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

180-Day Exp. Date: May 23, 2014

May 9, 2014

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

REGARDING:	Conservation District Use Application (CDUA-MA3663) for Shore Protection
BY:	Hololani Resort Condominiums 4401 Lower Honoapi'ilani Road Lahaina, Hawai'i 96761
LANDOWNER:	Hololani Resort Condominiums/State of Hawaii, Unencumbered Land
LOCATION/ **Tax Map Key:**	Kahana, Lahaina, Island of Maui (2) 4-3-010:009 and Adjacent Submerged Land
SUBZONE:	Resource

DESCRIPTION OF AREA/HISTORY:

The subject area is located on the shore at Kahana, West Maui, TMK: (2) 4-3-010:009 (**Exhibits 1, 2 & 3**). This is a northwest-facing coastline just south of Kapalua Resort. The property is located in the State Land Use Urban District down to the highest wash of the waves. Lands seaward of the shoreline are located in the Conservation District, Resource subzone.

The U.S. Geological Survey's *Atlas of Natural Hazards in the Hawaiian Coastal Zone* publication describes this area as a developed coast with intermittent rocky shoreline and beach. The subject area has an overall high hazard assessment rating of 5 on a scale of 1 to 7 (**Exhibit 4**). Erosion and tsunami potential are within the highest hazard assessment rating. According to the University of Hawaii, Hawaii Coastal Erosion Website, the shoreline in the vicinity of Hololani Resort Condominiums (HRC) is experiencing an annual erosion rate of approximately 0.7 feet per year.

The coastal processes in the area are complicated by the bay and headland morphology, the presence of offshore reefs, seasonal wave climate with two opposing wave approach directions, and existing

shoreline structures (armoring fronting an adjoining property). According to the applicant[1], beach width varies significantly from season to season. During a recent site visit (February 10, 2014), the beach width was observed to be approximately 20-40 feet, close to its maximum observable width **(See Exhibit 4)**. During seasonal erosion events, there is very little sand in front of the HRC. When the sand is gone, the substrate is composed of stony plates of beach rock **(Exhibit 6)**. The applicant indicates that there appears to have been a net sand loss from the overall system over the decades so that the protective sand beach has been lost with increasing frequency, leaving the red clay shoreline embankment increasingly exposed to erosion. The overall trend in sand loss is supported by University of Hawaii, School of Ocean, Earth Science and Technology, Erosion Rate Maps[2] **(See Exhibit 5)**. An aerial photograph dated 1949 shows a continuous sandy beach along the Kahana Bay shoreline **(Exhibit 7).**

The HCR property is bordered by large condominium units to the north and south. The Pohailani Condominiums is located on the immediate north side of the HRC. There is a large seawall structure protecting the Pohailani, and sand is rarely, if ever present in that area **(See Exhibit 2)**. The Royal Kahana is located on the south side of the HRC. Here the beach is more stable (seasonally), although it too is undergoing chronic erosion and can fluctuate significantly to a point where a beach is non-existent part of the year. A nice sandy beach appears to survive seasonal fluctuations south of the HRC and Royal Kahana for at least another 1,000-1,500 feet down to Pohaku County Beach Park (S-Turns), where Lower Honoapi'ilani Road intersects with the sandy beach **(See Exhibit 2)**.

Hawaiian sea turtles appear to frequent the area and have been seen on the sandy beach in front of HCR.

A County drainage outfall exists between the Pohailani and HRC, which is badly damaged and in a state of disrepair. The soil embankment around the outfall has eroded, exposing the apron of Lower Honoapi'ilani Road.

According to the applicant, the HRC was built in 1959. It consists of twin 8-story buildings with 63 total apartments.

Property erosion has been a problem at HRC for several decades. According to the applicant, during the winter of 2006-2007, large sections of the shoreline calved into the sea. The erosion posed a significant threat to the HRC buildings **(Exhibit 8)**. HRC placed boulders, geotextile bags and other materials along the escarpment for protection **(Exhibit 9)**. In response to these actions, the Department ordered HRC to remove the unauthorized materials. HRC promptly removed the boulders and other materials.

On February 6, 2007, the Department of Land and Natural Resources (DLNR) issued the HRC an emergency authorization to install geotextile sand bags and erosion blankets (Tensar Mattresses) for a period of three years **(Exhibit 10).** The County of Maui also issued HRC an emergency permit for the temporary structure.

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[1]The term "applicant" is used interchangeably to mean the Hololani Resort Condominiums, and its consultant, Sea Engineering, Inc.

[2] http://www.soest.hawaii.edu/coasts/erosion/maui/. Coastal Geology Group. (2003) University of Hawai`i School of Coastal and Earth Science and Technology.

HRC's emergency permit has been extended three times and remains valid. The authorization issued by DLNR requires HRC to come up with a permanent solution. The emergency sand bag structure is shown in the photograph in **Exhibit 4**.

PROPOSED USE:

The HRC proposes to construct a hybrid shore protection structure (structure) that combines a vertical seawall with a sloping rock rubble mound revetment **(Exhibit 11)**. The structure would protect approximately 370 feet of the 400 foot shorefront area of HRC. The structure is designed to end at least 30 feet before the abutting Royal Kahana property, with the intention of minimizing end-effects relating to erosion of the neighboring property[3] (Exhibit 12). The north end of the structure would terminate at a county drainage easement **(See Exhibit 12)**. The Pohailani Condominium facility lies on the north side of the drainage easement. Pohailani is protected by a large coastal armoring structure.

According to the applicant, the structure has the following benefits:

1. The structure footprint has been minimized in order to fit within the property boundary of record and have the least excursion into the Conservation District and navigable waters of the United States;

2. The rock rubble mound revetment that forms the seaward toe of the structure will minimize wave reflection and allow seasonal sand accretion;

3. The crest of the rock rubble mound revetment is 5 ft. in width, and will provide lateral shoreline access when seasonal conditions prevent the formation of a sand beach;

4. The structure offers long-term erosion protection for the Hololani property; and

5. Preventing erosion of the native clay embankment will help prevent the formation of turbidity in nearshore waters during high wave conditions.

The shoreline at HRC was certified on May 2, 2013. The shoreline follows generally along the landward side of the existing sandbag/Tensar mattress structure **(Exhibit 13)**. It appears that most of the proposed structure would be constructed seaward of the shoreline within the Conservation District, although the landward part of the structure will cross into the County of Maui Special Management Area (SMA), which will necessitate a Special Management Area Use Permit and a County Shoreline Setback Variance (SSV)[4].

[3] End effect, or more commonly "flanking" refers to a process in which the natural shoreline immediately downdrift or up drift from an engineered erosion control structure experiences accelerated erosion.

[4] According to the applicant there is not enough room between the shoreline and the HRC building in which to place the structure. Therefore, most of the structure is located seaward of the shoreline.

ANALYSIS:

Following review and acceptance for processing, the applicant was notified, by letter dated November 22, 2013, that:

1. The proposal is an identified land use within the Conservation District pursuant to Hawaii Administrative Rules (HAR) §13-5-23, P-15 SHORELINE EROSION CONTROL (D-1), "Seawall, revetment, groin, or other coastal structure or device, including sand placement, to control erosion of land or inland area by coastal waters, provided that the applicant shows that (1) the applicant would be deprived of all reasonable use of the land or building without the permit; (2) the use would not adversely affect beach processes or lateral public access along the shoreline, without adequately compensating the State for its loss; or (3) public facilities (e.g., public roads) critical to public health, safety and welfare would be severely damaged or destroyed without a shoreline erosion control structure, and there are no reasonable alternatives (e.g., relocation). Requires a shoreline certification. Please be advised, however, that this finding does not constitute approval of the proposal;

2. Pursuant to HAR §13-5-40 Hearings, a public hearing will be required; and

3. In conformance with §343, Hawaii Revised Statutes (HRS), as amended, and HAR, §11- 200-8 this project will require the filing of an Environmental Assessment (EA).

A Finding of No Significant Impact (FONSI) to the environment was issued on October 8, 2013. Notice of the FONSI was published in the October 2013 edition of the Environmental Notice.

The FONSI determination was qualified with three (3) major concerns:

1. The structure footprint would encroach on the State Conservation beach, resulting in loss of that area of the public beach;

2. Coastal armoring has been shown to contribute to beach narrowing and loss in Hawaii and elsewhere through "passive erosion" (recession of the beach toe or water line towards the foot of a structure) and may contribute to further loss of public beach fronting the subject parcel; and

3. The structure may contribute to temporary (episodic) or long-term accelerated erosion on adjacent, unarmored portions of the beach ("end effects" "flanking erosion").

The following discussion evaluates the merits of the proposed land use by applying the criteria established in Section 13-5-30, HAR.

1. *The proposed land use is consistent with the purpose of the Conservation District.*

The objective of the Conservation District is to conserve, protect and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare.

2. *The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur.*

The objective of the Resource (R) subzone is "to develop, with proper management, areas to ensure sustained use of the natural resources of those areas.

The proposed use is an identified land use in the Resource subzone of the Conservation District, pursuant to §13-5-22, Hawaii Administrative Rules (HAR), P-15 SHORELINE EROSION CONTROL Seawall, revetment, groin, or other coastal erosion control structure or device, including sand placement, to control erosion of land or inland area by coastal waters, provided that the applicant shows that:

(1) The applicant would be deprived of all reasonable use of the land or building without the permit;

(2) The use would not adversely affect beach processes or lateral public access along the shoreline, without adequately compensating the State for its loss; or

(3) Public facilities (e.g., public roads) critical to public health, safety, and welfare would be severely damaged or destroyed without a shoreline erosion control structure, and there are no reasonable alternatives (e.g., relocation). Requires a certified shoreline.

Regarding demonstrating the need of the erosion control structure:

(1) Without any form of shore protection (seawall, revetment, beach nourishment), it is likely that the HRC would sustain significant damage and possible total failure. In addition, a planned retreat from the shoreline is not possible due to lack of space. Some residents of the HRC might be deprived all economic use of the property.

3. *The proposed land use complies with provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management," where applicable.*

Regarding the Coastal Management Criteria: Recreational resources: The structure would not curtail lateral public access;

Historic Resources: The matter is still under review by the State Historic Preservation Division[5];

Scenic and Open Space Resource: Upon completion, there may be slight change to ocean views due to the new structure **(See Exhibit 11, Artist's rendering)**.

Marine and Coastal Ecosystems: BMPs will be deployed to prevent potential pollutant discharges in storm water runoff and will be in place and functional before project activities begin and maintained throughout the construction period; and

[5] The Maui County Planning Department will also be working with the State Historic Preservation Division to ensure that any excavation of work along the shoreline complies with Chapter 6E, HRS.

Coastal Hazards and Beach Protection: It is a Coastal Zone Management policy to "prohibit construction of private erosion-protection structures seaward of the shoreline, except where they result in improved aesthetic and engineering solutions to erosion and do not interfere with existing recreational and waterline activities."

It is unclear whether the proposed structure will result in improved aesthetic and engineering solutions to erosion. It appears that, given the nature of the back shore geology (mud bank/gravel/silt/sand sediment) and continuing loss of sand from the beach cell, beach loss will continue whether or not the shoreline (backshore) is artificially hardened.

The major impact to the Conservation District is the structure's footprint which would encroach on the State Conservation beach, resulting in a definable loss of that area of the public beach. In addition, the structure may contribute to temporary (episodic) or long-term accelerated erosion on adjacent, unarmored portions of the beach ("end effects" "flanking erosion"). The beach directly in front of the HRC is ephemeral; meaning that it comes and goes depending on the wave direction. Based on the erosion trends for the area, it is likely that a sandy beach in front of the HRC will become less and less common, similar to the situation in front of the Pohailani Condominium, where a beach rarely appears. This is because: 1) the area is suffering from a long-term sand deficit, 2) the backshore substrate appears to be composed of material that is not compatible with carbonate beach material (e.g., clay, silt, rubble, dark sand), and 3) the shoreline fronting the HRC, and most likely Royal Kahana may be suffering end effects from the adjacent Pohailani revetment.

Looking at the situation from yet another point of view, the proposed structure could potentially represent an improvement over the current situation which consists of unsightly sand bags and Tensar mattresses, or even a worse scenario in which an eight story condominium structure collapses onto a public beach. If the temporary structure were removed, the shoreline/bank would continue to erode (during erosion events) resulting in turbid brown nearshore water.

Alternatives, such as beach restoration, will be considered in subsequent sections of this report.

4. *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.*

Staff does not believe that the effects of HRC's structure would rise to the level of "adverse." The area is already suffering from the adversities of a chronic sand deficit, as well as shoreline impacts from past shoreline armoring. The chronic sand deficit likely results from some combination of natural sediment processes on the nearshore reef driven by waves and currents, lack of upland carbonate sand resources **(See Geotechnical Report Tables, Exhibit 14)**, human impacts to alongshore sand transport (existing armoring), and rising sea level (eight inches over the past century). Without massive sand nourishment projects, it appears that the beaches along this stretch of coastline are in danger of continued narrowing and loss, especially when accelerated sea level rise (SLR), predicted throughout this century, is considered. Thus, while the structure could represent an incremental adverse effect, staff does not believe that the project in of itself has a "substantial adverse impact." This is reflected in the Departments

Finding of No Significant Impact (FONSI) with the Final EA for this project. However, the Department noted several concerns with the potential impacts of the project **(See Conclusions)**.

5. *The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

The HRC property is located at the north end of an approximate 2,000 ft. long beach in a partially-embayed shoreline area between the Pohailani revetment and Pohaku County Beach Park (S-Turns). The subject property and surrounding areas are zoned Urban (State) and H-2 (Hotel, County). The shoreline is currently armored at two other locations along the beach with seawalls fronting a condominium building and Pohaku Park at the south end of the beach. The Pohailani revetment, where the beach was lost between late '70s to mid '80s, separates a previously adjoined section of beach extending north another 1,500 ft. to Kaea Point. The backshore area is substantially developed with multi-story condominium complexes backed by Lower Honoapi'ilani Road. The properties are largely "built-out" with shoreline setbacks on most properties presently less than 40 ft.

6. *The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable.*

Staff believes that shoreline structures do not generally preserve or improve upon the natural beauty of the land.

7. *Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district.*

The proposed action does not involve a subdivision action. If the BLNR approves this CDUA, the landowner will be required to obtain an easement for the portion of the structure located on state submerged land.

8. *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

Staff believes that approval of the CDUA will not be substantially detrimental to the public health, safety and welfare. The project would improve the safety and welfare of the private residents of the Hololani Resort Condominiums.

PUBLIC HEARING

A public hearing was held on February 10, 2014 at the Hololani Resort Condominium. The meeting was attended by approximately 30 individuals. Most of the attendees were residents of the HRC voicing support for the project. One person testified from the neighboring Royal Kahana Condominiums stating concern about the potential for increased erosion to the Royal Kahana shoreline due to flanking or end effects from the proposed HRC revetment.

SUMMARY OF COMMENTS:

The application was referred to the following agencies for review and comment; The Department of Land and Natural Resources (DLNR): Maui District Land Office, the State Historic Preservation Division (SHPD), and Division of Aquatic Resources. Additionally, the application was sent to the County of Maui Department of Planning and Public Works; State Department of Health, Office of Hawaiian Affairs, and Department of Transportation, Highways Division; The US Army Corps of Engineers, along with Lahaina Public Library in order to make this information readily available to those who may wish to review it.

A summary of the comments received is listed below:

County of Maui Planning Department

The Planning Department submitted extensive comments on the CDUA **(Exhibit 15)**. The Applicant's response to Planning Department's comments is also attached as **Exhibit 16**. Planning Department's concerns are listed below:

1. Concerned over probable cumulative environmental impacts;
3. Concerned over impact of shore protection on the sandy beach and lateral access;
4. Concerned that the structure is not consistent with Conservation District criteria;
5. Concerned that a decision by the BLNR to approve the structure will establish a precedent for neighboring condominiums in Kahana Bay;
6. Concerned over cumulative beach loss throughout Maui attributable to seawalls;
7. Concerned that alternatives were not adequately evaluated in the EA;
8. Believes that public outreach was insufficient;
9. Believes that the project requires the preparation of an Environmental Impact Statement;
10. Requests that the BLNR consider a site visit;
11. Requests that the structure be moved out of the Conservation District (into County jurisdiction);
12. Requests mitigation for "end effects;"
13. Request that lateral and vertical access to the shoreline be provided by HRC;
14. Believes that the backshore material has not been adequately tested for beach sand compatibility; and
14. Suggests various design modifications.

The OCCL has considered the Planning Department's comments and the applicant's response. This staff report in general addresses most if not all of the Planning Department's comments.

County of Maui, Department of Public Works

No comments

State of Hawaii Department of Health

Comments attached as **Exhibit 17**

Vice President of The Royal Kahana AOAO

Supports project, but is concerned about the potential for flanking. Comments and Applicant's response are attached as **Exhibits 18 and 19**.

DISCUSSION:

Many beaches in Hawaii have been degraded or lost due to coastal armoring. In a 2012 study by U.S. Geological Survey and University of Hawaii researchers, 70 percent of all beaches measured in the Hawaiian Islands indicated an erosion trend. More than 13 miles or 9 percent of the total length of the beaches studied were lost to erosion over the past century. In nearly all cases, the beaches were lost to seawalls or other coastal structures. In order to address the serious threats to our beaches and coastal communities, the Board of Land and Natural Resources (BLNR) adopted the Hawaii Coastal Erosion Management Plan (COEMAP) in 1999/2000. COEMAP provides for five (5) alternatives to protect land from erosion: abandonment, beach restoration, erosion control, adaptation, and hardening.

1. Abandonment

Abandonment involves taking no action to protect human developments/infrastructure along an eroding shoreline. When the cost of shoreline protection exceeds the value of the facilities that are threatened, the logical outcome is abandonment. Government may prefer abandonment over shore protection when valuable natural resources, such as public beaches, or access ways, would be damaged as a result of shoreline armoring.

According to the applicant, the experience of the last five years has shown that erosion at the HRC is likely to continue, and perhaps accelerate. Without protection, it is likely that the north building will not be habitable in the near future. Abandonment of the north building is unlikely due to its value relative to the cost of the proposed hybrid revetment structure.

2. Beach Restoration

Beach restoration involves the placement of sand on an eroding shoreline to re-supply deficiencies in natural sand volume due to waves and currents and/or human activities. Beach restoration has been used as a way to protect coastal communities and public infrastructure from coastal hazards. At the request of the Office of Conservation and Coastal Lands and the County of Maui Planning Department, the project consultant investigated a number of beach nourishment alternatives.

In the Hololani Resort Final EA, Alternatives Considered Section, the project consultant indicates that, "On a regional level, there is no doubt that the coast would benefit from a large scale beach nourishment project." "If a suitable sand source were found, beach nourishment applied to the entire cell would greatly benefit the regional Kahana community and it therefore should be seriously considered for long-term beach management in this area." The applicant suggests that a relatively modest beach nourishment effort to widen the beach by 20 ft would require approximately 20,000 cy [cubic yards] of sand," which is on par with the 2012 Waikiki Beach restoration project.

A localized beach restoration project fronting just the HRC is possible, though the applicant suggests that stabilization structures such as "T" groins would be need to retain the sand at the HRC due to the high seasonal transport rates and variability along this beach. According to the applicant, while the "T" groins are highly effective, they are also highly visible, constitute a major change in the character of the shoreline, and may have adverse impacts to the nearshore reef environment. Introduction of shore perpendicular structures at HRC could have potentially serious down drift effects on the beach to the south by interrupting alongshore sand transport.

In the balance, the applicant believes that the coast would benefit from a large-scale beach restoration project. However, the hybrid revetment remains the applicant's preferred alternative to address the erosion problem due to the following reasons:

1. Due to the advanced and critical erosion condition of the Hololani shorefront, a coastal protection structure would be recommended as a back-stop even if a regional beach nourishment project were implemented;

2. Appropriate sand resources are difficult to find, and have not been identified in the area. A comprehensive prospecting effort consisting of geophysical surveying and sampling will be necessary;

3. An appropriate beach nourishment project will affect the entire littoral cell from the Kahana Sunset to S-Turns unless retention structures are used;

4. Breach nourishment of the entire Kahana littoral cell is recommended as a regional beach management project.

A regional beach restoration project is technically feasible but would require the cooperation and participation of all property owners within a 2,000-3,000 stretch of shoreline. Large amounts of sand would need to be imported to the area or recovered from offshore. This type of project would require the participation of all land owners in the area, as well as the State, County and Federal governments. The minimal time frame for construction of a regional beach nourishment project, if feasible from an environmental and regulatory perspective, would be 5-10 years.

3. Erosion Control

Coastal erosion control techniques use structures that are designed to reduce sediment losses and thus slow the rate of erosion. Breakwaters or groins could be installed offshore to reduce currents and waves that cause erosion. Other approaches can be considered to reduce shoreline erosion rates such as artificial reefs. These measures involve substantial costs with little assurance that they will be effective. In some cases they have been shown to backfire and exacerbate erosion. In most cases beach nourishment (discussed above) would be recommended along with erosion control structures. Adverse effects from erosion control structures may be similar to the preferred alternative of shoreline hardening, including encroachments / placement loss of public Conservation District Area, effects to adjacent down-current beach, impediments to shoreline access, impacts to the nearshore reef ecosystem, and recreation impacts to surfing, fishing, and other water based activities.

4. Adaptation

Adaptation requires that development patterns change in order to allow natural erosion/accretion cycles to continue without interference. Adaptation could be interpreted to mean that some structures that are currently threatened by erosion could be relocated landward as an alternative to the hardened shoreline structure. This would be the best long-term solution and would alleviate urgent erosion management procedures presently and in the near future. However, adaptation does not appear to be an option for the HRC because there is no place to relocate the HRC buildings due to the small lot size.

5. Hardening

In some cases, shoreline hardening may be considered as "an option of last resort," where adaptation and softer erosion control methods are not viable on a long-term basis, and where the existing beach is of limited quality. Where hardening is inevitable, compensatory mitigation might be considered. Compensatory mitigation requires the responsible entity to compensate the State for the loss of beach resources due to the impact of the shoreline structure on the beach. It is uncertain in this particular case if mitigation would be appropriate as the applicant is arguing that the effect of the structure on the beach is negligible. HRC would have to execute an easement with the State for the portion of the structure on public land and pay an easement consideration. In addition, if the Board of Land and Natural Resources approves the structure, there could be mitigation requirements imposed to address the inevitable flanking or end effects.

The consultant for the project provided a "Comparison of Alternatives table in the Final EA for the project. The table is attached as **Exhibit 20.**

CONCLUSION:

The applicant prepared a comprehensive and well-structured EA for this project, and provided thorough and thoughtful written responses to agency/public comments. OCCL believes that the EA portrays the coastal setting at West Maui very well. However, OCCL continues to have concerns over the potential impacts of the proposed structure on the remaining beach resources at Kahana.

In a 2012 USGS and UH study, 70 percent of all beaches measured in the Hawaiian Islands indicated an erosion trend. More than 13 miles or 9 percent of the total length of the beaches studied were lost to erosion over the past century. ***In nearly all cases, the beaches that were lost were replaced with seawalls or other coastal structures.***

The impacts from existing coastal armoring on Kahana Beach are clear, particularly fronting the Pohailani Condominium adjacent to the HRC. Following a common pattern observed throughout Hawaii on eroding beaches, a revetment was installed at the Pohailani in response to a natural trend of shoreline erosion in an effort to protect the landward development. The revetment fixed the backshore position while the water line continued to retreat landward, resulting in beach narrowing and eventually total loss of the beach fronting the Pohailani (**Diagram A**). The Pohailani revetment now blocks sand transport between the previously adjoined beach to the north and is also likely contributing to increased erosion to the HRC property through "flanking" or "end effects" as wave and current energy is directed around the end of the structure (**Diagram B**). This typical pattern, resulting in progressive need for alongshore shoreline protection, is often described as a "zipper" or "domino" effect whereby installation of coastal armoring on one property ultimately increases the need for

shoreline protection on adjacent properties as erosion increases due to flanking and impoundment of sand resources. Beach loss and seawall construction at Lanikai, east Oahu, is a commonly cited example of this domino effect.

If armoring is installed fronting the HRC, it may be just a matter of time before permanent shore protection will be requested by the abutting Royal Kahana Condominium – the next property down-drift **(See Exhibit 2)**. In fact, temporary shoreline protection (rock mattresses) has already been installed fronting the Royal Kahana in response to increased erosion.

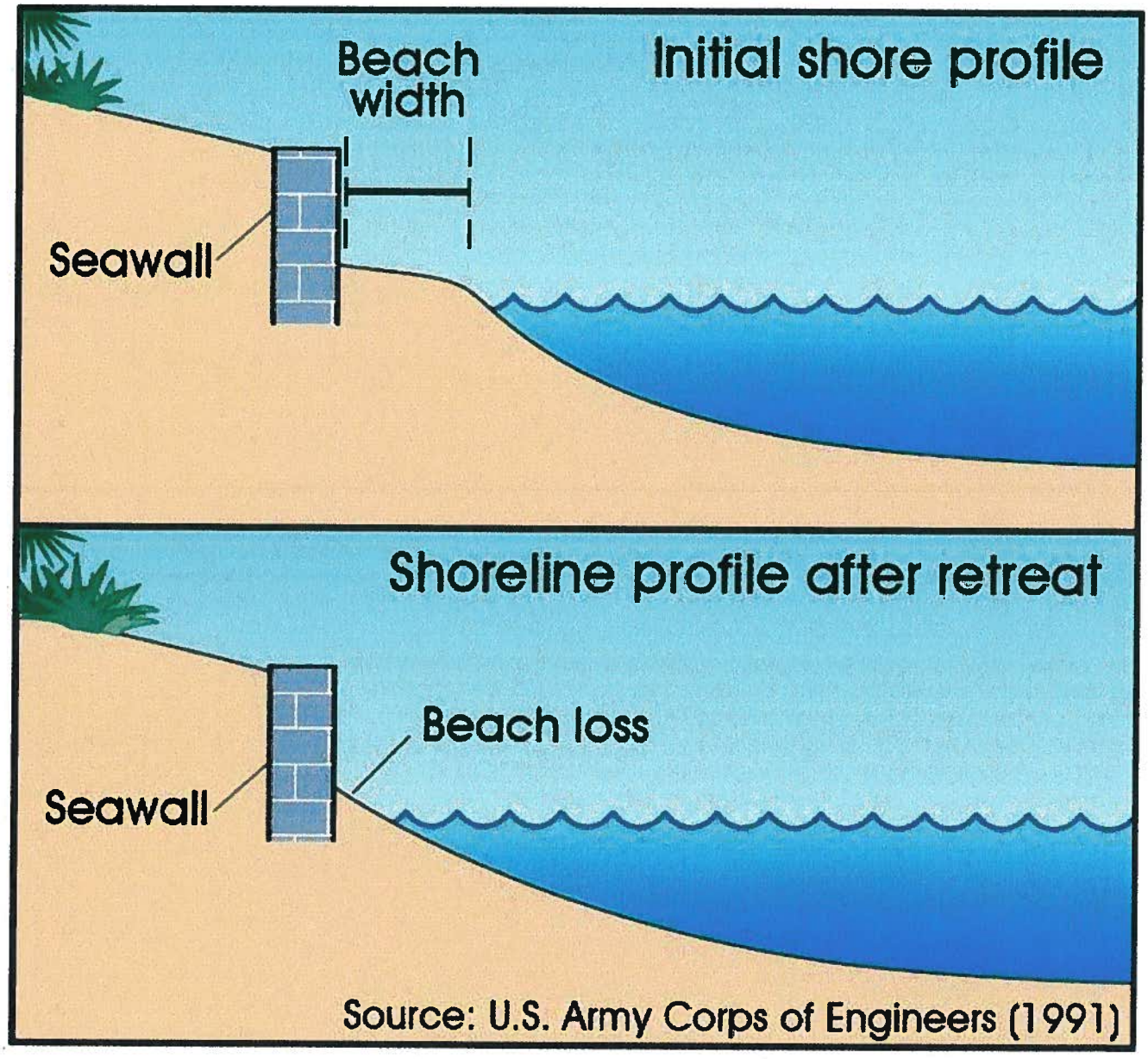


Diagram A. Depicting the typical process of beach narrowing and loss fronting coastal armoring installed on an eroding beach.

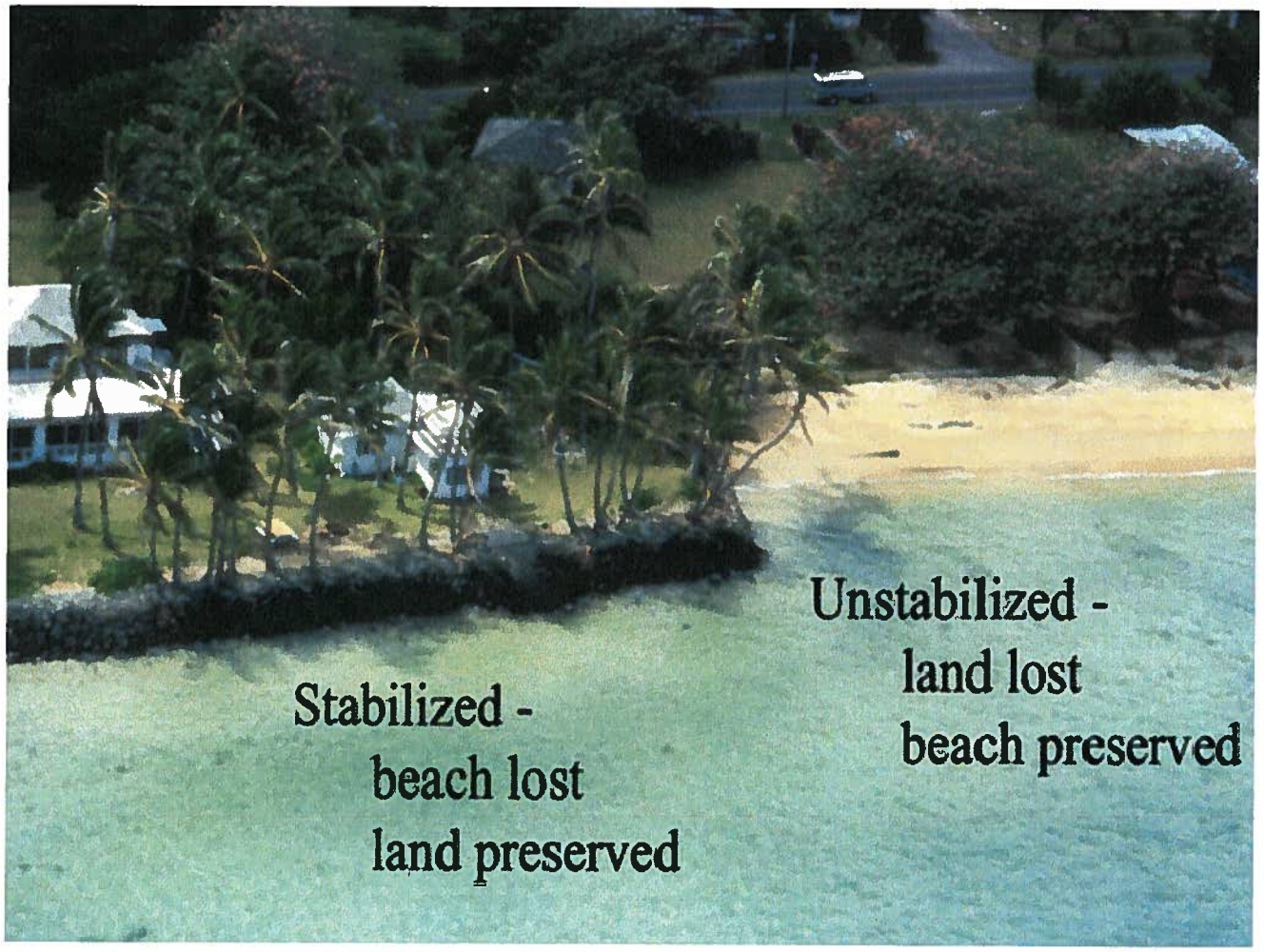


Diagram B. Installation of coastal armoring is typically a tradeoff between protecting private lands (left) or conserving public beach resources (right). Coastal armoring can also increase erosion at adjoining, unarmored beach through a process known as "flanking" or "end effects."

As depicted in Diagram A, a seawall or revetment can impound upland sand (e.g., dune) resources that would otherwise be available to nourish a retreating beach, increasing the rate of beach narrowing and loss fronting the structure[6].

When OCCL evaluates coastal armoring projects, we watch carefully if there is a potential for flanking and sand impoundment. Building seawalls to stop the erosion of natural sand systems will eventually kill beaches.

In the present case there does not appear to be relic carbonate beach sand in the backshore, which is comprised primarily of volcanic alluvial deposits (e.g., volcanic clay, sand, gravel)[7] **(See Exhibit 14)**. The eroding backshore at HRC is apparently not a significant source of beach sand. Sealing the eroded

[6] Relic sand deposits consist of sand deposits landward of the shoreline that came into existence by being blow there or deposited there during a higher sea level stand.

[7] The County of Maui Planning Department questions the applicant's interpretation of the geotechnical report. OCCL has also considered the geotechnical report and the comments by Maui County. While we agree that the entire backshore area is not "clay" we believe that the backshore material is not a source of substantial beach sand for the Kahana system.

bank/scarp with coastal armoring would not result in an appreciable reduction in sand supply to the area. The revetment may provide the benefit of improving marine water quality (reducing turbidity) in the area by stopping erosion of clay and silt-sized alluvial sediments that tend to stay suspended in the turbulent nearshore environment and can have a damaged effect on reef ecosystems.

In the balance and in this specific case, OCCL believes that there is strong merit for an argument in either direction for or against shoreline armoring, so we choose to evaluate the incremental effects of the proposed structure on coastal processes.

Based on our expert knowledge and hands on experience with coastal processes, OCCL staff believes that the structure "will" have negative effects on coastal processes, though these effects are incremental and do not rise to the level of "significant impacts." The potential impacts were noted by the Department in the FONSI for the Final EA:

1. The structure footprint would encroach on the State Conservation beach, resulting in loss of that area of the public beach;

2. Coastal armoring has been shown to contribute to beach narrowing and loss in Hawaii and elsewhere through "passive erosion" (recession of the beach toe or water line towards the foot of a structure) and may contribute to further loss of public beach fronting the subject parcel; and

3. The structure may contribute to temporary (episodic) or long-term accelerated erosion on adjacent, unarmored portions of the beach ("end effects" "flanking erosion").

Staff would like to clarify that we believe the proposed hybrid revetment design will "not" promote seasonal sand accretion as stated repeatedly by the applicant's consultant[8]. Any coastal hardening structure in this location is likely to accelerate beach loss and flanking effects[9]. Revetments do not "accrete sand" on chronically eroding beaches. While sand may continue to appear ephemerally from season to season (even with the structure in place), the long term trend for the beach appears to be erosion (sand loss and beach narrowing). The most likely scenario is that the size and duration of the seasonally-appearing beach will continually decline over years to decades fronting the proposed structure until the beach is lost year-round.

While the effects of the structure are not thought to rise to the level of "significant impacts", it may hasten the seasonal and long-term beach loss in front of the Hololani. The structure may also affect the neighboring Royal Kahana property. The effects attributable to the structure may be addressed with design modifications and some limited sand placement (nourishment).

Staff feels that it would be feasible to redesign the proposed structure to be located as far landward as possible, preferably landward of the certified shoreline[10] **(Exhibit 21)**. This would reduce the

[8] The applicant asserted in the EA that "Compared to the naturally hardened shoreline, the proposed hybrid structure is unlikely to have negative effect on coastal process, and it may well have a long-term beneficial effect by promoting sand accretion." OCCL finds this statement to be highly optimistic.

[9] Wave refraction and loss of sediment regardless of sediment type will exacerbate beach erosion on chronically eroding shorelines.

[10] The applicant claims that a mauka shift is problematic because of lack of space. However a mauka alternative design was provided in the EA. OCCL still believes that there is an engineering solution to this problem.

effective footprint of the structure within the Conservation District and would perhaps extend the life of the beach for years to decades by maintaining "accommodation space" for the seasonal beach to accumulate. To address potential flanking at the intersection of the HRC and Royal Kahana properties, sand could be placed on the active beach if erosion flanking is detected. This "mauka shift" alternative would likely result in "no net degradation" of beach processes, and would satisfy Chapter 205A-HRS, which "prohibits construction of private erosion-protection structures seaward of the shoreline, except where they result in improved aesthetic and engineering solutions to erosion and do not interfere with existing recreational and waterline activities."

This "mauka shift" follows upon concerns raised by the County of Maui Planning Department (listed above) and in the FONSI in regards to the proposed coastal protection structure and its location. Another benefit of a "mauka shift" is that HRC could substantially reduce their costs and liabilities resulting from a structure built substantially seaward of the shoreline. Although it means that HRC would have to sacrifice more land, the cost of an easement could be significantly reduced or foregone depending on how far back the structure can be built.

RECOMMENDATION:

Based on the preceding analysis, staff recommends that the Board of Land and Natural Resources (Board) APPROVE this application with modifications, subject to the following conditions:

1. The permittee shall redesign a shoreline protection structure that is located substantially landward of the May 2, 2013 certified shoreline;

2. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;

3. The permittee, 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, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;

4. The permittee shall obtain a land disposition from the department for any remaining portion of the shoreline protection structure on state lands;

4. The permittee shall comply with all applicable department of health administrative rules;

5. Before proceeding with any work authorized by the department or the board, the permittee shall submit four copies of the construction plans and specifications to the chairperson or an authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three of the copies will be returned to the permittee. Plan approval by the chairperson does not constitute approval required from other agencies;

6. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within two years of the approval of such use, in accordance with construction plans that have been signed by the chairperson, and shall be completed within three years of the approval of

such use. The permittee shall notify the department in writing when construction activity is initiated and when it is completed;

7. All representations relative to mitigation set forth in the accepted environmental assessment for the proposed use are incorporated as conditions of the permit;

8. The permittee understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;

9. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;

10. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;

11. Obstruction of public roads, trails, lateral shoreline access, and pathways shall be avoided or minimized. If obstruction is unavoidable, the permittee shall provide alternative roads, trails, lateral beach access, or pathways acceptable to the department;

12. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;

13. The permittee shall obtain a county building or grading permit or both for the use prior to final construction plan approval by the department;

14. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law;

15. Should historic remains such as artifacts, burials or concentration of charcoal be encountered during construction activities, work shall cease immediately in the vicinity of the find, and the find shall be protected from further damage. The Historic Preservation Division shall be contacted (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;

16. Monitoring of the nearshore water quality shall be conducted in accordance with best management practices;

17. Work shall be conducted during calm weather periods to the most practical extent possible and no work shall occur if there is high surf or ocean conditions that will create unsafe work or beach conditions;

18. The permittee shall implement the proposed Best Management Practices (BMPs) and monitoring and assessment plan to maintain BMPs to minimize dirt and silt from entering the ocean and the ability to contain and clean up fuel, fluid, or oil spills immediately under this authorization and immediately report any spills or other contamination(s) that occurs at the project site to the Department of Health and other appropriate agencies;

19. The permittee shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of all appropriate agencies, through silt containment devices or barriers, or other requirements as necessary;

20. Appropriate safety and notification procedures shall be implemented. 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;

22. 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;

23. The activities 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;

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

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

26. The Office of Conservation and Coastal Lands shall be notified (587-0377) in advance of the anticipated construction dates and shall be notified immediately if any changes to the scope or schedule are anticipated;

27. The permittee shall maintain safe lateral beach access for the life time of the structure;

28. If flanking or end effects are detected on The Royal Kahana property and can be attributed to the Hololani shoreline protection structure, the permittee shall place beach grade sand in the area to mitigate such effects;

28. Other terms and conditions as may be prescribed by the Chairperson; and

29. Failure to comply with any of these conditions shall render this Conservation District Use Permit null and void.

Respectfully submitted,

SAMUEL LEMMO
Administrator

Approved for submittal:

WILLIAM J.AILA Jr., Chairperson
Board of Land and Natural Resources

Attachments

PROJECT AREA

MAUI

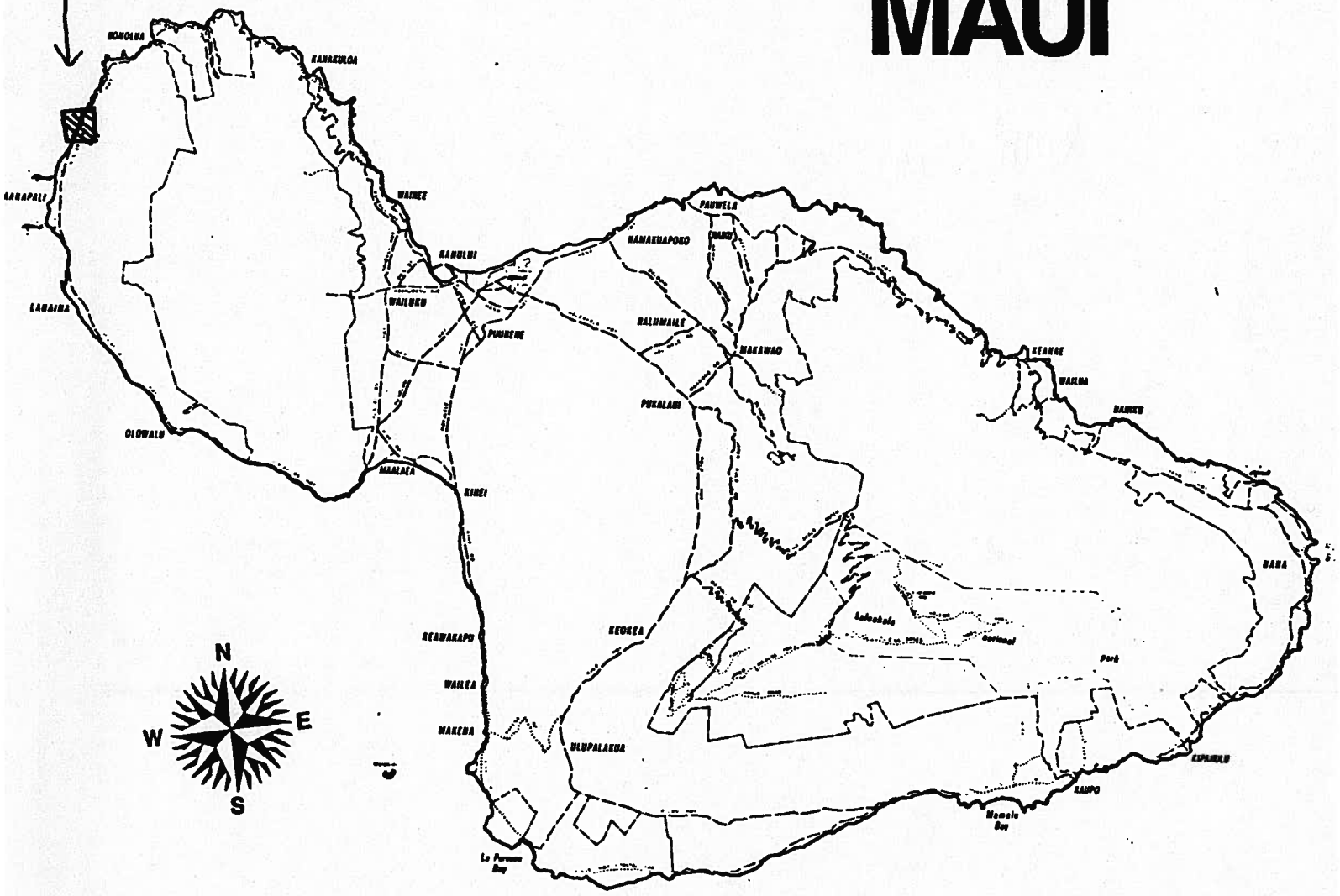
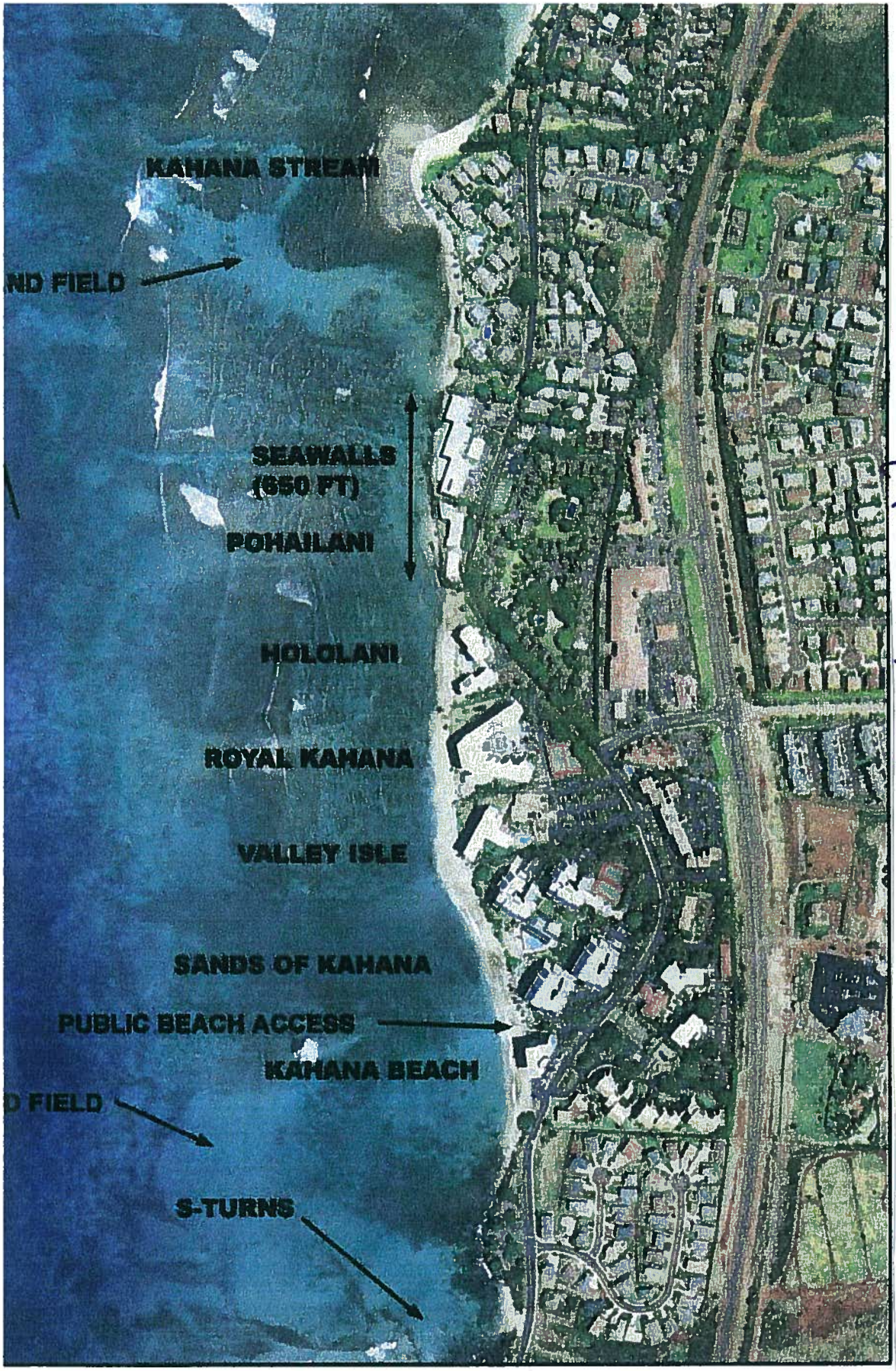


EXHIBIT 1



Condominiums and geographic features near Kahana Beach

EXHIBIT 2

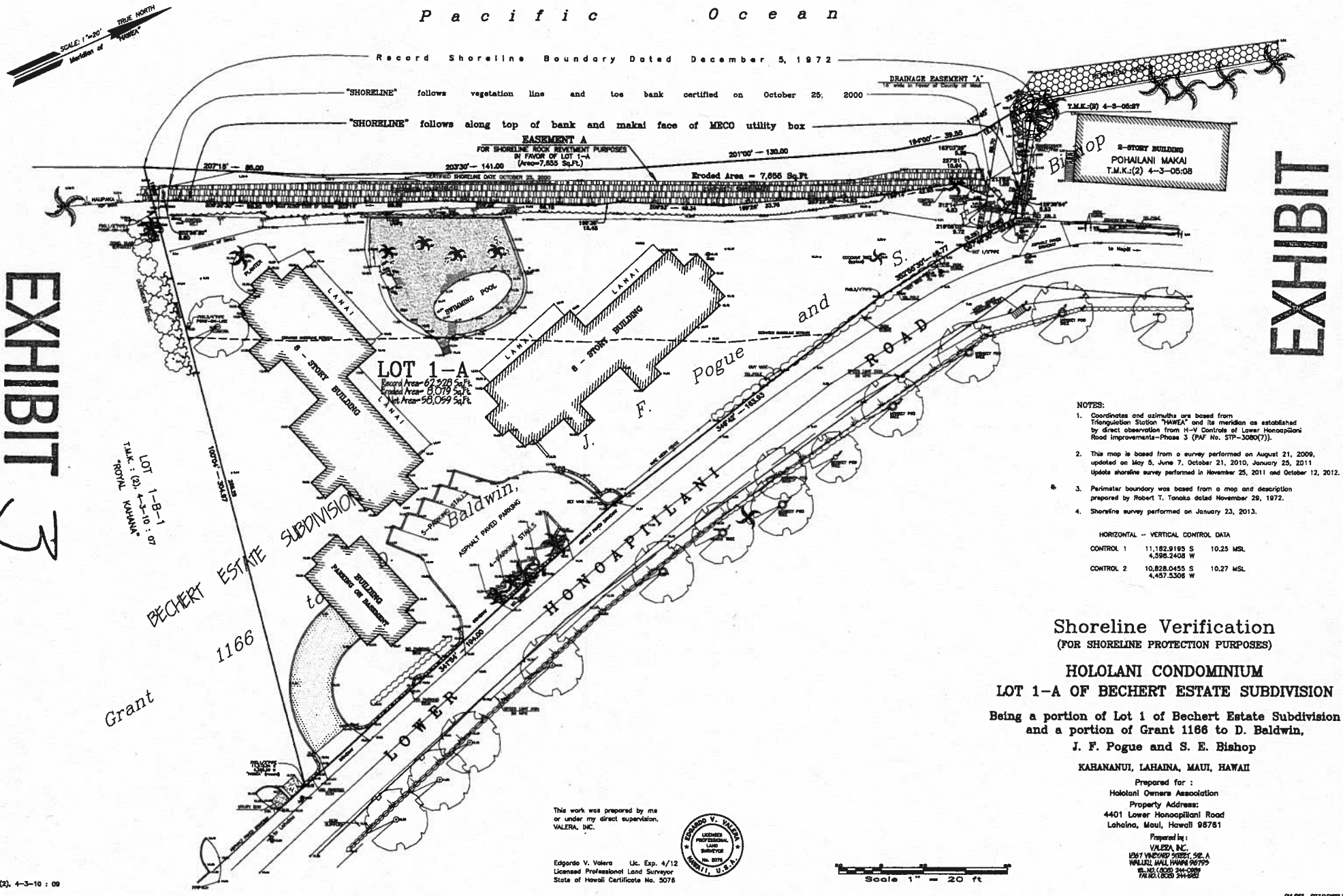


EXHIBIT 3

EXHIBIT

NOTES:

1. Coordinates and azimuths are based from Triangulation Station "HAWEA" and its meridian as established by direct observation from H-V Controls of Lower Honoapiilani Road Improvements-Phase 3 (PAF No. STP-3080(7)).
2. This map is based from a survey performed on August 21, 2009, updated on May 5, June 7, October 21, 2010, January 25, 2011 Update shoreline survey performed in November 25, 2011 and October 12, 2012.
3. Perimeter boundary was based from a map and description prepared by Robert T. Tanaka dated November 29, 1972.
4. Shoreline survey performed on January 23, 2013.

HORIZONTAL – VERTICAL CONTROL DATA

CONTROL 1	11,162.9195 S 4,598.2408 W	10.25 MSL
CONTROL 2	10,828.0455 S 4,457.5306 W	10.27 MSL

Shoreline Verification

(FOR SHORELINE PROTECTION PURPOSES)

HOLOLANI CONDOMINIUM

LOT 1-A OF BECHERT ESTATE SUBDIVISION

Being a portion of Lot 1 of Bechert Estate Subdivision and a portion of Grant 1166 to D. Baldwin, J. F. Pogue and S. E. Bishop

KAHANANUI, LAHAINA, MAUI, HAWAII

Prepared for :
Hololani Owners Association
Property Address:
4401 Lower Honoapiilani Road
Lahaina, Maui, Hawaii 96761

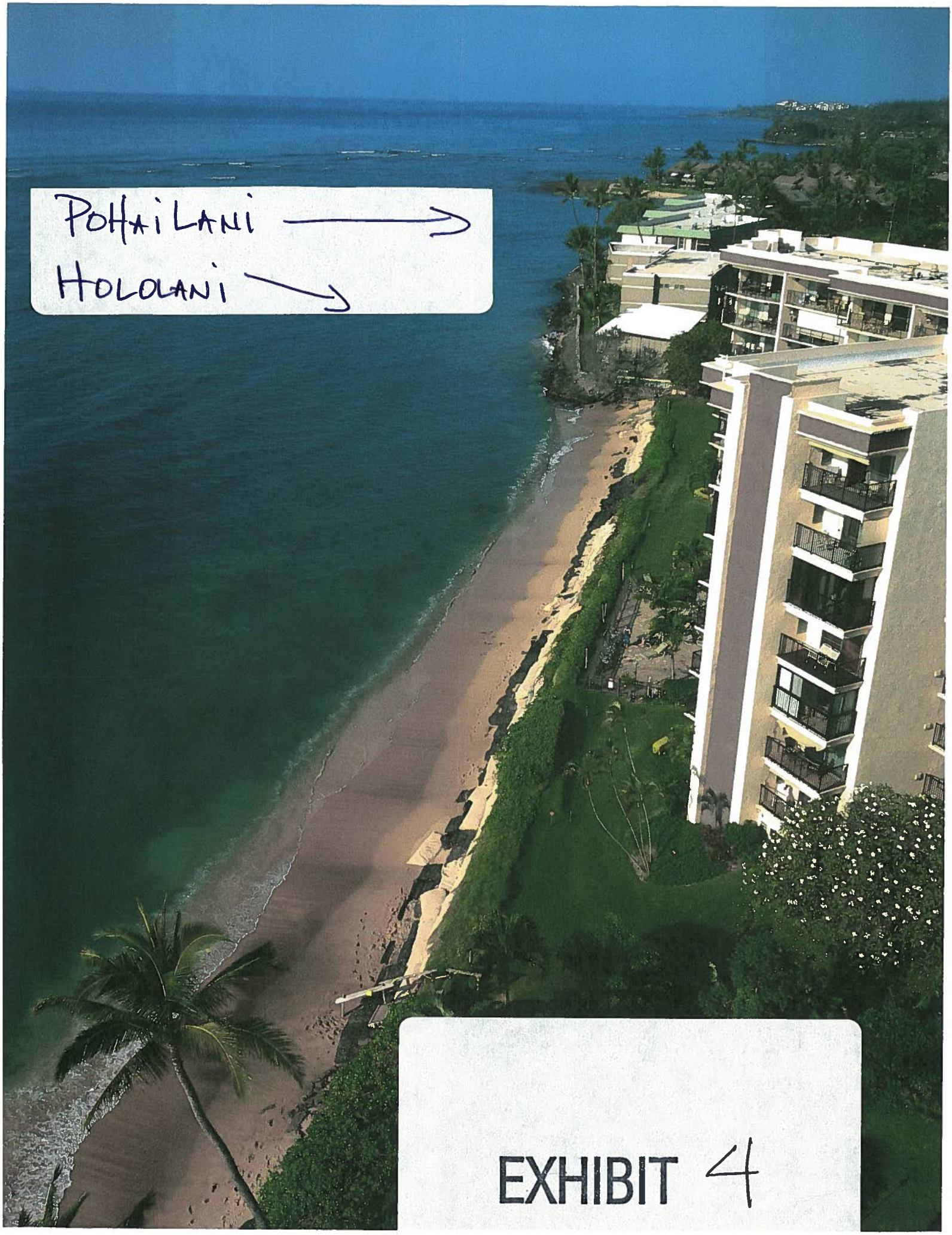
Prepared by :
VALERA, INC.
1767 VINEYARD STREET, STE. A
WAILUKU, MAUI, HAWAII 96793
TEL. NO.: (808) 244-0969
FAX NO.: (808) 244-1962

This work was prepared by me or under my direct supervision.
VALERA, INC.

Edgardo V. Valera Lic. Exp. 4/12
Licensed Professional Land Surveyor
State of Hawaii Certificate No. 5076

EDGARDO V. VALERA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5076
HAWAII, U.S.A.

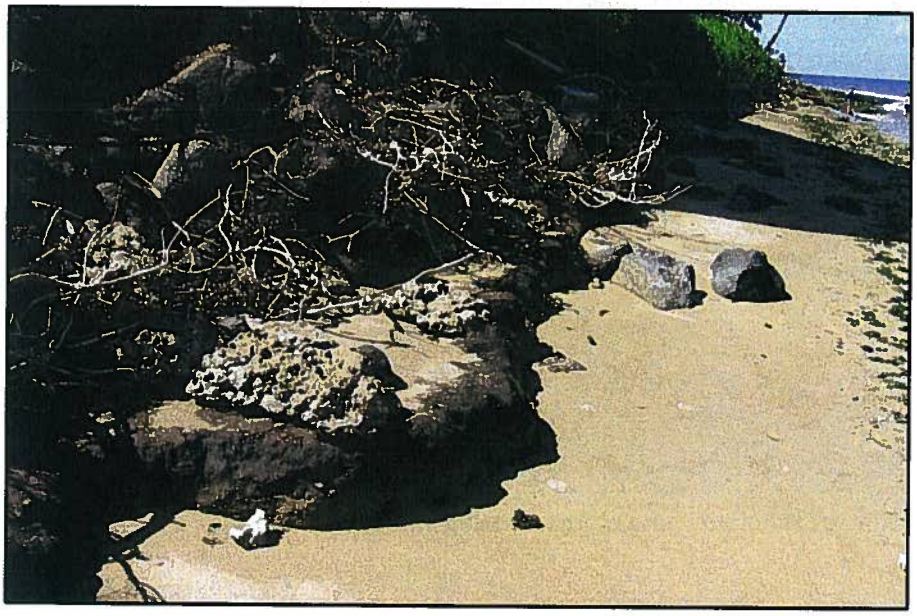
7187-SHORELIN


POHAILANI
HOLOLANI
EXHIBIT 4

. **University of Hawaii Coastal Geology Group erosion rates at the Hololani**

EXHIBIT 5

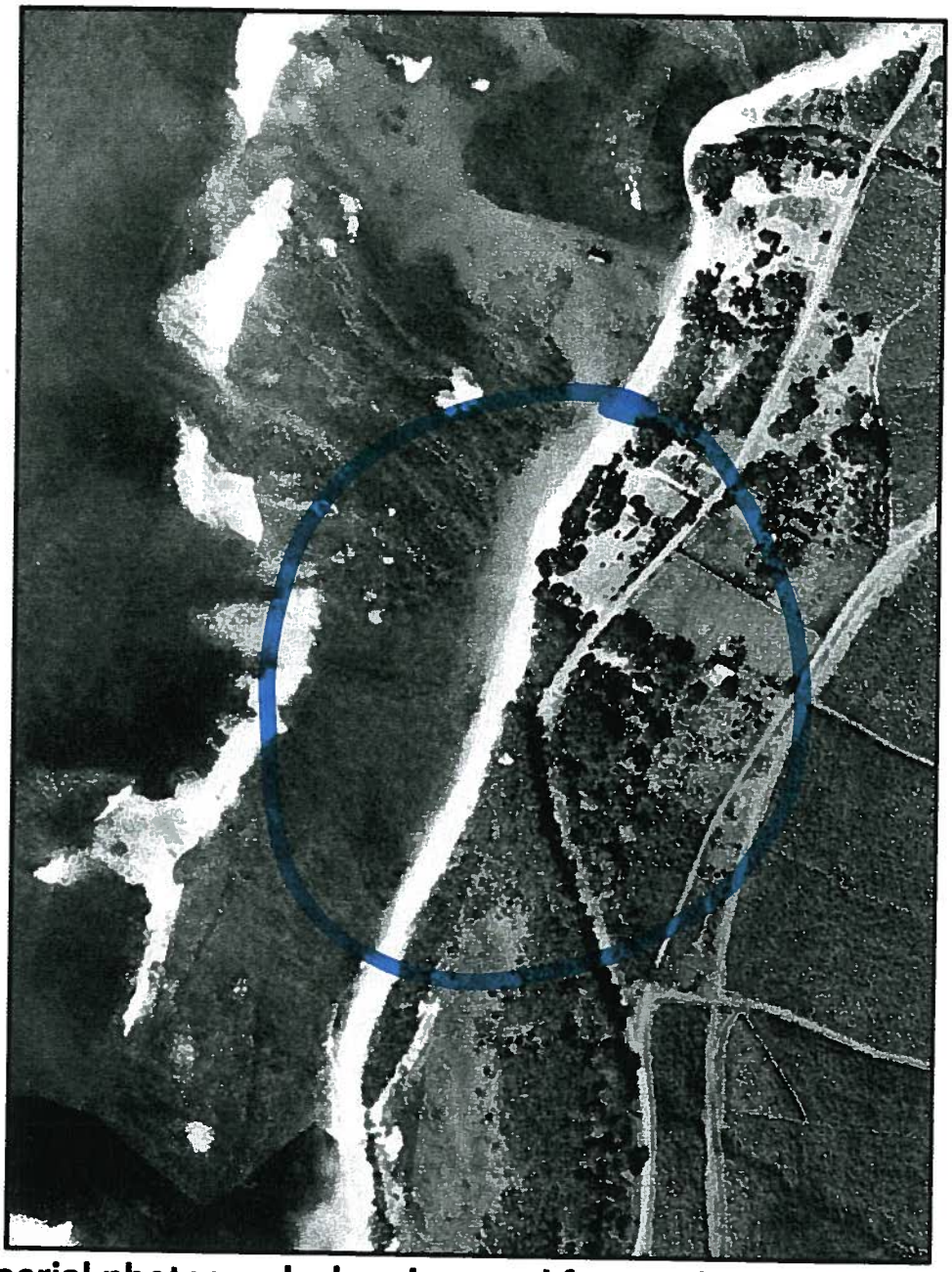
Beach rock fragments exposed during low sand conditions; note draped rock mattress shore protection at adjoining Royal Kahana property



Native substrate at Hololani showing red clay layer

EXHIBIT 6

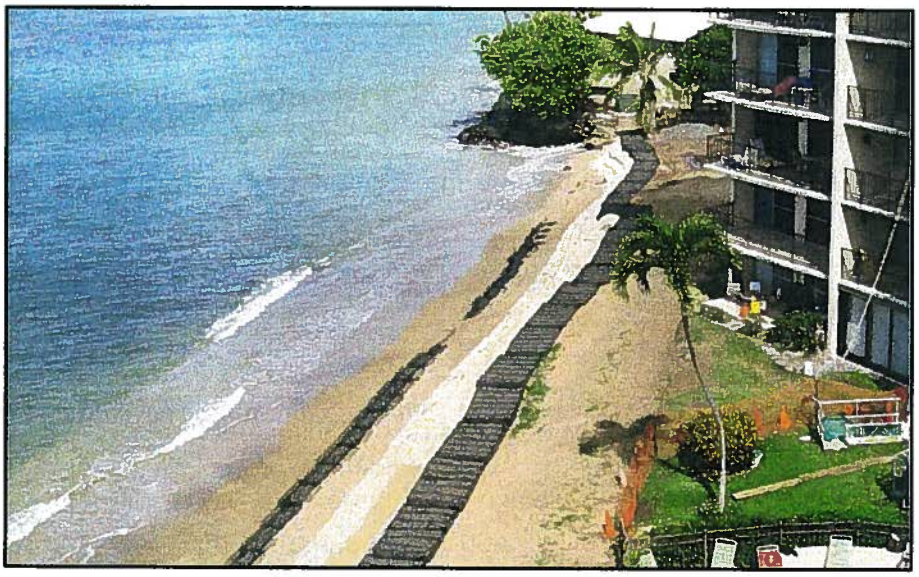
NOTICE CONTINUOUS SAND BEACH IN 1949



1949 aerial photograph showing sand from Kahana beaches to Kahana Stream

EXHIBIT 7

Erosion conditions threatening the north building in January 2007



Freshly installed temporary shore protection, January 2008

EXHIBIT 8

Photos taken: 2-7-07

Hololani Condominium complex

EXHIBIT 9

Photos taken: 2-7-07

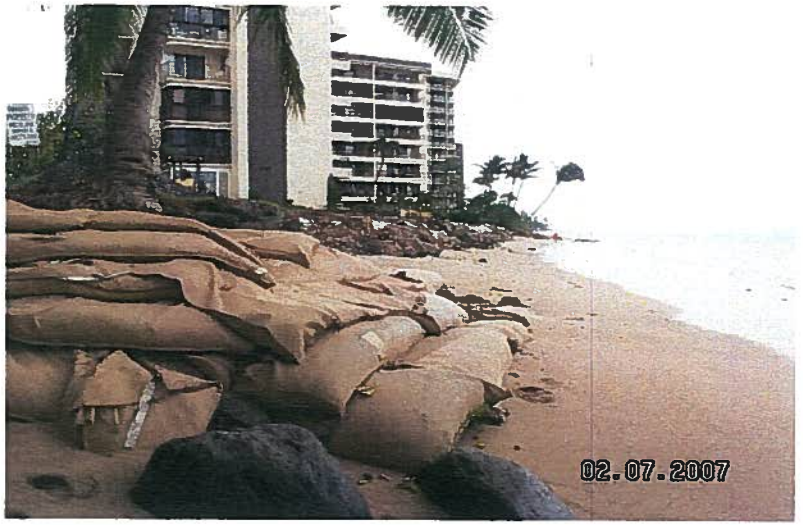


EXHIBIT 9

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

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

File No.: Emergency-OA-07-08

February 2, 2007

John C. Henry
Hololani Resident Manager
4401 L. Honoapiilani Rd
Lahaina, HI 96761

FEB - 2 2007

Mr. Henry:

SUBJECT: Emergency Erosion Control, Hololani Condominiums
4401 L. Honoapiilani Rd Lahaina, HI. TMK (2) 4-3-010:09.

The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) has reviewed Refugio Gonzales' February 2, 2007 request to place boulders in front of one of the buildings that is being threatened by erosion. The recent Kona storms have caused a sudden recession of the shoreline from 3-8 feet on a portion of the Hololani property. You are currently planning emergency erosion control measures (sandbags) for the entire property, but this project will not commence for a few weeks as the materials are currently on order. The erosion currently threatens a large multi-story building and it may be in danger of collapse without immediate shore protection. The DLNR understands the landowner(s) intend to apply for a shoreline setback variance for an engineered rock revetment placed landward of the shoreline. You are seeking our approval to place rocks and fabric on the shoreline as an interim measure until the sandbag revetment can be completed.

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

1. There is an imminent threat to the existing building with active erosion threatening the structure.
2. This berm is approximately defined by the active scarping and fallen vegetation. Erosion appears to have accelerated landward recently.
3. The proposed structure will provide temporary protection to the threatened structures until a more permanent solution is designed and approved.
4. There is no known beach-quality sand source stored behind the berm, it appears the area is composed a clay and weathered basalt that would not provide a useful source of sediment to the littoral system if were allowed to erode.

EXHIBIT 10

5. The area is largely armored with a large number of shoreline structures to the north and south of the property, specifically immediately to the north.
6. The are no other reasonable alternatives.
7. The applicant is developing a long-term plan for erosion control that may include stabilizing structures.

DEPARTMENT ACTION
Terms and Conditions

The Chairperson of the Department of Land and Natural Resources hereby authorizes your emergency request for temporary boulders fronting the subject property. This authorization includes, but is not limited to the following terms and conditions:

1. This authorization is valid for one month from the date of acceptance, at which time, the authorization shall expire;

2. The applicant shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of the DLNR, DOH or other agency, through silt containment devices or barriers;

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

4. This action is temporary to alleviate the emergency until long-term measures can be implemented. The DLNR reserves the right to terminate this authorization if it is determined the structure is having an adverse impact on the environment or if other shore protection alternatives are available;

5. At the conclusion of work, the area shall be clean of all construction material, and the site shall be restored to a condition acceptable to the Chairperson;

6. 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;

7. 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;

8. 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;

9. 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;

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

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

12. In the event there is any petroleum spill on the sand, the operator shall promptly remove the contaminated sand from the beach and immediately contact the DLNR/OCCL staff at 587-0377, to conduct a visual inspection and to provide appropriate guidance;

13. For projects authorized by this letter, 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, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under projects authorized under this permit;

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

15. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments for projects authorized under this letter;

16. 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 692-8015;

17. The applicant shall obtain a right-of-entry permit or other land disposition approval from the State of Hawaii, Land Division prior to the inception of project work;

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

19. 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; and

20. 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. The DLNR/OCCL staff shall be

EXHIBIT 10

contacted immediately at 587-0377, to conduct a visual inspection and to provide appropriate guidance.

Authorization Expiration:

21. This authorization shall expire one month from the date of this letter. At that time, all boulders authorized by this letter shall be removed. Failure to remove the boulders within thirty (30) days shall constitute a violation of Chapter 183C, Hawaii Revised Statutes and fines of $2,000 per day shall accrue for each day that the landowner fails to comply with the terms and conditions of this authorization.

Please acknowledge receipt of this authorization, with the above noted conditions, in the space provided below. Please sign two copies. Retain one and return the other within fifteen (15) 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 the Office of Conservation and Coastal Lands (OCCL) at (808) 587-0377.

Sincerely,

PETER T. YOUNG, Chairperson
Department of Land and Natural Resources

Attachments (Figures 1, 2)

cc: Chairperson
Maui Board Member
DAR/HPD
Maui County Planning Dept
OHA/DOH, Clean Water
USFWS/NMFS/USACE
Jim Barry Sea Engineering Makai Research Pier Waimanalo, Hawaii 96795-1820

I concur with the conditions of this letter:

_____
Applicant's Signature

Date_____

Note: transfer of ownership (Title) conveys all terms and conditions of this authorization to the new owner.

EXHIBIT 10

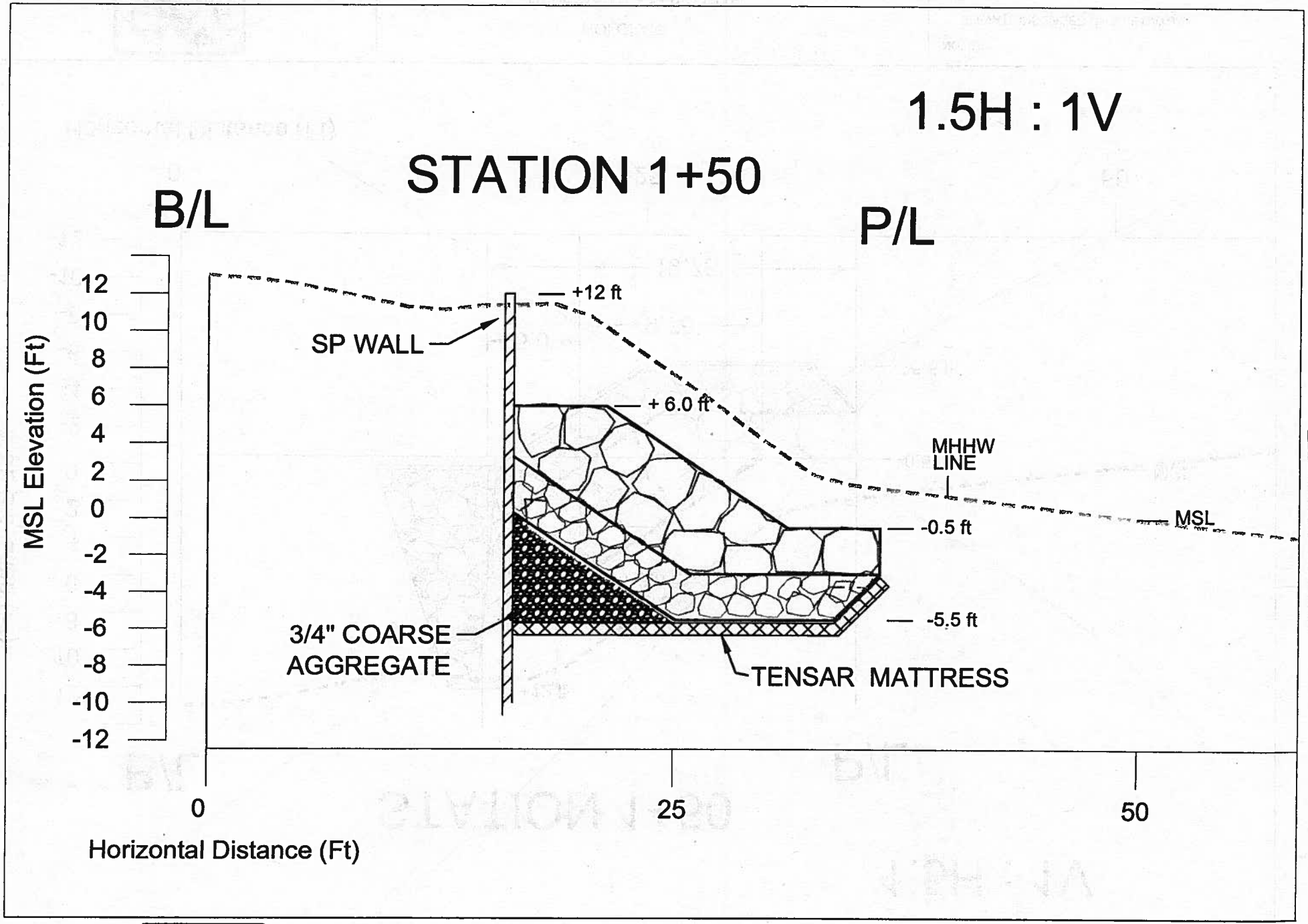


EXHIBIT K

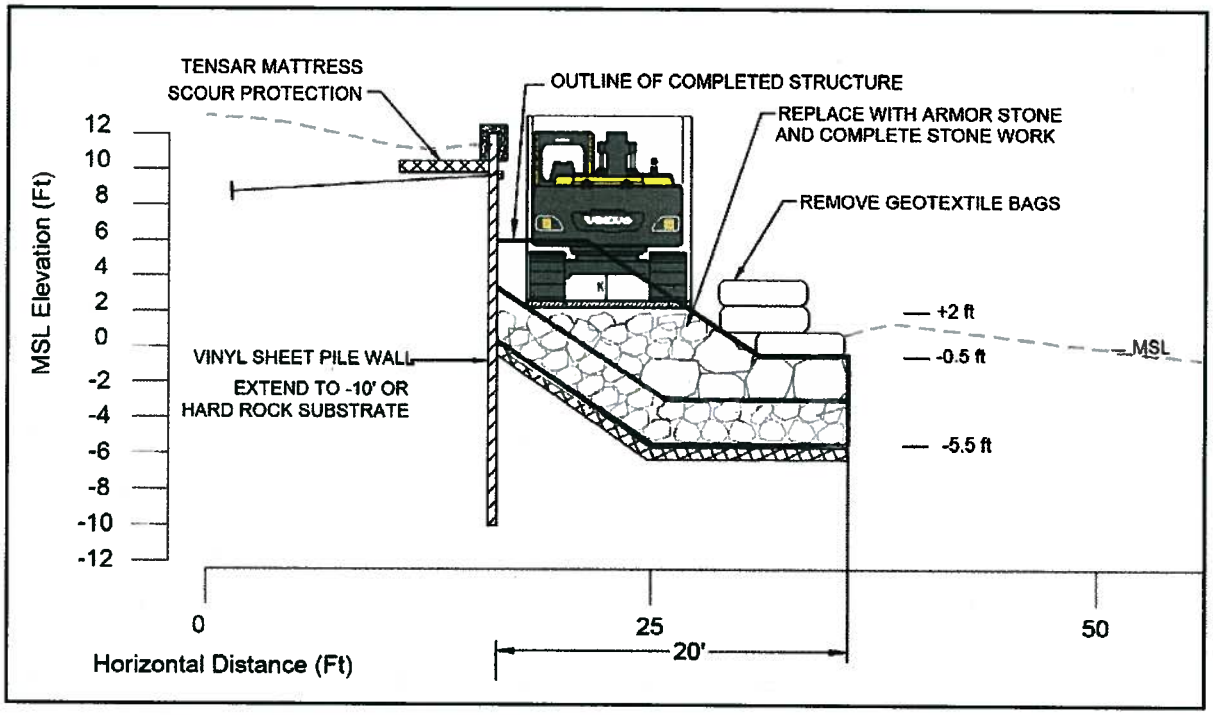
Sea Engineering, Inc.

HOLOLANI

REVETMENT and SEAWALL

NOTES:

1. ELEVATIONS BASED ON MSL DATUM



. Construction of remainder of structure, removal of temporary shoring – Phase 2, construction moving north.

2.6 Estimate of Material Quantities

The following material quantities (Table 2-4) are based on the dimensions in Figures 1-6 and 1-7. The quantities are conservative estimates. Quantities below MHHW are based on elevation rather than the high water mark, and therefore represent the maximum quantities that could be placed in federal jurisdiction (see Section 1.5.3)

Material Quantities

	Total Quantity	Quantity below MHHW
Armor Stone	1,785 tons	800 tons
Underlayer Stone	1,150 tons	1,080 tons
Vinyl Sheetpile	9,300 sq ft	4,740 sq ft
Tensar Mattress	8,170 sq ft (76 x 21.5' x 5')	8,170 sq ft
Seabags	145 bags (approx.) 2.5 cu yds per bag (362.5 cu yds)	145 bags (approx.) 2.5 cu yds per bag (362.5 cu yds)
Excavation (seawall)	475 cu yds	None
Excavation (revetment)	2,600 cu yds	1,475 cu yds

EXHIBIT 11

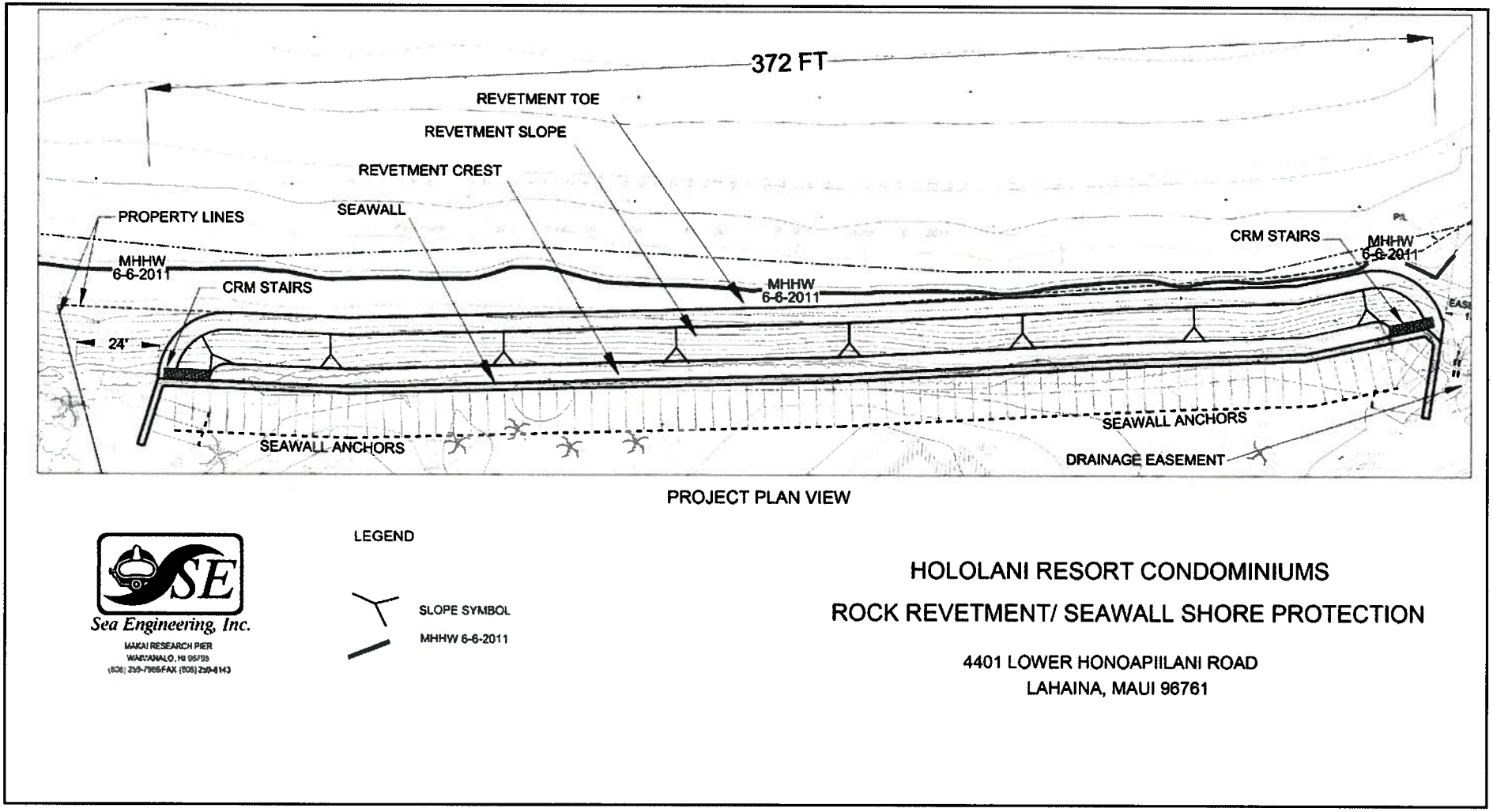
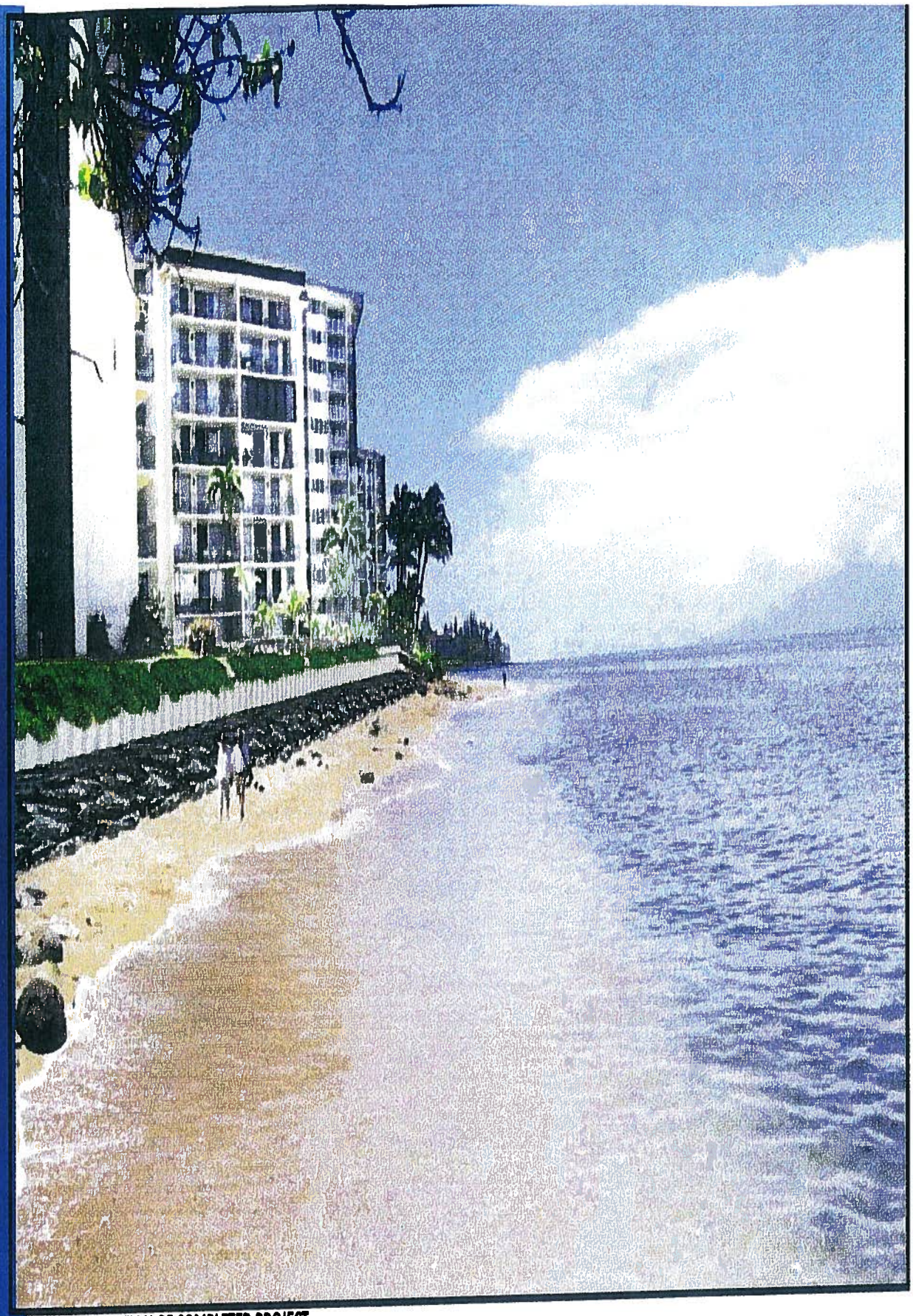


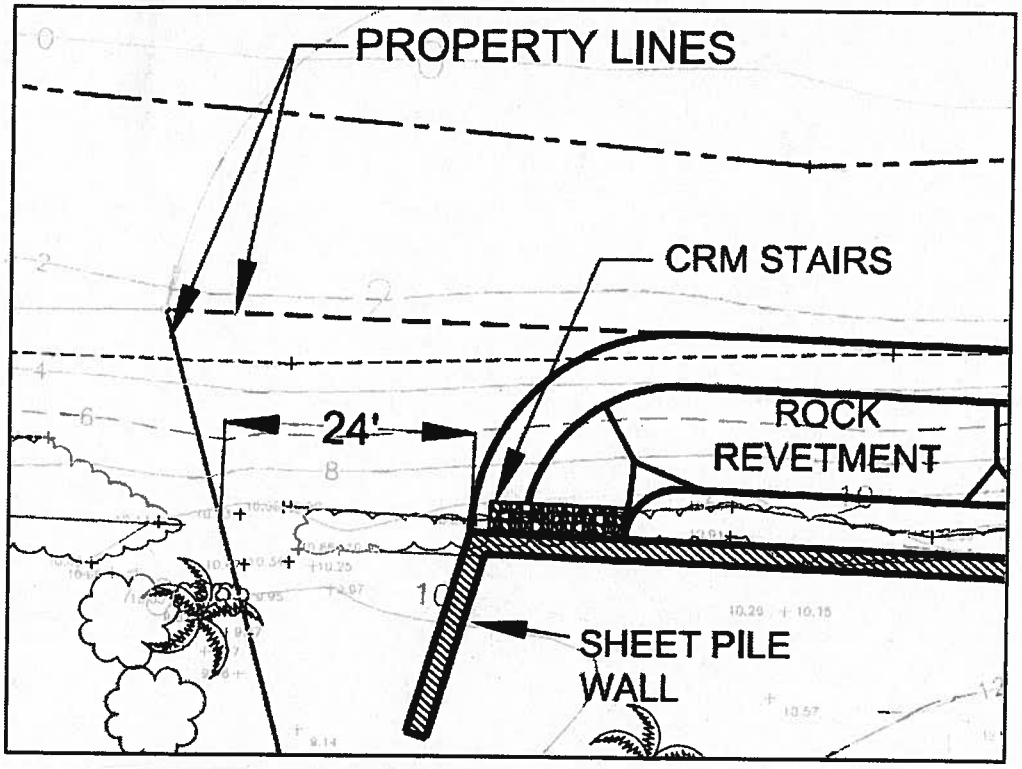
EXHIBIT 11

Figure 1-6. Layout of proposed hybrid revetment and seawall

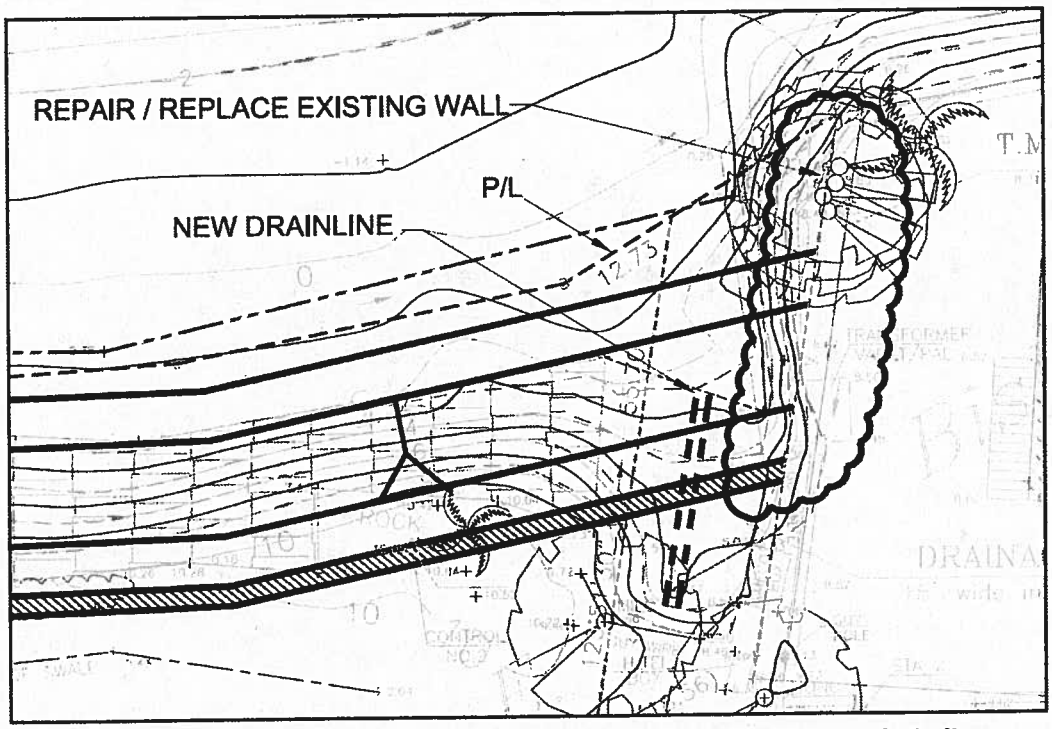


ARTIST'S RENDITION OF COMPLETED PROJECT

EXHIBIT 11



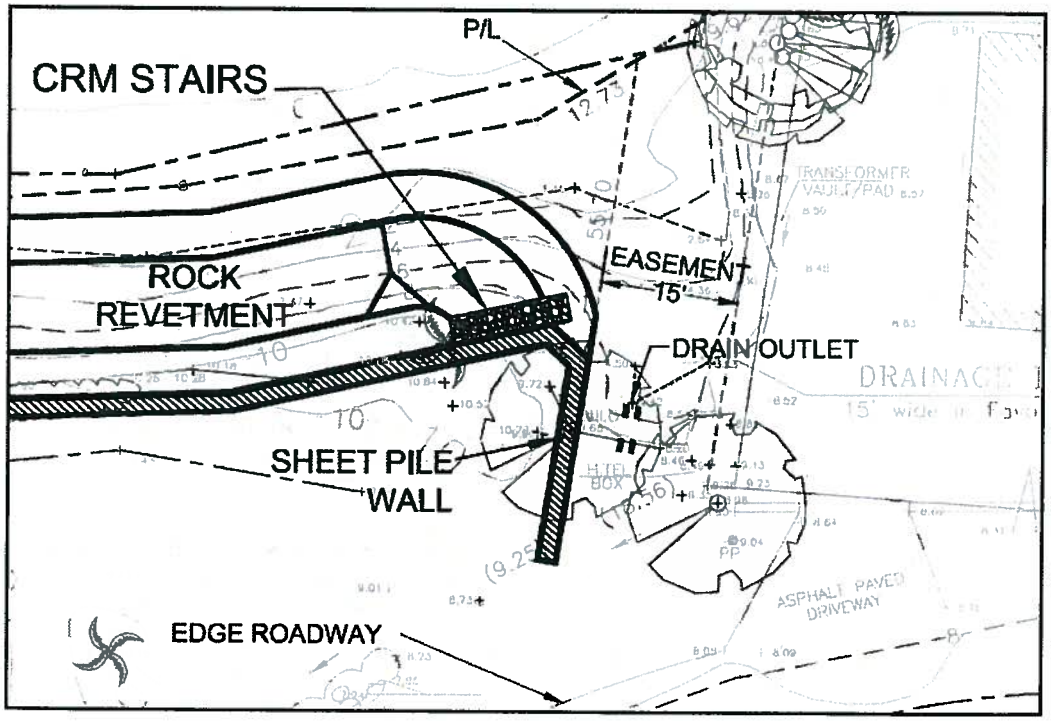
Proposed structure alignment at the south boundary



. Alternative configuration for the north end, with new drain line

EXHIBIT 11

Photograph of the drainage easement showing buried drain line



North end configuration for the proposed structure

EXHIBIT 12

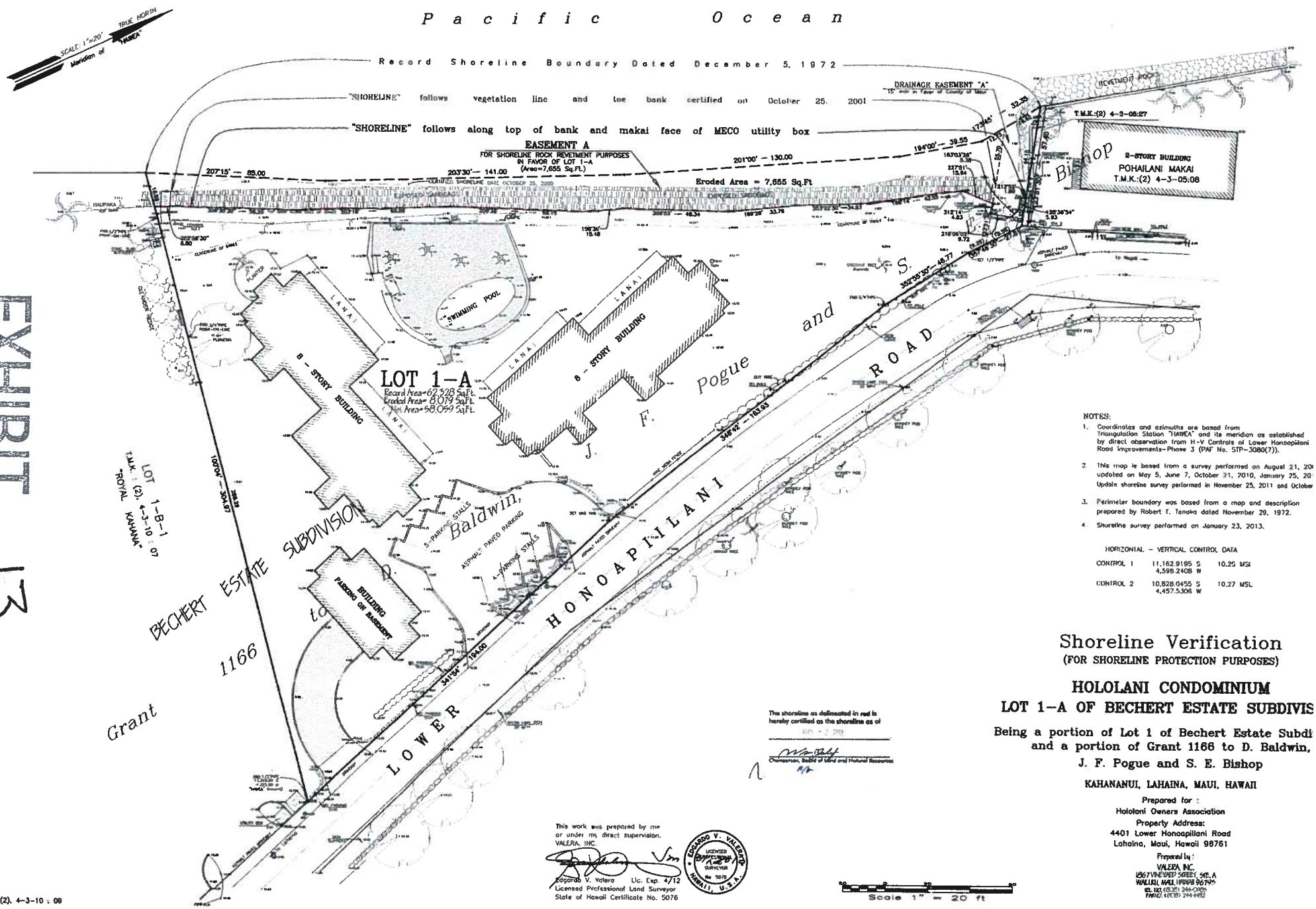


EXHIBIT 13

NOTES:

1. Coordinates and azimuths are based from Triangulation Station "HAWEA" and its meridian as established by direct observation from H-V Controls of Lower Honoapiilani Road Improvements-Phase 3 (PAF No. STP-3080(7)).
2. This map is based from a survey performed on August 21, 20 updated on May 5, June 7, October 31, 2010, January 25, 20 Update shoreline survey performed in November 25, 2011 and October
3. Perimeter boundary was based from a map and description prepared by Robert T. Tanaka dated November 20, 1972.
4. Shoreline survey performed on January 23, 2013.

HORIZONTAL - VERTICAL CONTROL DATA

CONTROL 1	11,162.9195 S 4,598.2408 W	10.25 MSL
CONTROL 2	10,828.0455 S 4,457.5306 W	10.27 MSL

The shoreline as delineated in red is hereby certified as the shoreline as of

Chairperson, Board of Land and Natural Resources

This work was prepared by me or under my direct supervision.
VALERA, INC.

Edgardo V. Valera Lic. Exp. 4/12
Licensed Professional Land Surveyor
State of Hawaii Certificate No. 5076

EDGARDO V. VALERA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5076
HAWAII, U.S.A.

Scale 1" = 20 ft

Shoreline Verification
(FOR SHORELINE PROTECTION PURPOSES)

HOLOLANI CONDOMINIUM
LOT 1-A OF BECHERT ESTATE SUBDIVIS

Being a portion of Lot 1 of Bechert Estate Subdi and a portion of Grant 1166 to D. Baldwin, J. F. Pogue and S. E. Bishop

KAHANANUI, LAHAINA, MAUI, HAWAII

Prepared for :
Hololani Owners Association
Property Address:
4401 Lower Honoapiilani Road
Lahaina, Maui, Hawaii 96761

Prepared by:
VALERA INC.
1967 VINEYARD STREET, STE. A
WAILUKU, MAUI, HAWAII 96793
BUS. NO. (808) 244-0876
FAX NO. (808) 244-4402

7187-

Photo # 1. Taken at north end shore looking northward. "Shoreline" follows top of bank at corner chain-link fence around to side of MECO box.

Photo # 2. Taken at north end shore looking southward. "Shoreline" follows top of bank at coconut tree going south.

EXHIBIT 13

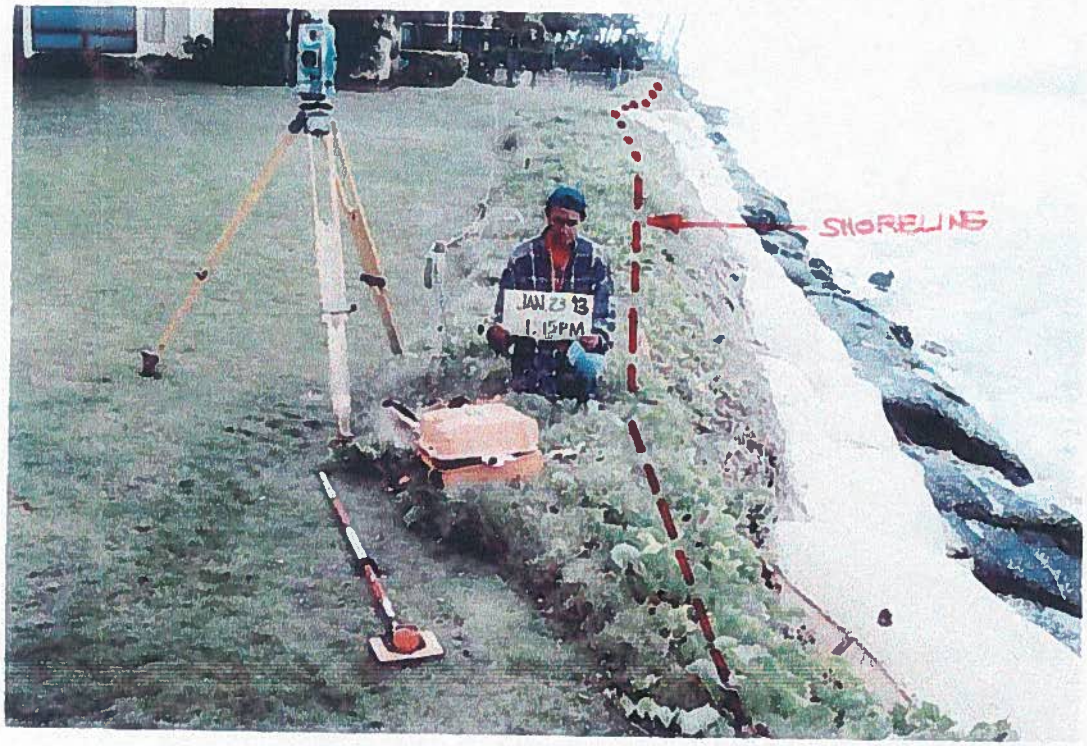


Photo # 3. Taken at north end shore looking southward. "Shoreline" follows top of bank.

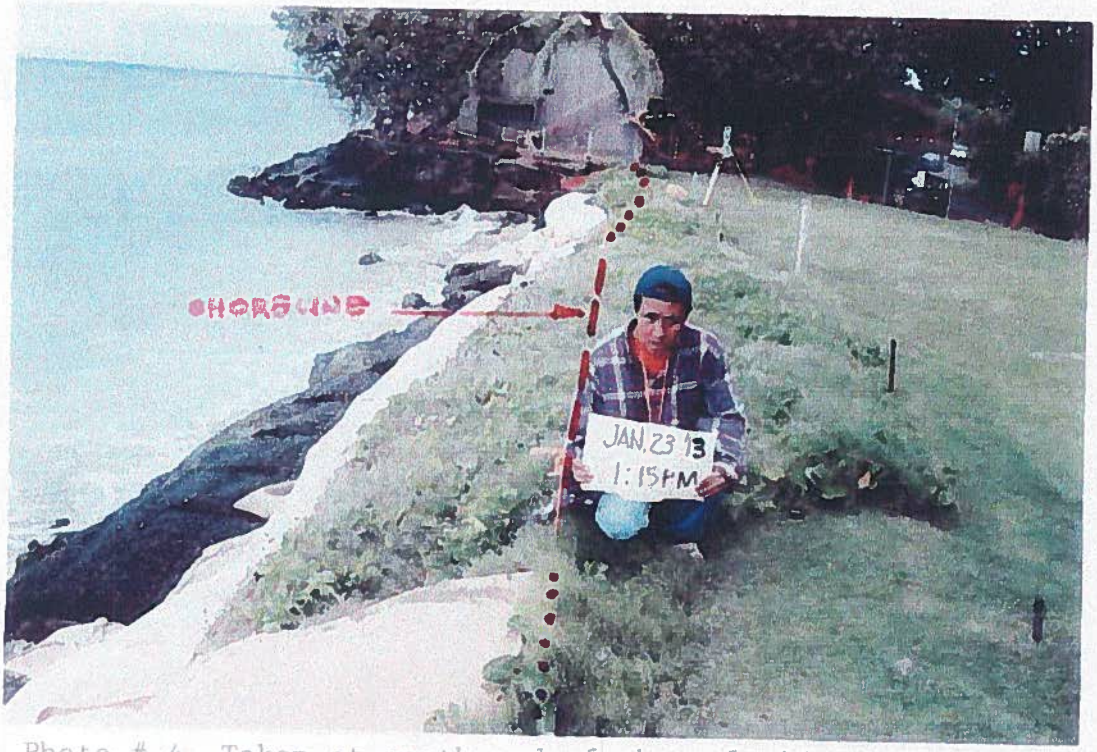


Photo # 4. Taken at north end of shore looking northward. "Shoreline" follows top of bank.

EXHIBIT 13

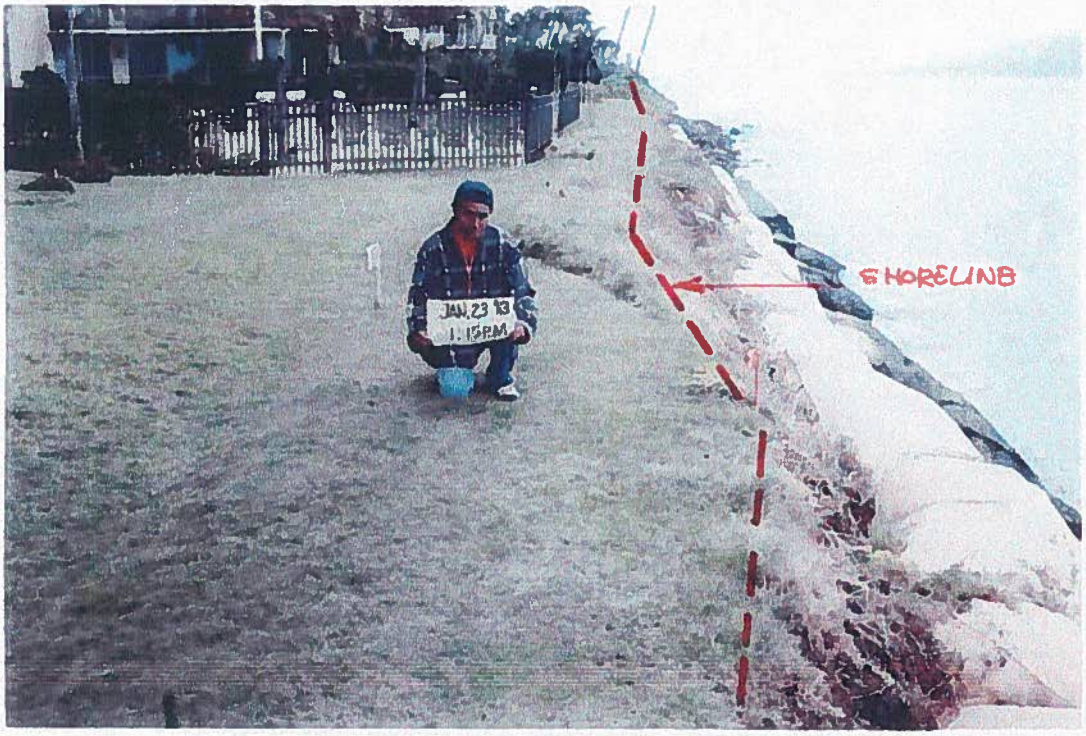


Photo # 5. Taken at near mid shore looking southward. "Shoreline" follows top of bank.

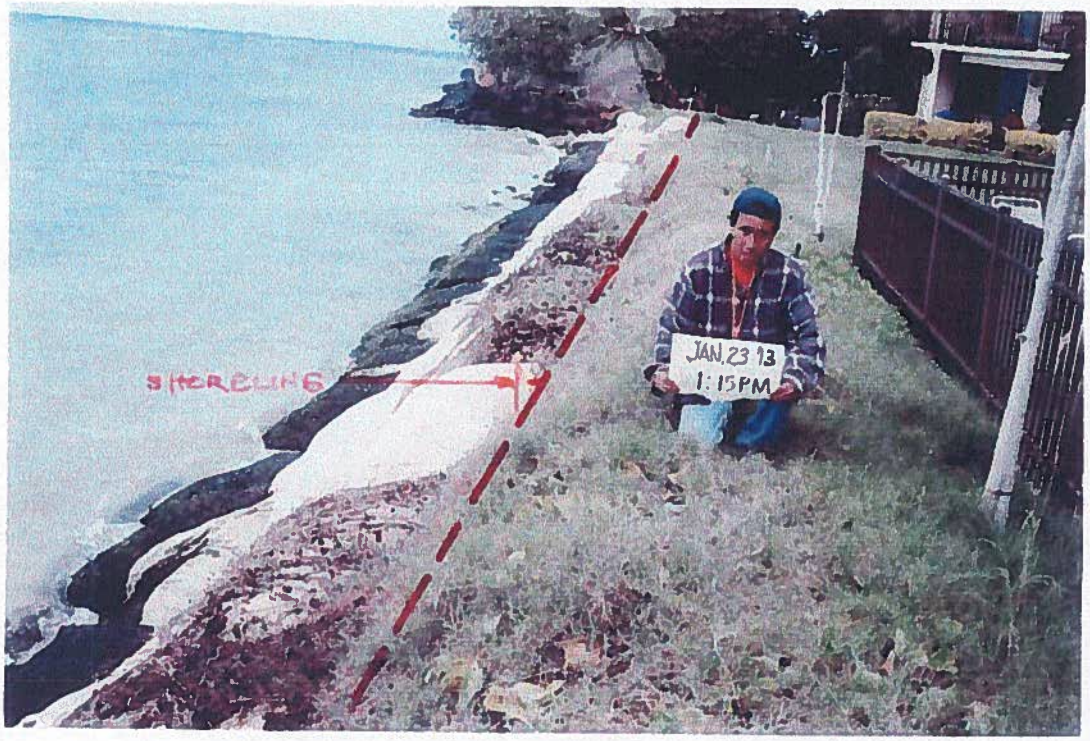


Photo # 6. Taken at near south end of shore looking north. "Shoreline" follows top of bank.

EXHIBIT 13

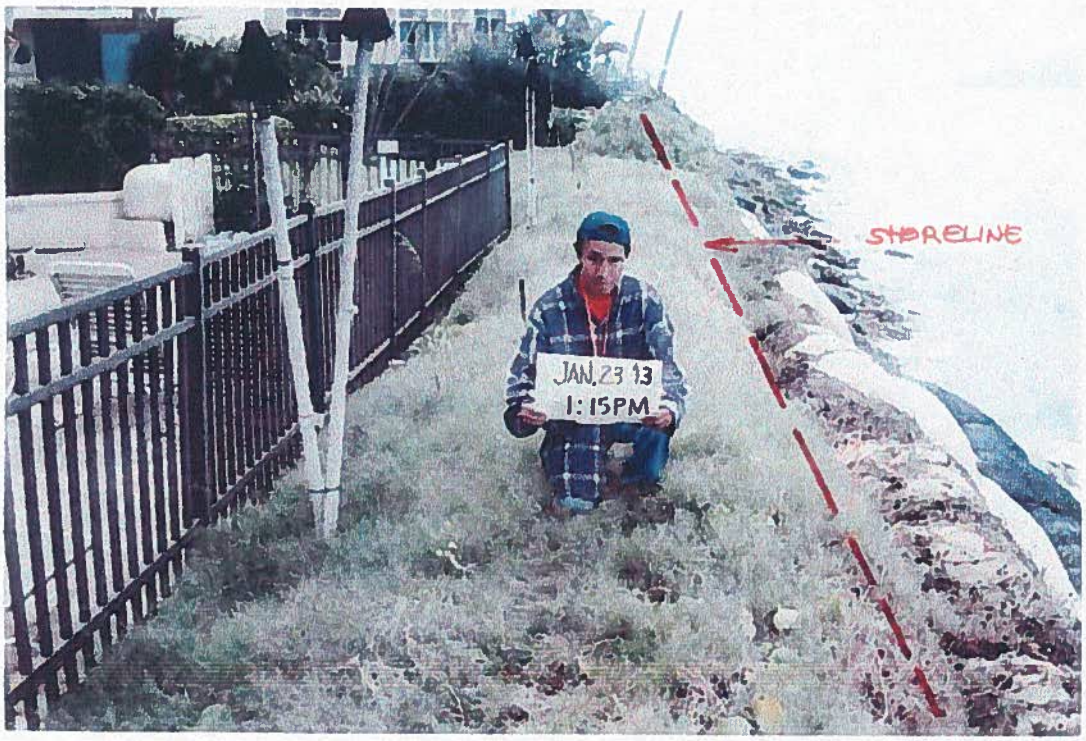


Photo # 7. Taken at near southend of shore looking southward. "Shoreline" follows top of bank.

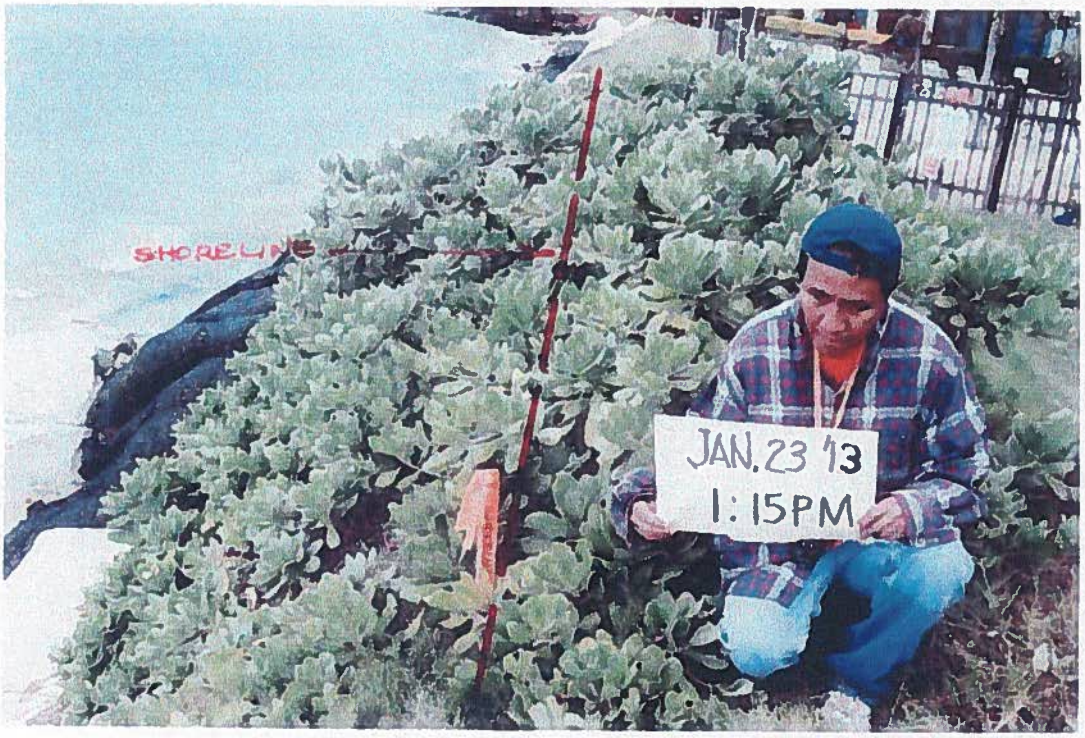


Photo # 8. Taken at south eand of shore looking northward. "Shoreline" follows top of bank.

EXHIBIT 13

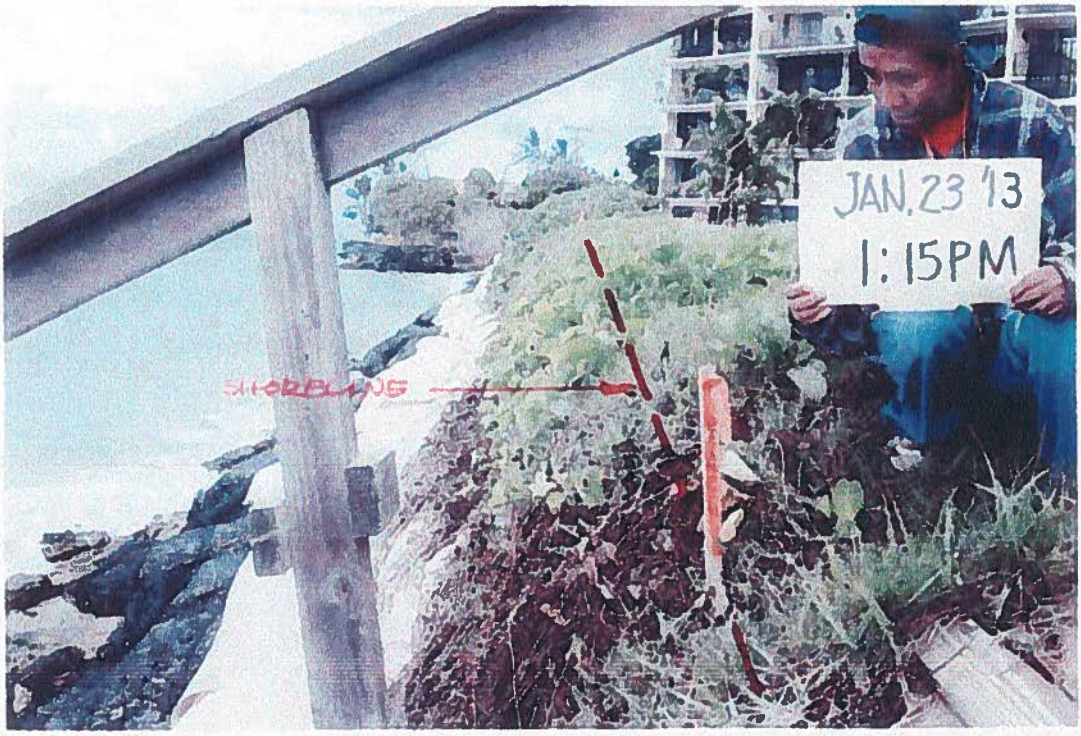


Photo # 9. Taken at southend of shore looking northward. "Shoreline" follows top of bank.

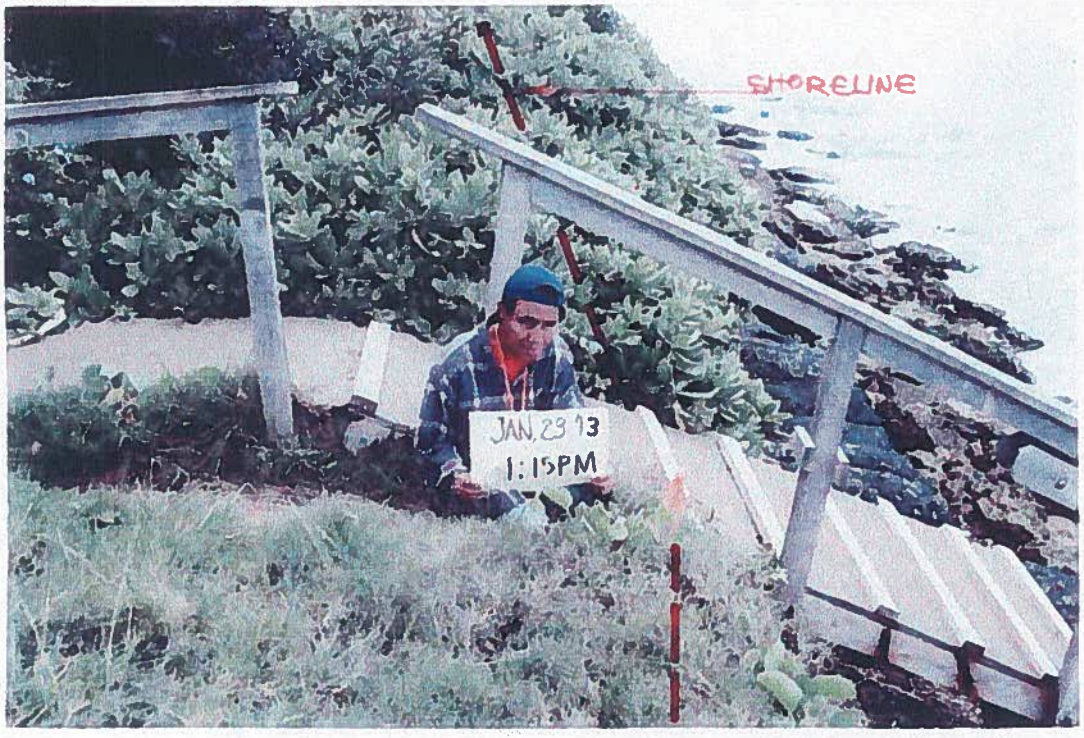


Photo # 10. Taken at southend of shore looking southward. "Shoreline" follows top of bank.

EXHIBIT 13

LOG OF BORING NO. 1

ELEVATION: see Plate 2

EQUIPMENT USED: B-59 Drill Rig

DEPTH OF BORING (FT.): 20.5

DATE DRILLED: June 9, 2010

DEPTH OF GROUNDWATER: 8.4 feet

DEPTH (FT.)	GRAPHIC SYMBOL	SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)
0		ML	sandy SILT with gravel			brown	moist to very moist	very stiff		15.6	
		MH/ ML	SILT with sand		58	dark brown				45.8	
3		SM	silty SAND			brown	moist	mod. dense			
					11					10.6	
6											
		GM	silty GRAVEL with sand				sat.				
9		SP-SM	SAND with silt			gray				55.3	
					13	light yellowish brown				39.6	
12											
15						very dark grayish brown		loose			
					9					45.9	
18											
		rock	ROCK		206	black		mod. hard rock		18.0	
21			END OF BORING AT 20.5 FEET								

EXHIBIT 14

PROJECT NAME: HOLOLANI ROCK REVETMENT

PROJECT NO.: 10140-FM

ISLAND GEOTECHNICAL ENGINEERING, INC.
Geotechnical Consultants

PLATE 3

LOG OF BORING NO. 2

ELEVATION: see Plate 2

EQUIPMENT USED: B-59 Drill Rig

DEPTH OF BORING (FT.): 21.5

DATE DRILLED: June 9, 2010

DEPTH OF GROUNDWATER: 8.7 feet

DEPTH (FT.)	GRAPHIC SYMBOL	SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)
0		ML	SILT (topsoil)			dark brown	moist	stiff		29.8	
		GM	silty GRAVEL with sand					mod. dense		8.3	
		SP	SAND		19	yellowish brown				9.3	
3		SP	cinder SAND			reddish brown					
		SM	silty SAND with gravel			brown					
					32			dense		18.1	
6							moist to very moist				
								mod. dense			
9							sat.				
		SP-SM	SAND with silt			dark gray				47.1	
		SP	SAND		18	olive gray to dark gray brown				37.7	
12											
15						reddish brown				37.6	
		GM	silty GRAVEL with sand		16					46.7	
18		rock	ROCK, weathered			dark gray		soft to mod. hard rock			
			Core Run #1: 19' to 21.5' Rec. = 33% RQD = 30%		23/0"						
21		CL	CLAY			very dark gray		stiff		38.3	
			END OF BORING AT 21.5 FEET								

PROJECT NAME: HOLOLANI ROCK REVETMENT

PROJECT NO.: 101408-FM

ISLAND GEOTECHNICAL ENGINEERING, INC.

Geotechnical Consultants

PLATE 4

LOG OF BORING NO. 3

ELEVATION: see Plate 2

EQUIPMENT USED: B-59 Drill Rig

DEPTH OF BORING (FT.): 19.5

DATE DRILLED: June 9, 2010

DEPTH OF GROUNDWATER: 8.6 feet

DEPTH (FT.)	GRAPHIC SYMBOL	SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)
0		SM	silty SAND with gravel			dark grayish brown	mod. moist to moist	very dense		6.2	
3											
		MH	sandy SILT			dark brown		stiff		14.9	
		SP-SM	SAND with silt		27	dark yellowish brown		mod. dense		6.4	
6							very moist				
9		SP-SM	SAND with silt and gravel				sat.				
						dark gray to grayish brown				42.4	
					13						
		SP	SAND							38.5	
12											
		CL	CLAY			very dark gray to dark gray		stiff		43.8	
15					45/2"						
		rock	ROCK: porous					soft rock		12.4	
			Core Run #1: 17.5' to 19.5' Rec. = 46% RQD = 33%					mod. hard rock			
18											
			END OF BORING AT 19.5 FEET								
21											

PROJECT NAME: HOLOLANI ROCK REVETMENT

PROJECT NO.: 101408-FM

ISLAND GEOTECHNICAL ENGINEERING, INC.

Geotechnical Consultants

PLATE 5

LOG OF BORING NO. 4

ELEVATION: see Plate 2

EQUIPMENT USED: Minuteman/Tripod Assembly

DEPTH OF BORING (FT.): 19.75

DATE DRILLED: August 13, 2010

DEPTH OF GROUNDWATER: 8.7 feet

DEPTH (FT.)	GRAPHIC SYMBOL	SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)
0		MH	SILT with gravel		15	very dark grayish brown	moist	mod. stiff			
								stiff		25.6	
		SP	SAND with gravel			dark reddish brown		mod. dense		23.3	
3		MH	sandy SILT		19			very stiff		23.1	
		SM	silty SAND			dark yellowish brown		loose		4.6	
6		MH	SILT		6			mod. stiff		23.8	
							very moist				
		SM	silty SAND with gravel			dark grayish brown	sat.	mod. dense		26.3	
9		MH	sandy SILT		20			very stiff		16.2	
		SP-SM	SAND with silt					mod. dense		36.5	
12					3			very loose			
15											
18						very dark grayish brown		mod. dense		26.7	
		SM	silty SAND with gravel		16					43.6	
			END OF BORING AT 19.75 FEET								
21											

PROJECT NAME: HOLOLANI ROCK REVETMENT

PROJECT NO.: 101408-FM

ISLAND GEOTECHNICAL ENGINEERING, INC.

Geotechnical Consultants

PLATE 6

LOG OF BORING NO. 5

ELEVATION: see Plate 2

EQUIPMENT USED: Minuteman/Tripod Assembly

DEPTH OF BORING (FT.): 17.5

DATE DRILLED: August 13, 2010

DEPTH OF GROUNDWATER: 8.1 feet

DEPTH (FT.)	GRAPHIC SYMBOL	SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)
0		MH	SILT with sand		41	brown	mod. moist to moist	stiff / very stiff		14.1	
3						dark brown				12.4	
		SM	silty SAND		7			loose		7.2	
6		MH	SILT			very dark grayish brown		soft		26.7	
		SM	silty SAND		7		very moist	loose		34.9	
		cob	COBBLE								
		SM	silty SAND				sat.				
9		SP-SM	SAND with silt		9	dark gray		mod. dense		53.7	
										47.2	
12						grayish brown		loose to very loose		35.7	
										41.2	
		GM	silty GRAVEL with sand		3					39.5	
		SM	silty SAND								
15						very dark grayish brown				31.5	
					1					40.3	
18			END OF BORING AT 17.5 FEET								
21											

PROJECT NAME: HOLOLANI ROCK REVETMENT

PROJECT NO.: 101408-FM

ISLAND GEOTECHNICAL ENGINEERING, INC.

Geotechnical Consultants

PLATE 7

Estimated ROCK Elevations at the Hololani Borings

Boring	Estimated MSL Elevation of Rock (*)
1	-9.5'
2	-8'
3	-5.5'
4	?
5	?

(*) Note that actual msl elevations at the borings was not provided to IGE. The elevation information on this table was estimated by interpolating the topographic map that was provided. All borings appear to be at about +10.0' msl.

06-08-2010

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

March 25, 2014

Mr. Samuel J. Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
Post Office Box 621
Honolulu, Hawaii 96809

Dear Mr. Lemmo:

Subject: **COMMENTS ON THE CONSERVATION DISTRICT USE APPLICATION (CDUA) AND FINAL ENVIRONMENTAL ASSESSMENT (EA), MA-3663, FOR A PERMANENT SHORE PROTECTION OF THE HOLOLANI RESORT CONDOMINIUMS AT KAHANA BAY, LAHAINA, ISLAND OF MAUI, HAWAII; TMK: (2) 4-3-010:009 (RFC 2013/0177)**

The Department of Planning (Department) has reviewed the CDUA for the Hololani Resort Condominiums (Hololani) proposed hybrid seawall-revetment preferred alternative. The Department understands that the structure is designed to protect the condominium structures from further coastal erosion. The structure would be placed both on State Conservation land, and within the County of Maui Special Management Area (SMA), and Shoreline Setback Area, as defined by the *Shoreline Rules for the Maui Planning Commission* (Shoreline Rules), Section 12-203-6, Establishment of Shoreline Setback Lines. As such, the proposed project will require a SMA Major Permit and a Shoreline Setback Variance (SSV) since structures of this nature are not permitted in the shoreline setback area. The Department acknowledges Hololani's requirement to protect the habitable structures from further coastal erosion. However, without additional mitigation applied to the project, the Department does have concerns about the preferred alternative proposed to the Board of Land and Natural Resources (BLNR) and its probable cumulative environmental impact to the beach and shoreline of Kahana Bay.

The Department has studied the Final EA for the project that was transmitted as part of the CDUA package for review. In addition, the Department attended the CDUA Public Hearing on February 10, 2014. The Department is very familiar with the parcel, having visited the site over a dozen times, and has been working closely with Hololani applicants and Department of Land and Natural Resources – Office of Conservation and Coastal Lands (DLNR-OCCL) staff since 2007 to mitigate the coastal erosion in this location. The Department has a good understanding of the history of the project and the environmental setting of both the Kahana Bay beach cell and the entire West Maui shoreline. The Kahana Bay beach cell is herein defined as the contiguous beach from Hololani at the north to the Hui O Pohaku Beach Park (aka S-Turns Park) at the south, spanning five (5) parcels, each with large condominium complexes (reference CDUA, Figure 8: Condominiums and geographic features near Kahana Bay). Because of the Department's concern for the proposed project's potential impact on the beach

EXHIBIT 15

resources at Kahana Bay and of the Kahana Bay beach cell, the Department would like to transmit to the BLNR additional information, findings, comments, and concerns for consideration, as stated below.

You can be assured that these same issues and concerns will be raised when the Maui Planning Commission (Commission) considers the SMA Major Permit and SSV applications that are required for the project. It only makes sense that the BLNR is able to consider the same information when it considers the CDUA.

These comments are based on observations and findings over the past four (4) years by two (2) professional geologists involved in the project, namely Coastal Resources Planner James Buika from the Department, and Coastal Processes Specialist Tara Owens from the University of Hawaii Sea Grant Extension Program – Maui.

1. Following the Hololani episodic shoreline erosion event in the winter of 2006-2007, the Department authorized Hololani on June 22, 2007, under a Special Management Area Emergency Permit (SM3 2007/0001), according to Section 12-202-16 of the *Special Management Area Rules for the Maui Planning Commission* (SMA Rules), to temporarily protect its shoreline within the shoreline setback area with rock mattresses and large geotextile sandbags. This emergency permit included a condition that the temporary shoreline protection structures would remain in place for a maximum of 180 days, after which time Hololani would be required to remove the temporary shoreline protection. Another condition of this emergency permit required the Hololani to submit within sixty (60) days to the Department a SMA permit application with an alternative solution for managing the shoreline erosion and protecting the buildings. Following the 180-day period, Hololani did not comply with either of the original conditions to remove the temporary protection and to submit the permit application. As a result of non-action and non-compliance, the temporary shoreline protection has remained in place for over six (6) years, during which time erosion has continued and has possibly been exacerbated in front of and down drift of the temporary protection.

2. On November 9, 2009, the Department received a SMA permit application (SMX 2009/0406) to repair the temporary protective structures. In a letter dated March 24, 2010, the Department stated it would not process the application due to noncompliance with the original SMA Emergency Permit, specifically the two (2) conditions referenced in No. 1, above. Please note that the March 24, 2010 Department letter was not included in either the Final EA document or the CDUA application, for review by the BLNR **(Exhibit 1).** Later, in a Department letter dated January 13, 2011, the Department authorized repairs to the temporary shoreline hardening as a SMA Minor Permit (SM2 2011/0001) only after gaining written assurances and documented progress from the Hololani that they were actively seeking a solution to the shoreline erosion **(Exhibit 2).** Subsequently, a Department letter dated August 16, 2011 commented on the

proposed permanent shore protection design and preliminary environmental document **(Exhibit 3).** In this letter, the Department noted to the applicant's representative that regional cooperation should be explored, stating that:

> "Additionally, the Department already recognizes a regional erosion problem whereby neighboring properties may soon face similar hazard threats and may also approach State and County with similar protection requests. In fact, neighboring Royal Kahana Condominiums has recently requested emergency shoreline protection and has been encouraged to develop a long-term erosion control strategy. With the future already upon us, it makes good planning sense to consider the regional opportunities and to assess the collective resources available for those opportunities."

The Department notes that, to date, this requested regional cooperation has not been adequately explored and documented by the Applicant as an alternative or complimentary solution to the proposed permanent shoreline hardening.

3. During repeated visits to the site since 2007, the Department has observed that the temporary shoreline protection has adequately protected the buildings from further erosion. However, the temporary shoreline protection appears to have impacted the coastal zone by diminishing the sandy beach and lateral access along the shoreline.

4. For the proposed alternative of the hybrid revetment-seawall, the Department concurs similarly with DLNR-OCCL that, despite the Finding of No Significant Impact (FONSI) determination by the State of Hawaii for the Final EA, the proposed shoreline protection structure will: a) impact the coastal zone by permanently hardening and fixing the shoreline, which will create a wave environment that will contribute to further narrowing of the public beach and sand loss fronting the Hololani; and b) the proposed structure most likely will contribute additional impact by accelerating episodic and long-term erosion on adjacent, unarmored portions of the Kahana Bay beach cell, noted by the State as "end effects" or "flanking erosion". This "end effect" or "flanking erosion" impact has been observed by the Department to the south of Hololani at the shoreline fronting the Royal Kahana condominium due to the presence of Hololani's temporary shoreline protection structures. The Department concurs with the State of Hawaii's standing policy to discourage seawalls, especially on active sandy shorelines and beach cells.

5. Regarding the Applicant's answers in the CDUA application and the Final EA, the Department provides these comments to the BLNR for consideration:

   a. The Department recommends that the BLNR review the stated answer to the first CDUA Evaluation Criteria 1, on page 6 of the application: <u>The purpose of the Conservation District is to conserve, protect, and preserve</u>

> the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. How is the proposed land use consistent with the purpose of the conservation district? The Department finds the Applicant's answer, as quoted below, to be inconsistent with the results of five geotechnical boring samples drilled to test the content of the underlying substrate of the shoreline.
>
> "The proposed project will prevent the deterioration of the shoreline that would occur without the project. It is important to note that the native shoreline condition is a steep, hard clay escarpment that is highly reflective of incident waves – a naturally hardened shoreline. Construction of a less reflective rock rubble mound revetment will help reduce wave reflection and may assist the sand accretion characteristics of the shoreline, thus promoting beach recovery when seasonal conditions are favorable. The project will likely not have a negative impact on the native beach, but may actually help beach stabilization. In addition, it should be noted that the temporary shore protection that is in place has improved the water quality in the area by preventing the erosion of the red clay substrate and suspension of the resulting fine particulates in the water column."

As part of the Final EA, a report entitled *Report Soils Investigation for Sea Engineering, Inc.,* by Island Geotechnical Engineering, Inc. and dated August 31, 2010, analyzed five soil boring samples to at least 18' below sea level (reference plates 3-7 of said report). The location of these five (5) borings were spaced along the shoreline from north to south directly behind the property line and along the shoreline. Only two (2) of the five (5) borings showed only one (1) thin lens of clay content each (Boring No. 2 at 21' depth, 6" thickness, and Boring No. 3 at 15' depth for 1' thickness). Otherwise the entirety of the substrate encountered by the five (5) borings is characterized as only sand, silt and gravel samples, with no significant clay layers encountered. Two cores never reached bedrock and remained in sediment. Three cores were completely devoid of any clay content. Since the report's written description corroborates the existence of predominantly sand and silt, with only the two (2) aforementioned isolated lenses of clay at depth, the Department notes a distinct inconsistency between the results of the geotechnical work and the applicant's conclusion of a hard, red-clay backed shoreline area. This inconsistency may point to a need for BLNR to request additional borings or some other evidence or analysis to document the shoreline geology. However, if the shoreline area is actually sandy or partially sandy as the borings seem to indicate, then the seawall-revetment will not replicate the natural shoreline, will not assist with sand accretion, and may actually impound some natural sand that could supply the beach. Further, there does not appear to be any red clay to erode and degrade the water quality, as per the Applicant.

b. Additionally in the CDUA application, Pages 6-7, the Applicant's statements make additional reference to the hard, red-clay backed shoreline area. Again, these statements tend to contradict the geotechnical findings of predominately sand and silt and would benefit from additional evidence or analysis:

   i. The Applicant states, under Evaluation Criteria 3, Describe how the proposed land use complies with the provisions and guidelines in chapter 205A, HRS, entitled, "Coastal Zone Management". Under subsection 1, Recreational Resources, the Applicant's answer discusses the native clay escarpment as an environmental hazard and states that, "The project may improve seasonal beach accretion when compared to the native clay escarpment by reducing wave reflection."

   ii. A similar statement is made by the Applicant under subsection 3, Scenic and Open Space Resources: "The project will also prevent the release of the clay substrate, thereby preventing highly turbid plumes in coastal waters."

   iii. For Subsection 9, Beach Protection, the Applicant states: "The project has been engineered to prevent further coastal erosion and has been designed to minimize the horizontal footprint seaward of the shoreline, and also minimize wave reflection in order to promote accretion of a sand beach. No beach quality sediment will be impounded landward of the project."

   iv. Also, under Subsection 10 Marine Resources: "... The project will improve nearshore water quality by preventing release of the turbidity inducing native clay substrate into the water."

c. The Department also asks the BLNR to reference section 6.1.2 of the Final EA, (Impacts On Shoreline Characteristics and Coastal Processes), in which the Applicant characterizes the coastal environment fronting Hololani as a "natural vertical escarpment" and "naturally hardened native shoreline" (p. 111 of Final EA) and reasoning that the "proposed project does not impound beach quality sand as the eroding substrate at the Hololani is composed of red clay..." (p. 110 of Final EA) in direct contrast to the findings in the five boring samples fully described in the geotechnical engineering report included as part of the Final EA and referenced above.

d. Under Significance Criteria No. 4, Describe how the proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region, the Applicant states, "No adverse impacts due to the proposed project have been identified." The Applicant then describes benefits of the project. Contrary to the Applicant's findings of no adverse impacts due to the proposed project, the Department offers evidence of adverse impacts to the BLNR, as described in points Nos. 6 through 15 below.

e. Under Significance Criteria No. 6, Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, with be preserved and improved on, the Applicant states that, "The project has the least environmental impact of all alternatives considered." From the Department's findings, none of the other alternatives were fully considered in an equal manner as the preferred alternative. Thus, neither the Applicant, neighbors, public, Department, nor BLNR have an adequate analysis of any other alternatives to consider in terms of significant and cumulative environmental impact.

f. For the CDUA Cultural Impacts section (p. 9), the Applicant refers to a 1999 study conducted by Xamanek Researches for the County of Maui that found no archaeological sites in the vicinity for the Hololani. However, the document is not referenced in the CDUA nor was it included as an appendix in the Final EA. It appears that no Cultural Impact Assessment was conducted as part of the Final EA, as required, nor was any archaeological study conducted as part of the Final EA.

6. The Department observes that directly to the north of Hololani is approximately 650 feet of contiguous seawalls, beginning with the Pohailani condominium, whose seawall has negatively impacted the shoreline fronting the Hololani due to "end-effects" and "flanking erosion", and contributing to the need to protect the Hololani structures. This area to the north of Hololani is also an example of continuous shoreline hardening that has resulted in the loss of physical beach as well as all lateral shoreline access. The Pohailani seawall has created a wave environment that has eliminated the sandy beach fronting the Pohailani parcel and has accelerated the erosion at the subject Hololani shoreline, resulting in a secondary impact to the remaining sandy shoreline to the south, and beginning at Hololani. Should Hololani harden its shoreline in a similar way, the end-effects and flanking erosion would continue to the south.

7. The Department argues that the final BLNR decision on this project will set a precedent for the neighboring condominiums located in Kahana Bay – if the hybrid seawall-revetment is approved, then BLNR will have set a precedent for additional similar shoreline hardening alternatives for the other properties in

Kahana Bay. The sandy beach shoreline from Pohailani to the north has been eliminated by the continuous 650 feet of seawalls. To the south, the remaining Kahana Beach cell extends along the shoreline of five beachfront condominiums. The Royal Kahana, adjacent to and south of the Hololani, has twice inquired with the Department about shoreline protection and seawall hardening options since Hololani installed temporary shoreline protection structures in 2007. If the BLNR authorizes the proposed structure at Hololani, this action, in the opinion of the Department, will have a cascading impact to the Royal Kahana, starting a domino effect to the south creating additional hardened shorelines for the remaining Kahana Bay beach cell. Based on the above argument, the Department asks that the BLNR specifically examine the potential for long-term cumulative impacts of the proposed Hololani hybrid revetment-seawall and consider other alternatives or complimentary solutions described in the Final EA.

8. As previously noted, the Department finds that the Kahana Bay area north of Hololani has already lost approximately 650 feet of sandy shoreline due to contiguous seawalls constructed beginning with the Pohailani. As a result, all lateral shoreline access has been lost to the public along this stretch of shoreline. Further north in Kahana Bay, past these noted seawalls, the Kahana Village AOAO has undertaken coastal dune restoration project as a preferred erosion control alternative in partnership with the Department and with the University of Hawaii Sea Grant Extension Program – Maui. The project entailed removing unauthorized geotextile sandbags identified as encroachments by DLNR and has successfully restored sand to the coastal dune for protection of the beach and the condominium development. The owners at Kahana Village are very satisfied with the outcome of this preferred alternative. Exhibit 4 shows the restored coastal dune fronting Kahana Village. **(Exhibit 4)**

9. The Department also notes that the people of Maui have completely lost three (3) major beach cells on the west side of Maui due to the proliferation of seawall construction in: a) Lahaina Town, south of Kahana Bay with approximately twenty-five (25) contiguous seawalls plus the privatized beach cell in the Puamana Planned Development area, totaling over one mile of seawalls; b) Honokawai area, just to the south of Kahana Bay, with nine (9) contiguous seawalls; and 3) Keonenui Bay just to the north of Kahana Bay with seven contiguous seawalls and retaining walls. These seawalls have eliminated or severely reduced all former sandy beaches and have eliminated nearly all lateral public access along these respective shorelines. The Department cites the loss of these beaches adjacent to Kahana Bay, as well as the loss of shoreline lateral and vertical access in these locations, to demonstrate that shoreline hardening by seawalls and revetments has cumulative impacts in specific areas of west Maui.

10. As a corollary to the above lost beach cells, the people of Maui only have six (6) beach cells remaining on the west side, including the subject Kahana Bay beach cell. The other beach cells are the contiguous Ka'anapili Beach and Kehakili Beach, Napili Bay, Kapalua Bay, Oneloa Bay, and Honohakua Bay (aka DT Fleming Beach Park).

11. The Department notes that for the past forty (40) years, the five condominiums in the subject Kahana Bay have been adequately protected by a sandy beach fronting the parcels from yearly storms and high waves. Beaches and dunes are known to protect structures effectively. It is evident that the sand within the Kahana Bay beach cell moves south and north with seasonal conditions. However, the Department also finds that the presence of the temporary shoreline protection structures fronting the Hololani may have contributed to a decreased capacity for sand retention, and therefore sand loss, in front of the Hololani over the past six (6) years.

12. The Department notes that only one alternative, the "preferred alternative", was fully examined in the Final EA. The Department finds that the proposed project alternative as described in the CDUA, to build a hybrid seawall-revetment, is the only one (1) of several viable alternatives that was designed to a 60 percent (60%) level and fully described in the Final EA. Each of the other valid alternatives was summarily dismissed without proper exploration and full explanation. From the Department's understanding of the Kahana Bay beach cell, the Department feels that some of the other erosion control alternatives listed in the Final EA would have fewer environmental impacts, while also providing erosion control, and should be fully evaluated.

13. The Department also relies on the experience and professional judgment of Ms. Tara Owens, in her capacity as the University of Hawaii Sea Grant Coastal Processes and Hazards Specialist for Maui and advisor to the Department. Ms. Owens has been regularly observing the condition of the shoreline in the Hololani region, as well as many other State and County beach projects. As part of your deliberations, the Department encourages you to consider the attached letter to Mr. Samuel Lemmo, dated July 23, 2012, with comments on the Draft EA for the subject project. The letter serves to document some of Ms. Owens' observations and concerns related to the project. Similar to the Department's concerns stated in Nos. 11 and 12, above, Ms. Owens' states that "Overall, the proposed solution has a high potential for impact and alternative solutions, such as sand placement with retention structures, would benefit from further scoping." **(Exhibit 5)**

14. The Department suggests before reaching a decision that the BLNR become fully satisfied with the adequacy of the public outreach about this project to Hololani owners, neighboring condominium owners, and the public. The Department encourages the BLNR to investigate the extent to which the owners, neighbors

and public have been informed about the project and its potential impacts and environmental consequences. The Department observed at the CDUA Public Hearing on February 10, 2014 that owners and neighboring condominium owners in the Kahana Bay area were not well noticed about the meeting and, of the approximately 23 individuals in attendance, many were not fully familiar with the project and the alternatives. The lack of comprehensive noticing to those potentially directly impacted by the project was mentioned by at least one (1) member of the audience. Of those that participated, they were only partially informed of the consequences and potential environmental impacts of the preferred alternative, with reassurances that there would be no significant or cumulative impacts to neighboring properties and the Kahana Bay shoreline. From the comments during the Public Hearing, it was evident to the Department that not many Hololani property owners are fully aware of the preferred alternative, nor of the other alternatives as described in the Final EA, in order to be able to make an informed decision as to the best option.

15. Considering every phase of this proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of this action, the Department has also reviewed the above findings against the Significance Criteria in Hawaii Administrative Rules (HAR) Chapter 11-22-12 to determine whether the proposed action may have a significant effect on the environment. The Department believes that that the proposed action triggers four (4) of the listed significance criteria: a) involves an irrevocable commitment to loss or destruction of the shoreline natural resource (11-200-12 B.1); b) curtails the range of beneficial uses of the environment (11-200-12 B.2); c) is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions (11-200-12 B.8); and d) affects...an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion prone area, geologically hazardous land, estuary, fresh water, or coastal waters (11-200-12 B.11).

Within the framework of these concerns and findings, the Department is in support of shoreline protection for the Hololani, following a fully informed decision by the BLNR. As a result of the above findings, the Department requests that the BLNR require the provision of further information which would give the BLNR the opportunity to fully examine each of the alternatives listed in the Final EA prior to authorizing the construction of a hardened shoreline and also to fully understand the physical setting as well as potential regional impacts created by each alternative. To help accommodate this described level of understanding, the Department recommends that the BLNR consider a site visit to Maui that can be led by the Department and the University of Hawaii Sea Grant Extension Program – Maui, to understand the Kahana Bay shoreline environment and regional cumulative impact to the west Maui coastline from shoreline hardening, as described herein.

In light of the above, if the BLNR still deems the proposed hybrid seawall-revetment as the preferred alternative, the Department encourages the BLNR to consider including the following mitigation measures as conditions for approval of the CDUA in order to minimize the stated anticipated cumulative environmental impacts:

1. The applicant shall move the seawall-revetment out of the Conservation District everywhere possible in order to preserve public lands and public shoreline. The Department notes that the preferred siting and design of the proposed hybrid seawall-revetment protects the two most protruding corners of the two condominium towers. In so doing, the seawall-revetment structure is located partially makai of the shoreline in the Conservation District to achieve this condominium protection. However, a significant portion of the seawall-revetment is directly protecting only the swimming pool deck area and swimming pool, located in the shoreline setback area. The Department is in favor of the Hololani removing parts of its pool deck in the shoreline setback area in order to move portions of the proposed seawall-revetment to a more mauka location, out of the Conservation District. The Department believes that conserving the public shoreline area should be a higher priority than conserving the pool deck area. The Department asks that BLNR consider an alternative siting and/or design that may provide an improved capacity to retain shoreline access and sandy beach in front of the structure.

2. The Applicant shall clearly demonstrate a mitigation plan in place to arrest any coastal erosion caused to neighboring properties due to "end effects" and "flanking erosion". This demonstration should occur before the BLNR approves the preferred alternative, and this mitigation should include a beach nourishment option designed to build the beach area at the southern terminus of the revetment, located at the contiguous northern end of the Royal Kahana property.

3. The Applicant shall include both lateral and vertical public access to the shoreline fronting Hololani.

4. A design modification should be considered, whereby the revetment portion of the structure is buried deeper than proposed in order to mitigate the eventual exposure of the revetment's toe with continued erosion. In figure 6 on page 10 of the CDUA, the current design for the revetment portion of the structure buries the revetment toe at only 0.5 feet below low water. With continued sand deflation and sand loss in front of the structure, there is a concern that the eventual exposure and possible undermining of the revetment toe will compromise the energy absorbing function of the revetment.

In summary, the Department requests review and action of this proposed project within the regional beach cell context, including consideration of the additional development within the Kahana Bay beach cell, and not as a "one-parcel-only" solution. The BLNR and the owners of Hololani must understand that there is a public resource at risk – the Kahana Bay beach cell,

one (1) of only six (6) remaining beach cells on the west side of Maui. The Department finds that the proposed hybrid seawall-revetment will have a potential long-term, negative cumulative environmental impact to the Kahana Bay shoreline system because, over time, this seawall revetment will necessitate the building of additional seawalls fronting additional developments in Kahana Bay. The result will be accelerated erosion of the remaining beaches, as evidenced by similar situations in other areas of the west side of Maui. The proposed Hololani seawall-revetment will, in time, necessitate the construction of protection at the neighboring Royal Kahana and then the next condominium, Valley Isle Resort, creating a cascading domino effect, further negatively impacting the shoreline through accelerated chronic beach loss from multiple seawalls being constructed. In order to protect Kahana Bay from cumulative environmental impacts, a regional solution needs to be considered now.

The Department requests the BLNR to work with the County and property owners to study the long-term solutions from the regional perspective by examining alternative mitigation solutions that will lessen the cumulative and long-term negative impact to the Kahana Beach shoreline.

Thank you for your cooperation. If additional clarification is required, please contact Coastal Resources Planner James Buika at james.buika@mauicounty.gov or by phone at (808) 270-6271.

Sincerely,

WILLIAM SPENCE
Planning Director

Attachments
xc: Clayton I. Yoshida, Planning Program Administrator (PDF)
John S. Rapacz, Planning Program Administrator (PDF)
James A. Buika, Coastal Resource Planner (PDF)
Tara M. Owens, UH Sea Grant Extension Program – Maui (PDF)
Department of Public Works
Leo Asuncion, Office of Planning, DEBT (PDF) leo.asuncion@dbedt.hawaii.gov
Board of Directors, Royal Kahana Resort
Board of Directors, Valley Isle Resort
Board of Directors, Sands of Kahana
Board of Directors, Kahana Beach
Board of Directors, Pohailani AOAO
Board of Directors, Kahana Village AOAO
Hololani SM1 KIVA File (SM1 2014/0001)
Project File
General File

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April 4, 2014

Mr. Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands,
State of Hawaii, Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI, 96809

Dear Mr. Lemmo,

Subject: Hololani Shore Protection: Response to County of Maui Department of Planning comments on the Conservation District Use Application (CDUA), March 25, 2014

Thank you forwarding comments from the Maui Department of Planning (the Department) on the CDUA for permanent shore protection of the Hololani Condominium Resort. As a preliminary clarification, it is noted that the Department considers the Kahana Bay beach cell to extend from the Hui O Pohaku Beach Park (S-Turns) to the Pohailani Condominium which borders the Hololani on the north property boundary. In the Final Environmental Assessment (FEA), the natural beach cell is considered to extend to the boulder and cobble delta formed by the mouth of the Kahana stream. The Pohailani boundary that is referred to is considered a sub-set of this reach, formed by the relative offset of the Hololani from the Pohailani due to shoreline erosion. The offset blocks sand movement to the north much of the time, and has the effect of making the Pohailani the *de facto* cell boundary at present, as noted by the Department.

Many of the issues raised by the Department have been previously discussed in the project Final Environmental Assessment (FEA), and in comments by various agencies and responses by the project agent, Sea Engineering, Inc. (SEI), that were part of the environmental review process.

During the winter of 2006-2007, both the State of Hawaii and County of Maui recognized that the Hololani property was under imminent threat of loss of use of the property as the active shoreline erosion scarp moved to within 15 ft of the northern building. Both the state and county granted emergency permits to place temporary shore protection as a stopgap measure to gain time for the design and permitting of permanent, engineered shore protection. At the present moment, shore protection that conforms to standard coastal engineering practice has been designed to a 60% level, has been through the Chapter 343 (EIS, EA) environmental review

EXHIBIT 16

process, and will soon be presented to the State of Hawaii Board of Land and Natural Resources and the County of Maui Planning Commission for permit approval. The Department believes that the engineered shore protection selected as the preferred alternative by SEI will result in the loss of public beach resources at the project site, and prefers the selection of unspecified alternatives (likely beach nourishment or beach nourishment with stabilization structures) as the preferred alternative for the project. During the environmental review process – including in the FEA and comment responses, SEI presented evidence and rationale to show that such alternatives are not feasible and that the existing backshore material forms vertical scarps, has significant silt and clay content, and is not conducive to beach formation. Furthermore, cycles of sand accretion and deflation at the site are a natural process that was well-documented before the implementation of temporary shore protection, and has continued in much the same manner for the last six years when the temporary shoreline hardening has been in place. The cycles occur because of a seasonal wave climate where waves are incident at high angles from opposite north and south directions. SEI believes these cycles will continue when the preferred alternative shore protection is constructed.

The Department believes that shoreline hardening of a 650-ft reach above the Hololani has resulted in the reduction of sand resources and consequent erosion at the Hololani and other locations to the south. Furthermore, they believe that implementation of the preferred alternative will be the cause of additional erosion to other properties to the south along Kahana Beach. Aside from some "end effects" at the neighboring Royal Kahana that have been addressed in the FEA, SEI does not believe that construction of the preferred alternative will result in the "domino effect" condition presented by the Department. The preferred alternative will not alter the overall sand volume in the region, and, as the backshore in not composed of beach quality sand, will not impound sand that could be released to the beach. In the FEA, SEI presented evidence and rationale that the region has seen a long-term depletion of sand resources, and that this depletion is very likely the reason for the regional erosion problems. The seawalls referred to were likely built as a result of this regional, long-term loss. Do seawalls cause sand loss, or does sand loss result in seawall construction? This deceptively simple "chicken vs. egg" question is difficult to resolve, and neither argument should be summarily dismissed. From a coastal engineer's viewpoint, all beaches have their unique characteristics and should be individually evaluated. The experience of having temporary shoreline hardening in place at the Hololani over the last six years has indicated that the effects of this hardening have been minimal – the sand continues to come and go just as it did previously.

One can discuss the effects of shoreline hardening endlessly, but there is no doubt that the choices to be made at the Hololani are clear. Either the property is protected from further erosion, or there will be significant loss of use, structural damage, and possible abandonment. Given the nature of the erosion, the value of the property, and the proximal position of the

shoreline (i.e. 15 ft from the north building), it is the opinion of SEI that coastal armoring of the shoreline is necessary to ensure the safety of the buildings and their inhabitants. Coastal stabilization methods, including beach nourishment with or without retaining structures, will not guarantee the protection of the Hololani to the extent required by good engineering practice.

As noted in the FEA (see Section 3.6), other types of structures recommended for consideration by the Department during the environmental review process, including groins and artificial reefs, do not offer the necessary protection to the Hololani buildings, can have profoundly negative environmental effects, and are unlikely to be approved by permitting agencies. It should be noted that the preferred alternative presented by SEI is compatible with a future regional beach nourishment effort to restore stability to the Kahana reach. We believe this effort has the greatest possibility of realization if it a partnership between the community, the state, and the county.

SEI believes that the preferred alternative (hybrid seawall and rock revetment) or the second preferred alternative (rock revetment only) are the only alternatives that meet coastal engineering standards for protection of the Hololani, and that these alternatives will have the least environmental impact.

Following are responses to specific comments contained in the Department's letter.

Comment 1.
This comment reviews the history of the project, specifically with respect to the existing temporary shore protection that was permitted by the County of Maui as well as the State of Hawaii Department of Land and Natural Resources, Office of Conservation and Coastal Lands (DLNR-OCCL). The county granted a 180-day permit, subject to extension, and asked for submission of county permit applications (Shoreline Setback Variance, SSV, and Special Management Area, SMA) for a permanent shore protection solution within 60 days. SEI has been working closely with the Hololani since early 2010 on the engineering and permitting for a permanent solution. The SMA and SSV applications were submitted to the MDP in December 2013. According to the department, the Planning Commission hearing will likely not be held before August, 2014. The temporary shore protection has been granted permit extensions throughout this time period by the DLNR-OCCL.

Comment 2.
Comment 2 provides additional details on the project history, including repairs to the temporary protection structure and preliminary consultation on the proposed design for permanent shore protection. Concerning the proposed design at that time, the Department wrote that it recognized a regional erosion problem, and that "... *it makes good planning sense to consider the regional*

opportunities and to assess the collective resources available for those opportunities."

There is history of attempts to collect the Kahana Beach properties to address shore protection problems. This history was described during a community outreach held at the Hololani (see FEA, Appendix F) by Mr. Pat Kelley, who resides in the neighboring Royal Kahana Condominiums. It was described as a failure. Many of the condominiums are time-share properties, and there are often multiple management companies within each condominium complex. It was not feasible to pursue the concept any further.

Comment 3.
Comment 3 states that the existing temporary shore protection appears to have diminished the sand beach at the site. As mentioned above, SEI believes that six years of monitoring the site shows little influence of the temporary protection on seasonal fluctuations of the sand resource.

Comment 4.
The Department believes that the proposed permanent shore protection will "*create a wave environment that will contribute to further narrowing of the public beach and sand loss fronting the Hololani...*" As stated above and in the FEA, SEI believes that long-term regional sand loss has been, and continues to be, the driving force for shoreline erosion problems in the region.

Comment 4 also mentions that "end effects" from the temporary shore protection is responsible for erosion at the neighboring Royal Kahana property. While the problems at the Royal Kahana have been long-standing, SEI agrees that the Royal Kahana has the right to be protected from any possible negative effects due to shore protection implementation at the Hololani. To that end, the Department agreed to the installation of 45 ft of temporary protection at the Royal Kahana in 2008. At the time, the Royal Kahana asked for an additional 30 ft of protection but permission was not given by the Department, and this section of the shoreline has continued to erode. Mitigation from end effects is described at length in the DEA (see Section 6.1.2.5, and Figure 6-1), and as part of the permanent shore protection project, SEI recommends extending the existing temporary protection approximately 100 ft into the Royal Kahana property.

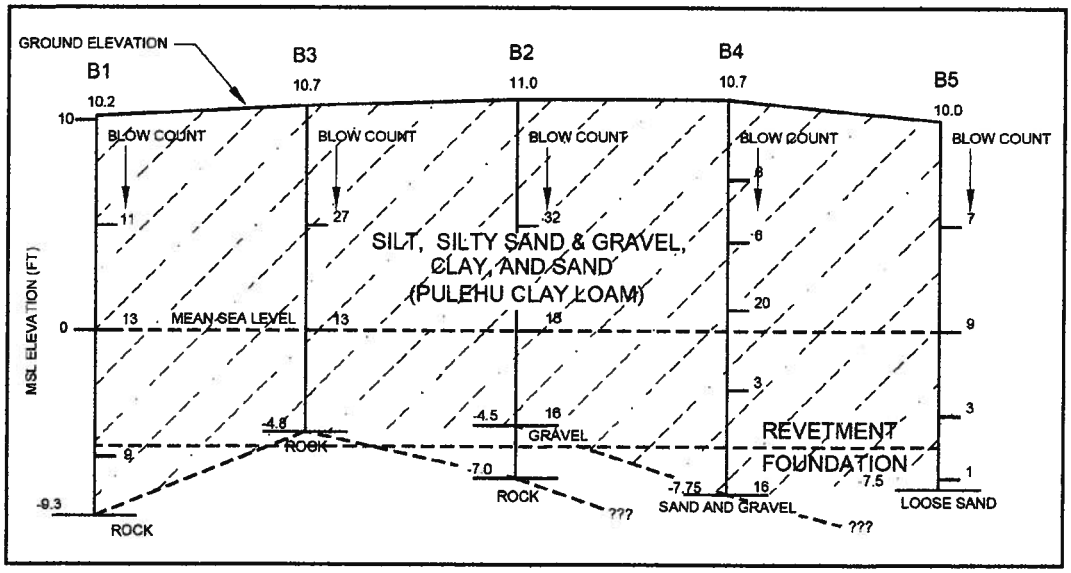
Comment 5.
This comment is subdivided into six sections, 5a through 5f. Comments 5a through 5c are concerned with the nature of the soils at the project site. The Department writes that the substrate is primarily described as "clay" in the DEA, and mostly described as silt, sandy silt, and gravel in the project geotechnical report. The Department is referred to the footnote on page 1 of the FEA:

[1] Note: in this report the term "clay" is used to describe the predominant silt, silty sand, silty gravels as well as clay of the Pulehu clay loam that appears to form most of the substrate at the project site (see Section 4.1.14).

The term "red clay" is commonly used to describe red volcanic soils, and so it is in the FEA. The geotechnical borings and observations of the backshore substrate indicate that there is little or no beach quality sand. In addition, the February 2, 2007 letter of permission for temporary shore protection sent by DLNR-OCCL states:

> "*4. There is no known beach quality sand source stored behind the berm, it appears the area is composed of clay and weathered basalt that would not provide a source of useful source of sediment to the littoral system if it were allowed to erode.*"

The turbidity released by the erosion of the substrate is well-documented by Figure 1-3 in the FEA. The vertical nature of the shoreline escarpment and the overall morphology of the site, as well as the geology, are as described in the FEA (see Sections 4.1.5, 4.1.6, and 4.1.11). The figure below (Figure 4-21 in the FEA) is a summary of substrate conditions as presented in the FEA:



***From FEA*: Figure 4-21. Schematic of foundation conditions (note: B1 is at the north end of the property)**

Comment 5d observes that the CDUA application states that "*No adverse impacts due to the proposed project have been identified*", and that the Department identifies adverse impacts in following comments. Adverse impacts were addressed in detail in a second submission of the FEA at the request of DLNR-OCCL. They do not appear in the CDUA application because the

Kahana Bay.

Comment 8.
Comment 8 discusses a coastal dune restoration at the Kahana Village property north of the Hololani. SEI has had an active role in dune restoration and other soft beach management design and practice. Dune restoration and other shoreline stabilization practices will not ensure adequate protection for the threatened buildings at the Hololani.

Comment 9.
In Comment 9, the Department lists the loss of sand beaches in the vicinity of Kahana Bay, and states that the loss is due to the construction of seawalls. The FEA contains extensive discussion on the nature of beach erosion and the presence of coastal armoring (see *Introductory Comments* in Appendix E). Evidence and rationale are presented in the FEA that loss of sand in the Kahana cell is a regional phenomenon not tied to shoreline hardening (see Sections 4.1.11 and 4.1.12).

Comment 10.
Comment 10 is provided for information. SEI has no response.

Comment 11.
In Comment 11, the Department notes:

a) That the condominiums at Kahana Bay have been adequately protected by a sandy beach for the past forty years;
b) The temporary structures have contributed to sand loss over the last six years.

It is noted in Section 1.1 in the FEA that the Hololani shoreline has eroded 40 ft since 1959. Other properties in the area have also experienced significant erosion. Erosion severely threatened the Hololani in 2007, and temporary shore protection was constructed under emergency status given by both the county and state. Without implementation of emergency measures, the Hololani would have suffered serious damage, and would very likely no longer be habitable.

Figure 1 is from the FEA, and shows the shoreline near the Hololani/Royal Kahana property line in 2006, before construction of the temporary shore protection. Figure 2 was taken on February 10, 2014. Figure 1 shows the site nearly devoid of sand. Figure 2 shows the entire Hololani reach with a high volume of sand, with the beach toe aligned with the Pohailani seawall. Additional beach accretion would require migration and stabilization of sand north of the Pohailani. As detailed in FEA (see Section 4.1.11), the cycles of accretion and deflation are regular seasonal events at the Hololani. The effects of the existing temporary

protection are minimal, and effects of the preferred alternative should be similar.

Figure 1. Deflated beach, July, 2006

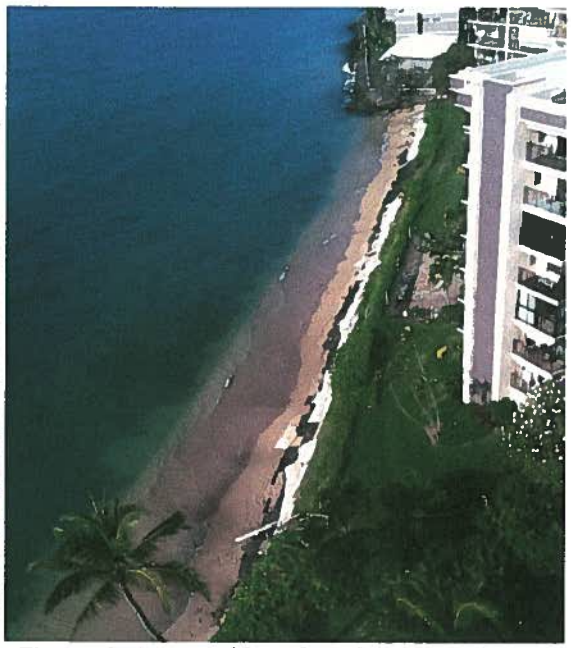


Figure 2. Accreted beach, February, 2014

Comment 12.

In Comment 12 the Department states that "Each of the other valid alternatives was summarily dismissed without proper exploration and full explanation." In Section 3 of the FEA, all other reasonable alternatives were fully considered, and the reasons why alternatives were not selected were explained. SEI believes that the preferred alternative (hybrid seawall and rock revetment) or the second preferred alternative (rock revetment only) are the only alternatives that meet coastal engineering standards for protection of the Hololani, and that these alternatives will have the least environmental impact.

Comment 13.

Comment 13 is a referral to a comment letter written by the University of Hawaii Sea Grant agent on Maui for the project Draft Environmental Assessment (DEA). A detailed response to those comments is contained in Appendix E of the FEA.

Comment 14.

Comment 14 states that there was inadequate public outreach at the site, and that Hololani owners are not fully aware of the details of the project. At the request of the Department, the Hololani conducted a community outreach on September 10, 2012. The Hololani also presented

the DEA to the Maui Planning Commission in a public hearing on September 11, 2012. Both of these actions were voluntary and not mandated by the environmental review process. Public officials were invited by email, and all of the condominiums in the vicinity were invited by a combination of email and phone calls. Postings were made at local stores. There were no major concerns expressed by the public during these meetings.

The Hololani formed a shoreline committee in 2010 as part of the contract with SEI. The committee has been kept fully informed on all project developments.

Comment 15.

In Comment 15, the Department states that Hololani permanent shore protection will trigger four listed significance criteria from HAR 11-200-12. SEI has addressed these criteria in Section 6.4 of the FEA.

The Department suggests four mitigation measures if the project is approved by the Board of Land and Natural Resources (BLNR):

1. The Department is in favor of the Hololani removing part of its pool deck, with the idea that moving a large portion of the structure mauka will help retain a sandy beach.

A structure alignment mauka of the Certified Shoreline was presented as an alternative in the FEA. The alignment would require that significant amounts of oceanfront land be excavated and disposed of. The mauka alignment is not compatible with the preferred alternative due to anchoring requirements of the sheet pile portion of the structure. Examination of the drawing layout (see Figure 3-8 in the FEA) shows that bending the revetment as requested would be difficult to implement, and would likely not provide benefits as perceived by the Department.

2. The Department requests an in-place mitigation plan demonstration to counter end-effects at the southern boundary with the Royal Kahana. This mitigation plan should include a beach nourishment option in that locale.

The proposed mitigation has been in-place at the Royal Kahana for the last six years. Tensar rock mattresses have been anchored in place, and during that time there has been no shoreline erosion along the protected reach. A localized beach nourishment effort was made at great expense early during the time period by the Royal Kahana, but the sand disappeared virtually overnight. Beach nourishment is successful only when the entire littoral cell is addressed, and this is encouraged as a future, region-wide project through state, county, and community partnership. However, a limited perched beach concept might be explored to counter foot traffic effects in the south boundary area.

3. The Department requests public access at the site.

The Hololani has agreed to provide public access should the preferred alternative be implemented. The FEA (Appendix E) contains a schematic showing public access possibilities in two comment response letters: 1) to the University of Hawaii Sea Grant Agent on Maui, and 2) to the Maui Planning Commission.

4. The Department requests a design modification to place the toe of the structure at greater depth, with the concern that the toe may become exposed and undermined.

The toe configuration is designed to resist scour and undermining. Placing the toe deeper will require a greater structure footprint and will likely incur greater expense. Nevertheless, SEI recognizes and appreciates the value of conservative design, and the structure toe depth is an important design element that should receive a final review. Sea level rise projections have changed somewhat since the preliminary design, and SEI may wish to make other minor revisions. The Department's observation and request will be fully considered.

In final observations, the Department re-iterates their concern that shore protection at the Hololani will cause a cascading domino effect of shore protection requests at other properties on Kahana Beach, and calls for a regional solution.

It is the opinion of SEI that shore protection at the Hololani will have minimal negative effects on the shoreline dynamics in the area, and that the need for shore protection is caused by a regional depletion of sand. The Hololani must be protected from further shoreline erosion or face loss of use, structural damage, and possible abandonment. However, SEI agrees that a regional beach nourishment effort would be a great benefit to the Kahana Bay area, and would likely prevent the need for additional shore protection along the reach.

J. Barry

James H. Barry, P.E.
Coastal Engineer
Sea Engineering, Inc

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

12014PGH.13

December 10, 2013

Mr. Samuel J. Lemmo
Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Lemmo:

SUBJECT: Comments on Conservation District Use Application (CDUA) MA-3663 for a Shore Protection Project, Lahaina District, Island of Maui – TMK: (2) 4-3-010:009

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated November 22, 2013, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the CWB

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Individual NPDES Form through the e-Permitting Portal and the hard copy certification statement with $1,000 filing fee. Please open the e-Permitting Portal website at: https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the "CWB Individual NPDES Form." Follow the instructions to complete and submit this form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommend that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 438-9258) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb/, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

STUART YAMADA, P.E., CHIEF
Environmental Management Division

GH:rh

the Royal Kahana
Association of Apartment Owners
4365 Lower Honoapiilani Road, Lahaina, Maui, Hawaii 96768
(808) 669-5927 Fax (808) 669-7855

PUBLIC HEARING, HOLOLANI RESORT SHORE PROTECTION PROJECT

My name is Patrick Kelly. I am the Vice President of the Royal Kahana Resort, AOAO, the adjacent property on the south side of the Hololani . I wish to testify in favor of the proposed project. The Hololani has suffered dangerous erosion right up to the base of their "A" building and remedial action is necessary for the safety of its owners and the preservation of their property. However, at the same time we must ask that steps are taken to ensure there are no resulting damaging effects to the Royal Kahana Resort. In that regard we are willing to work with all parties to a satisfactory end.

In 1984, a similar solution was used at the Mahana Resort. It has been effective for 30 years and without discernible changes to the beach or adjoining properties. However, the shoreline here is somewhat different. When Hololani put in the current temporary protection, engineers recommended the rock mattresses be extended approximately 70 feet south fronting Royal Kahana property which would be at the end of " the hydraulic effect of the waves". This was agreed and Hololani's permit was amended to allow for this work. At some point, the decision was made to reduce that extension to approximately half the recommendation. The result; the area protected with rock mattresses has had no erosion, but the next 30 to 40 feet, the area that did not receive protection, has suffered the loss of eight or more feet of Royal Kahana property.

Attached are two photos; one from the roof of our building taken recently showing property loss in the unprotected area and the other from the beachside after winter storms and low sand period showing the effectiveness of the mattress protected section.

Erosion is a serious issue for all Hawaii and we support efforts to preserve these valuable assets. That said, those efforts cannot come at the expense of neighboring properties.

Respectfully submitted. February 10, 2014

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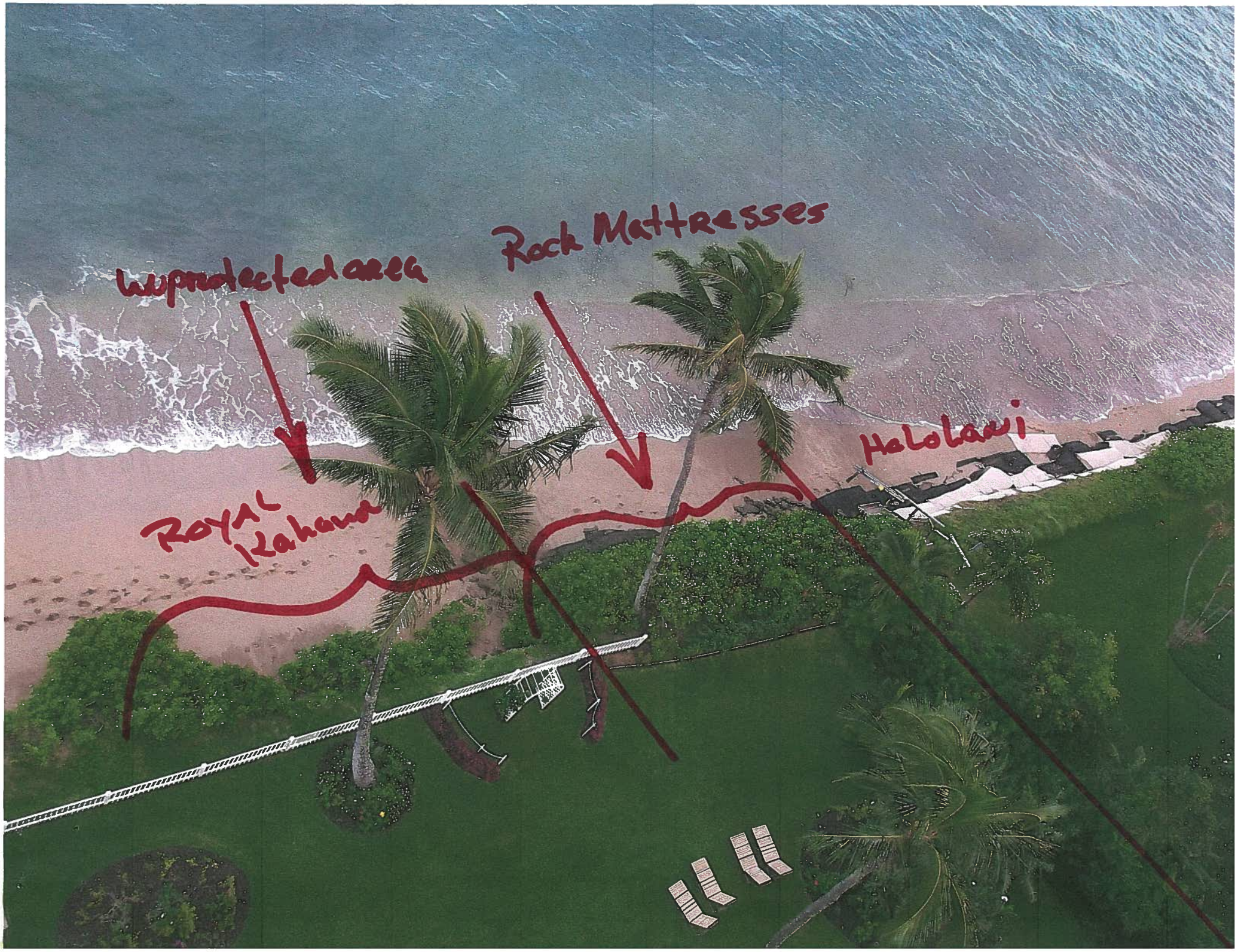
Unprotected area
Rock Mattresses
Royal Kahana
Halelani

Figure 3-3. Beach rock fragments exposed during low sand conditions

Sea Engineering, Inc.
Makai Research Pier • Waimanalo, Hawaii 96795-1820 • E-mail: sei@seaengineering.com
Phone: (808) 259-7966 / FAX (808) 259-8143 • Website: www.seaengineering.com

April 7, 2014

Mr. Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands,
State of Hawaii, Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI, 96809

Dear Mr. Lemmo,

Subject: Hololani Shore Protection: Response to Royal Kahana AOAO comments on the Conservation District Use Application (CDUA), February 10, 2014

Thank you forwarding comments from the Royal Kahana AOAO (Royal Kahana) on the Conservation District Use Application (CDUA) for permanent shore protection of the Hololani Condominium Resort. The author of the comments, Mr. Pat Kelly has been supportive of the Hololani Shore Protection Project since implementation of temporary shore protection at the site, and Hololani AOA (Hololani) and Sea Engineering, Inc. (SEI) are grateful for his support. Mr. Kelly handles shoreline issues for the Royal Kahana, and, as a long-time resident, is knowledgeable about the history of the region's coastal erosion problems. Mr. Kelly makes reference to a 1984 project at the Mahana Condominium at North Beach Kaanapali that has successfully prevented erosion of the property with no apparent long term environmental consequences. The project was designed by SEI, and was previously discussed as part of a response to comments on the Hololani project Draft Environmental Assessment (DEA) by your office (Department of Land and Natural Resources, Office of Conservation and Coastal Lands – DLNR-OCCL). The discussion can be found in the project Final Environmental Assessment (FEA), Appendix E. The problems experienced by the Mahana are similar to the present problems at the Hololani.

Mr. Kelly also references the implementation of approximately 40 ft of temporary shore protection at the Royal Kahana that were placed shortly after the construction of the Hololani temporary shore protection. The temporary shore protection at the Royal Kahana consists of Tensar rock mattresses anchored and hanging over the shoreline erosion scarp. The design originated as a way to "soften" the south end of the Hololani temporary protection in plans generated by SEI. However, SEI was not involved with the Royal Kahana installation except for some consultation by telephone.

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The hanging mattresses have worked well to prevent further erosion of the shoreline at the Royal Kahana over the reach of the installation, and as noted by Mr. Kelly, the shoreline has continued to erode where the protection was not installed.

The occurrence of "end effects" has been part of the Hololani project discussions in the FEA, especially in comments by the County of Maui, Department of Planning. The term is a reference to wave reflection, turbulence, and additional scour that can occur at the termination of a hard structure. In general, it is difficult to determine exactly what erosion effects are due to the structure and what would have occurred in the absence of the structure. In the present case, it is not known if the Hololani temporary protection was responsible for increased erosion of the Royal Kahana shoreline over the last six years in the reach beyond the protected area. However, SEI understands that the Royal Kahana has a right to not have their shoreline affected by implementation of shore protection at the Hololani. To that end, in the design of the Hololani shore protection, the following mitigation practices are recommended (see FEA, Section 6.1.2.5):

- The revetment should be stopped 24 ft from the property line in order to keep as much of the turbulence associated with end effects within the property of the Hololani, yet still protect the south building.

- The combination of the revetment returning to the face of the sheet pile wall, and the sheet pile extending inland at an angle minimizes disturbance of native ground and maximizes erosion resistance.

- The temporary measures have been robust and effective. It is the intent of project to have these temporary measures included in the Hololani permits and extended to at least 50 ft from the property line to ensure that localized damage at the Royal Kahana due to the new permanent structure does not occur. SEI recommends that the buffer area extend up to 100 ft south of the existing property line.

Thank you for forwarding these comments to SEI and allowing us to respond.

J. Barry

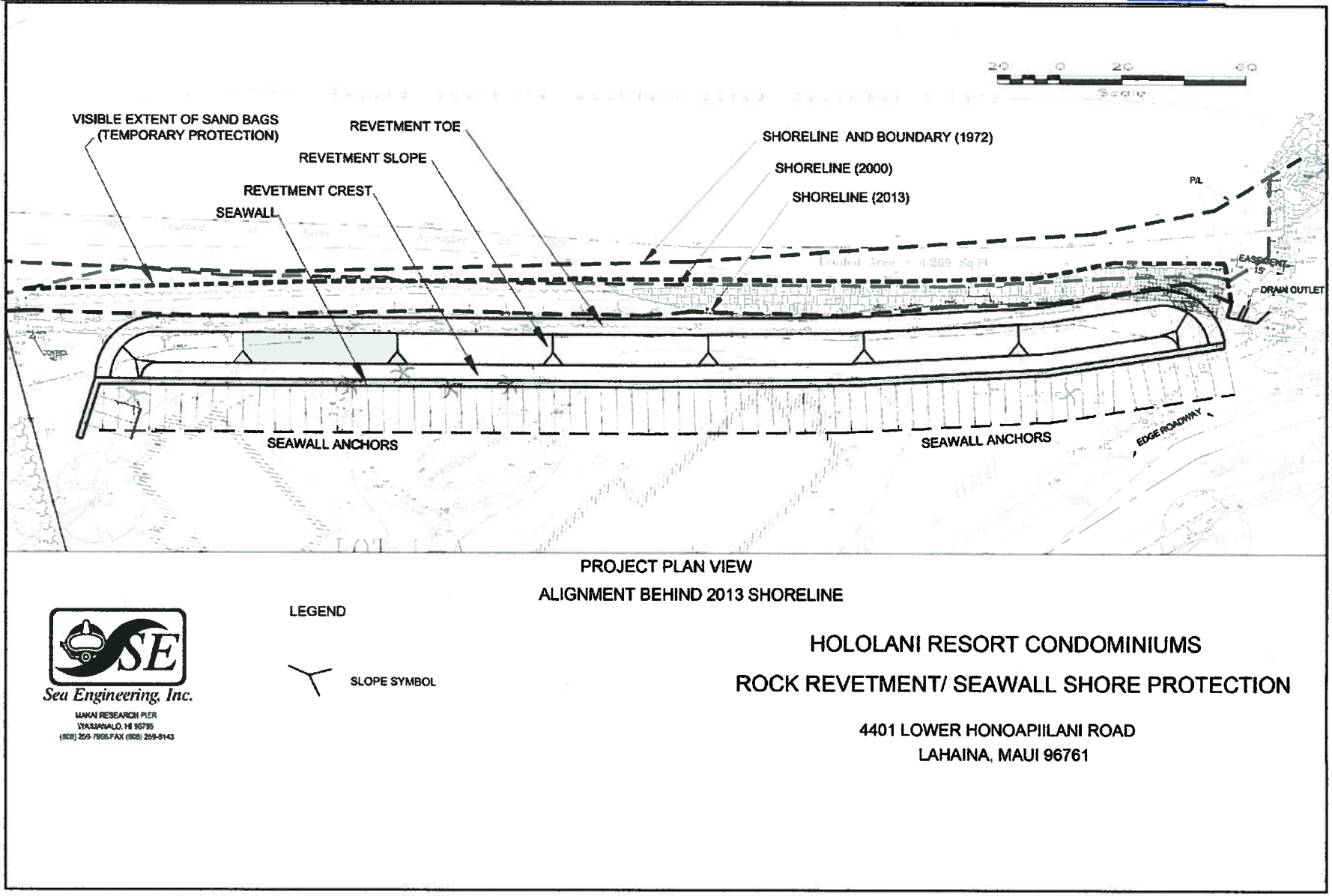
James H. Barry, P.E.
Coastal Engineer
Sea Engineering, Inc

Cc: Royal Kahana AOAO

EXHIBIT 20

Table 1. Comparison of Alternatives

Alternative	SEI Rating	Pros	Cons	ROM Costs
1. Hybrid Seawall/Revetment	Preferred	• Combines qualities of revetment and seawall: • Shoreline armoring (maximum protection); • Minimize reflection; • Minimize coastal footprint; • Minimal impact on coastal processes; • Rugged, adaptable structure • Provides lateral access • Least impact on marine environment	• May have minor erosion effect on neighboring property	$2M
2. Revetment	Second Preferred	• Shoreline armoring (maximum protection); • Minimize reflection; • Minimal impact on coastal processes; • Rugged, adaptable structure	• 30% greater footprint than (1); • May have minor erosion effect on neighboring property	$1.8M
3. Seawall	Not Appropriate	• Minimum footprint • Shoreline armoring (maximum protection)	• Weak soils will not support gravity wall – bulkhead style only; • Maximum reflection; • May have minor erosion effect on neighbor property; • Large vertical drop	$1M - $2M
4. Beach Nourishment	Not Appropriate (regional solution only)	• Will improve beach quality; • Regional application will solve regional problems	• Shoreline stabilization only – will allow additional erosion at Hololani; does not ensure adequate protection • Will require sand source; • Must be regional: local application will spread over entire littoral cell; Requires participation of all stakeholders including County and State agencies.	$3M - $5M
5. Beach Nourishment w/ Structures	Not Appropriate (requires study)	• Will create semi-permanent beach cells	• Shoreline stabilization only – will allow additional erosion at Hololani; • High impact on marine environment; • Will require sand source; • Will have profound far-field effects – needs detailed study; • Will change beach aesthetics and viewplane; • Difficult federal permit process • Most appropriate as a regional solution.	$10M
6. Offshore Breakwater	Not Appropriate	• None	• Shoreline stabilization – will allow additional erosion at Hololani; • High impact on marine environment; • Will require sand source (if used with beach nourishment); • Will have profound far-field effects – needs detailed study • Will change beach aesthetics and viewplane; • Difficult federal permit process; • May cause localized current formation (safety hazard)	Unknown ($1.5M - $3M)
7. Artificial Reef	Not Appropriate	• None	• Unproven as shore protection – will allow additional erosion at Hololani; • High impact on marine environment; • Far-field effects unknown– needs detailed study; • Difficult federal permit process	Unknown ($1M - $5M)



Alternative alignment: plan view of hybrid design placed landward of 2013 shoreline

EXHIBIT 21