. Commonly, wave periods range from 6 to 10 seconds, with wave heights up to 15 feet. In any year, Kona storms may occur several times or not at all; however, they occur most often in the winter months.

In addition to the primary wave types, infrequent severe tropical storms or hurricanes may generate large waves which strike the Hawaiian Islands. Between 1950 and 1974, twelve hurricanes or near-hurricanes occurred in the vicinity of Hawaii. Hurricane Dot (August 1959) and Nina (December 1957) generated deepwater waves from

the south in excess of 25 feet and are frequently considered "design" storms.

Nearshore wave heights in the study area are controlled by water depth. When designing for a structure on or immediately seaward of the reef flat, such as the storm drain pipeline, the worst case design condition would be experienced by waves breaking directly on the structure. When designing for a breaking wave condition, it is necessary to determine the maximum breaker height to which the structure would be subjected. The design breaker height depends on the water depth at the structure, the bottom slope seaward of the structure, and the incident wave characteristics.

The design water depth at the structure consists of the existing water depth below mean lower low water (MLLW), and the still water level (SWL) rise due to the astronomical tide, storm surge due to wind stress and low barometric pressure, and wave setup due to the mass transport of water by breaking waves. The breaking wave calculations in this report are based on a mean higher high tide level of 1.9 feet, a storm surge water level rise of 0.5 feet, and wave setup of 1.0 feet, for a total SWL rise of 3.4 feet.

A typical nearshore bottom profile, based on the National Ocean Survey chart number 19358 (Waimanalo Bay to Diamond Head), is shown on Figure 3. Water depths on the 800 to 1,000 foot wide reef flat average 1 to 2 feet MLLW, and seaward of the reef edge the average bottom slope is approximately 1V on 30H.

Based on the foregoing parameters, design breaking wave heights on the reef flat, at the reef edge, and 200 feet seaward of the reef edge for incident wave periods of 8, 12, and 16 seconds are shown in Table 1. The breaking wave heights are based on the methodology contained in the Shore Protection Manual (U.S. Army Coastal Engineering Research Center, 1977).

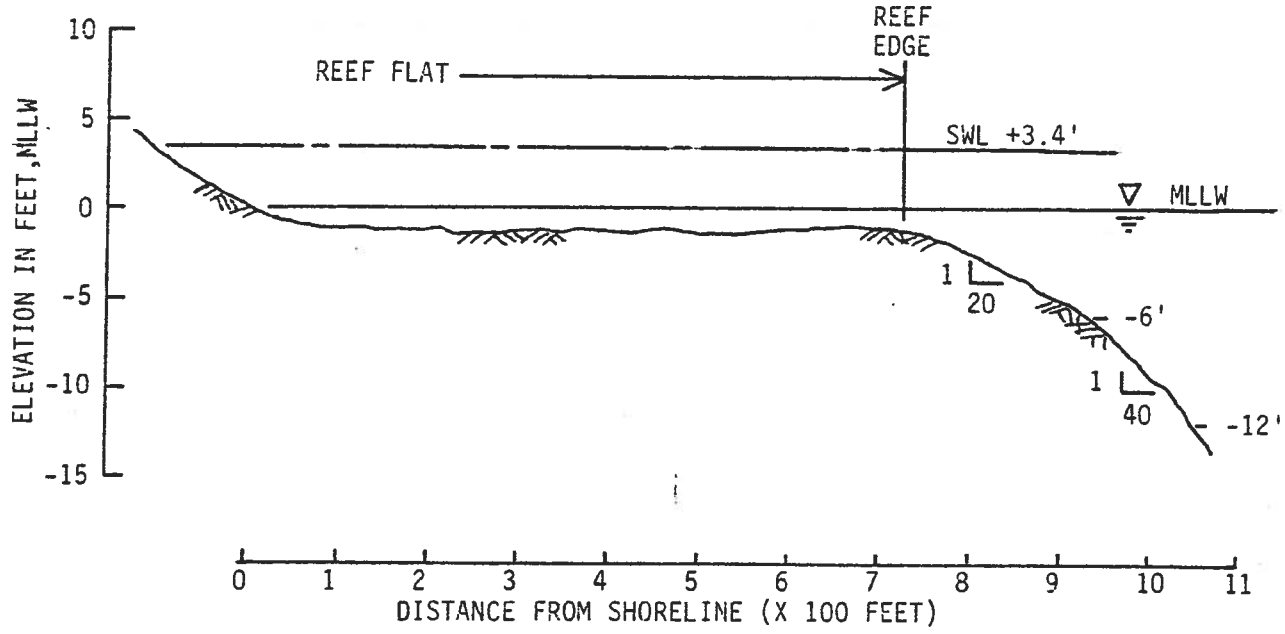

FIGURE 3. TYPICAL NEARSHORE BOTTOM PROFILE

TABLE 1. Design Wave Heights

Location	Depth Below MLLW (feet)	SWL (feet)	Design Depth (feet)	Bottom Slope	Breaker Height, feet 8-sec. Wave	12-sec. Wave	16-sec. Wave
Reef Flat	1.5	3.4	4.9	0	3.8	3.8	3.8
Reef Edge	1.5	3.4	4.9	0.05	6.3	6.6	6.8
200' Seaward of Reef Edge	6	3.4	9.4	0.025	8.9	9.6	9.9

Based on Table 1, reasonable design wave heights for prevailing wave conditions in the study area (excluding hurricane conditions) would be breaker heights of 4 feet on the reef flat, 7 feet at the reef edge, and 10 feet seaward of the reef at the -6 foot depth contour.

Currents and Circulation

Current speed and direction and general circulation patterns on the reef flat were measured during typical tradewind, Kona, and light and variable wind conditions, and during ebbing and flooding tides. The current speed and direction was obtained by measuring the time, distance and direction of movement of dye injected into the water. Current measurements were primarily taken in the vicinity of the Elepaio, Ulili, and Hunakai Street drains. The detailed results of the current studies are contained in the Appendix.

The circulation system in the study area is primarily driven by wave setup on the shallow reef flat and is virtually independent of wind direction and tide stage. The mass-transport of water onto the reef flat by wave action is relieved by a rip current setting seaward out the natural channel through the reef at the terminous of the Hunakai Street drain. The typical circulation system is shown on Figure 4. From the approximate mid-point of the study area, the wave setup induces a northeast setting longshore current which then flows seaward as a rip current out the channel at the eastern end of the study area. Current speeds are typically 0.5 to 1.0 feet per second (fps). At the western end of the reef flat, near the Elepaio Street drain and Black Point, the current is less well defined, with large eddies, particularly near shore, and generally flows southwest at 0.1 to 0.5 fps and out through the breakers near Black Point.

The circulation system in the vicinity of the Ulili and Hunakai Street drains is very persistent. The current direction was found to be constant regardless of tide stage and wind direction, and was even found to set directly into strong 20 to 25 mph ENE tradewinds. The current study clearly indicates a uni-directional, nonvariable circulation system, with wind and tide only influencing the current speed. Current speeds ranged from 0.5 to 0.8 fps during 20 to 25 mph ENE tradewinds and 1.0 to 1.2 fps during 10 to 15 mph SW Kona winds.

WATER QUALITY

Scope and Methodology

Water quality parameters were measured in the vicinity of the three relief drains during various meterological conditions in order to characterize the existing water quality on the Kahala reef. Water quality measurements were also made at the mouth of a concrete drainage canal and the Waialaenui Stream, approximately 2,300 and 3,300 feet east of Hunakai Street respectively, in order to measure the existing water quality at points of significant fresh water storm discharge.

The water quality parameters measured included salinity and temperature, dissolved oxygen (D.O.), pH, and turbidity. Salinity and temperature were measured insitu using a Beckman RS-5 portable salinometer, which measures salinity as a function of electrolytic conductivity and temperature using a precision thermister temperature sensor. The measurement accuracy is $\pm$0.3 percent for salinity and $\pm$0.05°C for temperature. Dissolved oxygen was also measured insitu, using a Yellow Springs Instrument Co. Model 57 Dissolved Oxygen meter which measures D.O. in parts per million (ppm). The measurement accuracy is $\pm$0.1ppm. Water samples were taken and measured in the laboratory for pH and turbidity. The pH of the water samples was measured using an Orion Research Model 501 Digital Ionalyzer, and turbidity in nephelometric turbidity units (NTU) was measured using a Hach Model 2100A Turbidimeter.

The water quality stations in the study area are shown on Figure 2. Additional measurements were made at the mouth and approximately 100 yards offshore of the canal and stream east of the study area as located on Figure 1.

Measurements were made on three separate occasions as follows:

Date	Meteorological Conditions
12-16-80	Light and variable winds, 4 to 8 mph north-northeasterly (Oahu winds reported 5 to 15 mph from north). There had been heavy rainfall for several days, stopping 24 hours prior to the field measurements. It was clear and sunny on the 16th.
12-22-80	Kona storm conditions, winds 10 to 15 mph from the southwest (Oahu winds reported to be 15 to 25 from southwest). It rained for approximately 12 hours preceeding and during the field measurements.
1-27-81	Typical strong tradewind conditions, winds 20 to 25 mph from the east-northeast (Oahu winds reported to be 15 to 30 mph from northeast). No significant rainfall immediately preceeding the field measurements.

Data Summary

The water quality measurements are summarized and discussed by parameter, station, and meteorological condition in the following paragraphs. Stations 1, 2 and 3 are along the alignments of the Elepaio, Ulili, and Hunakai Street relief drains, respectively, station 4 is located at the discharge of the drainage canal, and station 5 is at the mouth of Waialaenui Stream. Substation A is near the shoreline, B is located at the approximate mid-point across the reef, and C (Hunakai Street drain only) is located at the drain discharge point. Reference is made to Chapter 37-A, Water Quality Standards, of the State Public Health

Regulations, where applicable. The waters in the study area are classified Class A - open coastal waters.

Salinity and Temperature

Station	Salinity, 0/00			Temperature, °C		
	Light & Variable	Kona Winds	Tradewinds	Light & Variable	Kona Winds	Tradewinds
1A	33.50	33.49	34.24	23.79	26.14	24.85
1B	33.34	34.00	34.30	23.80	25.59	24.06
2A	33.90	33.86	34.15	24.41	25.13	24.01
2B	33.79	34.05	34.12	24.31	24.90	23.73
3A	33.85	34.00	33.99	24.44	25.13	24.04
3B	33.92	34.06	34.22	24.45	24.85	23.95
3C	33.90	33.55	33.82	24.51	24.88	24.00
4A	33.36	19.63	34.02	23.96	25.03	23.88
4B	-	33.95	34.10	-	24.85	23.64
5A	33.53	27.00	-	23.45	24.88	-
5B	-	32.68	33.92	-	24.61	23.85

The salinity in the study area was generally uniform and typical of nearshore coastal waters, regardless of the weather conditions, and varied between about 33.5 and 34.3 0/00. Measurements at the Hunakai Street drain terminus during rainy (Kona) weather with visible freshwater discharge showed no appreciable lowering of the salinity in the vicinity of the discharge point. On the other hand, measurements at the mouth of the drainage canal and Waialaenui Stream under the same conditions showed significantly depressed salinity values in the immediate vicinity of the freshwater discharge into the coastal waters. Measurements offshore within 100 yards of the discharge points showed near normal salinity values, however. The general uniformity of salinity and the apparent rapid absorption of fresh water is indicative of the good mixing and dispersion characteristics of the reef flat waters, which would be expected considering the good circulation system on the reef and exchange with offshore waters as

discussed in the previous section.

The water temperature on the reef showed a greater variability, ranging from about 23.7°C to 25.0°C. A low of 23.45°C was measured at the mouth of Waialaenui Stream during light and variable wind conditions and a high of 26.14°C was measured near the shoreline at Elepaio Street during Kona conditions. The temperature was approximately 1°C higher at all stations during Kona wind conditions than during strong tradewinds and was highest at the Elepaio Street stations during both Kona and tradewind conditions. The water temperature on the shallow reef is likely significantly affected by insolation during the daytime, and the rate of solar heating is directly proportional to circulation and water residence time. The generally higher temperatures at the Elepaio Street (west) end of the study area reflect the slower currents and poorer circulation in this area, and the slightly higher water temperatures during Kona wind conditions mirror the decreased circulation and exchange of nearshore waters on a windward coast.

The State Water Quality Standards require that the salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors, and temperature shall not vary more than 1°C from ambient conditions. Given the generally good circulation system in the study area, this requirement should not pose a problem for stormwater discharge, with the possible exception of the Elepaio Street (west) end of the study area where circulation and flushing of the reef flat is less well defined.

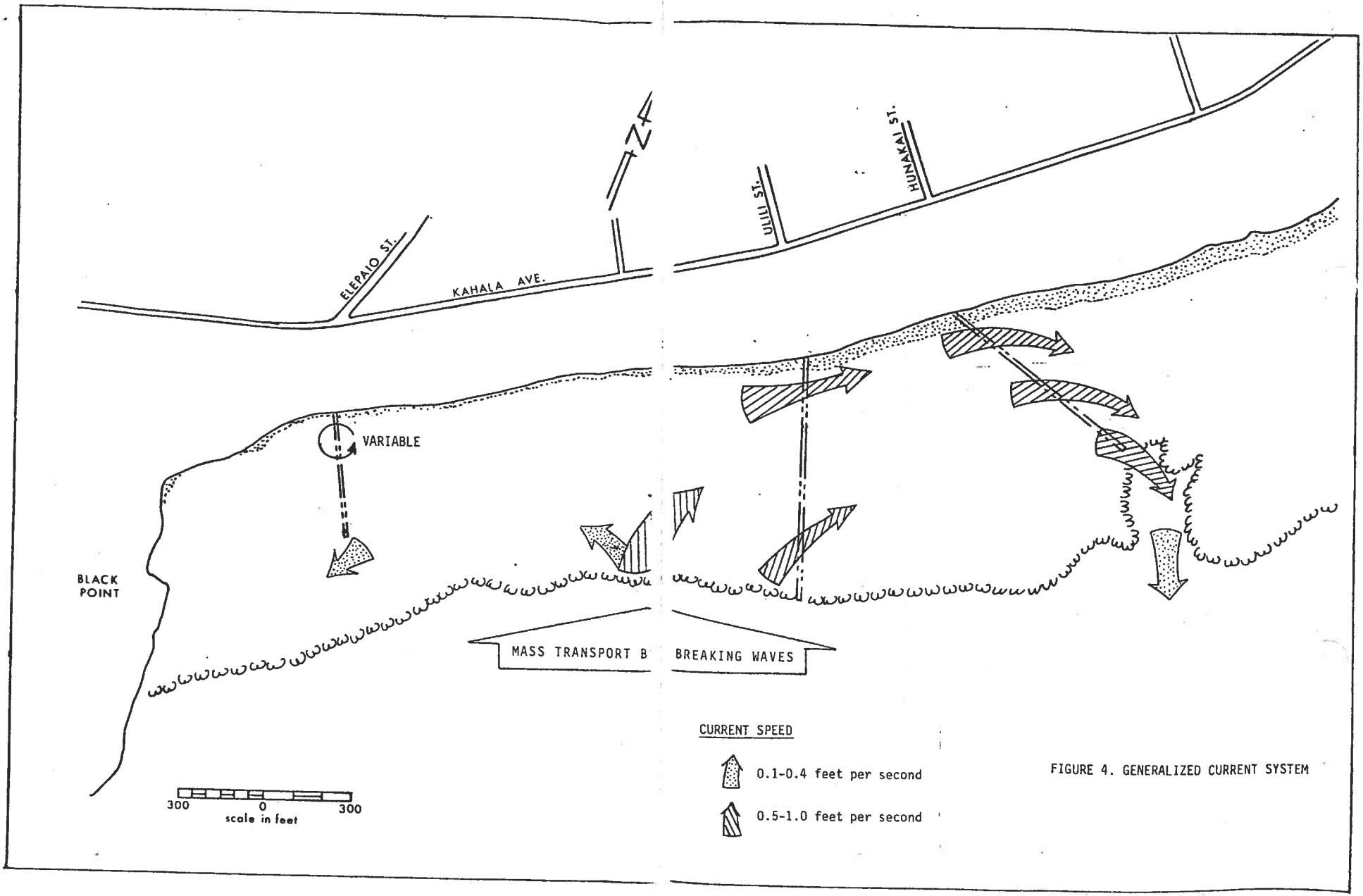

FIGURE 4. GENERALIZED CURRENT SYSTEM

Dissolved Oxygen

Station	D.O., ppm Light & Variable	Kona Winds	Tradewinds
1A	7.0	10.2	8.2
1B	7.1	9.3	7.8
2A	7.1	7.9	7.4
2B	6.7	6.9	7.1
3A	7.4	7.2	7.3
3B	6.8	7.2	7.0
3C	7.0	7.1	8.1
4A	7.0	6.7	6.6
4B	-	6.9	7.0
5A	5.3	3.4	-
5B	-	5.5	7.3

The dissolved oxygen levels in the vicinity of the three storm drains were well above the saturation point of about 5.0 ppm for all three weather conditions. Lower D.O. levels were measured at the Waialaenui Stream mouth during periods of obvious freshwater outflow, and a depressed D.O. level of 3.4 ppm was measured at the stream mouth during Kona conditions. The D.O. level was above saturation within 100 yards of the stream mouth, however. The D.O. level in the vicinity of the Hunakai Street drain terminus was well above saturation even with visible freshwater discharge. The generally high D.O. levels reflect the transport of water supersaturated with oxygen during the wave breaking process onto the reef flat and good reef flat flushing. No difficulty is foreseen in meeting the State Water Quality standard of D.O. being not less than 75% of saturation.

pH

The pH at all the stations during all weather conditions generally ranged between 8.1 and 8.3. A low of 7.79 and a high of 8.42 were measured at the Waialaenui Stream mouth and

station 1B at the Elepaio Street drain, respectively, both during Kona wind conditions. All measurements were within the State Water Quality criteria of no deviation greater than ± 0.5 units from a value of 8.1.

Turbidity

NTU

Station	Light & Variable	Kona Wind	Tradewinds
1A	0.87	1.8	0.85
1B	0.82	0.67	1.7
2A	0.65	0.68	1.1
2B	0.50	0.8	1.4
3A	0.68	0.66	1.5
3B	0.35	0.44	1.0
3C	0.62	0.63	1.3
4A	2.3	26.0	2.8
4B	-	0.75	1.7
5A	3.1	5.0	5.1
5B	-	3.0	-

The turbidity in the vicinity of the three storm drains ranged from about 0.4 to 1.7 NTU and was uniformly higher at all stations during strong tradewind conditions. The turbidity during light and variable and Kona wind conditions was generally slightly higher nearshore at the Elepaio Street drain, probably reflecting the poorer circulation in this area. The higher turbidity during tradewind conditions, almost twice as high as the other conditions, was probably a result of fine bottom sediments and algal material temporarily suspended by the wind chop generated by the strong trades blowing almost parallel to shore. There was no significant increase in turbidity at the terminus of the Hunakai Street drain during Kona conditions with visible freshwater outflow.

The turbidity in the vicinity of the canal and stream mouths was significantly higher at all times, reaching a high of 26 NTU at the mouth of the canal during Kona conditions and averaging about 3 to 5 NTU in the vicinity of Waialaenui Stream. The discharge waters of both the canal and stream were visibly very turbid during rainy periods, and a broad "delta" of fine sediments has been deposited on the reef around each discharge point which is easily stirred up by strong winds to make the water turbid even with no canal or stream discharge.

The State Water Quality Standards have two sets of turbidity requirements - "wet" criteria when the open coastal waters receive more than three million gallons per day of freshwater discharge per shoreline mile and "dry" criteria for areas that receive less. The criteria are also stated three ways: (1) geometric mean not to exceed 0.50 and 0.20 NTU for wet and dry areas, respectively; (2) turbidity not to exceed 1.25 NTU (wet areas) and 0.50 NTU (dry areas) more than 10% of the time; and (3) at no time to exceed 2.00 NTU in wet areas and 1.00 NTU in dry areas. It is likely, based on the limited measurements accomplished during this study, that these criteria are presently exceeded in the study area a significant portion of the time, particularly if Kahala is designated a "dry" area.

SUMMARY AND DISCUSSION

1. The Elapaio Street and Ulili Street drains are completely blocked along most, if not all, of their lengths. Only the Hunakai Street drain is flowing freely with no apparent problem with sand blockage. No fresh water flow was observed from any of the inspection holes drilled in the Elepaio and Ulili Street drains. Visual inspection of sediment samples taken from the inspection holes indicated that sediment toward the seaward ends of the pipes was primarily calcareous sand, with increasing amounts of terrestrial sands and silts nearer the shoreline. Poor joint construction was found on two of the pipelines, a 2-inch gap was found in a bell and spigot joint on the Ulili Street drain, and freshwater was observed flowing out through three or four joints on the Hunakai Street drain.

2. There is considerable sand on the reef flat, which is readily transported during periods of high surf and strong longshore currents on the reef flat. Visual inspection of the shoreline and pipelines indicates a predominant west to east sand movement. The Elepaio and Ulili Street drains discharge on the reef into what are apparently dredged holes. However, the inverts of the pipes are located below the adjacent bottom elevation, and it is likely that wave action moves sand off the reef and into the deeper pockets at the pipe ends and then directly into the pipelines. In order to eliminate the potential for sand blockage, the drains should discharge into deeper holes on the reef which are periodically dredged to insure that the sand level is well below the pipe invert, or, more ideally, the drains should discharge seaward of the reef edge with the pipe inverts above

the adjacent bottom elevation. The Hunakai Street drain is a good example of this. It discharges into a natural channel through the reef, with its invert well above the bottom at the discharge point and does not appear to have any problem with sand blockage at the discharge point.

3. Loose pipe joints, as found on the Ulili and Hunakai Street drains, are another point of entry for sand that can increase the likelihood of pipe blockage. Calcareous sand found in the Hunakai Street drain may well have entered through the visible gaps in the pipe joints.

4. Terrestrial sand and silt being transported by storm water runoff through the drains may be a third cause of blockage. The sediment samples obtained at the inspection holes, however, generally have a high percentage of calcareous sand indicating that sand from the reef is the primary problem.

5. An alternative to the drains discharging into deep holes in the reef flat or seaward of the reef edge would be to simply terminate them at the shoreline. At the location of the Elepaio Street drain the shoreline is rocky with little sand, and it may be possible to keep the pipe invert above the elevation of sand movement and eliminate the sand plugging problem. The shoreline at the location of the Ulili Street drains is a sand beach, and it would likely be very difficult to raise the pipe inverts above the elevation of active sand transport. In addition, any shoreline structures in this area may interfere with natural beach stability and sand transport processes. The shoreline is a sand beach in the vicinity of the drainage canal and Waialaenui Stream east of the study area, and very rapid sand plugging was noted following the cessation of heavy storm water discharge.

6. The reef flat substratum is composed of old reef material (consolidated limestone) with considerable sand and coral rubble on the surface and in deeper pockets and channels. The vertical relief is low, generally being less than a foot. The investigations showed the marine biological communities in the vicinity of the storm drain pipelines to be poorly developed. In general the species diversity and abundance is very low, with the possible exception of sea urchins near the Hunakai Street drain. Coral coverage is almost negligible, and few fishes were observed. The poorly developed marine biological communities do not appear to be a result of the contruction and subsequent discharge of the storm drains. Observations of shoreline storm drain discharges at other locations on Oahu showed colonies of living coral within 20 to 50 feet of the storm drain discharges, with their size indicating that they were 5 to 10 years old. Live Pocillopora meandrina coral was noted in the vicinity of the Hunakai Street drain discharge. The lack of live corals on the Kahala reef may be the result of strong wave surge forces that dislodge and break up the coral colonies in the reef ridge zone and the periodic transport of sand across the reef top which may abrade and kill small coral colonies or smother them completely.

7. Should the drains be terminated to discharge at the shoreline, the resultant periodic discharge of fresh water across the reef top may cause a shift in the algal constituents such that species more resistant to lower salinities may appear adjacent to the points of discharge. The effects on corals would be negligible since live coral coverage is nearly zero. Motile organisms such as fishes, sea cucumbers and sea urchins would be temporarily displaced during periods of major storm discharge but would migrate back within a relatively short time after the discharge stops.

8. The prevailing winds on the Kahala reef are the northeast tradewinds, which are funneled through the Koolau mountains, and in the study area are generally gusty offshore winds with an alongshore component. The study area is directly exposed to infrequent southerly and westerly winds which tend to blow onshore, again with an alongshore component.

9. The Kahala reef is exposed to tradewind-generated waves, south swell, and Kona storm waves. The nearshore wave heights are controlled by the water depth and design breaking wave heights on the reef flat, at the reef edge, and 200 feet seaward of the reef are 4, 7, and 10 feet, respectively.

10. The current system on the Kahala reef is driven by wave setup on the shallow reef flat and is virtually independent of wind direction and tide stage. From the approximate mid-point of the study area (west of the Ulili Street drain), the wave setup indices a northeast setting longshore current which then flows seaward out the natural channel through the reef at the Hunakai Street drain terminus. Current speeds are typically 0.5 to 1.0 fps. At the western end of the Kahala reef, in the vicinity of the Elepaio Street drain, the current is less well defined, with large eddies near shore, and generally flows southwest at 0.1 to 0.4 fps and out through the breakers near Black Point.

11. Existing water quality in the study area was measured under light and variable wind conditions, rainy Kona wind weather, and strong tradewinds. Water quality was also measured in the vicinity of a drainage canal and Waialaenui Stream, east of the study area. The salinity was generally uniform and typical of nearshore coastal waters, regardless of the weather conditions.

Measurements at the Hunakai Street drain terminus with visible freshwater discharge showed no appreciable lowering of the salinity. Greatly depressed salinity values were found at the mouths of the drainage canal and stream during a period of obvious storm water discharge; however, the fresh water was rapidly dispersed and salinity values were near normal 100 yards of the discharge point. The water temperature showed greater variability and is likely primarily influenced by insolation and water residence time on the shallow reef flat. The water temperature was slightly higher near the shoreline in the vicinity of the Elepaio Street drain, where the circulation is poorer, during both Kona and tradewind conditions. Dissolved oxygen values in the study area were well above the saturation point during all measurement periods. The high dissolved oxygen levels reflect the transport of super-saturated water onto the reef by breaking waves and the good flushing characteristics of the reef flat. The pH of the water in the study area reflected normal sea water values during all measurement periods. Water turbidity in the study area was highest during strong tradewind conditions as a result of fine bottom sediment and algal material temporarily suspended by the wind chop on the reef. The turbidity during light and variable and Kona wind conditions was generally slightly higher nearshore in the vicinity of the Elepaio Street drain, again reflecting the poorer circulation in this area. The turbidity in the vicinity of the drainage canal and Waialaenui Stream mouths greatly exceeded that in the study area at all times.

12. General recommendations for the three relief drains are as follows:

(a) Elepaio Street Drain. This drain presently terminates in a dredged hole approximately mid-way across

the reef flat and is completely plugged. The amount of sand and loose coral rubble on the reef flat makes it almost impossible to terminate the drain on the reef, even in a deep dredged hole, without regular maintenance to keep the pipe clear of sand. A reasonable alternative would be to simply terminate the drain at the shoreline. This is essentially what presently occurs because the pipe is plugged and the storm water flows out through cracks in the manhole at the shoreline. There is very little sand on the shoreline in the vicinity of the Elepaio Street drain and, provided the pipe invert is at the high water line, there should be no sand plugging problem. Most of the shoreline homes in this area are fronted by rock or concrete retaining walls. Marine life along the shoreline and on the reef flat in this area is sparse and dominated by algae. It is recommended that the capacity of this drain to discharge storm water not be increased because the generally weak current system at the west end of the Kahala reef limits flushing of the reef flat.

(b) Ulili Street Drain. This drain is also extensively plugged. Unlike the shoreline at the Elepaio Street drain, however, the shoreline in the vicinity of the Ulili Street drain is a sand beach. A drain terminating at the shoreline in this area would require regular maintenance to prevent sand plugs and could adversely impact on natural littoral processes (sand movement) adjacent to it. This drain is within about 500 feet of the Hunakai Street drain and a reasonable alternative would be to abandon the Ulili Street drain and divert the storm water to the Hunakai Street drain.

(c) Hunakai Street Drain. This drain is clear and apparently functions effectively as a relief drain. The drain discharges into a natural channel through the reef, with its invert above the existing bottom, and has no problem with sand plugging the end of the pipe. Some sandy sediment was found in the pipe during its inspection, which likely enters through gaps in the pipe joints. This sediment does not appear to be a significant problem and is

likely flushed out during periods of heavy storm water discharge. The drain discharges into a strong and persistent rip current in the channel which very effectively flushes the reef under all weather conditions. The storm water discharge from the drain is rapidly mixed with the receiving water and dispersed seaward. This drain is very well located and its storm water discharge capacity could be increased if necessary with no apparent adverse impact. The drain could be shortened and still discharge into the strong current system. However, it presently terminates at the shoreward end of the natural channel, and any shortening of the pipeline so that it was no longer discharging into the deep channel would likely result in significant sand plugging problems.

NEIL ABERCROMBIE
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Correspondence: SPA OA-10-16

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JUN 25 2012

Dear Mr. Kugle and Mr. Evans,

Subject: Temporary Erosion Control Biodegradable Erosion Blanket at 4615 Kahala Avenue – TMK: (1) 3-5-005:015 (Seaward)

We are in receipt of your correspondences dated June 14, 2012 and June 20, 2012 in response to the Department of Land and Natural Resources' (DLNR) letter dated April 16, 2012, in which DLNR requests removal of the temporary shoreline erosion control structure seaward of the subject property at 4615 Kahala Avenue ("Property"). This letter is in response to comments within your letter.

Temporary erosion control using biodegradable erosion blankets, stabilizing sand bags, and placement of up to 50 cubic yards of imported sand (the "Structure") was approved by DLNR on December 30, 2009 (Site Plan Approval (SPA) OA-10-16). The Structure was permitted as a temporary response to ongoing erosion, while a longer-term erosion-control plan is developed. DLNR has not received correspondence from the Property regarding longer-term solutions.

The Structure was built using biodegradable coconut fiber material that will naturally degrade and is designed to provide temporary erosion protection for a year or so, while a longer-term plan is developed. The temporary structure, installed in early 2010 is beyond its expected lifespan and should be removed.

Upon review of the Terms and Conditions under which this temporary authorization was obtained in SPA OA-10-16, we note the following:

2. *All work shall be conducted landward (above) the high tide line and seaward of the shoreline (HRS 205A), no material shall be discharged into state waters from this project.* It appears that portions of the Structure are seaward of where the shoreline would likely be determined based on Hawaii Administrative Rule 13-222 (Shoreline Certification).

EXHIBIT 8

4. *All activities shall be performed in accordance with the submitted plans and within the lateral boundaries of the subject property.* DLNR received complaints about the Structure and conducted site visits in March and April of 2012. At that time, DLNR noted that two (2) unpermitted sand bag groins had been installed at either end of the Structure and extending into the water. These alterations to the Structure where not permitted by DLNR.

5. *Minor maintenance and repair may be considered with prior approval from the OCCL. Minor repair is defined as retaining the original material and reinforcing or repairing to maintain the structural integrity of the structure. Any replacement or repair of more than 25% of the structure is not considered maintenance and not allowed under this Site Plan Approval.* It appears that the structure has been repeatedly maintained, without our authorization. In addition, prior approval was not obtained from DLNR-OCCL for placement of additional sand bags (sand bag groins) at either end of the Structure.

6. *No other erosion control, landscaping or land uses are authorized without prior written consent from the DLNR.* Prior written consent and authorization was not obtained from DLNR for the sand bag groins.

10. *The applicant shall submit a summary report to the DLNR within 90 days of the completion of the project describing what maintenance actions took place and include photographic or other quantitative evidence (beach profiles or volume calculations) of the beach condition.* DLNR has not received the required summary report.

16. *Where any interference, nuisance, or harm may be caused, or hazard established by the proposed measures, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.* The sand bag groins are an interference to lateral public beach access.

21. *Where any interference, nuisance, or harm may be caused, or hazard established by the activities authorized under this letter, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard.* The structure has become an interference to lateral public beach access. Due to shoreline erosion flanking the structure, much or all of the structure is now seaward of where the shoreline would likely be determined based on Hawaii Administrative Rule 13-222 (Shoreline Certification). The toe of the structure is frequently submerged during high tides and has become an interference to lateral beach access.

DLNR sent letters to a number of Kahala beachfront owners requesting removal of encroaching vegetation growing seaward of the high wash of the waves (the Shoreline) and obstructing lateral beach access at high tides. The vegetation seaward of the shoreline was frequently under-washed by wave runup and had little or no effect in "securing the coastal dune" or protecting coastal property. Vegetation on a coastal dune (seaward of the Shoreline) is typically ineffective at reducing chronic or long-term coastal erosion as found on the beach fronting the Property. Studies by the University of Hawaii Coastal Geology Group (UHCGG) find that the beach

fronting the Property and adjacent properties has eroded at an annual rates between 0.5 and 1.0 feet per year since the late 1960s.

Removal of the Structure may lead to further erosion of the coastal dune. This is a natural process that will nourish the beach with sand presently impounded behind the Structure. Public beach access will not be impaired along the beach as long as the coastal dune and vegetation line is allowed to migrate landward at the same rate as the water line. Though the erosion may continue if the temporary structure is removed, no dwellings or structures are "imminently threatened" according to Administrative Rules (Title 13-5-2, HAR), meaning no structures are within a distance of 20 feet or less of an actively eroding shoreline or erosion that will threaten the structure in less than six months. Therefore, it does not appear that the erosion control structure is appropriate and removal is justified.

Your letter asserts that DLNR is in some regards responsible for recent vandalism to the Structure due to media publicity surrounding this case and adjacent properties. DLNR and the Office of Conservation and Coastal Lands are tasked with conserving Hawaii's beaches and protecting public coastal access. Due to the importance of beaches in Hawaii's society and economy our efforts are of interest to the public and media. DLNR cannot be held responsible for the publicity surrounding this case and is in no way liable for the damage to the Property or Structure.

Further, your letter attempts to implicate the storm drain at Hunakai Street as "the source of the non-natural, aggravated erosion occurring at the Property." DLNR has reviewed the report "Ocean Engineering and Environmental Reconnaissance Study of the Elepaio, Ulili, and Hunakai Street Relief Drains Kahala, Oahu, Hawaii" (the "Storm Drains Report") prepared for Wilson Okamoto & Associates in February 1981. DLNR finds no evidence that the Hunakai Street drain is a substantial contributor to the erosion at Kahala Beach fronting the Property. According to the UHCGG coastal erosion studies, rates of beach erosion fronting the Property and the Hunakai storm drain are similar to rates along adjacent portions of beach to the east and west, indicating that the Hunakai storm drain is likely not causing "aggravated erosion" fronting the Property.

The Storm Drains Report found loose joints in the pipe at Hunakai Street and calcareous sand within the pipes with increasing amounts of terrestrial sands and silts nearer the shoreline. The report also documents considerable calcareous sand on the reef flat. Based on these observations, it is likely that most of the sand is entering the pipe along the reef flat and not at the beach, and the pipe is not a substantial cause of sand loss from the beach.

The Storm Drains Report documented persistent currents of 0.5 to 1.2 feet per second moving to the east along the shore, in the vicinity of the Property regardless of tide stage and wind direction. Based on the data on nearshore currents and the UHCGG erosion data, it's apparent that natural erosion processes, longshore currents, and interference to the local sediment processes from armored shoreline to the west are largely responsible for the ongoing erosion fronting the Property. Alterations or removal of the Hunakai storm drain will have little or no effect in reducing erosion rates at the beach fronting the Property.

In response to your request in your letter dated June 20, 2012, DLNR has not located any permits or approvals that the State of Hawaii has granted to the City and County of Honolulu concerning the Hunakai storm drain. We suggest you contact Honolulu City and County Department of Facilities Maintenance, should you decide to pursue this matter further.

DLNR is requesting removal of the temporary erosion control structure and remediation of the shoreline. The Structure has surpassed its expected useable lifespan, is no longer in compliance with a number of The Terms and Conditions of the original authorization, and has become an obstruction to public shoreline access.

DLNR intends to bring this matter to the attention of the Board of Land and Natural Resources (BLNR) as an alleged violation pursuant to Hawaii Revised Statute Chapter 183C-7, and rules promulgated pursuant to this chapter (Title 13-5-6, Hawaii Administrative Rules). Should you fail to comply with this order within 30 days of the date of this letter, you may be subject to fines up to $15,000 per day pursuant to Chapter 13-5-6, HAR, in addition to administrative costs incurred by DLNR.

Please feel free to contact me at (808) 587-0377 should you wish to discuss the matter.

Sincerely,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands

Cc: Honolulu City & County Facilities and Maintenance

Chairperson

ODLO

Let's Discuss

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DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

DAMON KEY LEONG KUPCHAK HASTERT

July 23, 2012

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Mr. Samuel Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

Re: Temporary Shoreline Erosion Control Biodegradable Erosion Blanket at 4615 Kahala Avenue

Dear Mr. Lemmo:

We are in receipt of your correspondence dated June 25, 2012. We also write to follow-up on our telephone conversation with you on July 12, 2012.

Most significantly, we wish to provide you with an update of the actions the property owner is taking to address the Department's concerns. The property owner contacted Dr. Charles Fletcher of the University of Hawaii's School of Ocean and Earth Science and Technology (Dr. Fletcher had previously prepared a 2009 report concerning erosion at the adjoining property at 4623 Kahala Avenue). Dr. Fletcher recommended that the property owner engage the respected coastal engineering firm, Sea Engineering, Inc., to assess and make recommendations concerning the erosion. Accordingly, the property owner has engaged Sea Engineering and its experts are currently reviewing the situation and formulating recommendations concerning the alternatives available. We anticipate Sea Engineering's recommendations will be available in August.

Second, the property owner has engaged a civil engineer to evaluate the effect of the broken Hunakai drain line on the erosion and sand loss. This review is confirming the findings of the 1980 report, which at that time had identified the drain line joint gaps as the source of significant calcareous sand deposits within the pipe and the subsequent flushing of the sand with rainfall events. The property owner has also inspected the drain line, which inspection confirmed that the majority of joint gaps, and the most sizeable gaps, are located immediately adjacent to the beach.[1] The property owner has also initiated an inspection protocol and study to document sand migration within the drain over time.

[1] Attached please find a June 2012 photograph depicting the location of three large gaps in the immediate vicinity of the beach.

EXHIBIT 9

Third, your correspondence indicated that several coconut sandbags at the flanks of the structure were impeding lateral shoreline access. These bags will be removed. We anticipate removal within two weeks.

Our prior correspondence was not intended to suggest the Department caused the acts of vandalism and damage to the temporary structure. Rather, the acts of vandalism and sabotage were highlighted because those acts had the purpose and effect of limiting the effectiveness and operation of the structure. Those acts are beyond the property owner's control.

With respect to the longer-term solution to ongoing erosion at Kahala Beach, the property owner has undertaken significant steps, which may not be fully reflected in the Department's records. First, as part of the property owner's approved work, approximately 50 cubic yards of new sand was added to the beach and dune area. This step, while not a long term solution in and of itself, still conferred a public benefit for a time.

Second, and more importantly, Dr. Fletcher's 2009 report identified a significant sand field located beyond the reef that could be the source of a beach re-nourishment project, similar to that undertaken by DLNR on Waikiki Beach in 2012 and in 2007.[2] Although Dr. Fletcher also noted that a seawall or other permanent shoreline hardening was another possibility, as has already occurred along nearly every property from the Elepaio Street access to the Hunakia Street access, this would not serve to preserve Kahala Beach. Dr. Fletcher estimated the cost of engineering, permitting and undertaking beach nourishment at between $600,000 and several million dollars, depending on the size of the project. The recent Waikiki Beach project undertaken by the Department involved approximately 24,000 cubic yards of sand, resulting in the widening of the beach by an average of 39 feet over a distance of 1,700 feet, at a cost estimated to be $2.7 million.

Because it is neither feasible nor appropriate for a single property owner to fund a public beach nourishment project of this scale, the property owner approached other Kahala avenue property owners. Unfortunately, and despite the willingness of our client to contribute significantly toward a nourishment project, other owners were unwilling or unable to make a similar commitment. Further, it

[2] In fact, as noted in the 1980 Sea Engineering report on the operation of the Hunakai drain line, it appears that much of the sand that is located immediately beyond the reef might well have been deposited by the drain line and the predominant currents.

does not appear at this time that either DLNR nor the City and County of Honolulu is planning a nourishment project. Nevertheless, the property owner continues to evaluate ways to fund or partially fund such a project, possibly with the same public/private participation as occurred in Waikiki. To the extent that all Kahala residents benefit from a full and vibrant Kahala Beach, and also because the Hunakai drain line serves a sizeable watershed area of interior Kahala properties, there should be broader private participation that just one or two oceanfront property owners.

Third, the property owner has engaged both the Department and the City in an effort to obtain repairs to the Hunakai drain line, which would serve to stop its current effect on beach erosion and sand loss, and would also prepare the area for a future nourishment project, if and when one is undertaken. In this regard, City and State representatives were contacted concerning the drain and its repair. To date, however, no commitment to nor timetable for repair has been forthcoming.

The temporary protection measure is serving an important public service. The beach immediately east of the property is not eroding to the degree it was when the DLNR authorized temporary measures at that location, resulting in a walkable beach. Equally important, large numbers of coconut trees on the subject property and the adjacent property have not been lost to erosion. If the structure is removed, erosion will threaten these trees.

We also wish to provide the Department with additional information concerning the history of this project. DLNR personnel were inspecting the location as the project was undertaken and thus the Department had actual knowledge of the status of the project. In fact, after a site inspection on February 11, 2010, DLNR reported: "These practices along with successful vegetation removal at two properties just east of here are greatly improving lateral public beach access. (Coconut fiber bags are approved as a temporary bio-degradable erosion control measure). Slowly the beach resources here are beginning to improve." The property owners' contractor has had frequent communication with the Department.

Also in 2010, the City took a contrary position about the location of sand entering the Hunakai drain line. Mr. Tyler Sugihara of the City and County of Honolulu advised DLNR as follows: "I think if there is sand entering the outfall pipe it would occur closer to the sand beach area." This was consistent with DLNR's position as well: "DLNR-OCCL is supportive of critical repairs if the pipe is active as there is a possibility it may be pumping sand offshore through the holes

and would strongly support removal of all the inactive pipes." Mr. Sugihara offered to meet with DLNR at the beach, however, it is unknown if such a meeting occurred. Thus, from the time the temporary measures were implemented, the property owner has been actively soliciting the assistance of the governmental agencies in addressing beach erosion issues.

In summary, the property owner has undertaken many efforts, and incurred significant expense, in pursuing a longer-term solution to the erosion occurring at Kahala Beach. We appreciate the Department's patience, understanding and cooperation. If you have any questions or comments, please do not hesitate to contact the undersigned.

Very truly yours,

DAMON KEY LEONG KUPCHAK HASTERT

Gregory W. Kugle
Matthew T. Evans

GWK/MTE:ds
Enclosure
cc: 4615 Kahala Avenue Corp.
171415

Gregory Kugle

From: Gregory Kugle
Sent: Friday, July 20, 2012 8:48 AM
To: Gregory Kugle ([redacted])
Subject: FW: Skycam photo of Hunakai SD outfall main at beach

Sent from my iPad

Kahala Beach Vegetation Removal

May 2008 before Vegetation removal (Arrow denotes same point)

Partial removal (one property June, 2008)

After removal (two properties February 11, 2010)- with temporary Biodegradable sandbags

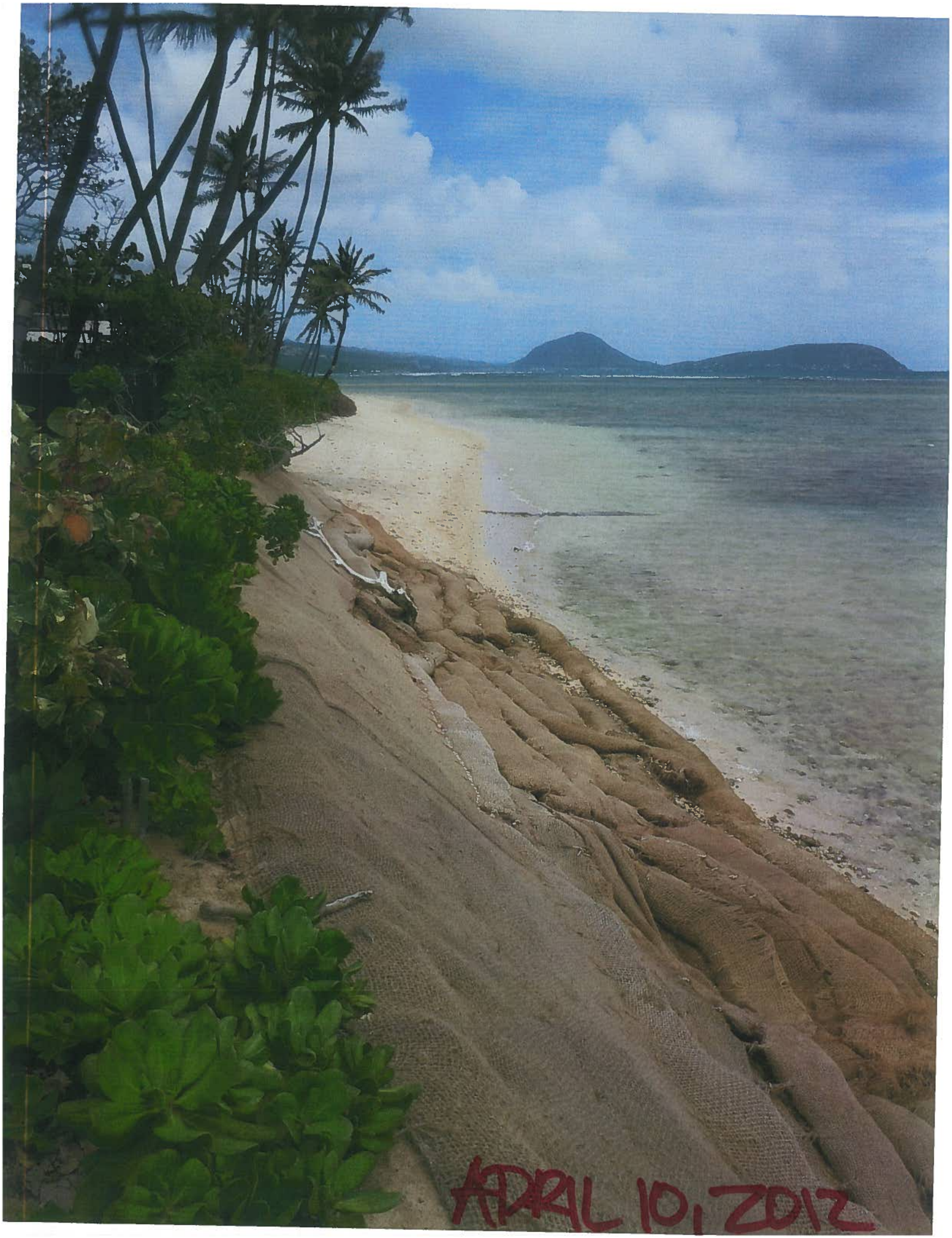
BEFORE / AFTER.

EXHIBIT 10


APRIL 10, 2012


APRIL 10, 2012


APRIL 10, 2012


APRIL 10, 2012


July 3, 2012


July 3, 2012


NOTICE
WARNING
PREMISES MONITORED BY ELECTRONIC SURVEILLANCE AND SECURITY PERSONNEL 24 HOURS
GUARD DOG ON DUTY
WARNING!
NO TRESPASSING
CRIMINAL TRESPASS
July 3, 2012


July 3, 2012

CONSERVATION DISTRICT VIOLATION PENALTIES SCHEDULE GUIDELINES AND ASSESSMENT OF DAMAGES TO PUBLIC LAND OR NATURAL RESOURCES

September 2009

Relating to penalties for violations within the Conservation District Act 217

Exhibit 11

TABLE OF CONTENTS

1 INTRODUCTION

Hawaii Revised Statutes (HRS) §183C-7 was amended on July 7, 2008 to increase the maximum penalty for a Conservation District violation to up to $15,000 per violation, in addition to administrative costs, costs associated with land or habitat restoration, and damages to public land or natural resources, or any combination thereof.

This document, *Conservation District Violation Penalties Schedule Guidelines and Assessment of Damages to Public Land and Natural Resources* is intended to provide the Office of Conservation and Coastal Lands (OCCL) with a framework to systematically carry out its enforcement powers, in the determination and adjudication of civil and administrative penalties. These guidelines are to be used for internal staff guidance, and should be periodically reviewed to determine their effectiveness, and whether refinements are needed. These guidelines are consistent with HAR §13-1, Subchapter 7, Civil Resource Violation System (CRVS).

2 CONSERVATION DISTRICT VIOLATION PENALTIES SCHEDULE GUIDELINES

The charging and collecting of penalties is an enforcement tool that may be used to ensure future compliance by the responsible party and others similarly situated. The penalty amount(s) shall be enough to ensure immediate compliance with HAR §13-5 and HRS §183C, and cessation of illegal activities. Penalties will be assessed for each action committed by an individual(s) that conducts an unauthorized land use and that impairs or destroys natural resources protected under Chapter §183C, HRS.

The Staff will treat each case individually when assigning conservation district penalties using the following framework, and additional considerations and factors for upward or downward adjustments. The staff of the OCCL (Staff) will use these penalty schedule guidelines to issue violation notices and to make recommendations to the Board of Land

and Natural Resources (Board), Chairperson of the Board of Land and Natural Resources (Chairperson), or Presiding Officer, whom may ultimately adjudicate the Conservation District penalties. These guidelines presume that all cases in which a violation has occurred, the Chairperson, Board, or Presiding Officer may also assess administrative costs, damages to public land or natural resources, and costs associated with land or habitat restoration.

2.1 PENALTY CALCULATION

The penalty range for these actions will be substantially determined based on the type of permit that would have been required if the individual(s) had applied to the Department of Land and Natural Resources (Department) or Board for pre-authorization to conduct the identified use, under Hawaii Administrative Rules (HAR) §13-5-22, 23, 24, 25. Assessing the penalties according to the Conservation District permit type accounts for the level of review or scrutiny the unauthorized use would have received by the Department or Board in order to avoid damage to the natural resource. This graduated permit review framework corresponds to the level of actual or potential "harm to the resource"[1] caused by the violation.

Once the baseline for the penalty range has been established according the required permit, the penalty may be adjusted appropriately upward or downward according to the "harm to resource" caused or potentially caused by the violator's action and additional considerations and factors (See 2.1.4),[2] within the assigned penalty range. Where Staff was unable to associate the unauthorized use with a typical land use identified in HAR §13-5, Staff may try to associate the action with the most similar identified land use in HAR §13-5, or according to the "harm to the resource" caused by the violation. Table 1

[1] "Harm to resource" is an actual or potential impact, whether direct or indirect, short or long term, impact on a natural, cultural or social resource, which is expected to occur as a result of unauthorized acts of construction, shoreline alteration, or landscape alteration (See Appendix B: Definitions) *Adapted from Florida Department of Environmental Protection2000 Administrative Fines and Damage Liability, Ch. 62B-54.*

[2] Penalty amounts may be adjusted up or down, based on additional considerations, such as the actual extent of the direct damages, significance of any offsite indirect impacts, environmental record of the violator, responsiveness of violator, etc. (See 2.1.4 Additional Considerations and Factors).

was created to demonstrate the penalty ranges for the type of required permit and "harm to resource" (See 2.1.1 or Appendix A).

The first two of the following sections explain the identified and non-identified land use framework. The next four sections: Tree Removal, Additional Considerations and Factors, Continuing Violations and Permit Non-Compliance, and In-Kind Penalties, provide guidance for the upward or downward adjustment of penalties based on the initial framework discussed in Section 2.1.1, Identified land use penalties.

2.1.1 Identified Land Use Penalties

The violation penalty range associated with each required permit will be assessed in accordance with the following harm to resource indices in this graduated framework.

Table 1. Penalty Guideline Framework

Harm to resource or potential for harm to resource	Identified land use permit beginning with the letter	Penalty Range
Major	D (Board)	$10,000-$15,000
Moderate	C (Departmental)	$2,000-$10,000
Minor	B (Site Plan)	$1,000-$2,000
Very Minor	(B) (Site Plan)	Up to$1,000

Major Harm to the Resource/ Board Permit (D)

Violations identified with the required permit prefix (D) may incur a penalty in the range of $10,000 - $15,000 as a Board permit would have been required to minimize the possibility of causing "major harm to the resource." Examples of "major harm(s) to the resource" may include actions that cause substantial adverse impact to existing natural resources within the surrounding area, community, ecosystem or region, or damage to the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics. Such actions may include, but are not limited to, unauthorized single-family residences or unauthorized structures, grading or alteration of topographic features, aquaculture, major marine construction or dredging, unauthorized shoreline structures, major projects of any kind, mining and extraction, etc.

Moderate Harm to the Resource/Departmental Permit (C)

Violations identified with the required permit prefix (C) may incur a penalty in the range of $2,000-$10,000, as a Departmental permit would have been required, due to the possibility of causing "moderate harm to the resource." Examples of "moderate harm(s) to the resource" may be adverse impacts that degrade water resources, degrade native ecosystems and habitats, and/or alter the structure or function of a terrestrial, littoral or marine ecosystem. Such actions may include, but are not limited to, unauthorized landscaping causing ground disturbance, unauthorized alteration, renovation or demolition of existing structures or facilities, such as buildings and shoreline structures, maintenance dredging, agriculture, and animal husbandry, etc.

Minor Harm to the Resource/Site Plan Approval (B) Permit

Violations identified with the required permit prefix (B) may incur penalties as a site plan approval would have been required to assure that "minor harm(s) to the resource" are minimized. "Minor harm(s) to the resource" may incur a penalty of $1,000-$2,000 and could be actions causing limited to short-term direct impacts including, but not limited to, small-scaled construction, construction of accessory structures, installation of temporary or minor shoreline activities or similar uses.

Very Minor Harm to the Resource/(B) Permit

In instances in which a permit with the B prefix should have been sought but are considered to have only caused "very minor harm(s) to resource" a penalty of up to $1,000 may be incurred. These "very minor harm(s) to the resource" could be actions in which the impact on the water resource or terrestrial, littoral or marine ecosystem was temporary or insignificant, and was not of a substantial nature either individually or cumulatively.

2.1.2 Non- Identified Land Use Penalties

Violations in which an unauthorized use is not identified in HAR §13-5-22, 23, 24, 25, Staff may try to associate the action with the most similar identified land use in HAR

§13-5 or according to the "harm to the resource" caused by the violation. Refer to the above section, *Identified Land Use Penalties*, for the most similar required permit prefix. To categorize the violation as a "harm to resource" when no similar use is identified in HAR §13-5, Staff will refer to Table 1 and the definitions of the four violation types of "harm to resource" (See Appendix B: Definitions).

2.1.3 Tree Removal

Violation penalties for the removal of any federal or state listed threatened, endangered, or commercially valuable tree may incur a fine of up to $15,000 per tree. Removal of any native tree may incur a fine of up to $1,000 per tree. The removal of any invasive tree shall be considered as removal/clearing of vegetation.

The Board, Department, or Presiding Officer also has the option of considering the removal of more than one tree as a single violation, similar to the removal/clearing of vegetation.[3] If violation is considered as one violation, a fine amount of up to $15,000 may be incurred, utilizing the guidelines for Major, Moderate, Minor, and Very Minor outlined in this schedule. However, the removal of any federally or state listed threatened or endangered tree shall be considered on a one violation per tree basis, with a maximum penalty of up to $15,000 per tree.

2.1.4 Vegetation Removal/Vegetation Clearing

Past Staff recommendations and Board decisions have treated some cases of tree or removal as one citation of vegetation clearing/vegetation removal, this practice may be continued in violations resulting in minor or very minor harm to the resource. In accordance with the identified land uses within HAR §13-5 the assessment of vegetation removal has been based on a single citation of removal/clearing determined by the square footage of vegetation removed (See Table 3 Vegetation Removal). However, the

[3] While Staff and Board decisions in MA-01-09, OA-05-40 and HA-06-08 have treated the removal of non-native, invasive, or noxious trees as one citation of "clearing" with mandatory remediation plans.

Department may see fit to assess the removal/clearing of threatened, endangered, or commercially valuable plants similar to the modified tree removal framework and may be penalized on an individual plant basis of up to $15,000 per plant.

Table 3. Vegetation Removal

Action	Comparable Harm to Resource	Penalty Range
Removal of more than 10,000 sq. ft.	Major	$10,000-$15,000
Removal of Vegetation or of 2,000-10,000 sq. ft of vegetation	Moderate	$2,000-$10,000
Removal of less than 2,000 sq. ft. vegetation	Minor	$1,000-$2,000
Clearing of Invasive or noxious vegetation	Very Minor	Up to $1,000[4]

Note: The clearing of threatened, endangered or commercially valuable plants will be addressed on a case-by-case basis, but depending on the importance of the species may incur a penalty of up to $15,000 per plant. According to Table 2, the clearing of vegetation may incur a penalty of up to $1/ sq.ft., as clearing 10,000 sq.ft. Staff could assess a penalty of $10,000.

2.1.5 Additional Considerations and Factors

After Staff applies the Conservation District violation graduated penalty framework to identify the violation penalty range (1, 2, and 3 found above), the Staff may incorporate several considerations into the final assessed conservation district penalty including but not limited to, those factors identified in HAR §13-1-70 Administrative Sanctions Schedule; Factors to be Considered.

2.1.6 Continuing Violations and Permit Non-Compliance

Each day during which a party continues to work or otherwise continues to violate conservation district laws, and after the Department has informed the violator of the offense by verbal or written notification, the party may be penalized up to $15,000 per day (penalties for every day illegal actions continue) by the Department for each separate offense.

[4] Provided the harm to the resource and offsite damage were minimal.

Violation of existing approved Conservation District Use Permit (CDUP) conditions will be assessed on a case-by-case basis. Existing permit violations, in which deadlines are not met, may be individually assessed by the Staff as to prior violator conduct, knowledge, and compliance. Violation of permit conditions involving initiation and/or completion of project construction, notification of start and completion dates, failure to file legal documents, etc., may be considered very minor within the existing framework, although it should be noted that such actions may result in permit revocation. Failure to perform proper cultural, archeological, or environmental impact studies or failure to implement proper best management practices as identified in the standard permit conditions may be assessed more severely by Staff, as a moderate or major harm to the resource, due to the potential of greater adverse impacts to natural resources from the violator's failure to comply with the permit conditions, may have occurred.

2.1.7 In-Kind Penalties

Once the penalty amount has been established through the framework above, the Department may determine that the full payment or some portion of the penalty may be paid as an in-kind penalty project.[5] This would not serve as a way to avoid payment but as a way to reduce the cash amount owed while allowing the Department to consistently enforce its rules. The in-kind penalty project is not designed to credit the violator for restoration or remediation efforts that may be already required, but to offset a portion of the cash penalty assessed. The in-kind penalty should be enough to ensure future compliance with HAR §13-5 and HRS §183C, by the violator and to deter other potential violators from non-compliance.

In-kind penalties will only be considered if (1) the responsible party is a government entity, such as a federal agency, state agency, county agency, city agency, university, or school board, or if (2) the responsible party is a private party proposing an environmental

[5] In-Kind Penalty framework has been adapted from Florida Department of Environmental Protection. 2007. Program Directive 923, Settlement guidelines for civil and administrative penalties.

restoration, enhancement, information, or education project. In-kind penalties are limited to the following specific options:

a. **Material and/or labor support for environmental enhancement or restoration projects.** The Department will give preference to in-kind projects benefiting proposed government-sponsored environmental projects. For shoreline violations, this may include state beach nourishment projects and dune restoration projects.

b. **Environmental Information and Environmental Education projects.** Any information or education project proposed must demonstrate how the information or education project will directly enhance the Department's, and preferably the OCCL's, mission to protect and conserve Hawaii's Conservation District Lands.

c. **Capital or Facility improvements.** Any capital or facility improvement project proposed must demonstrate how the improvement will directly enhance the Department's and/or public's use, access, or ecological value of the conservation property.

d. **Property.** A responsible party may propose to donate land to the department as an in-kind penalty. Donations will be handled by the Department's Legacy Lands program or similar program.

2.1.8 Penalty Adjudication

Violation penalties may be adjudicated similarly to the harm to resource indices in the penalty guideline framework.

Comparable Harm to Resource	Identified land use permit and Penalty Range	Penalty Adjudicator
Major	$10,000-$15,000	Board
Moderate	$2,000-$10,000	Board
Minor	$1,000-$2,000	Chairperson or Presiding Officer
Very Minor	up to $1,000	Chairperson or Presiding Officer

Major and Moderate Harm to the Resource

The Board may adjudicate penalties to violations categorized as causing or potentially causing major or moderate harm(s) to the resource. The Board may also adjudicate cases in which repeat violations, repeat violators, or egregious behavior were involved, or moderate to significant actual harm to the resource occurred. The Board may also adjudicate the payment of part or all, of the penalty as part of an In-kind penalty.

Minor and Very Minor Harm to the Resource

The Board may delegate to the Chairperson or a Presiding Officer the power to render a final decision in minor and very minor conservation district violations in order to provide expeditious processing and cost effective resolution. The Chairperson or appointed Presiding Officer may adjudicate penalties to minor and very minor violations characterized by inadvertent or unintentional violations and those violations which caused minor or very minor harm to the resource.

3 ASSESSMENT OF DAMAGES TO PUBLIC LAND OR NATURAL RESOURCES

Penalties to recoup damages to public lands or natural resources for the purposes of enforcement and remediation may be assessed in addition to Conservation District violation penalties assessed by the aforementioned guidelines. The assessed total value of the initial and interim natural resource(s) damaged or lost (compensatory damages) and the cost of restoration or replacement of the damaged natural resource(s) (primary restoration cost) along with any other appropriate factors, including those named in HAR §13-1-70, may be adjudicated by the Board. The total value may be estimated on a per annum basis, and then may be used to calculate the net present value of the initial and interim loss of natural resource benefits, until the ecosystem structure, function, and/or services are restored.

The cost of a full-scale damage assessment by the Department would be an administrative cost, which could be recouped by the Board from the landowner or offender pursuant §HRS 183C-7. In some cases, the damage to public lands or natural resources may occur on more than one ecosystem or habitat type, (e.g., sandy beaches, seagrass beds, and coral reefs). In such instances, damages for all impacted systems will be handled cumulatively.

Since all the ecosystem services provided by the ecosystem in question cannot be quantified (e.g., the aesthetic value), the values obtained are lower bound estimates, and may be applied to systems similar to the referenced ecosystem using the benefit transfer method. These valuations, to account for the loss of ecosystem services and the cost to restore them, may be applied to Hawaiian ecosystems on public lands: such as Koa and Ohia forests, coral reefs, seagrass beds, wetlands, dune and beach ecosystems, and other important Hawaiian ecosystems.

While each case is unique and individual in nature, the Department may not be able to conduct detailed damage assessments in each case, and may refer to past precedent,

economic ecosystem valuations, and other published environmental valuations to estimate and assess damages on smaller scales (for valuations and publication examples see Appendix C: References and Appendix D: Damages Examples). Using the benefit transfer method to apply past precedents and published valuations in some situations would allow the Department to focus its administrative duties and time on remediation and restoration efforts. However, as ecological valuation and research continue, more comprehensive estimates may be produced and utilized.

The Board may allow restoration activities and damage penalties to be conducted and/or applied to a site different from the location of the damaged area where similar physical, biological and /or cultural functions exist. These assessed damages are independent of other, city, county, state and federal regulatory decisions and adjudications. Thus, the monetary remedies provided in HRS §183C-7 are cumulative and in addition to any other remedies allowed by law.

3.1 PRIMARY RESTORATION DAMAGES

The cost of land or habitat restoration or replacement, the cost of site monitoring, and site management may be assessed and charged as primary restoration damages. Restoration efforts will aim to return the damaged ecosystem to a similar ecological structure and function that existed prior to the violation. In cases in which the damaged ecosystem was predominately composed of non-native species, restoration efforts must re-vegetate Conservation District land and public lands with non-invasive species, preferably native and endemic species when possible. The use of native and endemic species may thus result in the restoration of ecological structure and function critical for the survival of endemic Hawaiian species.

Returning the damaged and or severely degraded site to a condition similar to or better than its previous ecological structure and function (e.g., a terrestrial system such as a Koa (*Acacia koa*) forest) would include: (1) calculating the level of ecosystem services to be restored from carbon sequestration, climate regulation, nutrient cycling, air and water purification, erosion control, plant and/or wildlife habitat, and any other services which

may be valued; (2) purchase, production and out-planting of Koa seedlings; and (3) monitoring, maintenance, and management for the time period of mature growth of ~40-60 years, to achieve mature canopy structure, native under-story, and an acceptable level of lost ecosystem structure, function and/or services restored.

3.2 COMPENSATORY DAMAGE CALCULATION

Compensatory damages to public lands or natural resources may be assessed and charged to the violator to compensate for ecosystem damage and lost initial and interim ecosystem services to the public. All Divisions of the Department may coordinate their resources and efforts along with existing ecosystem valuations and publications (See Appendix C and D for examples) to derive the estimated total value of the natural resource damaged until the ecosystem structure, function, and services are estimated to be recovered.

The total value of the natural resource that is lost or damaged may include the initial and interim values of the ecosystem services provided by the natural resource or habitat, and the social-economic value of the degraded site, until the ecosystem structure, function, and/or services are restored. Assessing the damages to the resource could include: estimating the loss of ecosystem services of carbon sequestration, climate regulation, nutrient cycling, plant and/or wildlife habitat, biodiversity, air and water purification, erosion control, coastal protection, the loss of benefits to tourism, fisheries, society, cultural inspiration and practices, and any other services which may be valued.

These natural resource damages may be assessed using economic valuation techniques to estimate the total value(s) of the natural resource(s) damaged on a per area basis, including: total ecosystem service value, total annual benefits, the market value of the natural resource, or any other factor deemed appropriate. The total value of the present and interim natural resource damage may be estimated by calculating the net present value of these lost benefits, values and services. The net present value may be calculated using a discount rate to scale the present and future costs to the public, of the interim losses of ecosystem services over the restoration time. The restoration time may be

estimated as the number of years for the damaged natural resource or ecosystem to reach maturity and/or the ecosystem structure and function to be restored similar to the pre-violation state. The discount of future losses and accrued benefits may be used in the valuation of mitigation efforts performed by the violator. For example the restoration conducted immediately after damage occurred may be calculated to have a higher present benefit worth than the benefit of restoration activities undertaken a year or two later.

In other instances, a habitat equivalency analysis (HEA) or a resource equivalency analysis (REA) may be used to scale equivalent habitat or wildlife losses for estimating both ecosystem damage penalties and restoration efforts.

3.3 ADJUDICATION OF DAMAGES

The adjudication of primary restoration damages and compensatory damages will be adjudicated by the Board due to the complexity of the assessment process and to assure proper checks and balances, including adequate public notice and a public hearing.

In addition to the damages and penalty violations assessed, the Department is allowed to recoup all administrative costs associated with the alleged violation pursuant to HRS §183C-7(b). All penalties assessed will be in compliance with HRS §183C-7(c) and will not prohibit any person from exercising native Hawaiian gathering rights or traditional cultural practices.

APPENDIX A: GUIDELINE FRAMEWORK TABLES

Table 1. Penalty Guideline Framework

Harm to resource or potential for harm to resource	Identified land use permit beginning with the letter	Penalty Range
Major	D (Board)	$10,000-$15,000
Moderate	C (Departmental)	$2,000-$10,000
Minor	B (Site Plan)	$1,000-$2,000
Very Minor	(B) (Site Plan)	Up to$1,000

Table 2. Vegetation Removal

Action	Comparable Harm to Resource	Penalty Range
Removal of more than 10,000 sq. ft.	Major	$10,000-$15,000
Removal of Vegetation or of 2,000-10,000 sq. ft of vegetation	Moderate	$2,000-$10,000
Removal of less than 2,000 sq. ft. vegetation	Minor	$1,000-$2,000
Clearing of Invasive or noxious vegetation	Very Minor	Up to $1,000[6]

Note: According to Table 2, the clearing of vegetation may incur a penalty of up to $1/ sq.ft., as clearing 10,000 sq.ft. Staff could assess a penalty of $10,000. The clearing of threatened, endangered or commercially valuable plants, will be addressed on a case-by-case basis, but depending on the importance of the species may incur a penalty of up to $15,000 per plant.

APPENDIX B: DEFINITIONS

Definitions:

(1) "Baseline" means the original level of services provided by the damaged resource.

(2) "Benefit Transfer Method" estimates economic values by transferring existing benefit estimates from studies already completed for another location or issue.[7]

(3) "Board" means the Board of Land and Natural Resources.

(4) "Board Permit" means a permit approved by the Board of Land and Natural Resources.

(5) "Chairperson" means the chairperson of the board of land and natural resources

(6) "Civil Resource Violations System" or "CRVS" means a system of administrative law proceedings as authorized under chapter 199D, HRS, and further prescribed in Subchapter 7, 13-1, HAR, for the purpose of processing civil resource violations.

(7) "Compensatory Damages" means damages for compensation for the interim loss of ecosystem services to the public prior to full recovery.

(8) "Contested Case" means a proceeding in which the legal rights, duties, or privileges of specific parties are required by law to be determined after an opportunity for an agency hearing.

(9) "Department" means the Department of Land and Natural Resources.

(10) "Departmental Permit" means a permit approved by the Chairperson.

(11) "Discounting" means an economic procedure that weights past and future benefits or costs such that they are comparable with present benefits and costs.

(12) "Ecosystem Services" means natural resources and ecosystem processes, which may be valued according to their benefits to humankind.

For example: carbon sequestration, climate regulation, nutrient cycling, plant and/or wildlife habitat, biodiversity, air and water purification, erosion control, coastal protection, the loss of benefits to tourism, recreation, scientific discovery, fisheries, society, cultural inspiration and practices, and any other services which may be valued.

(13) "Grossly negligent" violation means conscious and voluntary acts or omissions characterized by the failure to perform a manifest duty in reckless disregard of the consequences.[8]

(14) "Harm to resource" means an actual or potential impact, whether direct or indirect, short or long term, acting on a natural, cultural or social resource, which is expected to occur as a result of unauthorized acts of construction, shoreline alteration, or landscape alteration as is defined as follows:

(a) "Major Harm to resource" means a significant adverse impact(s), which can cause substantial adverse impact to existing natural resources within the surrounding area, community or region, or damage the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics

(b) "Moderate Harm to Resource" means an adverse impact(s), which can degrade water resources, degrade native ecosystems and habitats, and/or reduce the structure or function of a terrestrial, littoral or marine system (but not to the extent of those previously defined as those in (a)).

(c) "Minor Harm to Resource" means limited to short-term direct impacts from small scaled construction or shoreline or vegetation alteration activities.

(d) "Very Minor Harm to Resource" means an action in which the impact on the water resource or terrestrial, littoral or marine ecosystem was insignificant, and was not of a substantial nature either individually or cumulatively.

For example, "major harm to the resource(s)" would be associated with a major land use violation that would have likely required a Board Permit, such as building a house, while a "minor harm to the resource(s)" may be

[7] Ecosystem Valuations http://www.ecosystemvaluation.org/benefit_transfer.htm

[8] Definition adapted from Florida Department of Environmental Protection. 2000 Administrative Fines and Damage Liability, Ch. 62B-54.

associated with minor land uses requiring an administrative Site Plan Approval, for building a small accessory structure.

(15) "Knowing" violation means an act or omission done with awareness of the nature of the conduct.

(16) "Net Present Value" means the total present value (PV) of a time series of cash flows.

(17) "OCCL Administrator" means the Administrator of the Office of Conservation and Coastal Lands.

(18) "Party" means each person or agency named or admitted as a party.

(19) "Person" means an appropriate individuals, partnership, corporation, association, or public or private organization of any character other than agencies.

(20) "Presiding Officer" means the person conducting the hearing, which shall be the chairperson, or the chairperson's designated representative.

(21) "Primary Restoration Damages" means the costs to restore the damaged site to its prior baseline state.

(22) "Site Plan" means a plan drawn to scale, showing the actual dimensions and shape of the property, the size and locations on the property of existing and proposed structures and open areas including vegetation and landscaping.

(23) "Willful violation" means an act or omission which is voluntary, intentional and with the specific intent to do something the law forbids, or fail to do something the law requires to be done.

APPENDIX C: REFERENCES

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APPENDIX D: DAMAGES EXAMPLES

Examples of Damage Assessments and Possible Remediation Efforts

The following are only brief past estimates used in Hawaii and other states; they are by no means comprehensive or limiting. These are intended to be examples for possible assessments and remediation efforts not as templates. As previously stated each case will be handled individually to account for unique ecological, economic and cultural impacts. The following are organized by habitat type.

Coral

Florida Department of Environmental Protection (Civil Damages):
The DEP can impose fines of up to $\$1,000/m^2$ of reef damaged and is dependent on the absence of extenuating circumstances such as weather conditions, disregard of safe boating practices, navigational error, whether the vessel operator was under the influence of drugs or alcohol etc.

Cesar et al 2002 (Ecosystem Service Valuation)
Cesar et al. used a Simple Coral Reef Ecological Economic Model (SCREEM) to assess Hawaiian coral reefs based on the annual benefits of the coral reefs to recreation/tourism, property amenities, biodiversity, fisheries and education. The annual benefits and total economic value could then be expressed on a 'per area' basis. This study found the total annual benefits of the coral reefs of Hanauma Bay to be \$37.57 million ($\$2,568/m^2$), of the coral reefs in Kihei to be \$28.09 million ($\$65/m^2$) and the coral reefs on the Kona coast to be \$17.68 million ($\$19/m^2$).

Pilaa enforcement (KA-02-10) (Primary Restoration Cost)
Damage to Coral reef ecosystems was assessed for restoration activities according to Florida guidelines, as \$5,830,000 for 5,380 m^2 of coral reef damage. This calculation

was similar to the estimated cost of remediation efforts $390,000 to clean 5,000 yd^3 of beach sand. However between 30,000-50,000 yd^3 was estimated to be impacted, totaling $2,300,000-$3,900,000. While cleaning the sediment from the reef was estimated to cost approximately $845,000 (for the 13 acres, or $65,000 for $10m^2$). This totaled between $3,100,000 and $4,700,000, and did not include coral colony re-establishment. An additional $630,000 was estimated for the 10-year monitoring period, (however studies by Cesar et al. 2003 estimated a 25 year period for recovery of ecological impacts).

Thus damage to corals may be calculated as follows:

Number of square meters of coral damaged

X Multiplied by $1,000 (or estimated value of coral on per/area basis)

(#m2 x $1000)

Plus the estimated net present value of ecosystem services lost until recovery. (This may be more if damage to an area such as Hanauma Bay with increased recreational economic revenue.)

+Plus cost of Remediation

+Plus Cost of cleaning sediment from reef

+Plus Cost of cleaning sediment/mud from beach sand

+Plus Cost of coral reestablishment

+Plus Cost of Monitoring

+Plus Cost of Management

Seagrass beds (Compensatory Damage)

The Florida DEP fines offenders $100/$yd^2$ of damage to seagrass beds for the first yd^2 damaged and $75/$yd^2$ per each additional yd^2 damaged.

$100 for the first yard damaged

+$75 per each additional yard

or net present total value of ecosystem services lost until recovery

+vegetation planting

+monitoring

Sand Beaches (ex. Of Primary Restoration Costs)

Minimum penalty cost of restoration and potential negative ecological, social and environmental impacts should be included in the assessment of damaged, degraded or lost sandy beaches. As one of Hawaii's greatest natural resources the following should be included in the minimum penalty assessment, however, as ecological valuation and research continue, more comprehensive estimates may be produced. In KA-02-10 Pilaa, $390,000 fine was estimated to clean 5,000 yd^3 of beach.

+Cost of lost revenue due to altered Beach resources (compensatory)

+primary restoration costs

+Plus cost of cleaning of sediment/mud from beach area (if necessary)

+Plus cost of beach nourishment (sand replacement)

+Plus cost of native dune vegetation

(In some circumstances the loss of beach resources may be assessed in conjunction with other ecological impacts listed above, such as coral reefs and sea grass beds.)

APPENDIX E: PENALTY CALCULATION WORKSHEET

Violator's Name(s):_____

TMK:_____

OCCL Staff Member:_____

Date:_____

Part 1- Penalties

	Violation Type	Permit Prefix (D,C, B)	Harm to Resource (actual & potential)	Tree or Vegetation Status	Penalty Range	Adjustments (Mark Adj. Choice #1-8)	Multi-day (# days)	Total
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Penalty Total:

Penalty Adjustments and Descriptions (please attach additional adjustments and descriptions, including but not limited to those listed in §13-1-70)

1. Actual environmental damage extent (onsite)

   Description:_____

   _____

2. Actual environmental damage extent (offsite)

   Description:_____

   _____

3. Does the violator's have a history of violations?

   _____

   _____

4. Was the violation repetitious or of a long duration?

   _____

   _____

5. Was the violator Responsive and exhibit a level of cooperation of with the Department and/or Staff?

   _____

   _____

6. Does the Violator have a Financial Hardship?

   _____

   _____

7. Did the violator receive Economic or commercial gain through non-compliance?

   _____

   _____

8. Other.

   Description:_____

   _____

Total Adjustment: up/down_____

Multi-day penalties

Number of days to multiply penalty:_____

Reasoning:_____

_____

_____

Total multi-day: _____