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COMMISSION
LAND
STATE PARKS

Ref.:PB:SL

File No.: CDUA OA-3114

MEMORANDUM

TO: Genevieve Salmonson, Director
Office of Environmental Quality Control

FROM: Dierdre S. Mamiya, Administrator *[Signature]*
Land Division

Subject: FINAL ENVIRONMENTAL ASSESSMENT for the Lusardi Residence Seawall
Repairs at Napili, Maui, Hawaii TMK 2nd 4-3-15:02

The Department of Land and Natural Resources has reviewed the comments received on the draft Environmental Assessment (EA) as well as the applicants' response to these comments for the subject project, and hereby issues a Finding of No Significant Impact (FONSI) determination for the project.

Acceptance of the EA does not constitute endorsement of the project by the Department or Board of Land and Natural Resources. The EA is considered complete for informational purposes only. The proposed improvements must be found to be consistent with the Department and Board's criteria for shoreline structures and encroachments.

Please publish notice for this project in next issue of The Environmental Notice. Enclosed are four copies of the Final EA. The consultant for the project will e-mail a completed OEQC Bulletin Publication Form with the project description shortly.

Should you have any questions, please contact Sam Lemmo of our planning staff at 587-0381.

Cc: Chris Hart & Partners

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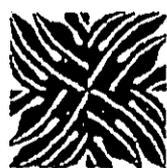
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FINAL ENVIRONMENTAL ASSESSMENT
IN SUPPORT OF

CONSERVATION DISTRICT USE APPLICATION
REQUEST TO USE STATE LANDS
SPECIAL MANAGEMENT AREA PERMIT
SHORELINE SETBACK VARIANCE

LUSARDI RESIDENCE SEAWALL REPAIRS

NAPILI • MAUI • HAWAII



**CHRIS
HART**
& PARTNERS, INC.

NOVEMBER 2002

FINAL ENVIRONMENTAL ASSESSMENT
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CONSERVATION DISTRICT USE APPLICATION
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SPECIAL MANAGEMENT AREA PERMIT
SHORELINE SETBACK VARIANCE

LUSARDI RESIDENCE SEAWALL REPAIRS

N A P I L I • M A U I • H A W A I I

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NOVEMBER 2002



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I. INTRODUCTION

A. PURPOSE OF THE REQUEST

The applicant is proposing repairs to an existing seawall located at the makai section of his residential property along Keonenui Beach, Napili, Maui. This environmental assessment has been prepared to describe and analyze the impacts associated with this project and is submitted in support of the following application requests: 1) Special Management Area Use Permit; 2) Shoreline Setback Variance; 3) Conservation District Use Application, and 4) an easement for use of State Land.

The purpose of this project is to stabilize shoreline in order to: remove a public hazard along the beach; prevent earthen soils from eroding and entering the coastal waters; and prevent future erosion of the property and potential undermining of the neighboring shoreline protection structures.

This Environmental Assessment has been prepared in compliance with Chapter 343, Hawaii Revised Statutes (HRS); Chapter 200, Hawaii Administrative Rules, Environmental Impact Statement Rules. This Assessment also includes information consistent with that suggested by the State Office of Environmental Quality Control's guide entitled *Shoreline Hardening Policy and Environmental Assessment Guidelines*.

B. IDENTIFICATION OF THE APPLICANT

Owner/Applicant: Warner C Lusardi
4871 Lower Honoapiilani Road
Lahaina, Hawaii 96761
Phone: (808) 669-0504/Fax: (808) 669-1668



C. CONSULTANTS

Coastal Engineering: Sea Engineering, Inc.
Makai Research Pier
Waimanalo, Hawaii 96795
Phone (808) 259-7966/ Fax (808) 259-8143
Contact: Marc Erickson

Structural Engineering: Arnold T. Okubo & Associates
Consulting Structural Engineers
94-529 Ukee Street, Suite 107
Waipahu, HI 96797
Phone: (808) 671-5184/ Fax (808) 671-5187
Contact: Arnold Okubo

Land Use: Chris Hart & Partners;
Landscape Architecture and Planning
1955 Main Street
Wailuku, Maui, Hawaii 96793
Phone: (808) 242-1955/ Fax (808) 242-1956
Contact: Rory Frampton

D. ACCEPTING AGENCY

Accepting Agency: Department of Land and Natural Resources
State of Hawaii
P.O. Box 621, Honolulu, Hawaii 96809
Phone: (808) 587-0400/Fax: (808) 587-0390
Contact: Sam Lemmo

E. PRE-CONSULTATION

The following agencies were solicited for preliminary comments on the Draft Environmental Assessment. Submitted comments are included in Appendix C.

COUNTY OF MAUI

1. Department of Planning
2. Department of Public Works and Waste Management



STATE OF HAWAII

1. Department of Land and Natural Resources, Land Division
2. Department of Land and Natural Resources, Planning
3. Department of Accounting and General Services
4. Department of Health
5. Office of Planning
6. State Land Use Commission

FEDERAL GOVERNMENT

1. Department of the Army
2. Department of Agriculture
3. Department of the Interior, Fish & Wildlife Service

F. DRAFT EA CONSULTATION

The following agencies were provided comments on the Draft Environmental Assessment. Comment letters and responses are included in Appendix E.

COUNTY OF MAUI

- Department of Planning

STATE OF HAWAII

- Department of Land and Natural Resources, Land Division
- Department of Land and Natural Resources, Forestry & Wildlife Division
- Department of Health
- The Office of Environmental Quality Control
- The Office of Hawaiian Affairs

FEDERAL GOVERNMENT

- Department of the Army



II. DESCRIPTION OF THE PROPERTY AND PROPOSED ACTION

A. PROPERTY LOCATION

The project area is located in the Lahaina District, in the town of Napili, which is located on the northwest coast of the West Maui Mountains. The property is approximately 7 miles north of Lahaina and 4.5 miles south of Honokahua. The project area is situated along Keonenui Beach, between Haukoe and Alaeloa Points. The area has been collectively referred to as "Alaeloa". Access to the residence is via Lower Honoapiilani Road. (See Figure No. 1, "Regional Map" and Figure No. 2 "Area Map").

B. EXISTING LAND USE

Development in the Alaeloa area includes several single-family residences and some multi-family developments such as the Kahana Sunset Condominium. The shoreline between the rocky points is armored by individual vertical seawalls that together form a continuous structure along Keonenui Beach. Some vacant lands are present in the area, mostly mauka of Lower Honoapiilani Road. (See Figure No. 2 "Area Map").

C. LAND USE DESIGNATIONS

The project area includes a portion of the applicant's property (TMK parcel (2) 4-3-015: 052) and approximately 261 square-feet of land owned by the State of Hawaii.

State Land Use Classifications:	Urban Conservation (State Land)
West Maui Community Plan:	Single Family Residential Open Space (State Land)
County Zoning:	R-3 Residential
Flood Zone Designations:	V24, A4, BFE 17'



Special Designations:

Special Management Area
Shoreline Setback Area

D. PROJECT BACKGROUND AND NEED

Prior to a subdivision in 1989, the subject parcel (52), and the parcel immediately south [TMK (2) 4-3-015:2] composed a larger property. The subdivision, and a landward relocation of the makai property line reduced the subject parcel to its current size of 14,959 square feet (See Figure No. 2, "Tax Map Key Parcel Map"). The original seaward property boundary is illustrated in Figure 3 "Area Map".

A building permit for a residence was granted in 1989. In that same year a stone-masonry vertical seawall was constructed along the cliff fronting the property to the south (Parcel 2), which included a section of wall fronting the subject property. The foundation of the south neighbor's wall was built about 8 feet above mean sea level and was approximately 9-feet tall. Sometime later, a stairway was constructed at the north edge of the existing wall, and a second seawall was constructed following the natural bank fronting the subject property. The second wall completed the connection between the wall to the south neighbor's wall and the north neighbor's wall (Parcel 3). The north neighbor's wall is about 10 feet high and is based at about 6 feet above msl. This connecting section was built partially within the subject property and partially within State Land. The connecting section was constructed without obtaining the necessary permits. Proper permitting would have required a Conservation District Use Permit, a Special Management Area Permit, a Shoreline Setback Variance, and a Building Permit.

Portions of the connecting seawall began to fail in 1997. Over the next two years, approximately 35 feet of the wall was removed. In 1999, storm waves undermined the backshore, creating a cave in the bank. The cave concerned local residents, who feared that a collapse could injure a person walking on the bank above the undermined section, or a person inside the cave. The (former) property owners applied for an *SMA Emergency Permit* to place large sand filled "seabags" within the cave to prevent further retreat and to block passage into the feature. The Maui Planning Department granted the permit in August of 1999, in order to "prevent substantial harm to persons", with the condition that the landowner should promptly design and apply for a properly engineered long-term solution (See Appendix C "Prior Permits and Correspondence").

Before a long-term solution was devised, the property was sold to the applicant in late 1999. The applicant placed warning signs around the cave and renewed the SMA



emergency permit so that replacement seabags could be used to fill the cave. Despite these efforts, children were still attempting to play in the cave. In 2000, the applicant met with members of the Maui Planning Department, The State Department of Land and Natural Resources, the Sea Grant extension service, coastal engineers, and structural engineers in order to renew the emergency permits for the interim measures and to develop the long term solution required. The project has been initially processed by the State as HOAPS Case No. 01-0028-EN-MA.

Final EA: Update- Coastal Collapse. Following heavy rains and high winds in late January 2002, the backshore along the removed section of wall collapsed upon the beach, leaving earthen debris and vegetation makai of the 1984 property line. The applicant applied for and obtained permits from DLNR and the Maui Planning Department to excavate the collapse and to allow for installation of a temporary sandbag structure mauka of the 1984 shoreline. The sandbags structure was designed to retain the (unstable) bank and protect the excavated area from wave action. The collapse and subsequent temporary measures are documented in Figures 11A and 11B.

The purpose of this project is to create a long-term solution that will stabilize the backshore order to:

- Prevent future erosion of the property and potential undermining of the neighboring shoreline protection structures;
- Prevent earthen soils from eroding and entering the coastal waters; and,
- Remove the public hazard associated with the unstable backshore;

E. DESCRIPTION OF PROPOSED ACTION

The proposed action involves the following steps:

- Removal of existing interim measures including the sand filled *seabags*
- Demolition of the remaining 20 feet of deteriorating seawall north of the stairway.
- Construction of a new wall, approximately 55 feet in length.

Removal of the Interim Measures

This step will include the removal of the seabag coverings; the seabags utilized within the cave were deliberately filled with beach-quality sand so that in the event of rupture or removal, the contents would be compatible with the existing beach.



Demolition of the Remaining Wall

Demolish 10 feet of eroding wall and 10 feet of undermined wall north of the existing stairway. Silt fences and similar barriers will be utilized during demolition to protect the beach from wall debris and earthen soils while the wall sections are removed. Figure No. 4, "Site Survey" shows the location of the remnant sections.

Construction of a Replacement Wall

A new wall will be constructed on a rock outcrop between the existing stairway and the north-neighboring seawall. The length of the replacement feature is approximately 55 feet. Approximately 35 feet of the wall will be located within parcel 52 and 20 feet within State Land (but within the originally deeded property boundary). The wall will be built upon a ledge consisting of a clay-rock matrix that extends from the backshore of the beach, at approximately 8ft above mean sea level. Details on the placement of the wall are included in Figure No. 6 "Construction Details". The reconstruction will have the following characteristics:

Construction of a Replacement Wall: Final EA Update

Revised locations for the placement of the wall have been included in figures 10A and 10B. (See Section F [Alternatives] for a description and analysis of the revised locations.)

Construction. Excavation of earthen soils and rocky matrix will be accomplished by hand tools and by backhoe from the property above. Silt fences and similar barriers will be utilized during excavation to protect the beach from debris and sediment. Construction will require use of the beach fronting the immediate project area by workers, however no construction or demolition materials will be stored on the beach. Work will be above the high water line and will not require construction activities to occur in the ocean.

Materials. A reinforced concrete foundation will be set 2-3 feet within the underlying rocky matrix. A wedge shaped rock masonry wall will be constructed atop the foundation. The width of the footing will be 7-8 feet wide and the wall will be 1-2 wide feet at the peak. The height of the wall will be approximately 9 feet above the foundation. "Weep holes" utilizing two-inch PVC pipe will be interspersed in the lower sections of the wall to relieve water that has percolated in soils on the mauka side of the wall. Crusher rock will be placed on the mauka side of the weep holes to filter solids from the runoff that seeps into the pipes.



An alternate design incorporates a poured concrete wall with a rock façade. Details of both construction types are included in Figure No. 6, "Construction Details". The two variations would be similar in appearance from the beach.

Materials: Final EA Update. The poured concrete wall with rock façade will be the preferred alternative. The construction type will minimize construction time and simplify the process.

Cost. The cost to construct the project is estimated to be \$30,000 to \$60,000. This cost does not include engineering design and surveys, permitting, construction management/review, and project monitoring. The anticipated duration of construction activities is 90 days for the rock masonry wall, and 30-45 days for the poured concrete alternative.

F. ALTERNATIVES

1. No Action

Description. The *no action* alternative would forgo improvements to address the eroding seawall and seacliff. By leaving the subject area in its present condition, the applicant and the public forgo both the costs and benefits associated with the project.

Analysis. Positive impacts of the *no action* alternative may include:

- Some may visually prefer the earthen bank over a seawall
- Maximum use of backshore area

Negative impacts of the *no action* alternative may include:

- The backshore may be further destabilized, a cave in of the bank could injure someone near the cave or a person traversing the bank above;
- Earthen soils will erode from the backshore and enter coastal waters; and,
- The subject property may experience further erosion, which may undermine neighboring shoreline protection structures.

The potential benefits of the *no action* alternative were not considered significant for the following reasons.



- Visual benefits were negligible because the surrounding backshore is composed of vertical seawalls and the immediate area (the eroding dirt bank) is not aesthetically significant.
- The potential gain in beach width by forgoing improvements along the backshore is marginal since the affected area is currently hazardous due to the unstable overhanging cliff. Additionally, the usable area of the beach may be reduced in this alternative if a collapse narrows the beach.

Since the potential benefits of this alternative are considered marginal and the potential negative impacts are considerable, the *no action* alternative is not preferred.

Final EA: Update- Coastal Collapse. Following heavy rains and high winds in late January 2002, the backshore along the removed section of wall collapsed upon the beach, leaving earthen debris and vegetation makai of the 1984 property line. The collapse and subsequent temporary measures are documented in Figures 11A and 11B. The collapse was a result as the applicant was applying for approval of temporary measures, and is an example of the consequence of the no-action alternative.

2. Sloped Revetment

Description. A revetment is a sloped structure built to protect existing land against erosion by wave action, currents, or weather. Revetments are usually placed parallel to the natural shoreline. Riprap (randomly placed stone) and gabions (a wicker like basket that is filled with stones) can be included in this definition. The protection revetments offer is due to the armoring characteristics of the revetments and their ability to dissipate wave energy.

Analysis. A sloping revetment is superior versus a vertical wall in dissipating wave energy, and is generally preferred over a vertical structure for most beaches. Sloping revetments require more horizontal space than a vertical seawall, and this characteristic is magnified at the project site because the area immediately mauka of the shoreline continues to slope upward rather than leveling off. A revetment with a slope of 1V to 1.5H (the maximum) could require a footprint over 20 feet wide to meet the upland elevation, resulting in a structure significantly larger than the proposed wall. Additionally, the presence of adjacent vertical structures would diminish the dissipative advantage of the revetment, and possibly allow for flank erosion at the sides of the structure.

In consideration of the size of the revetment structure, the aesthetically inconsistency compared to adjacent vertical walls, and the potential for flank erosion at the sides of the



structure, the preferred alternative was considered superior to the revetment despite the potential performance advantages of the revetment.

3. Artificial Beach Nourishment

Artificial beach nourishment involves placing sand harvested from another source (borrow sediment, or fill) on the beach to widen the beach and create a repository of sand on the shore that would dissipate wave energy. The ultimate goal of this alternative would be to recreate a naturalistic beach dune ecosystem. It would involve a beach nourishment and dune enhancement component.

This alternative would have the added benefit of widening the beach. Because enhanced beaches are likely to experience erosion, sand must be replenished on a regular schedule. Oftentimes, in order to retain sand within the bay, artificial groins are constructed to prevent offshore currents from regularly depleting the supply of sand.

Analysis. Despite its apparent attractiveness as an environmentally sensitive alternative to shoreline structures, there are many uncertainties associated with beach replenishment programs. This type of action would be complicated for the following reasons:

- The entire beach would need to be nourished, not just the section along the applicant's property
- The amount of sand required for regular replenishment is difficult to estimate
- The entire backshore of the beach is armored, and there are no dune areas that can serve as sand repositories

A nourishment strategy may also have the following negative impacts:

- Increased sand volumes may bury offshore reefs and other marine habitat
- The only known sand source on Maui is dune sand, which contains a significant percentage of fine material. This fine material would be released into the nearshore waters in the bay, with possibly significant negative impacts on the coastal water quality and marine biology
- The groin structures would have visual impacts and cause significant changes to coastal processes
- Ultimately, the nourishment strategy may not protect the backshore from erosion in a significant wave event

In evaluation of the costs and benefits of the alternative, artificial beach nourishment was determined to be an impractical solution.



4. Alternate Locations for the Proposed Improvements

In this alternative, the reconstructed seawall would be located further landward or further seaward than the proposed location.

Advantages of locating the wall landward include:

- The action will utilize a lesser amount of public lands
- The structure will be located further from wave action

Disadvantages of locating the wall landward include:

- Since the property slopes upward, the height of the wall along the beach would need to be greater.
- More excavation of the backshore would also be required due to the movement of the wall landward, and because a higher wall would require a wider base and larger foundation.
- At a more landward position, the reconstructed wall may not protect adjacent structures from flank erosion, including the neighboring wall to the north and the stairway to the south.

Advantages of locating the wall seaward include:

- Better protection of the seawall to the north
- Less excavation required

Disadvantages of locating the wall seaward include:

- Less beach width
- Increased exposure to wave action

Analysis. In review of these positive and negative effects, no practical advantage of incrementally moving the structure landward or seaward is anticipated. The proposed location, which would place the face of the proposed wall generally coincident with the existing backshore was considered most appropriate, and minimizes the negative impacts identified.

Analysis: Final EA Update. Considering information and comment from the Land Division of the State Department of Land and Natural Resources and from the County of Maui Planning Department, the preferred locations for the replacement seawall have been revised. Two new inland placements are represented in Figures 10A and 10B.

In both alternatives, the proposed connection to the neighbor's seawall to the north has been moved about 10 feet landward, which is coincident with the mauka edge of



neighbors wall. This position is also approximately 10 feet inside of the current property line, which was established via the 1984 shoreline survey. Although a portion of this area was accessible prior to the collapse of the sea-cliff, the area has not been accessible since the collapse due to the presence of earthen material and the subsequent placement of temporary sand bags. With this new alignment, a potential access area (~170 sf) will be made available along the north half of the repair. Similarly, moving the wall landward is anticipated to lessen any effect the wall may have on coastal processes.

The south half of the repair (which includes demolition of a remnant section) is represented by two options in the attached figure. Option A would continue the wall in a straight line towards the existing stairway, slightly landward of the existing remnant section. Option A encroaches on State land near the stairway (approximately 70 sf). Option B would divert from the Option A midpoint, following the current property line to its intersection with the existing stairway.

Option A is preferred for the following reasons:

- The wall would be straight, and essentially perpendicular to the connecting structures. This simplifies engineering and construction, and provides a compatible aesthetic design.
- Option B creates an acute angle at the intersection with the stairwell, which is not a preferred engineering solution. In large wave events, the acute angle could increase scouring forces, due to the increased refraction of wave energy.
- The additional beach area created along the south repair section by Option B would provide an area of marginal utility from a public access perspective. The area would have an awkward "V" shape and be bordered by vertical walls approximately 10 ft. high, creating an almost cave like feel. Given the presence of the stairway, this area would not likely be used for lateral access. Furthermore, based on the 1984 photographs, the area was not sandy, rather, it was part of the sloping backshore and made up of a combination of rocky matrix and dirt.
- It is not known if the landward portion of the stairway is built upon earth or masonry. Option B would expose this unknown portion of the stairway. If an earthen base is uncovered, it would have to be excavated from the side and the void filled with concrete/masonry. This could cause a collapse of the stairway and create a risk to the construction crew. Option A minimizes the risk of collapse or injury.
- Option B increases the amount of backshore that needs to be excavated. Given that the difference in elevation between the rock matrix and the pool deck is 18 vertical feet, and that the footing of the wall will be 8 feet wide, there is a concern that excavating further inland could create unstable soil conditions.



- The Option A alignment does not appear to be utilizing beach area that was once available to the public. Please see the attached figure showing the annotated shoreline survey and survey photo. Option A appears to be coincident with the steep bank that was present during the 1984 shoreline survey (note slope of ladder); land mauka of the Option A alignment does not appear accessible to a person on the beach.

G. REQUIRED PERMITS

The following permits and approvals are required for the proposed action:

State of Hawaii

The following permits and approval are administered by the Department of Land and Natural Resources and approved by the Board of Land and Natural Resources:

- Conservation District Use Permit
- Easement for use of State Land

County of Maui

The following permits are administered by the Department of Planning and acted upon by the Maui Planning Commission:

- Special Management Area Permit
- Shoreline Setback Variance

The following permits are administered by the Department of Planning, Zoning Enforcement Division:

- Flood Hazard Area Permits

The following permits are administered by the Department of Public Works and Waste Management, Land Use and Codes Administration:

- Building permit
- Grading permit



III. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATIONS MEASURES

A. PHYSICAL ENVIRONMENT

1. Land Use

Existing Conditions. Development along Keonenui Beach includes four single-family residences and a resort condominium project. The residential properties occupy the southern half of the backshore and extend onto the rocky headlands of Haukoe Point. The resort development (the Kahana Sunset) occupies the north half of the backshore and extends to Alaeloa Point. Recreational uses of the coastal areas included swimming and fishing. The backshore of Keonenui Beach between the naturally rocky headlands is armored by individual vertical seawalls that together form a continuous structure. Some vacant lands are present in the area, mostly mauka of Lower Honoapiilani Road. (See Figure No. 2 "Area Map").

The subject property is of a rectangular shape, with its long dimension running perpendicular between the coast and Lower Honoapiilani Road. The elevation of the property slopes from 41 feet along the roadway to 15-17 feet along its border with Keonenui Beach. A residence is located at the upland section of the property. A pool with a concrete pool deck extends from the residence to approximately 30 feet of the makai property boundary.

Potential Impacts and Mitigation Measures. No significant changes or impacts to land uses in the area are anticipated since the proposed project is limited to the reconstruction of a structure ancillary to an existing single-family dwelling. The immediate project area is currently occupied by existing wall and temporary sandbags. The use of this area for a reconstructed seawall does not significantly reduce the foreshore available for recreational use. Local residents have been in favor of the repairs, and have sent letters in support of the project (see Appendix C).



2. Shoreline Conditions and Processes

A Coastal Evaluation was prepared to document the existing coastal conditions and processes, provide a history of the shoreline near the project site, evaluate potential impacts of the proposed and alternative actions, and identify and quantify the proper criteria to be used in design of the proposed structure. The evaluation, prepared by Sea Engineering Inc. is attached as Appendix A. A summary of the findings follows.

Coastal Conditions. The Lusardi property is located along Keonenui Beach, between Alaeloa Point and Haukoe Point on the northwest coast of Maui, about 3500 feet south of Napili Bay. The beach is a pocket beach typical of this stretch of coastline. It is about 500 feet long, nestled between the headlands, which protrude about 400 to 500 feet seaward. The backshore along the north half of the beach is occupied by the Kahana Sunset resort and condominiums. The backshore along the southern half of the beach is occupied by four single-family homes; the Lusardi property is the second property to the south of the Kahana Sunset. Vertical rock walls protect the properties along the entire beach.

North of the Lusardi Property, the shoreline consists of a sandy beach. The sand extends 50 to 70 feet from the rock walls protecting the properties to the water line. In front of the Kahana Sunset, the beach is about 70 feet wide and slopes 1 vertical (V) to 9 horizontal (H) to an elevation of about 10 feet mean sea level (msl) at the base of the rock wall protecting the resort buildings. In front of the neighboring property to the north of the project site, the beach narrows to a width of about 50 feet and slopes 1V to 6.8H (measurements taken 8-21-2001).

Beginning at the Lusardi Property, the shoreline transitions from sandy beach to an irregular, rough rocky shore. The rock is a conglomerate with a soft silt/clay matrix, and rock clasts. The seaward boundary of the Lusardi property has the following configuration, from south to north: 10 feet of vertical rock wall, 6-foot wide stairway to the shore, 10 feet of vertical rock wall, 10 feet of undermined and eroding rock wall, and 35 feet of exposed, undermined earthen bank where the original vertical rock wall failed and was removed in 1997. The 35 feet of exposed earthen bank represents the only section of the beach that does not contain a vertical wall. The erosion has cut a cave or overhang about 3 feet deep and 3 feet high into the earthen bank. This erosion threatens the neighboring wall to the north.

South of the Lusardi property, the shoreface slopes more steeply, and the conglomerate rock extends from the base of the vertical walls at an elevation of 9 to 10 feet msl to the waterline (Figure 11). At 20 feet south of the steps, the rocky shoreface is 25 to 30 feet



wide and slopes 1V:4H. At 80 feet south of the steps, the rock forms a ledge 8 feet wide at the base of the wall, that drops vertically about 5 feet to the water.

The nearshore seafloor in the bay consists primarily of sand in the central part of the bay, and coral, limestone and rock along the perimeter and beyond about 400 feet offshore. There is a narrow patch of rocky, cobble bottom close to shore in front of the Lusardi property.

Final EA: Update- Coastal Collapse. Following heavy rains and high winds in late January 2002, the backshore along the removed section of wall collapsed upon the beach, leaving earthen debris and vegetation makai of the 1984 property line. The applicant applied for and obtained permits from DLNR and the Maui Planning Department to excavate the collapse and to allow for installation of a temporary sandbag structure mauka of the 1984 shoreline. The sandbags structure was designed to retain the (unstable) bank and protect the excavated area from wave action. The collapse and subsequent temporary measures are documented in Figures 11A and 11B.

Shoreline History. The coastal processes along the shoreline within the study area are complicated by the bay and headland morphology, the presence of offshore fringing reefs, and a seasonal wave climate with two opposing wave approach directions. To assess the shoreline history in the project area, an historical aerial photographic analysis was completed for Keonenui Beach. The analysis utilizes the location of the beach toe, which is a good indicator of shoreline erosion or accretion because it marks the seaward edge of the foreshore, or beach face. However, the beach toe can also vary with seasonal or short term erosion or accretion, or changes in beach slope and width, and thus may also indicate the dynamic nature of a beach, rather than long term erosion or accretion trends.

The results show that the beach is dynamic with periods of erosion and accretion. Along a transect fronting the Kahana Sunset, the beach toe eroded 78 feet between 1949 and 1987, then accreted 68 feet in the following year, and has eroded 42 feet between 1988 and 1997. Similarly, at a transect near the subject property, the beach toe eroded 39 feet between 1949 and 1987, then accreted 35 feet in the following year, then eroded 48 feet between 1988 and 1997. Net erosion between 1949 and 1997 has been 52 feet at both transects. The beach toe movements may be attributable to seasonal changes in surf and current conditions. The beach toe was in an accreted position during photos taken in November and March, which may indicate response to winter conditions. Conversely, the beach toe was in an eroded (landward) position in the photos taken in May and July, which may indicate response to summer surf conditions.



Projection of the 30 year erosion hazard was not completed because of the dynamic nature of the beach, with large shifts in the beach toe position possible on a seasonal basis and the limited number of data points available for the analysis. On a dynamic beach such as Keonenui Beach, the computed erosion rate depends largely on whether the beginning and end points of the analysis are during seasonally accreted or eroded states. If the first photograph is during an accreted state, and the last photograph is during an eroded state, then a large erosion rate may be indicated which is misleading; conversely, if the first photograph is during an eroded state, and the last photograph is during an accreted state, then net accretion may be indicated. The five photographs used in this analysis are not sufficient to pinpoint the seasonal patterns of beach toe movement, nor the existence or cause of any long term erosion trend, and therefore could result in a misleading 30 year erosion prediction. The analysis does indicate that the beach is dynamic, with large possible seasonal shifts in the beach toe position, and that a net erosion trend is possible.

Given the dynamic nature of the beach it is also not possible to determine the impacts of walls on the beach. During the eight months between the 1987 and 1988 photos, with wall already lining the shoreline, there was accretion of 35 feet and 68 feet along the beach. Yet between 1988 and 1997, the beach appeared to erode.

Local accounts from long-time residents in the bay are consistent with net erosion occurring on Keonenui Beach. Locals remember palm trees further seaward on the beach that were eventually undercut by progressive erosion.

Design Criteria. A determination of the oceanographic design criteria necessary for the wall design included the following steps: evaluation of the deep water wave types and sizes that may impact the project site; transforming those deep water waves to shallow water waves at the shoreline; calculating the water level rise at the shoreline due to tides, storm surge and wave setup; and computing wave runup and wave forces on the wall.

The range covered in the analysis of five types of design waves, with deepwater wave heights between 14.3 and 30.3 feet. The modeling of the waves yielded condition with the following attributes.

- Breaker heights between 4.0 and 6.4 feet
- Water depths at the wall between 1.1 and 4.0 feet
- Maximum wave force at 4550 lbs/ft

Potential Impacts and Mitigation Measures. Construction of this vertical wall should have no significant negative impact on the beach for two primary reasons. First, the wall



will harden only 35 feet of shoreline. The remaining 500 to 600 feet of the beach is already lined with vertical walls. The wall will tie in to existing vertical walls on either side. Second, there is little sand in front of the Lusardi property. The wall will be built on, and be fronted by, rock outcrops. The rocky outcrops extend from the waterline to the 6 to 10-foot elevation. The rocky outcrops serve as a naturally hardened shore, and absorb the primary forces of the waves and currents. The base of the wall is landward of the rock outcrops. South of the Lusardi property, these rock outcrops form a vertical cliff at the waterline. The wall should therefore have no significant impact on existing coastal processes, and should not aggravate or contribute to erosion.

The proposed structure can be constructed to withstand the design forces calculated in the Coastal Evaluation.

3. Marine Resources

Existing Conditions. The nearshore seafloor in the bay consists primarily of sand in the central part of the bay, and coral, limestone and rock along the perimeter and beyond about 400 feet offshore. There is a narrow patch of rocky, cobble bottom close to shore in front of the subject property.

Nearshore waters are classified as open coastal "A", according to the Water Quality Standards Map prepared by the State Office of Environmental Planning and Hawaii Department of Health.

Potential Impacts and Mitigation Measures. The beach profiles constructed at the project site show that the immediate project area is approximately 30-40 feet inland of the waterline and 8 feet higher than mean sea level. Observations of the area indicate that the backshore is not ordinarily subject to wave action in the summer, but is subject to the wave action of north-west swells that primarily occur during the winter season. To mitigate potential impacts to coastal waters and marine resources, construction will be coordinated to avoid ocean conditions where higher runup is anticipated and will utilize silt fences and similar barriers to contain earthen soils. Construction will require use of the beach fronting the immediate project area by workers, however no construction materials will be stored on the beach. Work will be above the high water line and will not require construction activities to occur in the ocean. Therefore, with the incorporation of the aforementioned mitigation measures, no construction-related impacts to marine resources are anticipated.

In the long term, the proposed action would prevent soil erosion and resultant high water turbidity during high wave events. As determined in the Coastal Evaluation,



construction of this vertical wall should have no significant negative impact on the beach. Therefore, no long-term or secondary negative impacts to marine resources are anticipated as a result of the action.

4. Topography and Soils

Existing Conditions. The soil at the project site is identified as beach sand and Rough Broken and Stony Land (rRS) (United States Department of Agriculture, Soil Conservation Service, 1972). This soil association is characterized as thin stony material over saprolite or bedrock.

The Coastal Evaluation (Appendix A) of the project area provides the following description of the foreshore:

Beginning at the Lusardi property, the shoreline transitions from sandy beach to an irregular, rough rocky shore. The rock is a conglomerate with a soft silt/clay matrix, and 40% rock clasts ranging in size from 0.2 to 1 foot in diameter. The silt/clay matrix can be broken and scratched by hand

Visual observations of the backshore indicate that the eroded section of the backshore contains earthen soils (See Figure No. 5, "Site Photos").

Potential Impacts and Mitigation Measures. The action will stabilize the earthen backshore, and therefore prevent sediment from entering coastal waters due to runoff or wave-induced erosion.

5. Flood and Tsunami Hazard

Existing Conditions. The Flood Insurance Rate Map for the area indicates that the seaward portion of the beach is within the V24 Zone and the residential parcel mauka is in the A4 and C Zones. The base flood elevation is 17 feet in the V and A zones. Zone V24 is considered a special flood hazard area subject to high velocity wave action from storms or seismic sources. Zone A4 is a special flood hazard area and is prone to special flood or flood-related erosion hazards. MCC Section 19.62.050 requires that a Special Flood Hazard Area Development Permit be obtained prior to construction.

Potential Impacts and Mitigation Measures. The proposed structure will be engineered to withstand the design forces calculated in the Coastal Evaluation, and thus reduces the chances that an extreme event would damage the structure.



The existing topography at the project site (35-feet of [formerly] sea-cliff and 20 feet of eroding sea wall) is too steep to offer an evacuation route during an emergency. Construction of the replacement wall, therefore, does not eliminate an escape route from the beach. Potential evacuation of the beach in an emergency is possible via the existing stairway fronting the subject property, and at the northern end of the beach.

6. Terrestrial Biota (Flora and Fauna)

Existing Conditions. The vegetated section of the project area is landscaped with beach naupaka and contains two mature coconut palms. There are no known significant habitats of rare, endangered or threatened species of flora and fauna located on the subject property. Animal life in this urban coastal setting includes avifauna including the common myna, several species of dove, cardinal, house finch, and house sparrow. Mammals common to this area include cats, dogs, rodents, and mongoose.

Potential Impacts and Mitigation Measures. The two mature coconut palms will likely be removed and stored onsite during the construction of the replacement structure, and then replaced in similar locations.

7. Visual Resources

Existing Conditions. The backshore of Keonenui Beach (approximately 500 feet) is armored with rock-masonry vertical seawalls. Upland of the seawalls are low-rise single and multi-family residences. The proposed repairs will reconstruct a 55-foot section of the wall, of which 35 feet has failed and has been removed.

Potential Impacts and Mitigation Measures. The wall will be constructed along the face of the existing backshore and will not significantly protrude above or beyond existing grades in the area, therefore views to or along the shoreline will not be impacted. Relative to mauka views from the beach, the proposed seawall repairs will utilize a similar rock/masonry construction or a compatible rock masonry façade to be consistent with the existing walls that run the length of the backshore. The growth of overhanging vegetation may provide visual mitigation, de-emphasizing the height of the wall. An example of overhanging vegetation can be seen in Figure No. 3 "Site Photos".



8. Archaeological/Historical Resources

Existing Conditions. The State Department of Land and Natural Resource's Historic Preservation Division has reviewed similar permit applications for adjacent residences in which no historic or cultural resources were known or suspected in the respective project areas (See Appendix B "SHPD Review of Neighboring Properties").

Potential Impacts and Mitigation Measures. No archaeological or cultural resources are anticipated in the project area. If cultural artifacts or burials are discovered during the construction process, all work will be stopped in that area and the State Department of Land and Natural Resources, Historic Preservation Division will be consulted for proper analysis and treatment. Any discovery of a human burial will be reported to the Island Burial Council.

9. Climate

Existing Conditions. The climate in the West Maui region is influenced by persistent north-northeasterly trade winds. Napili is located in the dry leeward portion of West Maui. Average annual temperature is 75 F. Average monthly temperatures vary by about 9 degrees between the coolest and warmest months. Rainfall at the project site averages approximately 15 inches per year.

Potential Impacts and Mitigation Measures. The proposed project will not be impacted by climatic conditions in the area, nor induce changes to the local climate.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

Existing Conditions. The 1990 Napili-Honokowai land division supported a resident population of 4,332. (Maui County Data Book, 2000)

Potential Impacts and Mitigation Measures. The proposed project has no anticipated effects on housing or population.

2. Economy

Existing Conditions. The Lahaina economy is based primarily on the visitor industry. Visitor accommodations are located near the shoreline along with necessary support



facilities and residential communities. Kapalua and Kaanapali have developed into important visitor destination anchors while old Lahaina Town, with its historic character and charm, has developed into the region's visitor, service, commercial and residential center. Agriculture is a second important part of Lahaina's economy. Pineapple and coffee are important components of the regional economy.

The project area is developed with residential and resort uses.

Potential Impacts and Mitigation Measures. The project will generate construction-phase economic impacts that are generally short-term effects. They include employment, income, and expenditure impacts that are created by on-site and off-site construction employment, on-site and off-site trade/transportation/service employment, and manufacturing employment in support of construction. No substantial long-term impacts are anticipated.

3. Cultural Resources

Existing Conditions. Natural resources available for gathering in the project area include plants and animals that exist in the coastal waters (i.e. limu, fish, invertebrates). In addition, sea salt may be available from evaporative pools along the rocky points. Public lateral access corridors include Lower Honoapiilani Road and along Keonenui Beach. The applicant's property is not utilized for public mauka/makai access.

Potential Impacts and Mitigation Measures. The immediate project area is located along the bank at the mauka edge of the beach. The improvement will not protrude further makai than the existing wall to the north or the existing stairway to the south. The replacement structure will generally follow the existing backshore and will not significantly narrow the beach. With consideration to existing development along the beach, and the Coastal Evaluation, the proposed repairs are not anticipated to have a significant effect upon the coastal features or marine resources that could be utilized as part of cultural activities.

C. PUBLIC SERVICES

1. Recreational Resources & Facilities

Existing Conditions. West Maui offers many outdoor recreational opportunities, some in conjunction with resort activities. These include snorkeling, swimming, surfing,



boating, golfing, and hiking. The Ka'anapali area is noteworthy for its continuous sandy shoreline that extends some 8,000 feet. State and County beach parks in the Lahaina District include the Honolua-Mokuleia Marine Life Conservation District, the D. T. Fleming Park, Honokowai Beach Park, Wahikului State Wayside, Kamehameha Iki Park, Puamana Beach Park, Lanuniupoko State Wayside, Ukumehama Beach Park, and Papalaua State Wayside.

Public facilities are not present at Keonenui Beach. A public access to Haukoe Point exists but no direct access to Keonenui Beach is present. The public does not utilize the subject property for mauka/makai access.

Potential Impacts and Mitigation Measures. The proposed replacement wall will be generally located along the existing backshore and therefore will not result in significant narrowing of the usable portion of the beach. With consideration to existing development along the beach, and the Coastal Evaluation, the proposed repairs are not anticipated to have a significant effect upon the immediate coastal features or resources. No impacts to regional recreational resources or facilities are anticipated.

2. Police and Fire Protection

Existing Conditions. The County of Maui Fire Department provides fire protection in the area, the Napili Station is located approximately a half mile north. The Lahaina Civic center, approximately 5 miles south of the project contains a Police Station and another Fire Station.

Potential Impacts and Mitigation Measures. The proposed project has no anticipated effects on Police or Fire Protection services.

3. Schools

Existing Conditions. The Lahaina District is serviced by both private and public schools, which provide education from preschool through high school. Public schools in the Lahaina District include the King Kamehameha III Elementary School from kindergarten through fifth grade, the Lahaina Intermediate School for grades six through eight, and Lahainaluna High School for grades nine through twelve. Private schools in the Lahaina District include Sacred Hearts School for grades kindergarten through twelve and several preschools.

Potential Impacts and Mitigation Measures. The proposed project has no anticipated effects on Schools.



D. INFRASTRUCTURE

1. Wastewater

Existing Conditions. An existing 24" sewer line runs along Lower Honoapiilani Road; a part of the County's Napili-Honokowai wastewater transmission system. Wastewater from the system is processed at the Honokowai Treatment Plant.

2. Water

Existing Conditions. The property is presently being serviced through the existing water meter by the County of Maui, Department of Water Supply.

3. Roadways and Traffic

Existing Conditions. Lower Honoapiilani Road provides access to property. Lower Honoapiilani Road is a paved two-lane county roadway.

4. Drainage

Existing Conditions. Storm water run-off is naturally sheet flows towards the makai section of the property.

Potential Impacts and Mitigation Measures. The proposed project will not have a direct impact on infrastructure services in the area. The replacement structure will contain adequate weep holes to allow for relief of sub-surface water accumulation.



IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE LAWS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes four major land use districts into which all lands in the State are placed. These districts are designated Urban, Rural, Agricultural, and Conservation. The project area includes lands within the Urban District and Conservation Districts. Development entitlements within the Urban District are delegated to the respective County Governments. Development within the Conservation District is administered by the State Department of Land and Natural Resources, Land Division. The rules and criteria for evaluating development in the Conservation District are analyzed in part H of this section.

B. MAUI COUNTY ZONING

The zoning of the subject property is R-3 Residential. The general purpose and intent of the district is to provide for harmonious residential neighborhood without the detraction of commercial and industrial activities. The project area also includes a portion of land owned by the State of Hawaii, which has no county zoning. Walls are considered permitted accessory structures in the Residential Zone.

C. MAUI COUNTY GENERAL PLAN

The General Plan of the County of Maui (1990 update) provides long-term goals, objectives, and policies directed toward improving living conditions in the County. The proposed project is applicable to the following General Plan Objectives and Policies:

Goal: Environment.

Objective No. 2.: To use the County's land based physical and ocean-related coastal resources in a manner consistent with sound environmental planning practice.



Policies: Evaluate all land-based development relative to its impact on the County's land and ocean ecological resources.

Analysis. The proposed action was evaluated to be the most effective and practical solution. The selection was made in consideration of environmental analysis of the shoreline area and processes, and the potential environmental impacts to the ocean resources.

D. WEST MAUI COMMUNITY PLAN

Nine community plan regions have been established in Maui County. Each region's growth and development is guided by a community plan which contains objectives and policies in accordance with the Maui County General Plan. The purpose of the community plan is to outline a relatively detailed agenda for carrying out these objectives.

The subject property is located within the West Maui Community Plan region. The Community Plan was recently amended by ordinance No. 2646 on March 25, 1998. The Community Plan designation for the subject property is Single Family Residential.

The proposed action is applicable to the following goals, objectives, and policies set forth by the West Maui Community Plan:

Goal: Environment. A clean and attractive physical, natural and marine environment in which man-made developments on or alterations to the natural and marine environment are based on sound environmental and ecological practices, and important scenic and open space resources are preserved and protected for public use and enjoyment.

Objectives and Policies:

1. Protect the quality of nearshore and offshore waters. Monitor outfall systems, streams and drainage ways and maintain water quality standards. Continue to investigate, and implement appropriate measures to mitigate, excessive growth and proliferation of algae in nearshore and offshore waters.



11. Prohibit the construction of vertical seawalls and revetments except as may be permitted by rules adopted by the Maui Planning Commission governing the issuance of Shoreline Management Area (SMA) emergency permits, and encourage beach nourishment by building dunes and adding sand as a sustainable alternative.

Planning Standards:

6. Environmental Aspects.

- c. Prohibit the construction of vertical seawalls, except as approved by the planning commissions of the County of Maui.

Analysis. In consideration of alternatives, the proposed action (replacing approximately 50 feet of seawall) was judged to be the most practical alternative.

Within the context of the above West Maui Community Plan objectives and policies, consideration of a vertical seawall may be allowed if the project meets the criteria set forth in the SMA Emergency Permit process. The purpose of the SMA Emergency Permit is provided in section §205A-22 of Hawaii Revised Statutes and section §12-202 of the *Special Management Area Rules for the Maui Planning Commission*. The definition provided in the HRS specifies that an emergency permit may allow development in either of two conditions: *to prevent substantial physical harm to persons or property or to allow the reconstruction of structures damaged by natural hazards.* (por. §205A-22, HRS. emphasis added).

As mentioned in the project summary, the original 1999 SMA emergency permit for the project was granted because it met the first of the criteria; *to prevent substantial physical harm to persons.* The subject project is the long-term solution to address the same physical hazard.

The project will also help protect the quality of nearshore waters as recommended by the plan. The proposed action will aid in the prevention of earthen soils from being eroded and transported to the coastal waters via wave action and inland runoff.



E. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

Chapter 205A, HRS, requires that any "development" within the Special Management Area obtain a SMA permit. Since a portion of the project will be constructed within the SMA, a SMA permit is required for the proposed project. Special Management Area permits are administered by the Maui Planning Department and acted upon by the Maui Planning Commission.

The following is a review of the proposed project within the context of the Special Management Area objectives, policies, and guidelines, pursuant to HRS Chapter 205A and Chapter 202, Special Management Area Rules for the Maui Planning Commission.

1. Recreational Resources

Objective: Provide coastal recreational resources accessible to the public.

Policies:

- (A) Improve coordination and funding of coastal recreational planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
 - (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or require reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
 - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
 - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
 - (v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having standards and conservation of natural resources;
 - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;



- (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing;
- (viii) Encourage reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Analysis. The subject area is located at the backshore of a beach located between two rocky headlands. The entire beach length (500-600) feet between the headlands is armored with vertical seawalls.

The project will enhance safety in the immediate section of the beach and aid in protection of near shore waters from erosion borne sediment. The location of the proposed structure generally along the unstable bank of the backshore and will not protrude further seaward than structures to the north and south. Therefore the improvement will not significantly narrow the usable sections of the beach. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will result in a significant change to the coastal area.

2. Historical/Cultural Resources

Objective: Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- (a) Identify and analyze significant archeological resources;
- (b) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (c) Support state goals for protection, restoration, interpretation, and display of historic structures.

Analysis. No archaeological or cultural resources are anticipated in the project area. If cultural artifacts or burials are discovered during the construction process, all work will be stopped in that area and the State Department of Land and Natural Resources, Historic Preservation Division will be consulted for proper analysis and treatment. Any discovery of a human burial will be reported to the Island Burial Council.



3. Scenic and Open Space Resources

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- (a) Identify valued scenic resources in the coastal zone management area;
- (b) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- (c) Preserve, maintain, and where desirable, improve and restore shoreline open space and scenic resources; and
- (d) Encourage those developments that are not coastal dependent to locate in inland areas.

Analysis. The proposed seawall repairs will utilize a similar rock/masonry construction or a compatible rock masonry façade to be consistent with the existing walls that run the length of the backshore. The growth of overhanging vegetation may provide visual mitigation, de-emphasizing the height of the wall.

The project is located on a cliff-like backshore of a beach and will not protrude significantly above the existing mauka grade, and thus by topographic nature will not block scenic vistas of the ocean or mountains. The subject property is not specifically identified in any county or state plans or studies as containing scenic vistas or view planes.

4. Coastal Ecosystems

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- (a) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (b) Improve the technical basis for natural resource management;
- (c) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;



- (d) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (e) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Analysis. The proposed project may protect the quality of the nearshore marine environment from earthen soils by preventing erosion of the earthen seacliff. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will cause a significant change the coastal area resources.

5. Economic Uses

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- (a) Concentrate coastal dependent development in appropriate areas;
- (b) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;
- (c) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - (i) Use of presently designated locations is not feasible;
 - (ii) Adverse environmental impacts are minimized; and
 - (iii) The development is important to the State's economy.

Analysis. The proposed action will stabilize the eroding sea-cliff at the subject property. This will lead to both public benefits and private benefits to the applicant and neighboring landowners. Public benefits will include the removal of the cave hazard, and prevention of earthen soils from entering the coastal waters. Private benefits include greater site safety, and the prevention of loss of property and structures.



The proposed action is not anticipated to cause any substantial impacts to coastal processes. The project will be designed with the appropriate treatments to make it visually compatible with the surrounding area.

6. Coastal Hazards

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

- (a) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
- (b) Control development in areas subject to storm wave, tsunami, flood, erosion, subsidence, and point and non-point pollution hazards;
- (c) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- (d) Prevent coastal flooding from inland projects.

Analysis. The proposed action will protect the upland property and adjacent structures from storm waves and erosion. This stabilization of the shoreline will also provide greater site safety to the residents living along the shore. Shoreline stabilization will also protect the beach and nearshore waters from impacts related to eroded earthen soils transported by wave action or inland runoff.

Since the subject area is prone to storm wave action, the project's impact on a potential evacuation of the area should be considered. Considering that the existing site conditions consist of an undermined earthen bank, which cannot be traversed, the proposed action will not eliminate an evacuation route.

7. Managing Development

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- (a) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (b) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and



- (c) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Analysis. Assessment and evaluation of the project will entail the following processes:

- Environmental Assessment Review (Chapter 343 HRS Review)
- Special Management Area Assessment and Permitting
- Shoreline Setback Variance Assessment and Permitting
- Conservation District Use Permit Assessment and Permitting

Where applicable, the evaluation and permitting processes will be combined under joint applications for the action. Each process entails a form of public participation, which are detailed in the following section.

8. Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- (a) Promote public involvement in coastal zone management processes;
- (b) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
- (c) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Analysis. Prior to project approval, it is anticipated that the following public notification and hearing requirements are applicable:

SMA Permit

A public hearing is required before the Maui County Planning Commission.

1. Thirty days prior to the public hearing, the Department of Planning must publish a notice of public hearing in a newspaper published twice weekly in the County of Maui.
2. Applicant is required to send notification of hearing and location map by registered or certified mail to all recorded owners and lessees within 500 feet of the property not less than 30 days prior to the hearing. The Applicant must also send notice to all persons who have requested in writing to be notified of proceedings.



3. Within 10 days of the Department of Planning's acceptance of the application, the Applicant must publish the notice of application and legible map once in a newspaper published twice weekly in the County.

Shoreline Setback Variance

A public hearing is required before the Maui County Planning Commission.

1. At least 30 days prior to the public hearing, the Department of Planning must publish a public hearing notice in a newspaper published twice weekly in the County of Maui.
2. At least 30 days prior to the public hearing, the Applicant is required to notify adjacent property owners and recorded lessees of the hearing date.

Conservation District Use Application

A public hearing may be required before the Board of Land and Natural Resources, or an assigned agent or representative of the Board, in the County of Maui. In such case, the following requirements must be met.

1. Notice of hearing must be given not less than 20 days prior to the date set for the hearing. Notice of the time and place of the hearing must be published at least once in a newspaper of general circulation in the State and in the County of Maui.
2. The hearing must be conducted in the County of Maui and may be conducted by the Board of Land and Natural Resources or may be delegated to an agent or representative of the board as designated by the chairperson and shall afford all interested parties a reasonable opportunity to be heard.

Environmental Assessment

Public involvement in the Environmental Assessment process involves the following steps:

1. Assessment made available in a nearby Public Library
2. OEQC publishes a notice of availability regarding public review of the Draft EA in the Environmental Notice bulletin.
3. 30 day public comment period
4. OEQC publishes notice of Final EA and FONSI

9. Beach Protection

Objective: Protect beaches for public use and recreation.

Policies:



- (a) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
- (b) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (c) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Analysis. The project will enhance safety in the immediate section of the beach and aid in protection of near shore waters from erosion borne sediment. The location of the proposed structure is not within the traversed or utilized section of the beach, but generally along the unstable bank of the backshore, and this will not significantly narrow the usable sections of the beach. From a coastal engineering perspective, it is important to tie in the proposed wall to the existing wall located on the adjacent northern property. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will result in a significant change to the coastal area.

10. Marine Resources

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- (a) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (b) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (c) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (d) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- (e) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources. [L 1977, c 188, pt of §3; am L 1993, c 258, §1; am L 1994, c 3, §1; am L 1995, c 104, §5; am L 2001, c 169, §3]



Analysis. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will result in a significant change to coastal area or marine resources.

F. RULES OF THE SHORELINE AREA

Since the proposed action is partially located within the *shoreline setback area*, development in the area is subject to the Rules of the Maui Planning Commission relating to the Shoreline Area of the Islands of Kahoolawe, Lanai, and Maui. §12-5-13 of the Rules set forth the criteria in which a shoreline area variance may be granted for a structure that is otherwise prohibited. Seawall structures may be permitted if the Maui Planning Commission finds that the structures are necessary or ancillary to:

§12-5-13a(7) Private facilities or improvements that are clearly in the public interest; or;

§12-5-13a(9) Private facilities or improvements that may artificially fix the shoreline; provided that, the authority also finds that shoreline erosion is likely to cause hardship to the applicant if the facilities or improvement are not allowed within the shoreline area, and provide further that the authority impose conditions to prohibit any structure seaward of the existing shoreline unless it is clearly in the public interest;

Analysis. The goal of this project is to create a long-term solution that will stabilize the backshore in order to:

1. Remove the public hazard associated with the unstable backshore;
2. Prevent earthen soils from eroding and entering the coastal waters; and,
3. Prevent future erosion of the property and potential undermining of the neighboring shoreline protection structures.

The accomplishment of goals 1 and 2 is clearly in the public's interest and thus makes the project consistent with the class of variance permitted under §12-5-13a(7). The stabilization of the bank fronting the subject property will also protect the public and beach resources from negative effects due to a collapse of adjacent seawalls due to continued flank erosion at the project site, and thus the accomplishment of goal 3 is also in the public's interest.

Shoreline stabilization (goal 3) will protect the immediate residents from personal injury due failure of the backshore. Stabilization will also protect residents from direct injury or hazard conditions stemming from the collapse of undermined seawalls and boundary walls onto the beach or the applicant's property. Thus, the action prevents hardship due



to injury, hazard, and property loss, and is thus consistent with the class of variance permitted under §12-5-13a(9).

G. ENVIRONMENTAL ASSESSMENT SIGNIFICANCE CRITERIA

In accordance with Title 11, Department of Health, Chapter 200 and Subchapter 6, Section 11-200-12, Environmental Impact Statement Rules, and based on the detailed analyses contained within this document, the following conclusions are supported:

1. The proposed action will *not* result in an irrevocable commitment to loss or destruction of natural or cultural resources.

Analysis. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will result in a significant change in appearance or resources of the coastal area.

2. The proposed action will *not* curtail the range of beneficial uses of the environment.

Analysis. The project will enhance safety in the immediate section of the beach and aid in protection of near shore waters from erosion borne sediment. The location of the proposed structure is not within the traversed or utilized section of the beach, but generally along the unstable bank of the backshore, and this will not significantly narrow the usable sections of the beach. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will result in a significant change to the coastal area. The proposed structure will be designed to visually match the surrounding seawall development (horizontal visual plane) and will utilize vegetation to minimize the height of the structure (vertical visual plane).

3. The proposed action will *not* conflict with State or County long-term environmental policies and goals as expressed in Chapter 344, HRS, and those which are more specifically outlined in the Conservation District Rules.

Analysis. The proposed project is required to obtain a State Conservation District Use Permit prior to initiation of construction. Thus, the proposed project will conform to State and County long-term environmental policies and goals as expressed in Chapter 344, HRS, and those that are more specifically outlined in the Conservation District Rules. An analysis of the project's applicability to the Conservation District Rules is provided in the following section.



4. The proposed action will *not* substantially affect the economic or social welfare and activities of the community, county or state.

Analysis. The proposed project will improve the safety of the immediate area and is not anticipated to have substantial economic or social impacts.

5. The proposed action will *not* substantially affect public health.

Analysis. No impacts to public health are anticipated.

6. The proposed action will *not* result in substantial secondary impacts.

Analysis. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will cause secondary effects that would significantly change the coastal area.

7. The proposed action will *not* involve substantial degradation of environmental quality.

Analysis. With the incorporation of the previously identified short-term mitigation measures, there should be minimal construction related impacts. The proposed project may protect the quality of the nearshore marine environment from earthen soils by preventing further erosion of the earthen seacliff. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will cause a significant change the coastal area resources.

8. The proposed project will not produce cumulative impacts and does *not* have considerable effect upon the environment or involve a commitment for larger actions.

Analysis. Armoring of a shoreline area is known to lead to the successive armoring of adjacent shoreline, of which, the larger (cumulative) structure may have greater impacts. The subject area is located at the backshore of a beach located between two rocky headlands. The entire beach length (500-600) feet between the headlands is armored with vertical seawalls. Given that total shoreline armoring exists, the repair of the 35-foot collapsed section will not encourage additional development or require a commitment for larger actions.

9. The proposed project will *not* affect a rare, threatened, or endangered species, or its habitat.



Analysis. No rare, threatened, or endangered species or their habitat are known to exist in the immediate project area. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will cause significant secondary impacts to the coastal habitat.

10. The proposed action will *not* substantially or adversely affect air and water quality or ambient noise levels.

Analysis. The proposed project will meet all required State and county air, water, and ambient noise quality standards prior to and during construction. No significant long-term impacts are anticipated.

11. The proposed action will *not* substantially affect or be subject to damage by being located in an environmentally sensitive area, such as flood plain, shoreline, tsunami zone, erosion-prone areas, estuary, fresh waters, geologically hazardous land or coastal waters.

Analysis. A certified structural engineer with experience in coastal development will design the proposed improvements with consideration of specific performance criteria derived for that coastline. Pursuant to Maui County Code, Section 19.62.050 a Flood Hazard Development Permit will be obtained prior to construction.

12. The proposed action will *not* substantially affect scenic vistas or view planes identified in county or state plans or studies.

Analysis. The project is located on the upsloping backshore of a beach, and thus by topographic nature will not block scenic vistas of the ocean or mountains. The subject property is not specifically identified in any county or State plans or studies as containing scenic vistas or view planes.

13. The proposed action will *not* require substantial energy consumption.

Analysis. Since the proposed project does not engender any increase in energy consumption over the existing use of the property, energy consumption will not be affected.



H. CONSERVATION DISTRICT USE CRITERIA

Chapter 5, Section 13-5-30, of the Hawaii Administrative Rules (HAR), requires that, unless otherwise provided, land uses shall not be undertaken in the State Conservation District without the appropriate land use permit. Since the proposed project will be constructed within the State Conservation District, a CDUA is required. The Board of Land and Natural Resources may grant approval of the CDUA.

Sections §13-5-23 and §13-5-24, HAR, provide an inventory of uses that may be permitted in the Conservation District's Resource subzone. The rules specify that "Seawalls and Shoreline Protection" structures may be permitted within the Conservation District Resource subzone and that the Board of Land and Natural Resources will serve as the permitting authority. Pursuant to section §13-5-30(c), HAR, the board shall apply the following criteria in its evaluation:

(1) The proposed land use is consistent with the purpose of the conservation district;

Analysis. The purpose 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. The proposed action will directly benefit public safety at the immediate project site. No significant impacts are anticipated to natural resources.

(2) The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;

Analysis. The objective of the resource subzone is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas. The project is a development that will add to the safety of beach users and protect existing structures from collapse.

(3) The proposed land use complies with provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management," where applicable;

Analysis. As documented in the previous section, the proposed action is generally consistent with Chapter 205A, HRS.

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



Analysis. Based on existing development at the project area and the Coastal Evaluation, it is unlikely that the improvements will cause substantial adverse effects or significant change to the coastal area.

(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;

Analysis. The proposed seawall repairs will utilize a similar rock/masonry construction or a compatible rock masonry façade to be consistent with the existing walls that run the length of the backshore. The growth of overhanging vegetation may provide visual mitigation, de-emphasizing the height of the wall.

(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;

Analysis. The proposed action entails reconstructing a 55-foot section of seawall that has fallen or eroded. The 35-foot section that has fallen is the only section of the entire backshore (approximately 500 feet) that is not currently armored with a vertical seawall. The current status of the 35-foot section is an eroded earthen bank, which has raised concerns about public safety, sediment erosion, and continued erosion with potential undermining of adjacent structures. While the action does include the hardening of a 35-foot section of the backshore, in practical terms, the reconstruction is consistent with the existing environment. Benefits of the project will include added safety and the prevention of earthen soils and existing structures from entering the beach or nearshore waters.

(7) Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district; and

Analysis. The action does not require the subdivision of land.

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

Analysis. A result of the project will be increased safety to the public by stabilizing the earthen cave that has formed along the backshore.



V. FINDINGS AND CONCLUSIONS

Processing of this Environmental Assessment is pursuant to Chapter 343 of the Hawaii Revised Statutes. The accepting authority has made a Finding of No Significant Impact (FONSI). This reasoning has been made in accordance with the criteria outlined in section §11-200-12 of the Department of Health's rules and regulations relating to environmental impact statements. This declaration is made with after the authority has considered all agency and public comments on the Draft Environmental Assessment.



LIST OF PREPARERS

Applicant	Warner C. Lusardi
Mancini, Rowland and Welch Attorneys at Law	Paul R. Mancini, Esq.
Arnold T. Okubo & Associates Consulting Structural Engineers	Arnold T. Okubo
Sea Engineering, Inc. Coastal Engineers	Bob Rocheleau Marc Erickson
Chris Hart & Partners Planning Consultant	Rory Frampton Robb Cole



VI. REFERENCES

County of Maui, Office of Economic Development. 1999. *Maui County Data Book*. Wailuku, Maui.

County of Maui, Department of Planning. 1991. *The General Plan of the County of Maui, 1990 Update*. Wailuku, Maui.

County of Maui, Department of Planning. 1996. *West Maui Community Plan*. Wailuku, Maui.

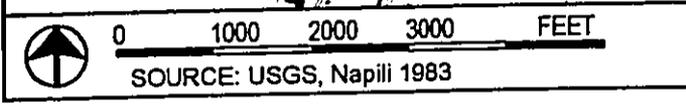
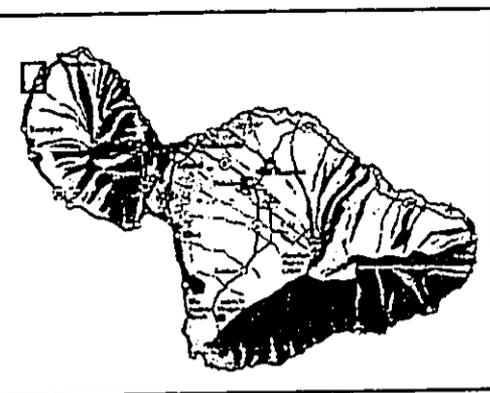
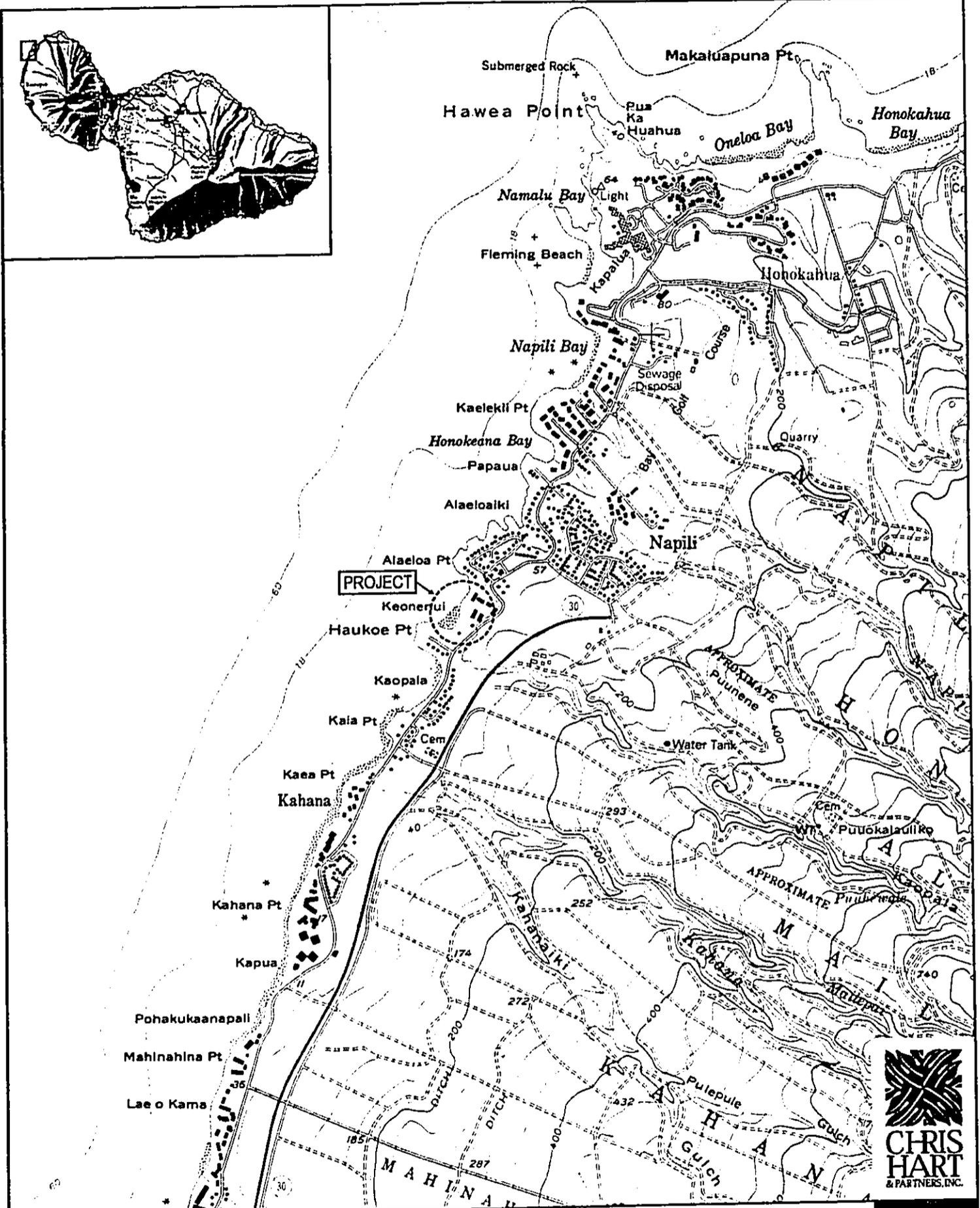
Environmental Planning Associates Inc. August 1990. *Maui Coastal Scenic Resources Study*. Prepared for the County of Maui, Department of Planning. Wailuku, Maui.

Makai Ocean Engineering, Inc. and Sea Engineering, Inc. June 1991. *Aerial Photographic Analysis Of Coastal Erosion On The Islands Of Kauai, Molokai, Lanai, Maui, and Hawaii*. Prepared for the State of Hawaii, Office of State Planning, Coastal Zone Management Program. Honolulu, Hawaii.

Office of Environmental Planning / Hawaii Department of Health. October 1987. *Water Quality Standards Map of the Island of Maui*



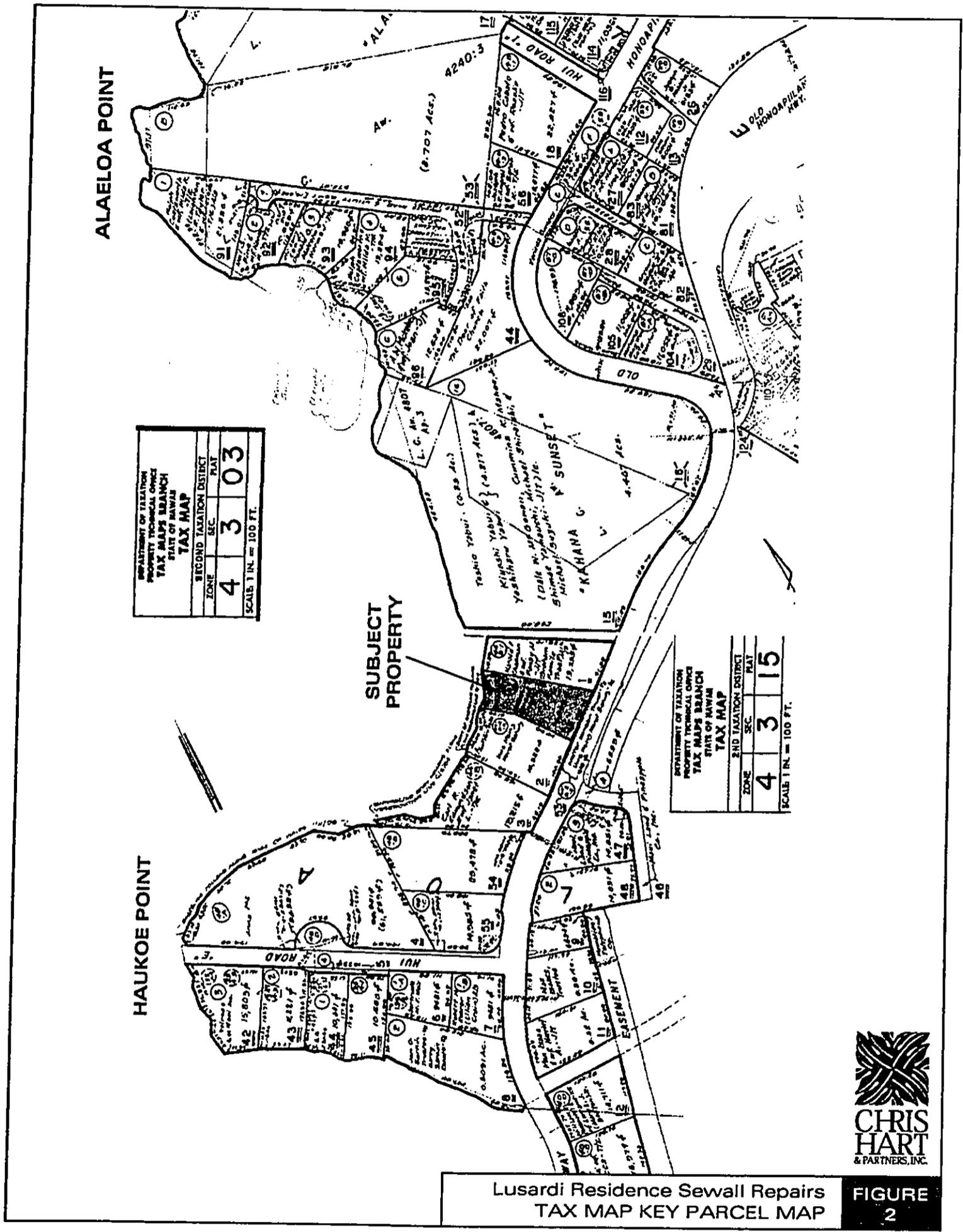
FIGURES



Lusardi Residence Sewall Repairs
LOCATION MAP



FIGURE 1



ALAELOA POINT

HAUKOE POINT

SUBJECT PROPERTY

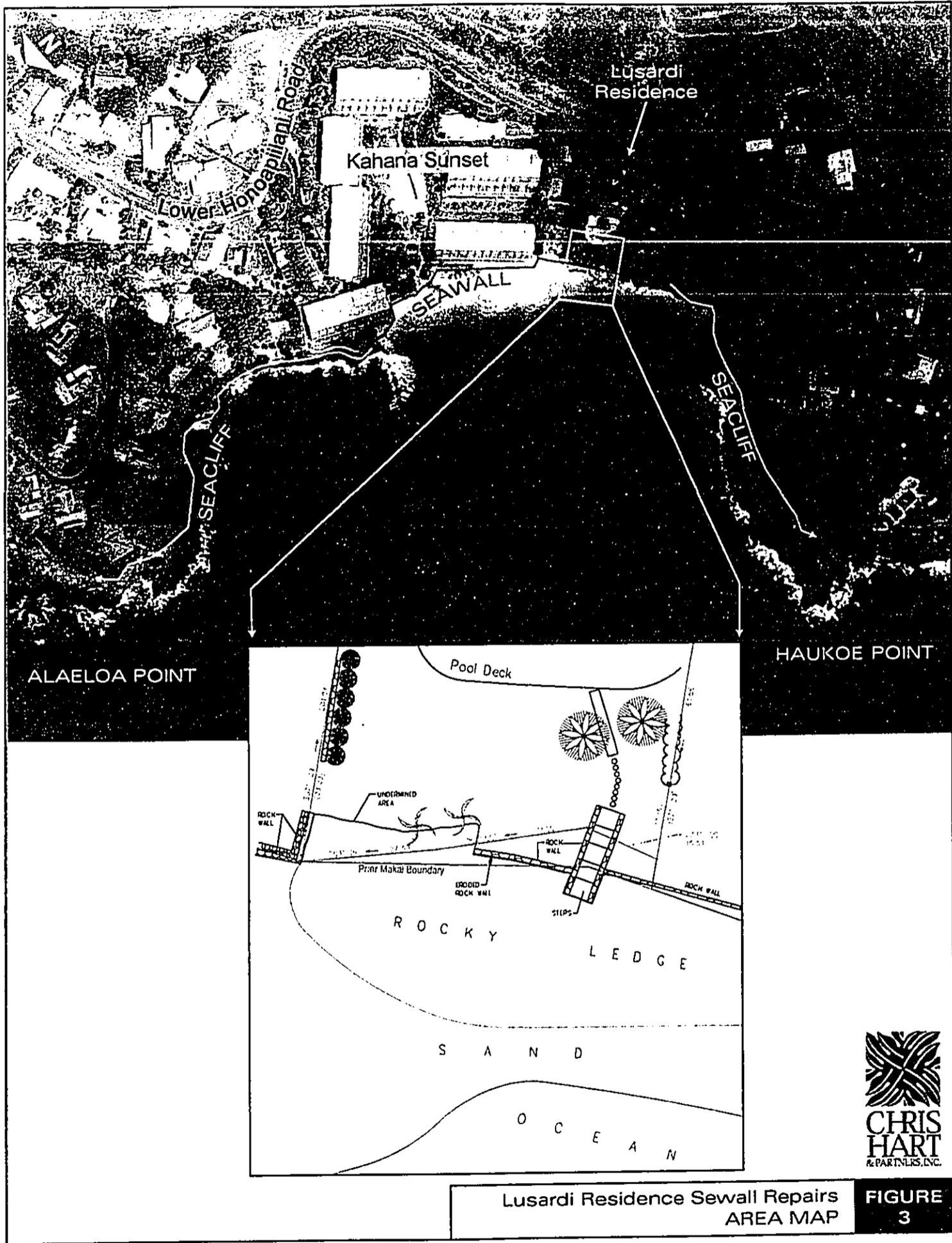
DEPARTMENT OF TAXATION PROPERTY TECHNICAL OFFICE TAX MAPS BRANCH STATE OF HAWAII TAX MAP			
SECOND TAXATION DISTRICT			
ZONE	SEC.	PLAT	
4	3	03	
SCALE 1 IN. = 100 FT.			

DEPARTMENT OF TAXATION PROPERTY TECHNICAL OFFICE TAX MAPS BRANCH STATE OF HAWAII TAX MAP			
2ND TAXATION DISTRICT			
ZONE	SEC.	PLAT	
4	3	15	
SCALE 1 IN. = 100 FT.			

Lusardi Residence Sewall Repairs
TAX MAP KEY PARCEL MAP



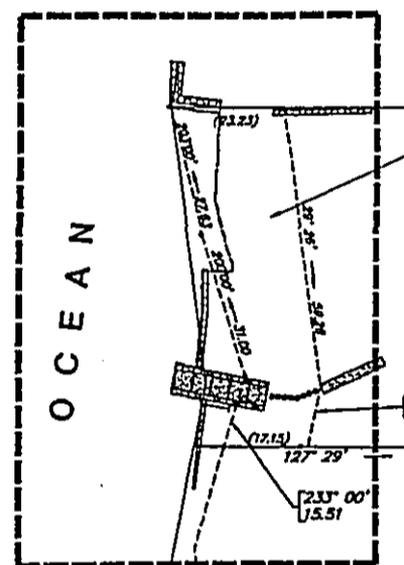
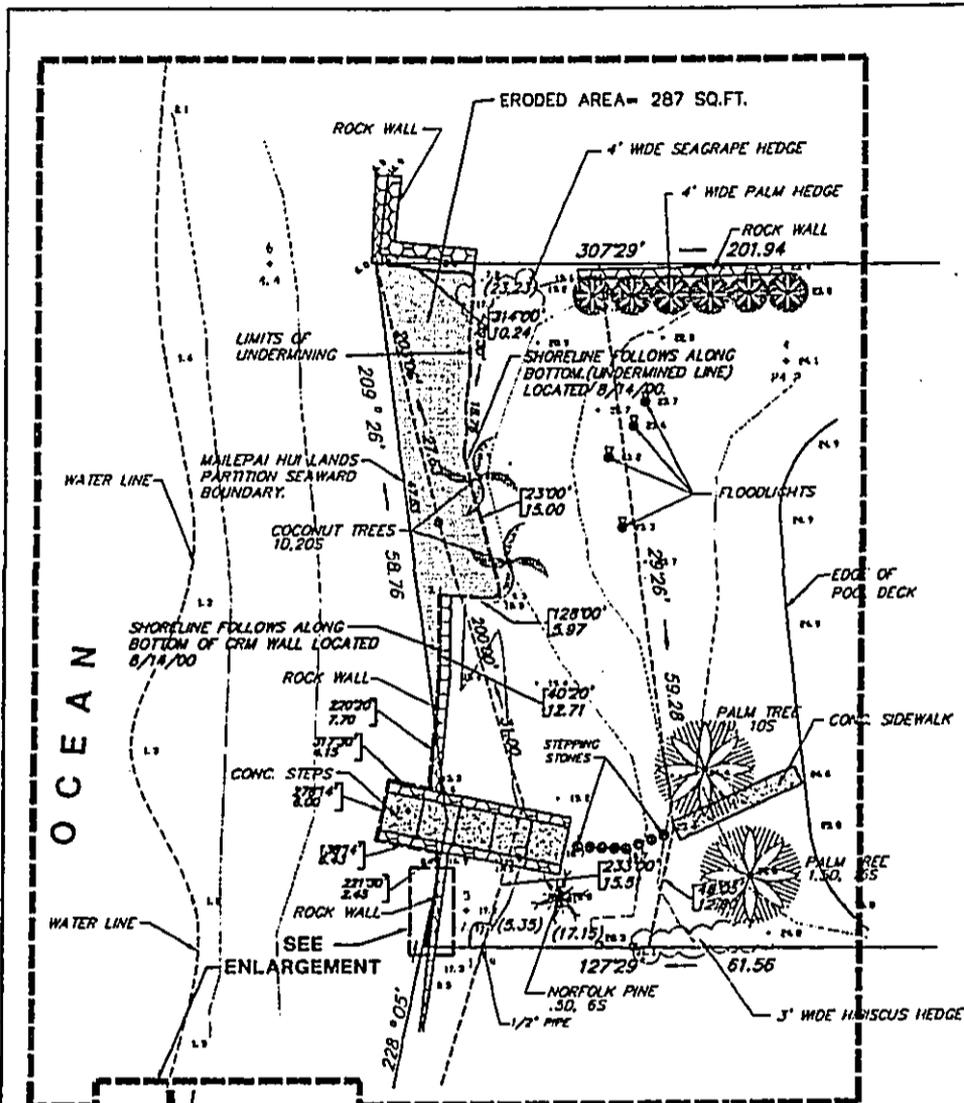
FIGURE
2



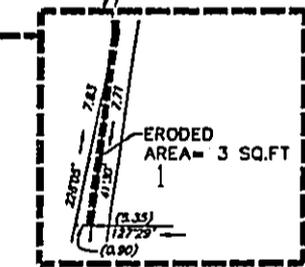
Lusardi Residence Seawall Repairs
AREA MAP



FIGURE
3



SEE INSET



ENLARGEMENT
SCALE: 1" = 4'

INSET
SCALE: 1" = 10'

OWNER:
WARNER C. LUSARDI
ADDRESS:
1570 LINDA VISTA DRIVE
SAN MARCOS, CA. 92069-3808

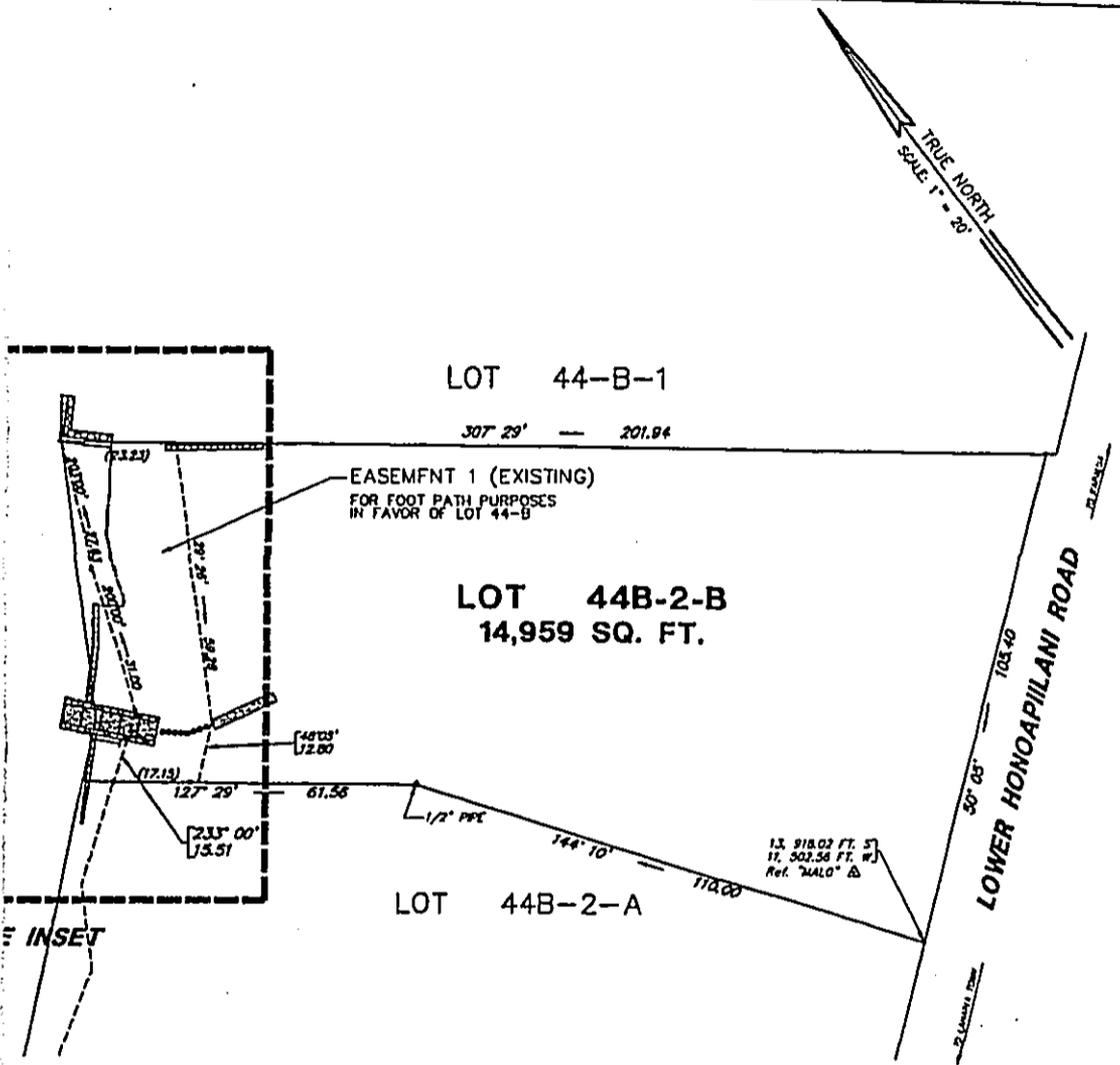
PRINTED
NOV 07 2001
BY TANAKA ENGINEERS, INC.

SHORELINE SURVEY
LOT 44B-2-
SMITH SUBDIVISION
Being a Portion of Royal Pali
Land Commission Award 5524
Being also a Portion of Allotment 44B
AT ALAELOA, KAANAPALI
MAUI, HAWAII

Tax Map Key (2)4-3-15: 52
871 KOLU STREET, SUITE 201
HONOLULU, HAWAII 96813

R. T. TANAKA ENGINEERS, INC.

Note: Provided only as a Site Survey, not a legal determination of the shoreline.



**PRELIMINARY SURVEY MAP
LOT 44B-2-B
WITH SUBDIVISION**

Portion of Royal Patent 1663
Mission Award 5524 to L. Konia
Division of Allotment 44b, Mallepa'i Hul Lands
**KAANAPALI, LAHAINA
MAUI, HAWAII**



THIS WORK WAS PREPARED BY ME
OR UNDER MY DIRECT SUPERVISION

KIRK T. TANAKA
Licensed Professional Land Surveyor
Certificate No. 7223

DATE

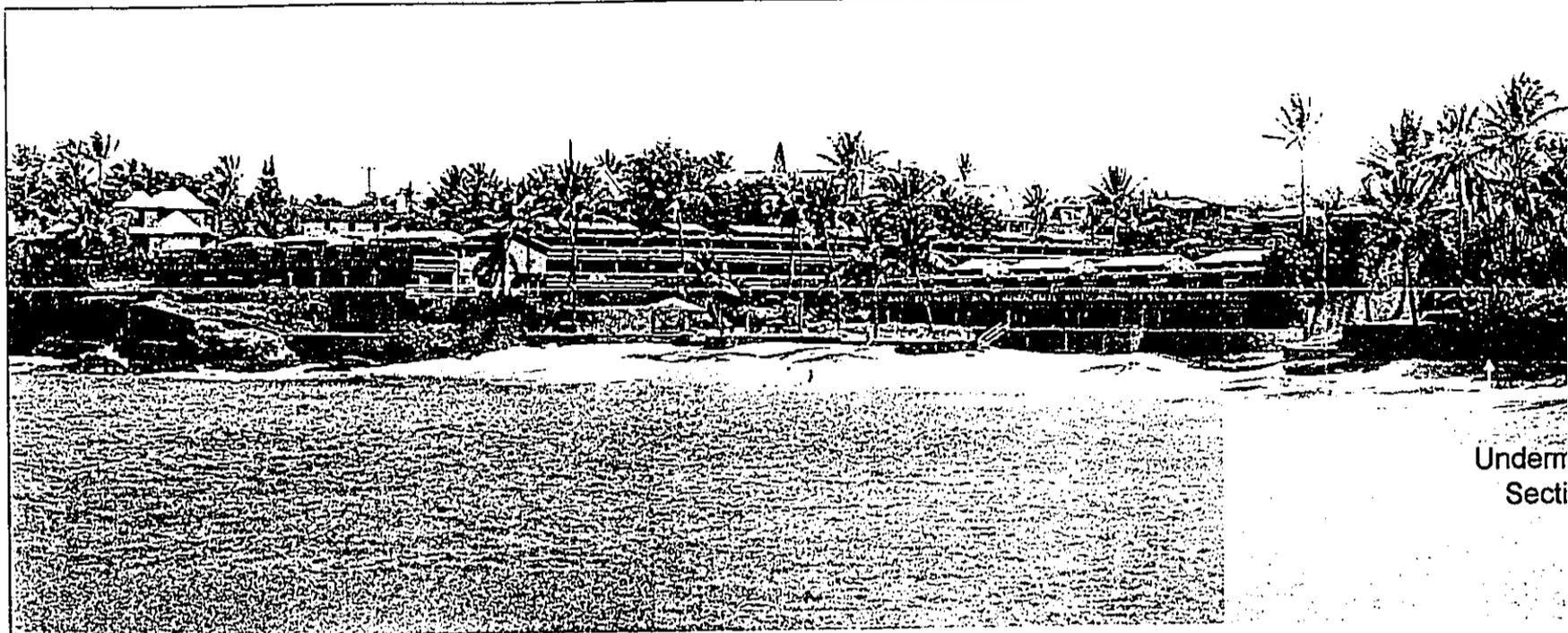
REVISED: NOVEMBER 18, 20K
AUGUST 25, 20K
JOB NO. 00-1

ENGINEERS, INC.

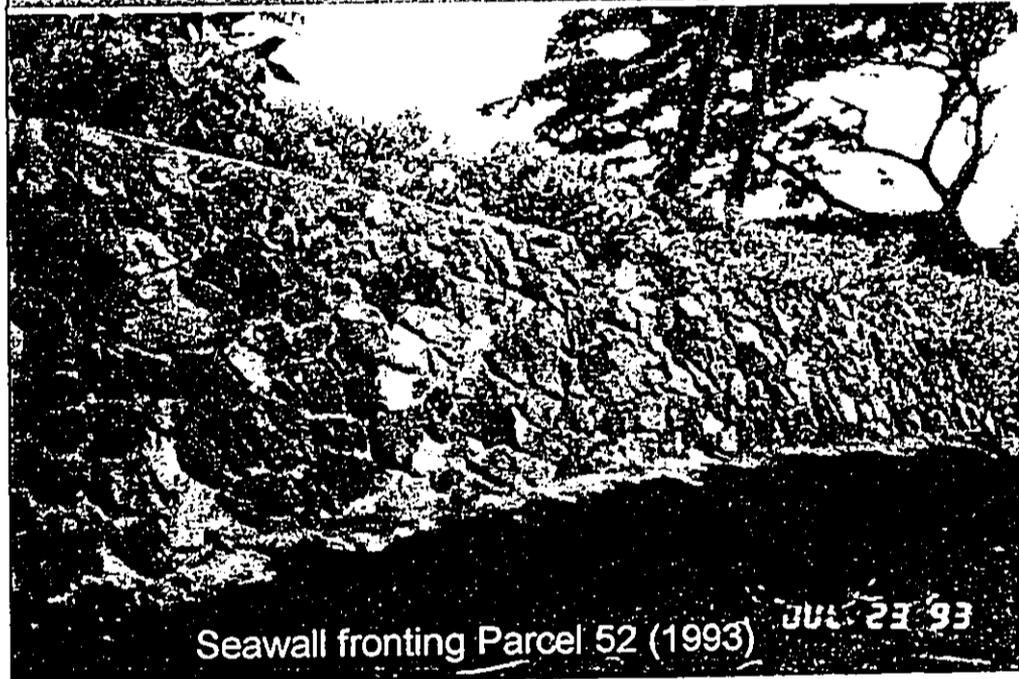


Lusardi Residence Seawall Repairs
SITE SURVEY

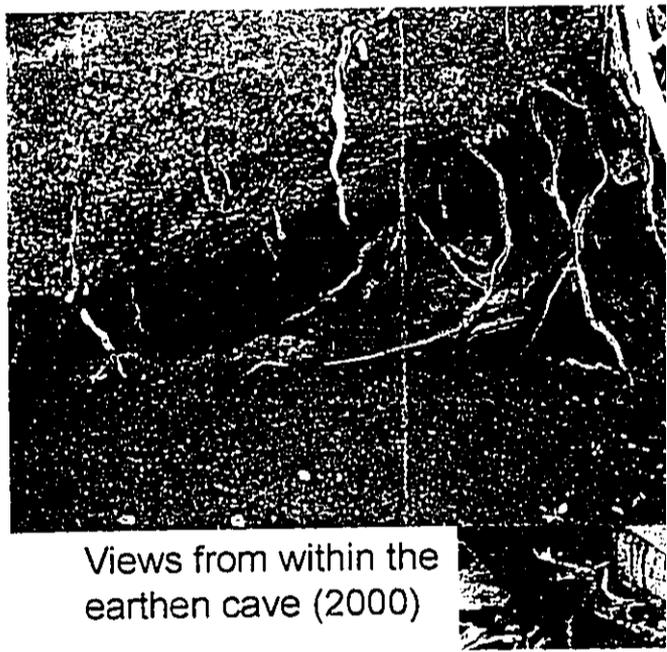
**FIGURE
4**



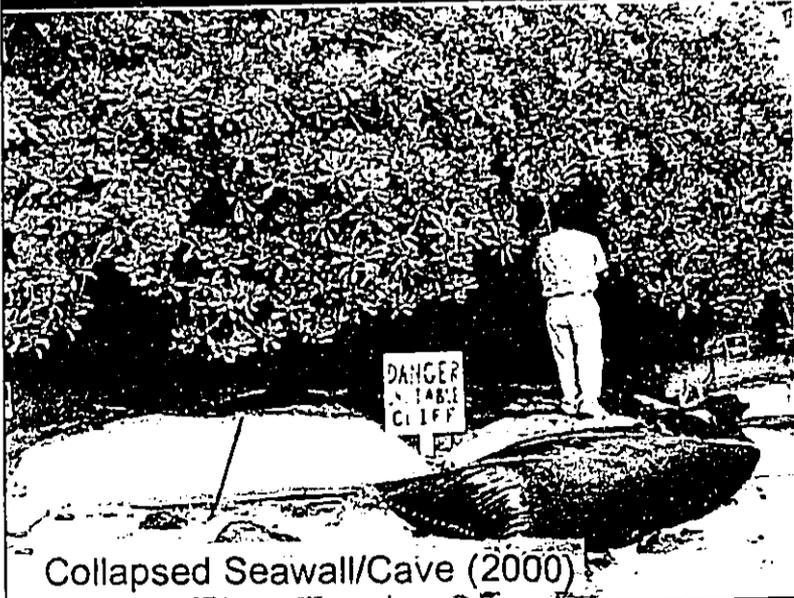
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Secti



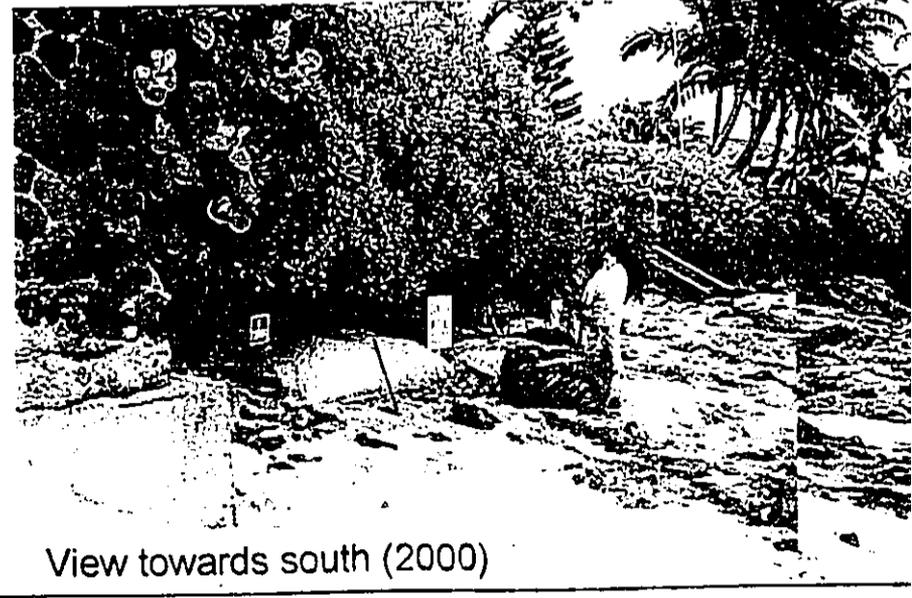
Seawall fronting Parcel 52 (1993)



Views from within the earthen cave (2000)



Collapsed Seawall/Cave (2000)



View towards south (2000)

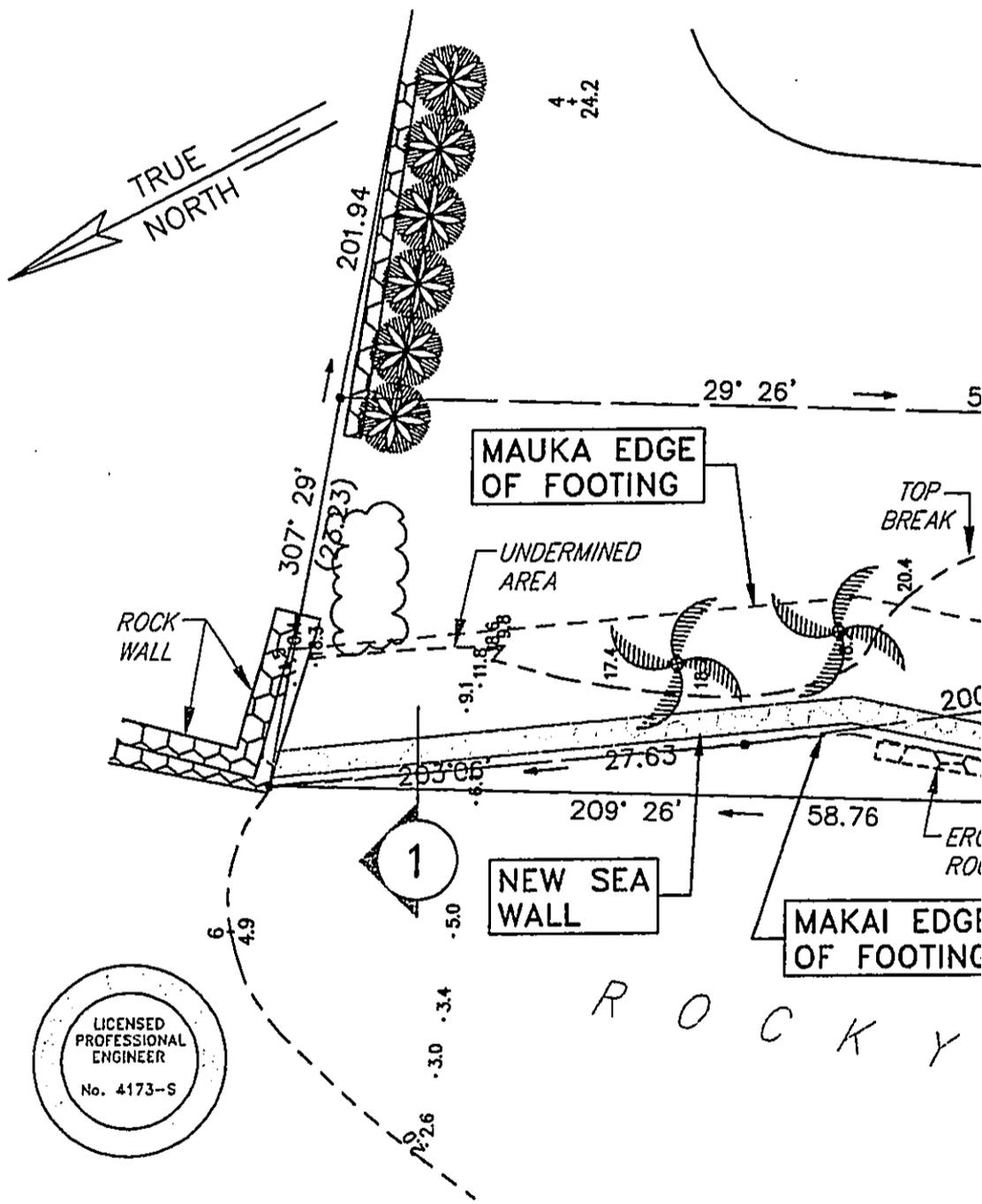


View of bay from Haukoe Point
(2001)

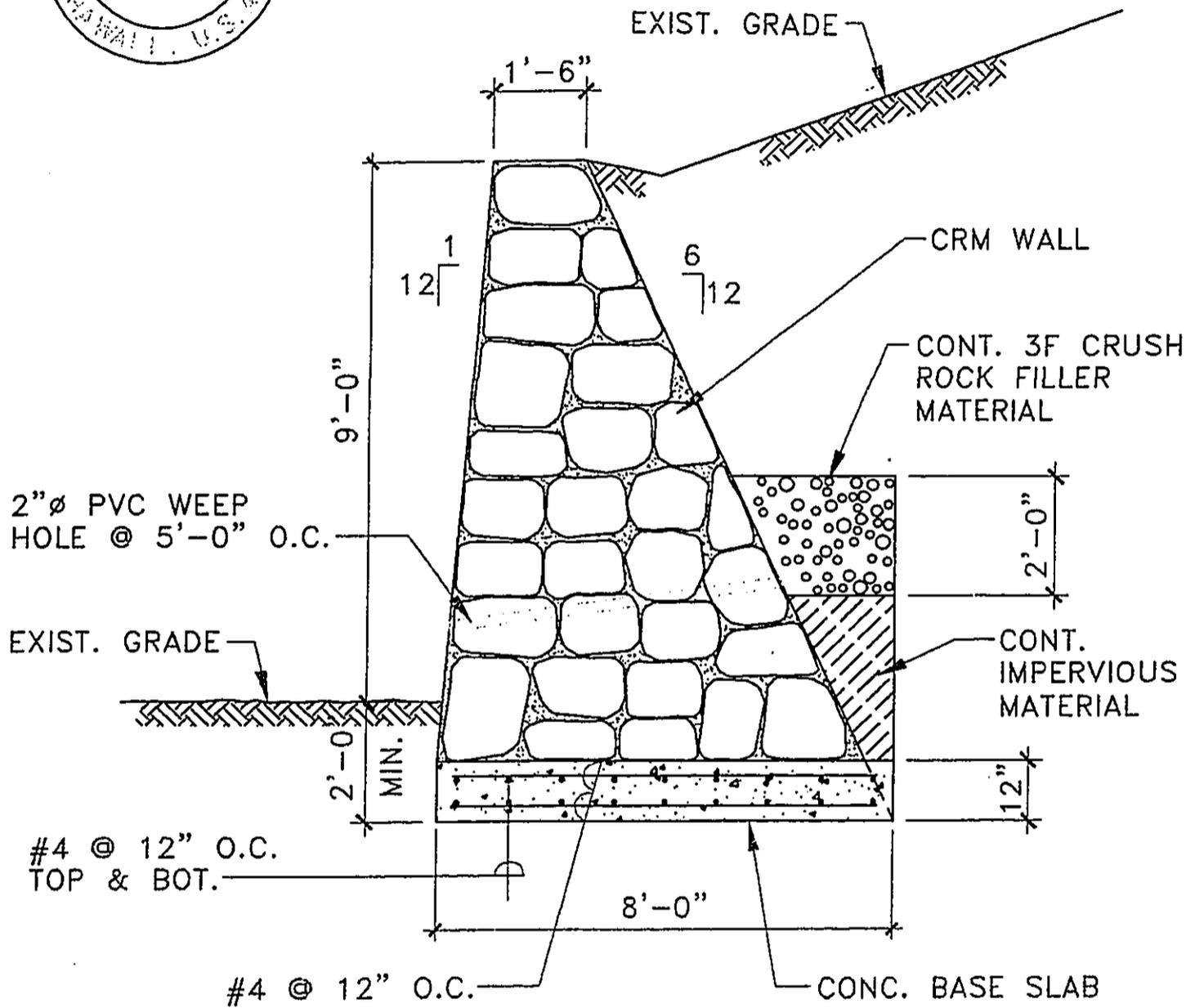


View atop undermined section (2000)





A SITE PLAN - NEW C
 SCALE: 1" = 10'



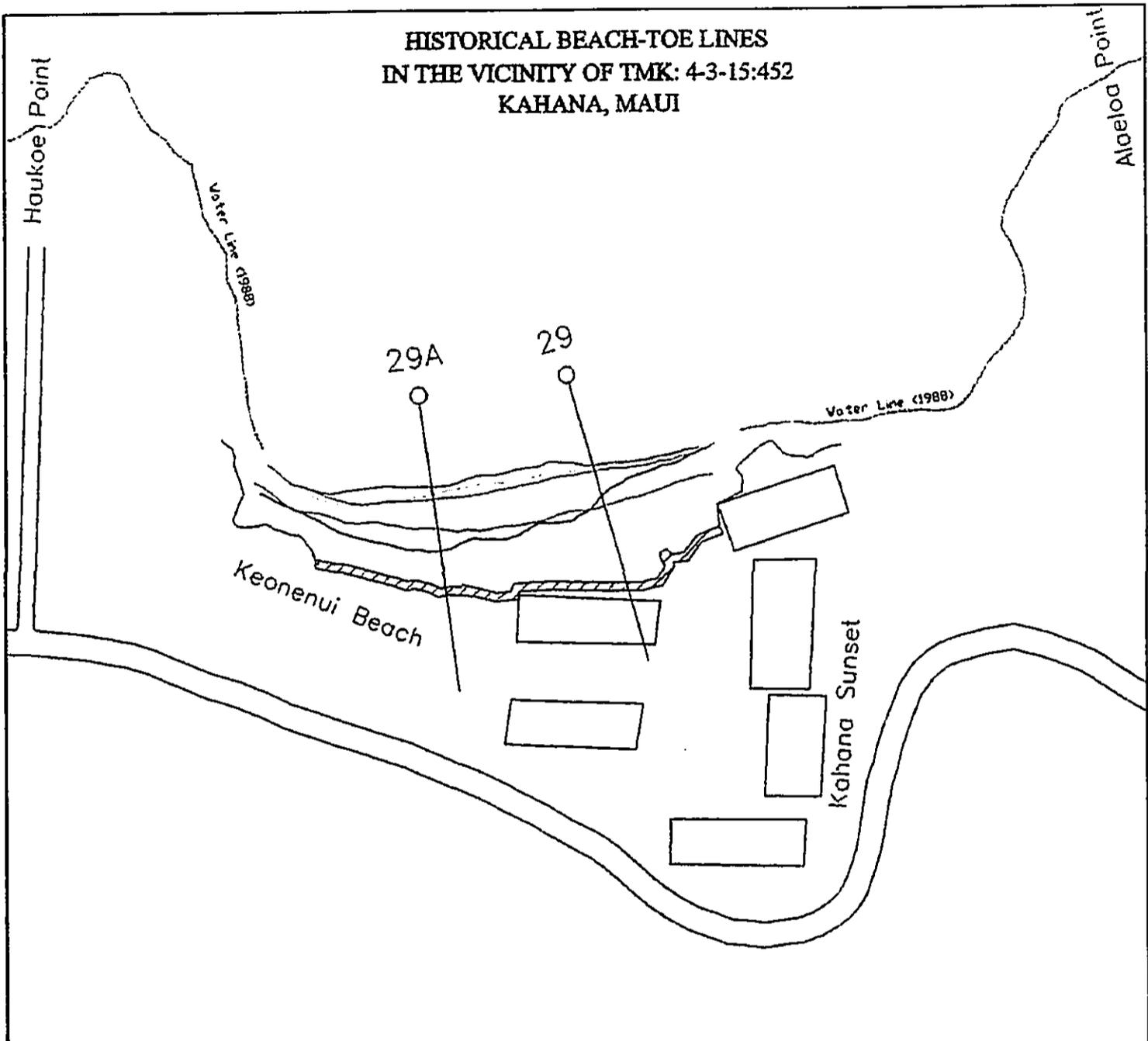
1 TYPICAL CRM WALL DETAIL
SCALE: 3/8" = 1'-0"



Lusardi Residence Seawall Repairs
CONSTRUCTION DETAILS

FIGURE
6B

HISTORICAL BEACH-TOE LINES
 IN THE VICINITY OF TMK: 4-3-15:452
 KAHANA, MAUI



BEACH-TOE LINE CHANGES (FT) SINCE 1949

	Trans-29	Trans-29A
November 1949	0	0
March 1975	-8	-15
July 1987	-39	-78
March 1988	-4	-10
May 1997	-52	-52

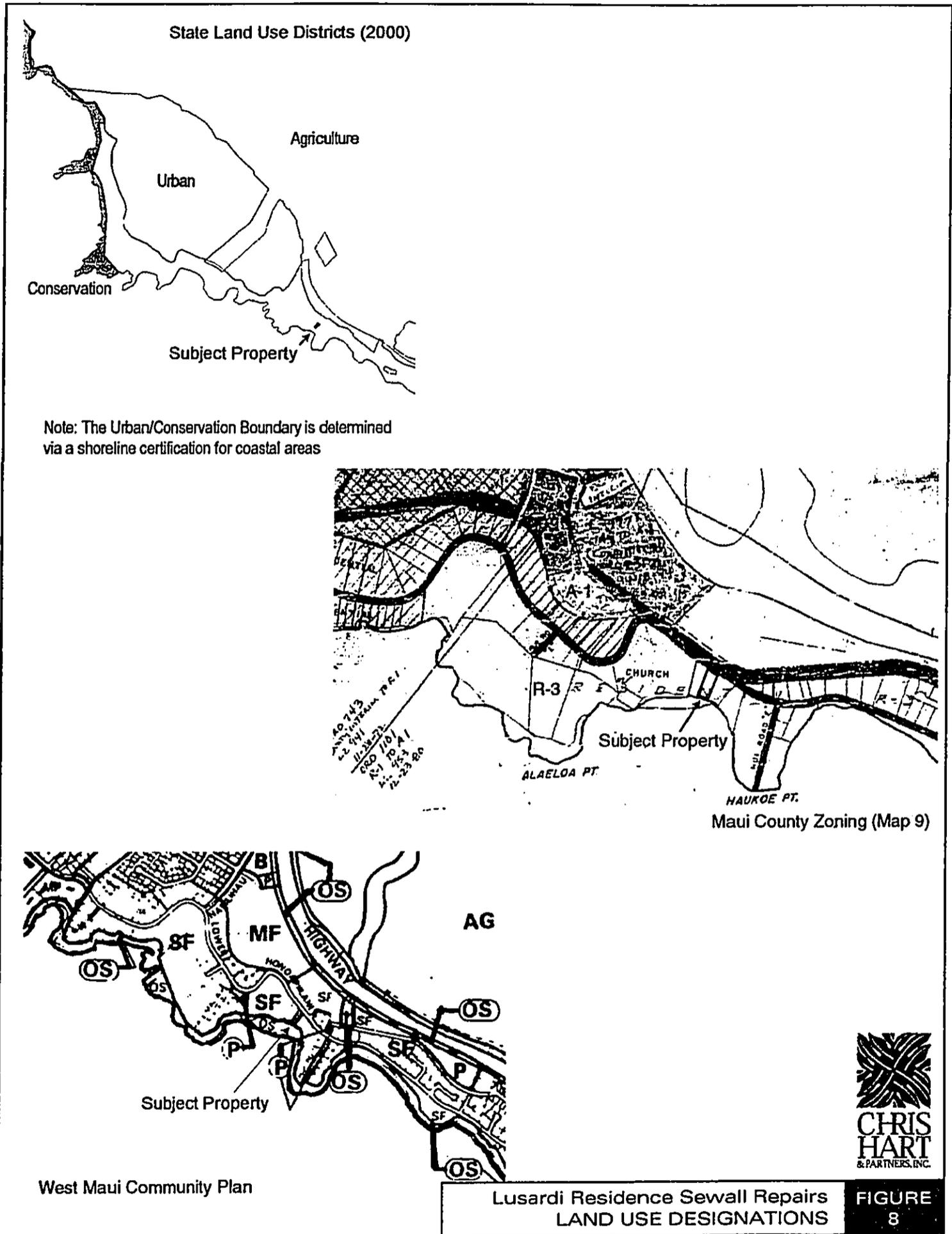


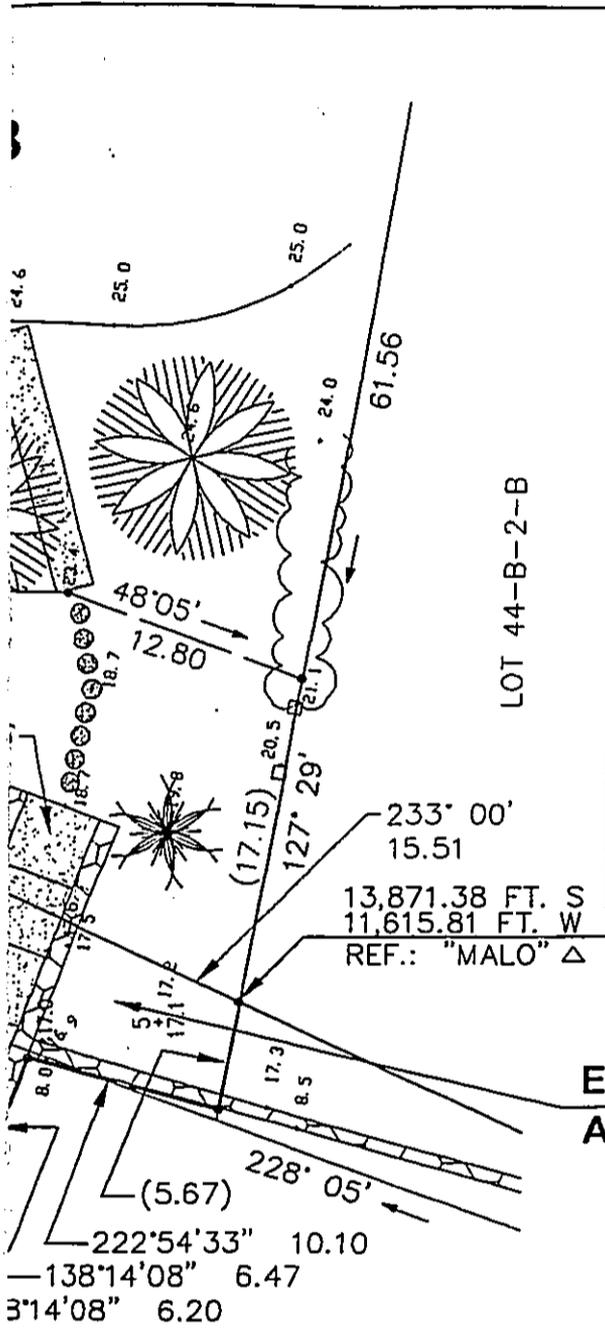
Source: Sea Engineering Inc.



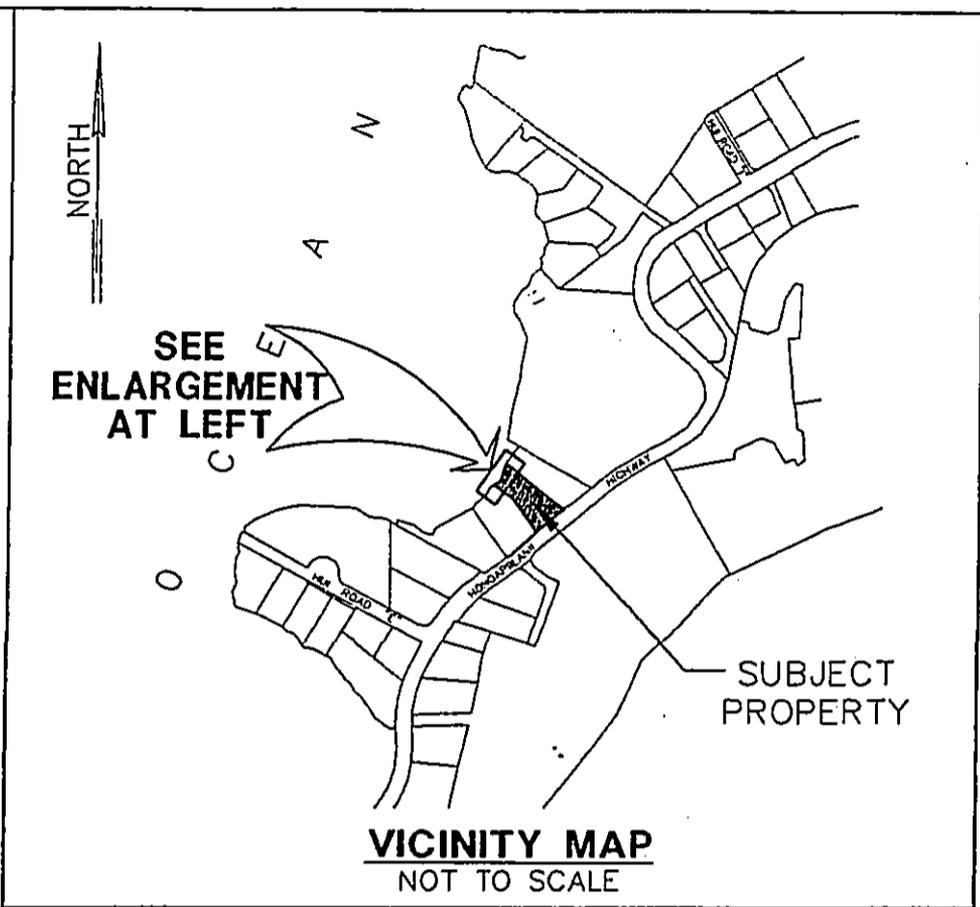
Lusardi Residence Sewall Repairs
 COASTAL HISTORY MAP

FIGURE
 7





EASEMENT
Area= 261 Sq. Ft.



THIS WORK WAS PREPARED BY ME
OR UNDER MY DIRECT SUPERVISION

FT

ENT FOR SEA WALL

SEASHORE

RNER C. LUSARDI

A, MAUI, HAWAII

KIRK T. TANAKA
Licensed Professional Land Surveyor
Certificate No. 7223

DATE

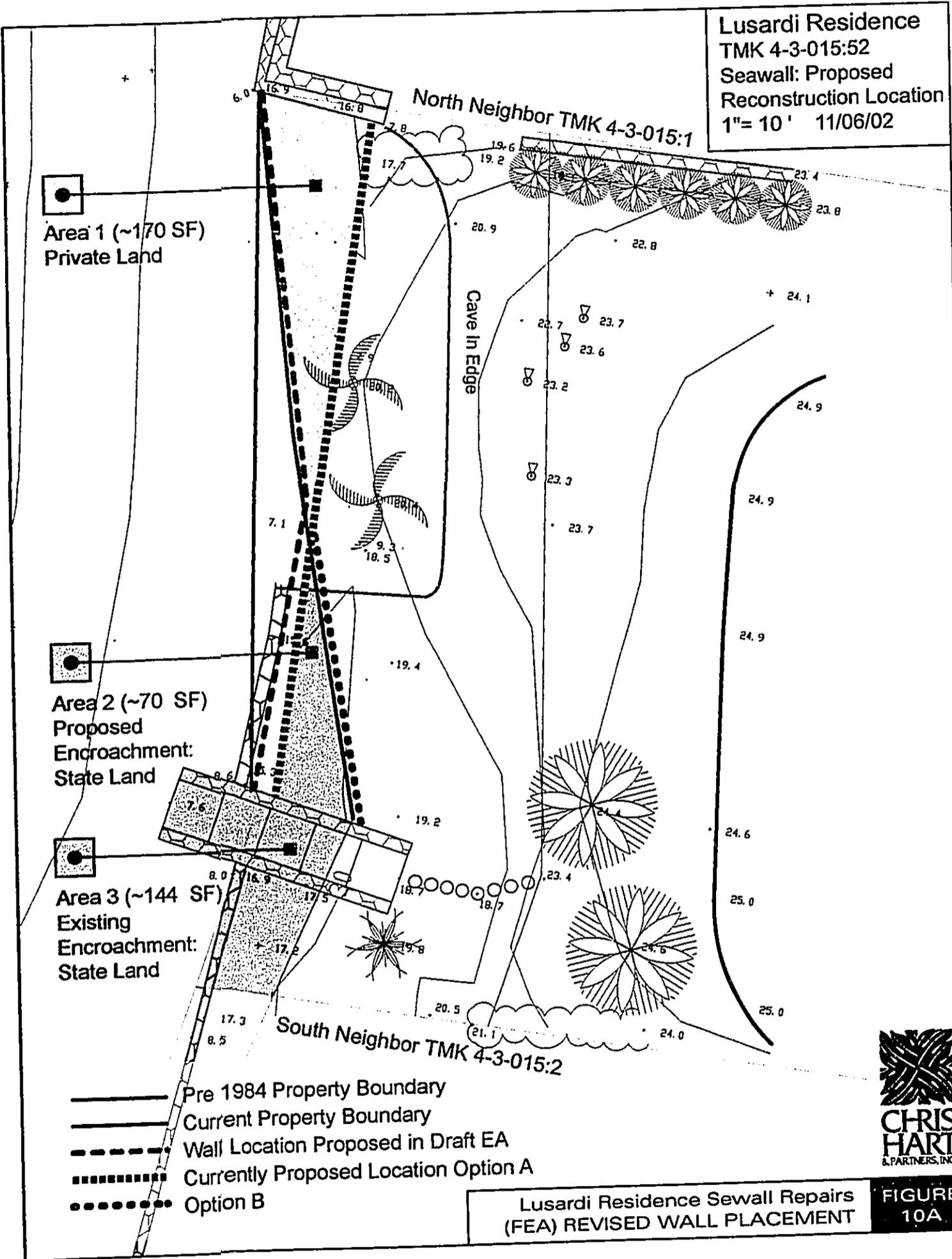
DECEMBER 17, 2001

ENGINEERS, INC.
& STRUCTURAL ENGINEERS

Lusardi Residence Seawall Repairs
PROPOSED EASEMENT

FIGURE
9

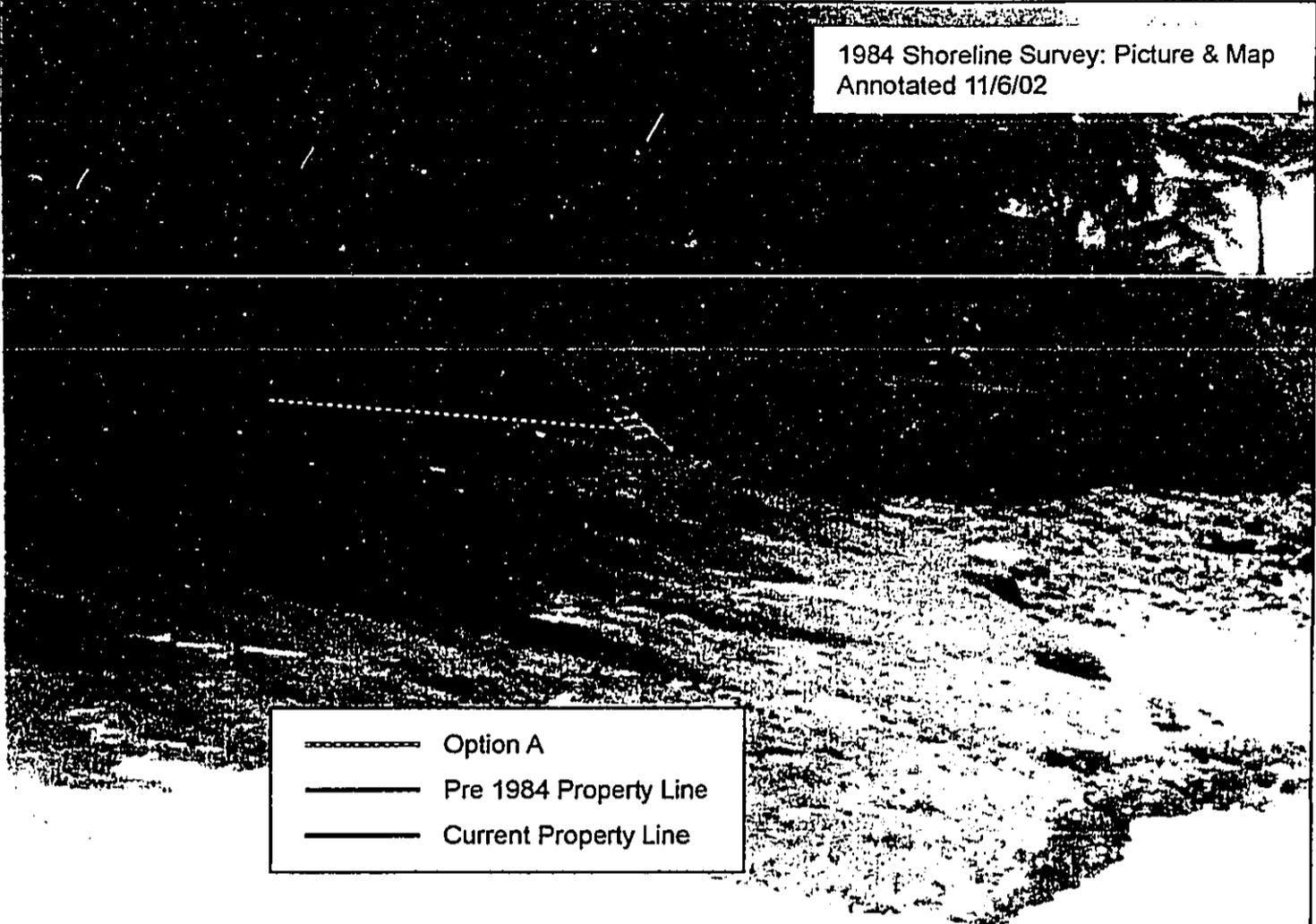
Lusardi Residence
 TMK 4-3-015:52
 Seawall: Proposed
 Reconstruction Location
 1" = 10' 11/06/02



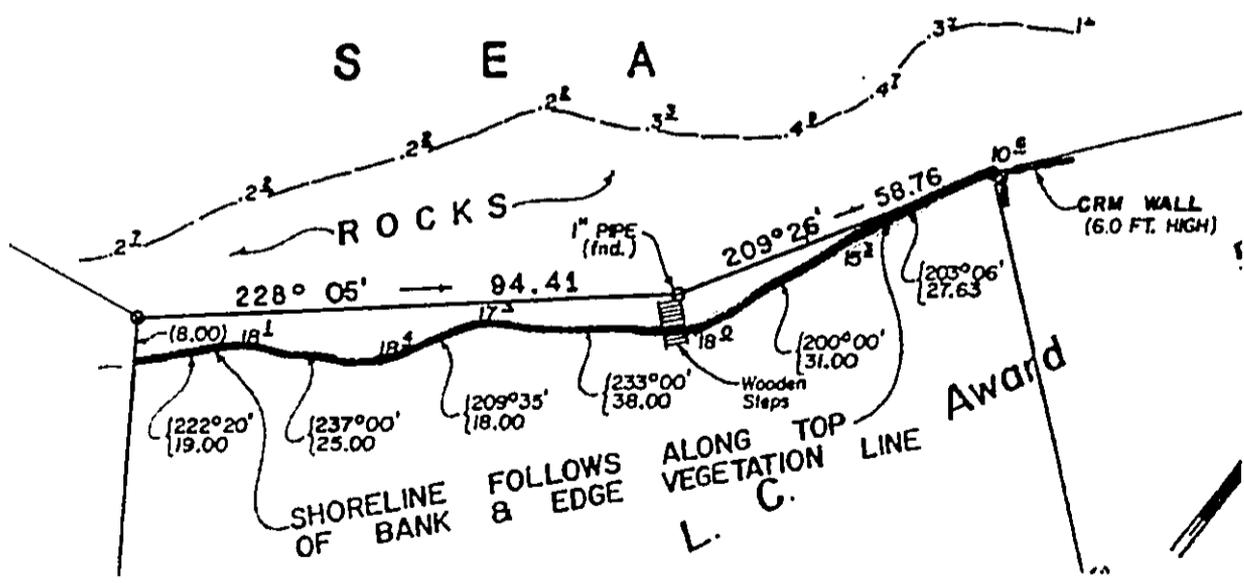
Lusardi Residence Sewall Repairs (FEA) REVISED WALL PLACEMENT

FIGURE 10A

1984 Shoreline Survey: Picture & Map
Annotated 11/6/02

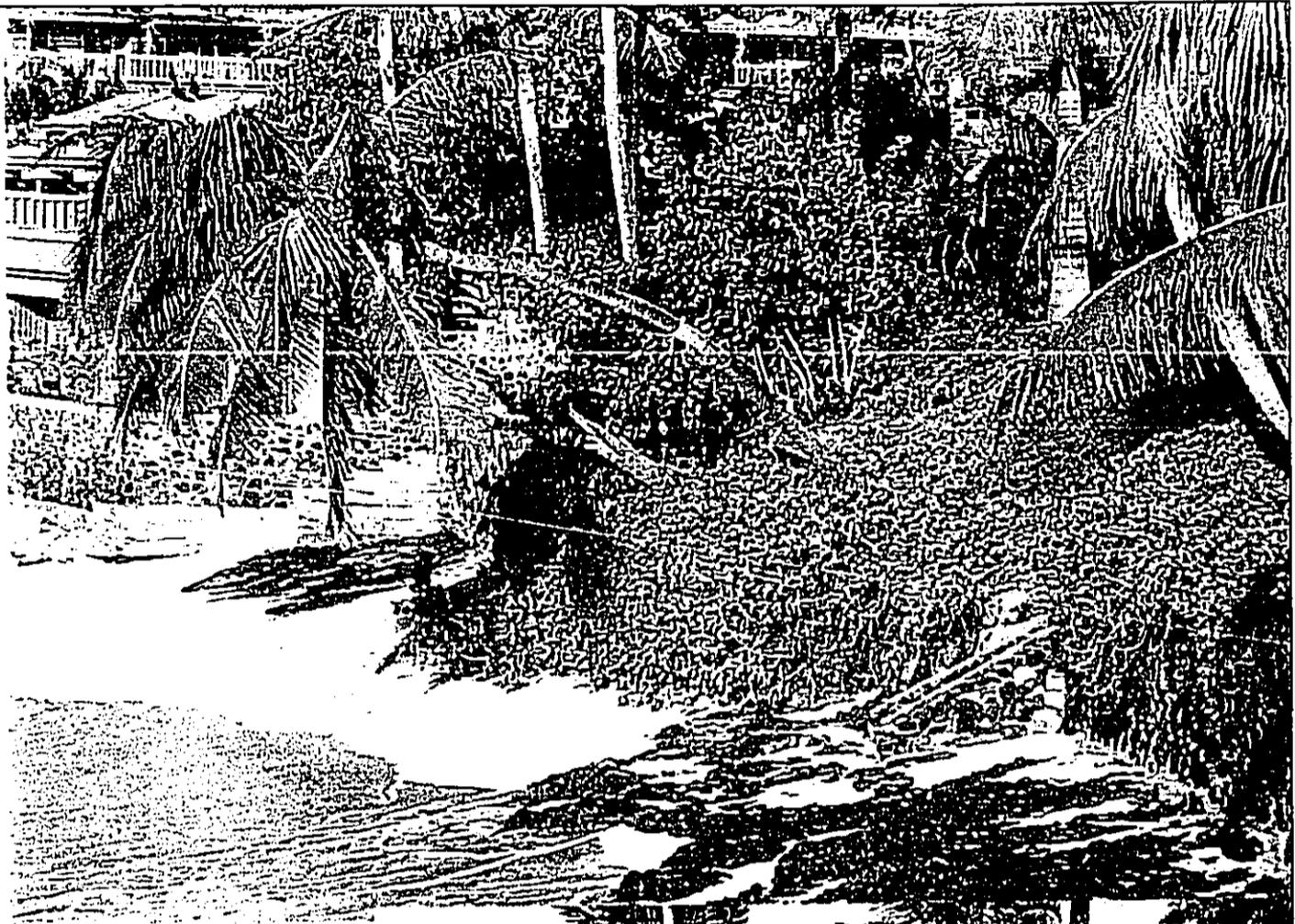


- Option A
- _____ Pre 1984 Property Line
- _____ Current Property Line

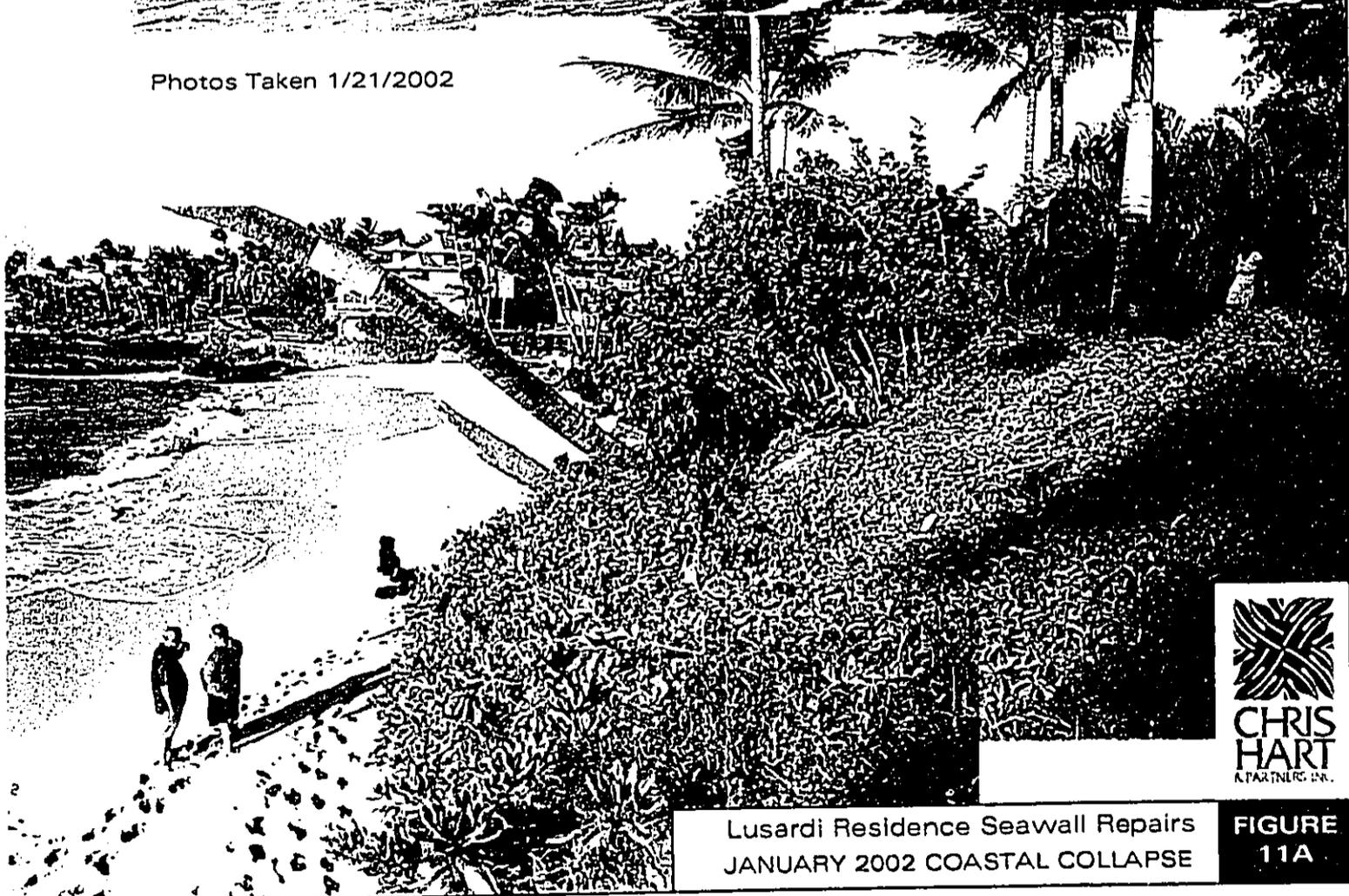


Lusardi Residence Sewall Repairs
(FEA) REVISED WALL PLACEMENT

FIGURE
10B



Photos Taken 1/21/2002

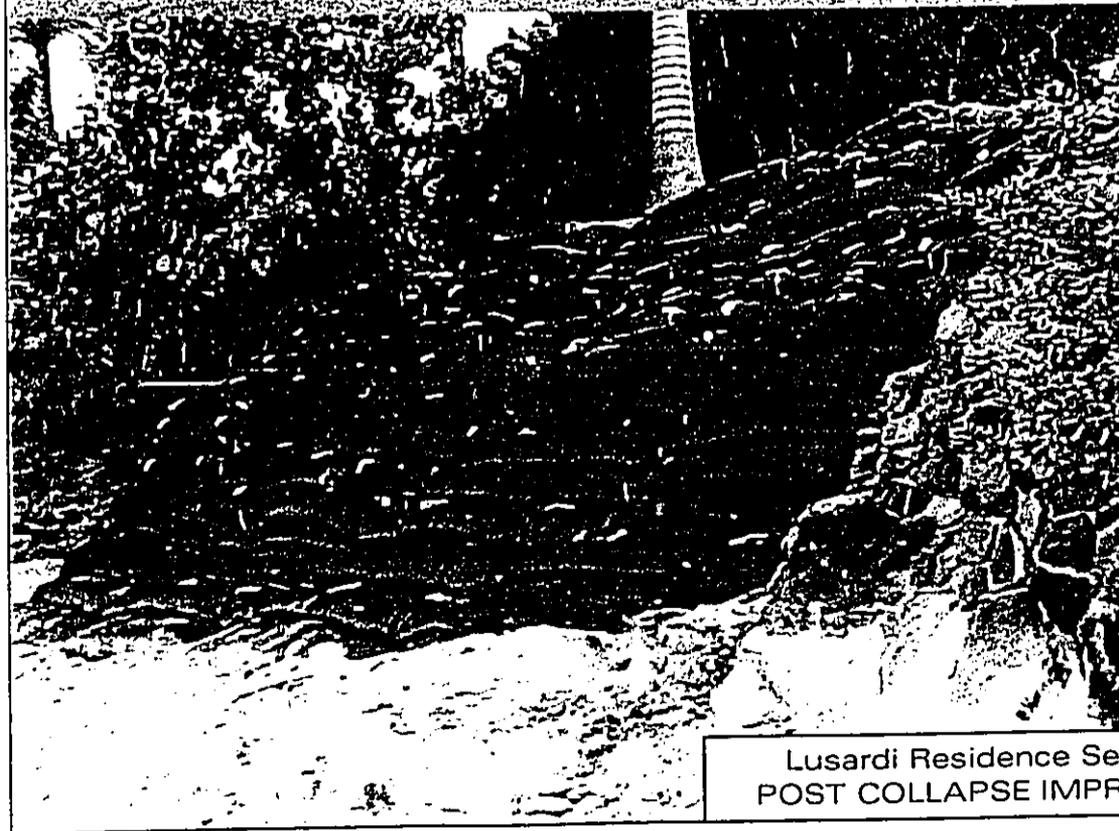


Lusardi Residence Seawall Repairs
JANUARY 2002 COASTAL COLLAPSE

FIGURE
11A



Above: 3/8/2002
Site visit with DLNR.
Hanging coconut tree
and other vegetation
removed from debris

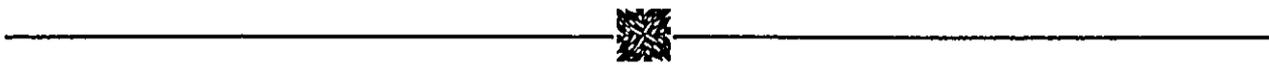


Left: 7/31/2002
Post excavation with
arrangement of large
sand bags



Lusardi Residence Sewall Repairs
POST COLLAPSE IMPROVEMENTS

FIGURE
11B



APPENDIX A
COASTAL EVALUATION

**COASTAL EVALUATION
FOR THE
WARNER LUSARDI PROPERTY
NĀPILI, MAUI**

Prepared for:
Mancini, Rowland & Welch
The Kahului Building
33 Lono Avenue, Suite 470
Kahului, Maui 96732-1681

Submitted by:
Sea Engineering, Inc.
Makai Research Pier
41-202 Kalaniana'ole Highway, Suite 8
Waimānalo, Hawai'i 96795

December 2001

#20-28

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COASTAL EVALUATION FOR THE WARNER LUSARDI PROPERTY, NĀPILI, MAUI

1. INTRODUCTION

The Lusardi property along Keonenui Beach in the Nāpili region of Maui currently contains a 35-foot long segment of land fronting the beach that is being eroded inland. A seawall protecting this segment failed in 1997 and was removed. The erosion is undermining the earthen bank, and creating a hazardous overhang, and is also threatening the seawall and property of the neighbor to the north. A vertical wall is proposed to protect the eroding property, tie in to the adjacent walls and replace the remnants of the existing wall. This report presents a coastal engineering evaluation and environmental assessment for the proposed wall, including a description of oceanographic and shoreline conditions, a determination oceanographic design criteria that might affect wall design, and an evaluation of possible environmental impacts.

The project location and study area are shown in Figure 1, and an aerial photograph of the study area is shown in Figure 2. The shoreline along this coast is characterized by a series of embayments between headlands. Keonenui Beach is located between Haukoe Point to the south, and `Alaeloa Point to the north. The property plan is shown in Figure 3. This figure shows the location of the eroded segment of property boundary and the remnant existing wall to the north of the steps.

2. OCEANOGRAPHIC SETTING

The project site is on the west-northwest coast of the island at the foot of the West Maui Mountains. The site is protected from prevailing tradewinds by the mountains, and is somewhat sheltered from waves by the surrounding islands of Moloka'i, Lāna'i, and Kaho'olawe.

2.1 Winds

The predominant winds in the Hawaiian Islands are the northeast tradewinds. During the summer months of April through October, the tradewinds occur 80-95 percent of the time with average speeds of 10-20 mph. The tradewind frequency decreases to 50-60 percent of the time during the winter months, when southerly or "Kona" winds may occur. Kona winds are generally associated with local low pressure systems. Kona conditions occur about 10 percent of the time during a typical year, with winds ranging from light and variable to gale strength. A severe, relatively long duration Kona storm which occurred in January 1980 produced sustained wind speeds of 30 mph, with gusts in excess of 50 mph from the southwest. Winds of hurricane strength occur infrequently in Hawai'i, but they are important for design purposes because of their intensity.

The blocking effect of the West Maui mountains decreases the influence of tradewinds in the Kahana-Nāpili area. As a result, a land-sea breeze condition caused by the diurnal heating and cooling of the land often predominates in coastal areas.

2.2 Waves

The general Hawaiian wave climate can be described by five primary wave types: 1) northeast tradewind waves generated by the prevailing northeast winds; 2) north Pacific swell generated by mid-latitude low pressure systems; 3) southern swell generated by mid-latitude storms of the southern hemisphere; 4) Kona storm waves generated by local low pressure storm systems; and 5) hurricane waves generated by nearby tropical storms and hurricanes. Northeast tradewind waves occur throughout the year, but the other wave types have seasonal distributions. North Pacific swell and Kona storm waves typically occur from October through March during the northern hemisphere winter. Conversely, southern swell typically occurs from April through September during the southern hemisphere winter. Hurricanes and tropical storms are also summer and fall phenomena.

The shorelines within the study area are directly exposed to deepwater waves from the sector 170° clockwise to 220° true north and to waves from approximately due west (Figure 4). The study area is well protected from the northeast tradewind waves by the island of Maui itself. North Pacific swell approaches from the sector west through north.

Typical deepwater heights are 5 to 15 feet, but higher waves can occur, and 20-foot waves occur on at least an annual basis. Although the project coast is partially sheltered from west and west northwest swells by the island of Moloka'i, some north swell energy refracts and diffracts around the east end of Moloka'i to reach the area. Wave heights are typically one-third to one-half that of waves on fully exposed coasts.

Southern swell is generated from mid-latitude winter storms in the southern hemisphere. These waves must travel long distances in order to reach the Hawaiian Islands, and are characteristically long and low, with deep water wave heights of 1 to 6 feet and wave periods of 12 to 20 seconds. Their approach can vary from southeast through southwest. Kona storm waves are locally generated by southerly winds associated with nearby winter storms. They may have wave heights over 10 feet, with periods of 8 to 10 seconds. Kona storm waves approach from the south to the west, with the largest waves usually coming from the southwest. Deepwater wave heights during the severe Kona storm of January 1980 were about 17 feet with a period of 9 seconds. The islands of Lāna'i and Kaho'olawe partially block both southern swell and Kona storm waves from reaching the study area.

2.3 Storms

There are two distinct types of storms that typically affect the Hawaiian Islands. These are Kona storms and tropical cyclonic storms. Kona storms occur when the winter low pressure systems that travel across the North Pacific Ocean dip south and approach the islands. Southerly winds generated by these storms not only cause Kona storm waves, but bring considerable precipitation to the normally dry leeward coasts. Hurricanes, the worst-case tropical cyclonic storms, are caused by intense low pressure vortices that are usually spawned in the eastern tropical Pacific Ocean and travel westward. While they typically pass south of the Hawaiian Islands, their paths are unpredictable and they will occasionally pass near or over the islands. In recent years Hurricane 'Iwa (1982) and Hurricane 'Iniki (1992) directly hit the island of Kaua'i. Damage from these hurricanes was extensive, not only on Kaua'i, which was subject to both high wind and waves, but also along coastal areas of other islands exposed to the large hurricane storm waves.

2.4 Tides

The tides in the Hawaiian Islands are semi-diurnal in nature, with pronounced diurnal inequalities (i.e. two tidal cycles per day with the range of water level movement being unequal). The nearest official tide station to the project site is at Lahaina. Based on National Oceanic and Atmospheric Administration (NOAA) tide prediction tables, the tides at Lahaina are:

Highest Tide (estimated)	1.6 feet
Mean Higher High Water	1.2 feet
Mean High Water	0.7 feet
Mean Tide Level	0.0 feet
Mean Low Water	-0.7 feet
Mean Lower Low Water	-1.0 feet

These values are referenced to the Mean Tide Level datum, which is approximately equal to Mean Sea Level. The MSL datum is used for the reference elevation in this report.

2.5 Currents and Circulation

Local currents in the Hawaiian Islands are generally driven by the semi-diurnal tides. Current measurements conducted by SEI off Kā'anapali in 1986 showed ebb tide currents flowing to the north and flood tide currents directionally inconsistent, flowing both north and south. The change in current direction lags the tide change by one to two hours. North flowing currents are stronger than south flowing currents with average speeds of about 0.25 knots (0.29 mph). Flood tide currents flow at about half the speed of ebb tide currents.

The presence of the headlands shelters the nearshore zone at the project site from the tidally driven currents offshore. The nearshore circulation is greatly affected by the presence of reefs and breaking waves. Depending on the direction of approach, waves will drive currents inside the bay in either direction along the beach.

2.6 Tsunamis and FIRM Designation

About 85 tsunamis have been observed in Hawai'i since 1813, with 15 resulting in serious damage. Four tsunamis have occurred in recent history, occurring in 1946, 1957, 1960, and 1964. The 1946 tsunami was the most destructive to ever hit Hawai'i. Tsunami wave runup heights at Kai'a Point, 1500 feet south of the project site, reported by Loomis (1976) for the 1946, 1957, and 1960 tsunamis were 24 feet, 9 feet, and 10 feet, respectively.

The Flood Insurance Rate Map (FIRM) designation for the project site is V24 with a base elevation of 17 feet. This designation corresponds to "areas of 100-year coastal flood with velocity (wave action)".

3. SHORELINE AND PROJECT SITE DESCRIPTION

The Lusardi property is located along Keonenui Beach, between 'Alaeloa Point and Haukoe Point on the northwest coast of Maui, about 3500 feet south of Nāpili Bay (Figures 1 and 2). The beach is a pocket beach typical of this stretch of coastline. It is about 500 feet long, nestled between the headlands, which protrude about 400 to 500 feet seaward (Figure 2). The backshore along the north half of the beach is occupied by the Kahana Sunset resort and condominiums (Figure 2). The backshore along the southern half of the beach is occupied by four single family homes; the Lusardi property is the second property to the south of the Kahana Sunset (Figure 2). Vertical rock walls protect the properties along the entire length of the sand beach.

Sea Engineering, Inc. and a survey crew from R.T. Tanaka Engineers conducted a site visit on August 21, 2001 to document existing conditions at the project site and along the surrounding shoreline. Six shoreline profiles were measured from the rock walls occupying the backshore to water depths of approximately 5 feet. The profiles were measured in the following locations: two in front of the Lusardi property, one 150 feet to the north in front of the Kahana Sunset, one 40 feet to the north, one 20 feet to the south and one 80 feet to the south. The site plan and shoreline profiles prepared by Tanaka Engineers are presented in Figures 3, 5 and 6 and in Appendix A. Photographs of the project site and shoreline are presented in Figures 7 to 11.

North of the Lusardi property, the shoreline consists of a sandy beach. The sand extends 50 to 70 feet from the rock walls protecting the properties to the water line (Figure 7). In front of the Kahana Sunset, the beach is about 70 feet wide and slopes 1V:9H to an elevation of about 10 feet mean sea level (msl) at the base of the rock wall protecting the resort buildings (cross section 1, Figure 6, Appendix A). In front of the neighboring property to the north of the project site, the beach narrows to a width of about 50 feet and slopes 1V:6.8H (cross section 2, Figure 6, Appendix A).

Beginning at the Lusardi property, the shoreline transitions from sandy beach to an irregular, rough rocky shore (Figures 8 and 9). The rock is a conglomerate with a soft silt/clay matrix, and 40% rock clasts ranging in size from 0.2 to 1 foot in diameter (Figure 11, bottom). The silt/clay matrix can be broken and scratched by hand. The seaward boundary of the Lusardi property has the following configuration, from south to north (Figure 3): 10 feet of vertical rock wall, 6-foot wide stairway to the shore, 10 feet of vertical rock wall, 10 feet of undermined and eroding rock wall, and 35 feet of exposed, undermined earthen bank where the original vertical rock wall failed and was removed in 1997 (Figures 8, 9 and 10). This 35 feet of exposed earthen bank represents the only section of the beach that does not contain a vertical wall. The erosion has cut a cave or

overhang about 3 feet deep and 3 feet high into the earthen bank (Figure 10). This erosion threatens the neighboring wall to the north. In the past year, the owner of this wall has been forced to pump concrete under his wall to reinforce the foundation. Remnants of sand bags, placed for emergency protection in 2000, are visible at the base of the undermined area. The profile measured in this location, 40 feet north of the steps, shows that there is only 15 feet of sand above the mean water line (0 msl), and 20 feet of sand mixed with the conglomerate rock (cross section 3, Figure 6, Appendix A). The overall slope is 1V:5H up to the base of the eroded bank.

The profile measured 10 feet north of the steps shows that the conglomerate rock extends all the way from the base of the wall to the waterline (Figures 8 and 9; cross section 4, Figure 6, Appendix A). The seawall at this location has been undermined a distance of 3 feet behind the face of the wall (Figure 10, top).

South of the Lusardi property, the shoreface slopes more steeply, and the conglomerate rock extends from the base of the vertical walls at an elevation of 9 to 10 feet msl to the waterline (Figure 11). At cross section 5 (Figure 6, Appendix A), 20 feet south of the steps, the rocky shoreface is 25 to 30 feet wide and slopes 1V:4H. At cross section 6 (Figure 6, Appendix A), 80 feet south of the steps, the rock forms a ledge 8 feet wide at the base of the wall, that drops vertically about 5 feet to the water (Figure 11).

The nearshore seafloor in the bay consists primarily of sand in the central part of the bay, and coral, limestone and rock along the perimeter and beyond about 400 feet offshore (Figure 2). There is a narrow patch of rocky, cobble bottom close to shore in front of the Lusardi property.

4. SHORELINE HISTORY

The coastal processes along the shoreline within the study area are complicated by the bay and headland morphology, the presence of offshore fringing reefs, and a seasonal wave climate with two opposing wave approach directions. To assess the shoreline history in the project area, an historical aerial photographic analysis was completed for Keonenui Beach. Vertical aerial photographs taken in November 1949, March 1975, July 1987, March 1988 and May 1997 were digitized at a scale of 1in=200ft. The photographs were registered to Hawaii State Plane Coordinate System, and common reference points were selected in each photo to correct for scale and rotation distortion. The vegetation line and beach toe position were digitized to assess shoreline changes over the years. Along Keonenui Beach, the vegetation line is not a good indicator of beach processes because it has been stabilized artificially by the construction of seawalls along the beach. The beach toe is defined as the change in slope at the transition between the nearshore and foreshore regions of the beach. It appears as a change in color or tone in vertical aerial photographs. The beach toe is a good indicator of shoreline erosion or accretion because it marks the seaward edge of the foreshore, or beach face. However, the beach toe can also vary with seasonal or short term erosion or accretion, or changes in beach slope and width, and thus may also indicate the dynamic nature of a beach, rather than long term erosion or accretion trends.

The results of the digitizing are presented in Figure 12. Each colored line represents the location of the beach toe for the particular year. A beach toe position that is further seaward indicates a wider, accreted beach, while a beach toe position closer to the buildings and walls indicates a narrow, eroded beach. To quantitatively assess the shoreline movement, the specific locations of the beach toe relative to the position in 1949 were measured along two transects: 29A in front of the Lusardi property, and 29 in front of the Kahana Sunset (Figure 12). The results show that the beach is dynamic with periods of erosion and accretion. Along transect 29A, the beach toe eroded 78 feet between 1949 and 1987, then accreted 68 feet in the following year, and has eroded 42 feet between 1988 and 1997. Similarly, at transect 29, the beach toe eroded 39 feet between 1949 and 1987, then accreted 35 feet in the following year, then eroded 48 feet between 1988 and 1997. Net erosion between 1949 and 1997 has been 52 feet at both transects. The beach toe movements may be attributable to seasonal changes in surf and current conditions. The beach toe was in an accreted position during photos taken in November and March, which may indicate response to winter conditions. Conversely, the beach toe was in an eroded (landward) position in the photos taken in May and July, which may indicate response to summer surf conditions.

Projection of the 30 year erosion hazard was not completed because of the dynamic nature of the beach, with large shifts in the beach toe position possible on a seasonal basis (see the July 1987 and March 1988 beach toe positions in Figure 12), and the limited number of data points available for the analysis. On a dynamic beach such as Keonenui Beach, the computed erosion rate depends largely on whether the beginning and end points of the analysis are during seasonally accreted or eroded states. If the first photograph is during an accreted state, and the last photograph is during an eroded state, then a large erosion rate may be indicated which is misleading; conversely, if the first photograph is during an eroded state, and the last photograph is during an accreted state, then net accretion may be indicated. The five photographs used in this analysis are not sufficient to pinpoint the seasonal patterns of beach toe movement, nor the existence or cause of any long term erosion trend, and therefore could result in a misleading 30 year erosion prediction. The analysis does indicate that the beach is dynamic, with large possible seasonal shifts in the beach toe position, and that a net erosion trend is possible.

Given the dynamic nature of the beach it is also not possible to determine the impacts of walls on the beach . During the eight months between the 1987 and 1988 photos, with wall already lining the shoreline, there was accretion of 35 feet and 68 feet along the beach. Yet between 1988 and 1997, the beach appeared to erode.

Local accounts from long-time residents in the bay are consistent with net erosion occurring on Keonenui Beach. Locals remember palm trees further seaward on the beach, that were eventually undercut by progressive erosion.

5. OCEANOGRAPHIC DESIGN CRITERIA

Determining the oceanographic design criteria necessary for the wall design requires the following steps: evaluating the deep water wave types and sizes that may impact the project site; transforming those deep water waves to shallow water waves at the shoreline; calculating the water level rise at the shoreline due to tides, storm surge and wave setup; and computing wave runup and wave forces on the wall.

5.1 Deepwater Design Waves

The study area is protected from deepwater waves by the island of Maui itself, and the surrounding islands of Moloka'i Lānai and Kaho'olawe. The waves approach the study area only through three channels, Pailolo Channel opening to the north, Kalohi Channel opening to the west and 'Au'au Channel opening to the south. Five types of severe waves were evaluated which could possibly propagate through the channels and impact the study area. Those waves are Kona storm waves, a 25-year North swell and three types of hurricane waves. The hurricane waves include waves locally generated in the channels during a hurricane (fetch limited waves), and hurricane waves generated in two types of Hawaiian scenario hurricanes in the open ocean.

Severe Kona Storm Waves

Sea Engineering, Inc. has hindcast the deepwater wave height and period for a relatively severe long duration Kona storm, which occurred in January 1980. The hindcast deepwater significant wave height is 17 feet with a wave period of 9 seconds. The wave conditions are considered reasonably representative of an extreme Kona wave event. The Kona storm waves possibly approach from the south and west (through 'Au'au Channel and Kalohi Channel).

Large North Pacific Swell

A detailed compilation of deepwater wave climate in Hawaiian waters was prepared by Marine Advisors, Inc. (1964) for the State of Hawai'i. The data was statistically analyzed to determine the predicted frequency of large North Pacific swell as a function of return period. From this data, the 25-year swell height was determined to be 23 feet with a wave period of 23 seconds. The north swell will propagate through Pailolo Channel.

Hurricane Waves

The characteristics of representative hurricanes that may impact Hawai'i are presented in Haraguchi (1984). Those hurricanes are based on an analysis of historical hurricanes passing near or through Hawai'i. Haraguchi estimates two likely hurricane approach directions, east through southeast (E-SE) and south through southwest (S-SW). The characteristics of these storms are as follows:

	Approach Direction	
	E-SE	S-SW
Max. sustained wind speed (knots): U_R	65	65
Min. sea level pressure (mbs): P_0	979	979
Forward speed (knots): V_F	11	20
Eye diameter (n.miles)	20	20
Radius of 34-knot wind (n. miles)	160	160
Radius of 50-knot wind (n. miles)	50	45
Radius of 64-knot wind (n. miles)	20	20

Based on the wind radius parameters, the radius of maximum wind speed, R , is estimated as 18.5 and 19.0 nautical miles for the E-SE and S-SW hurricanes, respectively. Two cases of waves generated by these storms are considered: (1) fetch limited waves generated within the confined water area surrounded by Maui, Moloka'i, Lāna'i and Kaho'olawe, and (2) open ocean deepwater waves generated south, west or north of the islands. Hurricane wave conditions were calculated by using the methodology described in the *Shore Protection Manual* (U.S. Army Corps of Engineers, 1984).

Fetch Limited Hurricane Waves

Hurricane waves generated in the Kalohi Channel between Moloka'i and Lāna'i are considered the most severe case for fetch limited waves as they would directly approach the study area. The fetch or area in which the wind is generating waves within the Kalohi Channel is limited by Moloka'i and Lāna'i, and this limited width results in wave generation significantly lower than that expected from the same generating conditions over open waters. An effective fetch is estimated to be 14 miles and the adjusted wind speed is 174 ft/sec based on the maximum sustained wind speed of 65 knots. The average water depth in the Kalohi Channel is estimated to be 384 feet (64 fathoms). The following equations can be used to determine the hurricane wave height and period in fetch limited conditions:

$$H_{mo} = 2.82 \times 10^{-4} U_A F^{0.5}$$

$$T_m = 2.825 \times 10^{-2} U_A F^{0.33}$$

where H_{mo} = the significant spectral wave height in feet
 T_m = the peak spectral period in seconds
 F = the effective fetch in feet
 U_A = the adjusted wind speed in ft/sec.

The calculated fetch limited wave height and period are 14.3 feet and 6.9 seconds.

Open Ocean Hurricane Waves

The deepwater wave height and the period for a slowly moving hurricane at the point of maximum wind are given by:

$$H_O = 16.5 \exp(R\Delta P/100) (1 + 0.208\alpha V_F/U_R^{0.5})$$

$$T_S = 8.6 \exp(R\Delta P/200) (1 + 0.104\alpha V_F/U_R^{0.5})$$

where R = radius of maximum wind in nautical miles
 $\Delta P = (P_N - P_0)$ in inches of mercury and P_N is the normal pressure of 29.92 inches mercury and P_0 is the central pressure of the hurricane
 V_F = hurricane forward speed in knots
 U_R = maximum sustained wind speed in knots.

Assuming $\alpha = 1$ (for slow moving hurricane), the wave heights and period for the two model hurricanes are as follows:

E-SE Hurricane: $H_O = 25.5$ feet
 $T = 10.8$ sec.
 S-SW Hurricane: $H_O = 30.3$ feet
 $T = 11.9$ sec.

5.2 Summary of Severe Deepwater Waves

The selected deepwater wave characteristics are summarized in Table 1.

TABLE 1. SUMMARY OF SEVERE DEEPWATER WAVE PARAMETERS

Wave Type	Wave Height (feet)	Wave Period (sec.)	Possible Approach Direction from		
			South	West	North
Kona Storm Waves	17.0	9.0	X	X	
25-Year North Swell	23.0	23.0			X
Hurricane Waves:					
Fetch Limited Waves	14.3	6.9		X	
E-SE Hurricane Waves	25.5	10.8	X	X	X
S-SW Hurricane Waves	30.3	11.9	X	X	

5.3 Wave Transformation From Deepwater To Shallow Water

Deepwater waves propagating toward the shore are primarily altered by wave refraction, shoaling and ultimately wave breaking, as they pass over changing bottom contours. As waves move at an oblique angle to depth contours, the part of the wave in deeper water moves faster than the part in shallow water and the wave crest bends or refracts toward alignment with the bottom contours. This change in direction of different parts of the wave may result in convergence or divergence of wave energy and has a major influence on the distribution of wave height and energy along a coastline. In the shoaling process, as a wave moves from deepwater to shallow water, the wave height gradually decreases

initially and then it starts increasing. The rate of increase is greater at shallower water depths. This wave height increase due to water depth is termed wave shoaling. The growing waves eventually break in shallow water.

Wave refraction coefficients (K_r) and wave shoaling coefficients were numerically calculated using linear wave theory for the selected deepwater wave conditions in Table 1. Wave breaking criteria was based on the formula empirically derived by Weggel (1976), which is presented in Shore Protection Manual:

$$d_b/H_b = 1/(b - aH_b/gT^2)$$

where d_b = breaker depth
 H_b = breaker height
 $a = 43.75 \{1 - \exp(-19m)\}$
 $b = 1.56 \{1 + \exp(-19.5m)\}$
 m = bottom slope.

The calculated refraction coefficients and the breaker heights are given in Table 2. The refraction coefficient values apply before the wave breaks.

5.4 Water Level Rise

The still water level along the shoreline above mean sea level (MSL) is primarily a function of astronomical tide (S_A), wave setup (S_W) and storm surge (S_S). The components of the water level rise are assumed to add linearly, and the total stillwater level rise is:

$$S_T = S_A + S_W + S_S.$$

Astronomical Tide

Tidal data is available from *Tide Tables 2001* published by Lighthouse Press (2000), based on information provided by National Oceanic and Atmospheric Administration, National ocean Service. The closest tidal station is located at Lahaina approximately 7 miles south of the study area.

	<u>Elevation (feet)</u>
Mean Higher High Water	1.2
Mean High Water	0.7
Mean Tide (Approx. MSL)	0.0
Mean Low Water	-0.7
Mean Lower Low Water	-1.0

For design purposes, an astronomical tide of 1.2 feet (mean higher high water) is chosen. The elevation datum in this study is mean sea level.

Wave Setup

Landward of the breaker zone, a water level rise occurs due to the mass transport of water by breaking waves, which is termed wave setup. The analysis in this study was simplified by assuming that the waves approach perpendicular to the shore after breaking. Based on this assumption wave setup was numerically calculated by integrating the following horizontal momentum equation:

$$dS_x/dX + \rho g(h + \xi)d\xi/dX = 0$$

where S_x = the radiation stress along the line perpendicular to the shore
 X = distance perpendicular to the shore
 ρ = density of seawater
 g = acceleration of gravity
 h = water depth excluding wave setup
 ξ = wave setup.

The linear wave theory was used in the wave setup calculations.

Storm Surge

Storm surge includes the water level rise due to reduced atmospheric pressure and the rise due to the wind stress, which piles water up against the shore during a storm event. The wind stress effects are significant on the mainland U.S. where hurricane winds blow over long reaches of shallow water over continental shelf. The wind setup is, however, very small for the coasts of the Hawaiian Islands, because deep water extends practically right up to the shoreline. In addition, the sheltered location of the project area reduces the direct onshore wind effects. Thus, for the purposes of this study the wind set up is considered negligible except for the fetch limited wave case.

The pressure reduction setup can be estimated by the equation $S_p = 1.14(\Delta P)$, where ΔP is the pressure reduction from normal in inches of mercury. The estimated hurricane pressure reduction for E-SE and S-SW hurricanes is 1.0 inch of mercury, and the pressure reduction water level rise would be about 1.1 feet. This is conservative, as it assumes that the center of the storm would pass over the project area.

The wind setup for the fetch limited waves was calculated using following equation:

$$S_U = 540 K U^2 x/d$$

where S_U = wind setup in feet
 $K = 3.0 \times 10^{-6}$
 U = wind speed in knots
 x = horizontal distance in n.m.
 d = average water depth in feet over x .

Results of water level rise calculations are given Table 2.

5.5 Wave Runup

Wave runup was calculated by using a wave runup program included in *Automated Coastal Engineering System* by Department of the Army, Waterways Experiment Station, Corps of Engineers (1992). The calculated wave runup is on a plane beach slope extending up to the maximum wave runup elevation at beach profiles 3 and 4, which run across the project property. The beach elevation beyond the seawall location is artificial for the sake of calculation. The calculated results are the maximum wave runup values over the beach slopes. The calculated runup results will be used to determine the wave force on the seawall.

5.6 Summary Of Design Waves, Water Level Rises And Wave Runup

The design waves, water level rises and wave runup along the study shore are provided in Table 2. Deepwater wave heights are decreased due to wave refraction as waves propagate through channels to the study area. Equivalent deepwater wave heights in the table are deepwater wave heights after applying the refraction effect. The breaker heights given are breaker heights which associate with the maximum wave runup on the beach profiles 3 and 4.

TABLE 2. DESIGN WAVES, WATER LEVELS AND WAVE RUNUP AT PROFILES 3 AND 4

Wave Type	Deepwater Wave		Refraction Coefficient	Equivalent Deepwater Wave Height (ft)	Breaker Height at Profiles 3 and 4 (feet)	Total Water Level (ft MSL)	Wave Runup Elev. (ft MSL)
	Height (feet)	Period (sec.)					
Kona Storm	17.0	9.0	0.7	11.9	4.0, 4.1	2.8	10.0, 11.4
25-Year North Swell	23.0	23.0	0.4	9.2	4.0, 4.1	2.7	12.8, 14.6
Fetch Limited Wave	14.3	6.9	1.0	14.3	5.5, 5.7	4.1	12.7, 14.2
E-SE Storm Wave	25.5	10.8	0.6	15.3	6.1, 6.3	4.3	15.2, 17.1
S-SW Storm Wave	30.3	11.9	0.5	15.2	6.2, 6.4	4.3	15.7, 17.7

5.7 Wave Forces On A Wall

Wave forces on a wall were estimated based on methodology for "Wave Forces on a Wall Shoreward of the Stillwater Line" described in *Coastal Engineering Technical Note, CETN-III-2* (6/1986). It updates the method described in the Shore Protection Manual (1984).

The total wave force was calculated using the following simplified approximation equations:

$$F = 4.5 \gamma d^2$$

$$d = 0.78 H_b (1 - X_1/X_2)$$

where, F = total wave force on the wall

γ = specific weight of sea water
 d = water depth at the wall
 H_b = breaker height
 X_1 = distance between stillwater line and the wall
 X_2 = distance between stillwater line and the adjusted wave runup limit without the wall.

The total force is a combination of the hydrostatic force, F_S , and the dynamic force, F_D .

$$F = F_S + F_D,$$

where, $F_S = 0.5\gamma d^2$
 $F_D = 4.0\gamma d^2$.

The total turning moment, M , is expressed as a summation of the hydrostatic component, M_S , and the dynamic component, M_D .

$$M = M_S + M_D,$$

where, $M_S = F_S d/3$
 $M_D = F_D d/2$.

The height of the center of force is calculated as,

$$h = M/F.$$

The wave forces were calculated at beach profiles 3 and 4 for a wall along the property line as the existing wall is located. The nearshore profiles were surveyed and provided by R. T. Tanaka Engineering, Inc. The calculation results are for the selected design wave conditions over profiles 3 and 4, and they are given in Tables 3 and 4.

The results presented in Tables 2 - 4 indicate that the most severe conditions at the project site would result from deepwater waves generated by the S - SW approach of a hurricane. This represents an extreme occurrence that has never occurred in recorded history – essentially a direct hit by a strong hurricane. The owner and structural engineer may decide to design for a lesser event, for example a severe Kona storm.

TABLE 3. THE DESIGNWAVE FORCE ON A WALL AT PROFILE 3

Wave Type	Stillwater Level Rise (feet)	Breaker Height (feet)	X ₁ (feet)	X ₂ (feet)	Water Depth At Wall (feet)	Wave Force (lbs/ft)	Height of Force (ft)	Overturning Moment (lbs-ft/ft)
Kona Storm	2.8	4.0	22	46	1.6	763	0.8	600
North Swell	2.7	4.0	23	64	2.0	1150	1.0	1110
Fetch Limited	4.1	5.5	14	55	3.2	2950	1.5	4540
E-SE Hurricane	4.3	6.1	13	69	3.9	4290	1.9	7980
S-SW Hurricane	4.3	6.2	13	73	4.0	4550	1.9	8710

TABLE 4. THE DESIGNWAVE FORCE ON A WALL AT PROFILE 4

Wave Type	Stillwater Level Rise (feet)	Breaker Height (feet)	X ₁ (feet)	X ₂ (feet)	Water Depth At Wall (feet)	Wave Force (lbs/ft)	Height of Force (ft)	Overturning Moment (lbs-ft/ft)
Kona Storm	2.8	4.1	25	39	1.1	380	0.6	210
North Swell	2.7	4.1	25	54	1.7	850	0.8	700
Fetch Limited	4.1	5.7	19	46	2.6	1960	1.3	2460
E-SE Hurricane	4.3	6.3	18	58	3.4	3310	1.6	5400
S-SW Hurricane	4.3	6.4	18	61	3.5	3570	1.7	6040

6. SHORE PROTECTION ALTERNATIVES

6.1 Seawalls

Seawalls are vertical or sloping reinforced concrete or grouted masonry walls used to protect the land from wave damage, with use as a retaining wall a secondary consideration. Seawalls have a stepped, vertical, or recurved seaward face. A seawall, if properly designed and constructed, is a proven, long lasting, relatively low maintenance shore protection method. They have the advantage of requiring limited horizontal space along the shoreline. However the near vertical seaward faces of seawalls result in very little wave energy dissipation. The walls are often stepped or recurved to reduce resulting problems of wave overtopping and spray. Wave energy is deflected both upward and downward, and also a large amount of wave energy is reflected seaward. The downward component can cause scour at the base of the wall, particularly in shallow waters, and the reflected waves can inhibit beach formation in front of the wall. Seawalls are not flexible structures, and their structural stability is dependant on the stability of their foundation. Vertical walls protect properties along the entire length of Keonenui Beach, with the exception of 35 feet of the Lusardi property. The proposed wall would be located behind rock outcrops on the beachface, and during typical tradewind and summer conditions would be above the normal reach of the water. This will minimize the negative impacts of the wall.

6.2 Revetment

A revetment is a sloped structure built of wave resistant material. The most common method of revetment construction is to place an armor layer of stone, sized according to the design wave height, over an underlayer and bedding layer designed to distribute the weight of the armor layer and to prevent loss of the shoreline material through voids in the revetment. In Hawaii, almost all revetments are constructed of basalt boulders. Limestone boulders can be used, but the lesser density of limestone requires a larger boulder size for a given site. Toe protection can be provided by excavating to place the toe on solid substrate where possible, constructing the foundation as much as practicable below the maximum depth of anticipated scour, or extending the toe to provide excess stone and extra wave protection. Properly designed rock revetments are durable, flexible, and highly resistant to wave damage. Should toe scour occur, the structure can settle and readjust without major failure. Damage from large waves is typically not catastrophic, and the revetment can still function effectively even if damage occurs. The rough and porous surface and flatter slope absorb more wave energy than smooth vertical walls, thus reducing wave reflection, runup, and overtopping.

The steepest practical revetment slope is 1V on 1.5H, therefore revetments have a larger footprint than vertical seawalls. A revetment at the project site would extend back about

15 to 20 feet into the property, may require significant bank excavation, and would be incongruous with the vertical walls lining the beach.

6.3 Beach Nourishment

Beaches are an effective way of minimizing wave impacts on the shoreline. Wave energy is absorbed by bed shear and resulting turbulence, the transport of sediment by wave swash, and percolation into the beach. Unlike hard structures, beaches will adjust to different incident wave conditions by shifting orientation, changing slope, and by hydraulic sorting of beach sediment.

Beach nourishment, to be effective, would have to occur along the entire beach, not just in front of the Lusardi property. This would greatly increase costs, and would require the planning and financial commitment of all property owners. In addition, beach nourishment is not a guaranteed solution, and would require periodic maintenance.

There are also possible environmental impacts from beach nourishment. Fine particles may be washed from the emplaced sand, increasing nearshore turbidity. Sand may also be washed offshore, and could bury portions of the reef.

6.4 No Action / Retreat Inland

Erosion at the site is ongoing and has resulted in a hazardous overhanging bank, and risks damaging the adjacent seawalls. No action or retreat inland will increase the hazards to beach users and may result in damage or failure of the adjacent seawall to the north.

6.5 Selected Alternative

A vertical wall is the preferred alternative for this site for a number of reasons. First, the entire backshore of the sand beach is lined with vertical walls. The 35 feet of exposed earthen bank along the Lusardi property represents the only segment along the entire sand beach without a vertical wall. A vertical wall will tie in easily with the adjacent vertical walls, providing seamless protection that will not leave the adjacent walls exposed to possible flank erosion and damage. Also, a vertical wall will be aesthetically consistent with the walls protecting the other properties. A revetment – typically the preferred alternative on sandy shoreline – will have little benefit at this location because it will be sandwiched between vertical walls and located landward of the conglomerate rock outcrops on the beach. At a slope of 1V:1.5H, a revetment will also require 15 to 20 of horizontal space which will significantly cut into the property and which may require a significant amount of excavation due to the height bank. No action or retreat are not feasible alternatives at the site because the erosion has created a hazard and threatens the adjacent seawall. The earthen bank now contains a three foot high and three foot deep overhang that could collapse at any time. Further erosion could damage the adjacent seawall.

7. SHORE PROTECTION DESIGN

Figures 13 and 14 illustrate the site plan and the design details for two types of walls being considered for the Lusardi property – a concrete retaining wall with a rock face, and a CRM wall (Figure 14). From a functional, appearance and coastal process standpoint, the walls are identical. The concrete wall will be faced with rocks, and thus will appear identical to a rock wall. Both walls will require a concrete base poured two feet below existing grade and extending inland 7.5 to 8 feet, and will rise 9 feet above existing grade. The concrete wall will be reinforced with rebar. Neither wall should significantly impact existing coastal processes.

The walls differ primarily in construction methodology and strength. The advantage of a CRM wall is that it uses natural available material. The disadvantage, however, is that the construction of a CRM wall is slow and labor intensive. The rocks need to be transported to the site and placed individually into the wall. By contrast, concrete for the concrete wall can be pumped directly to the wall site, requiring less material to transport and less labor to bring in material, and resulting in faster overall construction. Because the construction time is shorter, and less material is transported to the site, impacts to the shoreline during construction may be less for a concrete wall than a CRM wall. The concrete wall is also stronger and less permeable than the CRM wall.

8. POSSIBLE IMPACTS

Keonenui Beach is lined with vertical walls protecting the properties along the backshore. The 35 feet of exposed bank in front the north end of the Lusardi property is the only segment along the sand beach that does not have a vertical wall. The earthen bank is eroding, creating a hazardous overhang 3 feet deep and 3 feet high, and could possibly damage the adjacent wall. This overhang could collapse and injure beach users. Failure of the neighboring wall would have a significant negative impact to the beach because it would result in rocks, concrete and other dangerous debris being scattered along the beach. Construction of a vertical wall along this exposed bank to replace the wall that failed in 1997 and to tie in to the neighbor's wall to the north would be beneficial because it would eliminate a hazard to beach users and because it would prevent additional damage to the flank of the adjacent seawall to the north. Further, the wall would be visually consistent with the other walls lining the beach. It would prevent soil erosion and resultant high water turbidity during high wave events.

Construction of this vertical wall should have no significant impact on existing coastal processes, and should not aggravate or contribute to erosion for two primary reasons. First, the wall will harden only 35 feet of shoreline. The remaining 500 to 600 feet of the beach is already lined with vertical walls. The wall will tie in to existing vertical walls on either side. Second, there is little sand in front of the Lusardi property. The wall will be built on, and fronted by, rock outcrops. The rocky outcrops extend from the waterline to the 6 to 10-foot elevation. The rocky outcrops serve as a naturally hardened shore, and absorb the primary forces of the waves and currents. South of the Lusardi property, these rock outcrops form a vertical cliff at the waterline. The base of the wall is landward of the rock outcrops. Although moderate to large surf during the winter frequently results in runup reaching the wall location (as indicated by the erosion occurring in the bank), during typical tradewind and summer conditions, the wall location is above the normal reach of the waves. This allows sand to accumulate during favorable conditions.

9. REFERENCES

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Loomis, G.H. 1976, *Tsunami Wave Runup Heights in Hawaii*. Hawai'i Institute of Geophysics, University of Hawai'i, HIG-76-5.

Makai Ocean Engineering, Inc., and Sea Engineering, Inc., 1991; *Aerial Photograph Analysis of Coastal Erosion on the Islands of Kauai, Molokai, Lanai, Maui, and Hawaii*. Prepared for the State of Hawai'i, Office of State Planning, Coastal Zone Management Program.

Marine Advisors, Inc., 1964. *Characteristics of Deep-Water Waves in the Oahu Area for a Typical Year*, prepared for the Board of Harbor Commissioners, State of Hawai'i.

Sea Engineering, Inc., 1986; *Coastal Engineering Evaluation and Marine Biological Assessment for Kaanapali North Beach, Maui, Hawaii*.

U.S. Department of the Army, Waterways Experiment Station, Corps of Engineers, Coastal Engineering Research Center, 1984. *Shore Protection Manual*.

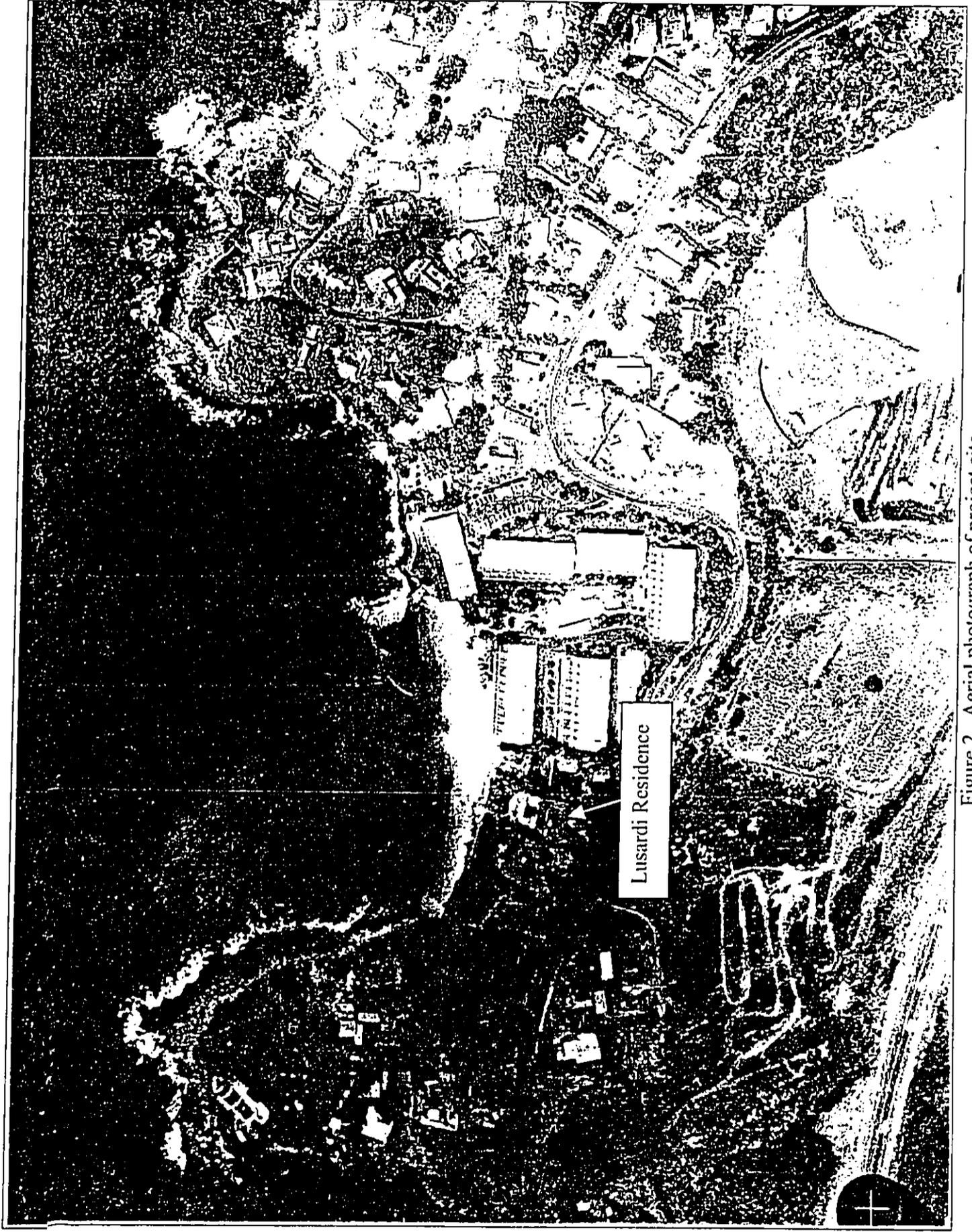


Figure 2. Aerial photograph of project site.

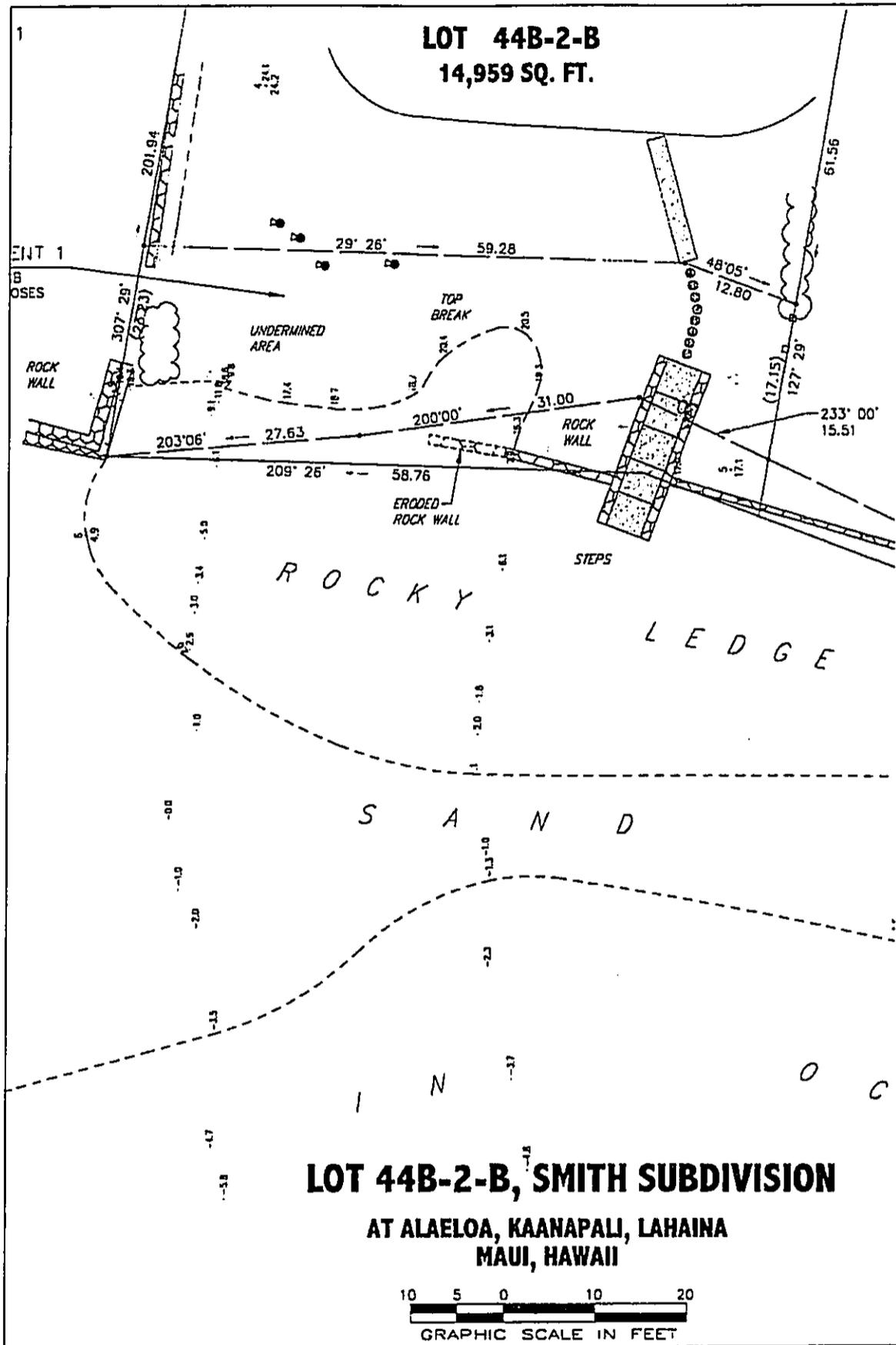


Figure 3. Site Plan (by Tanaka Engineers, Inc.).

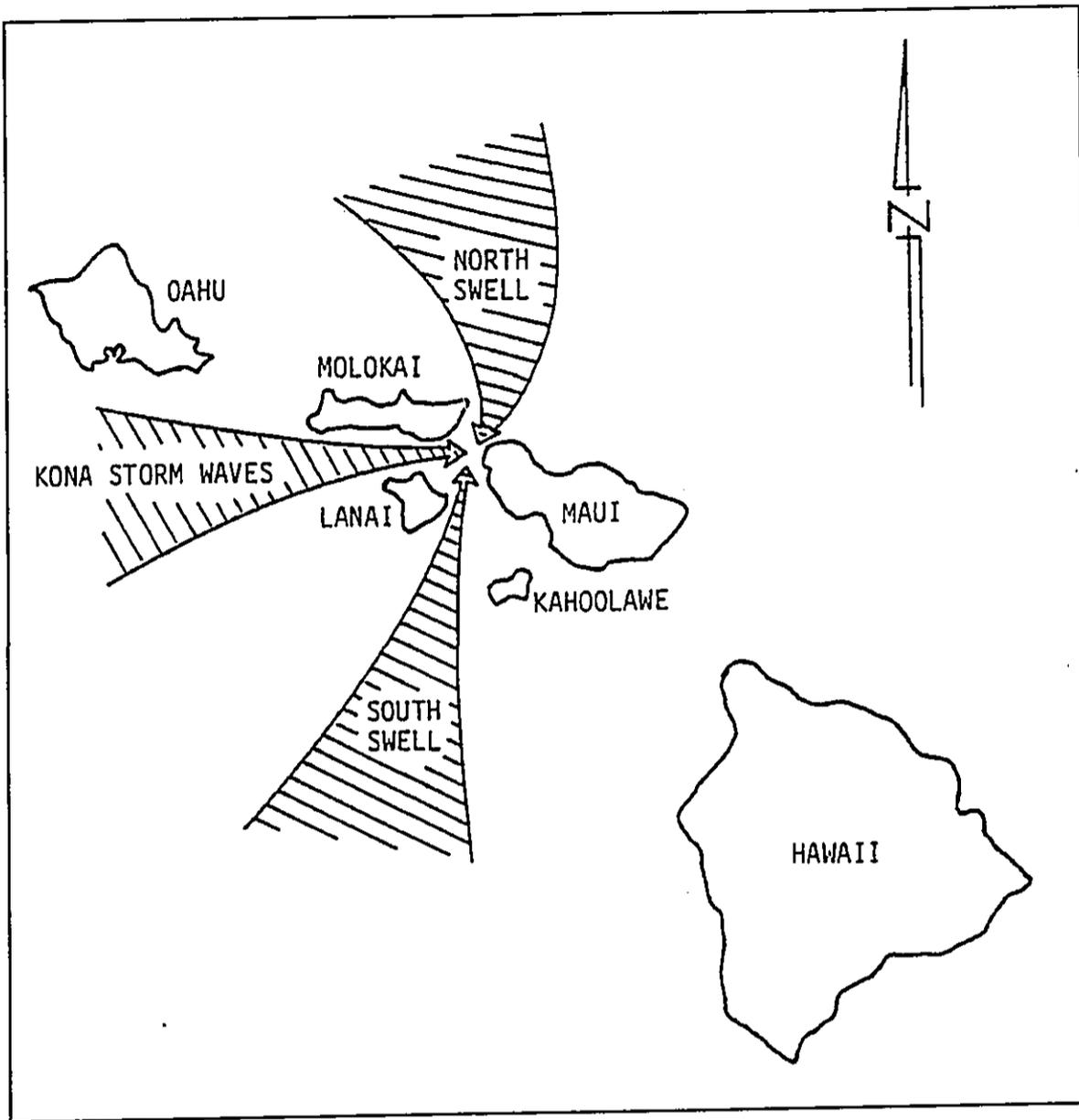
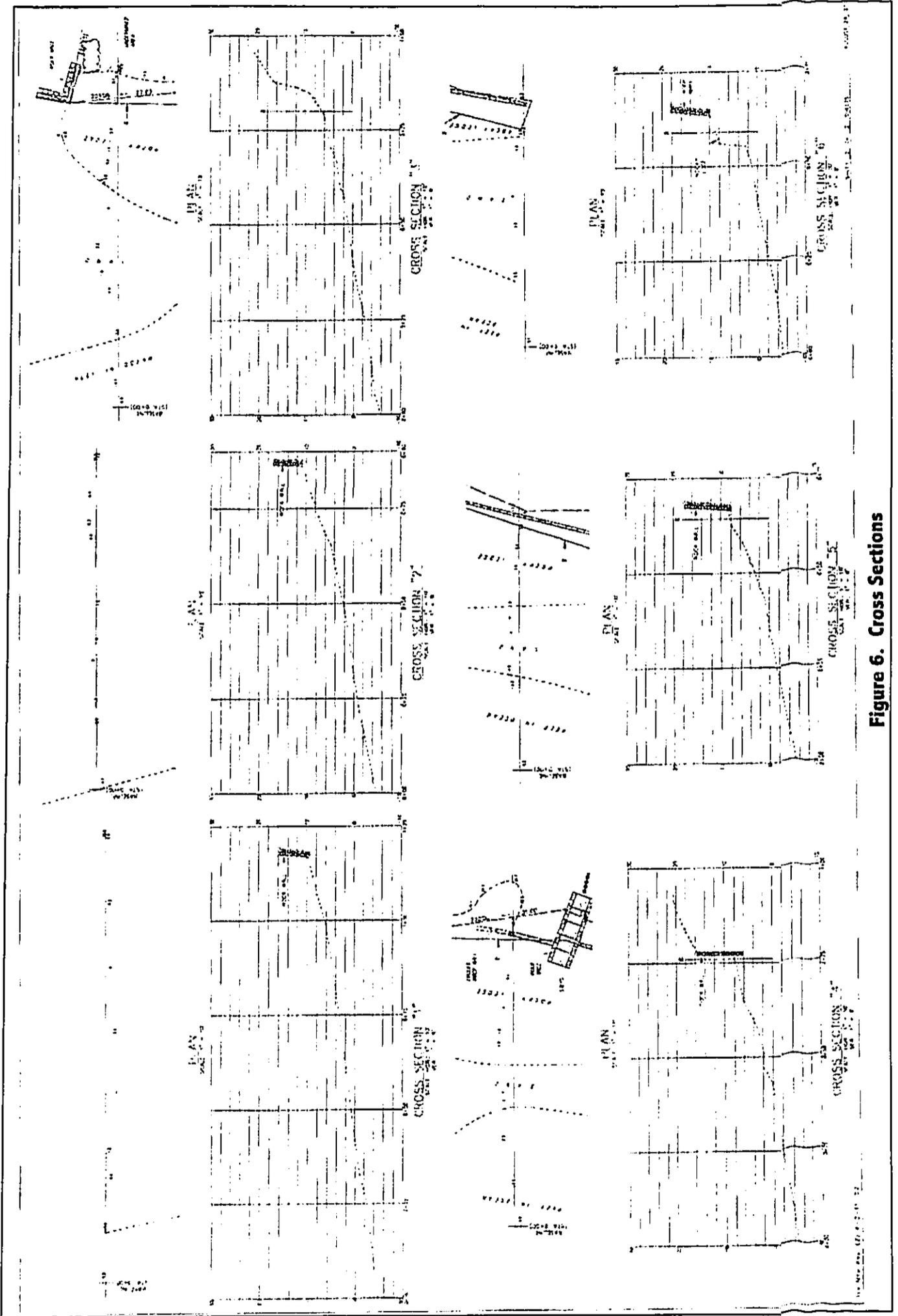


Figure 4. West Maui wave exposure.



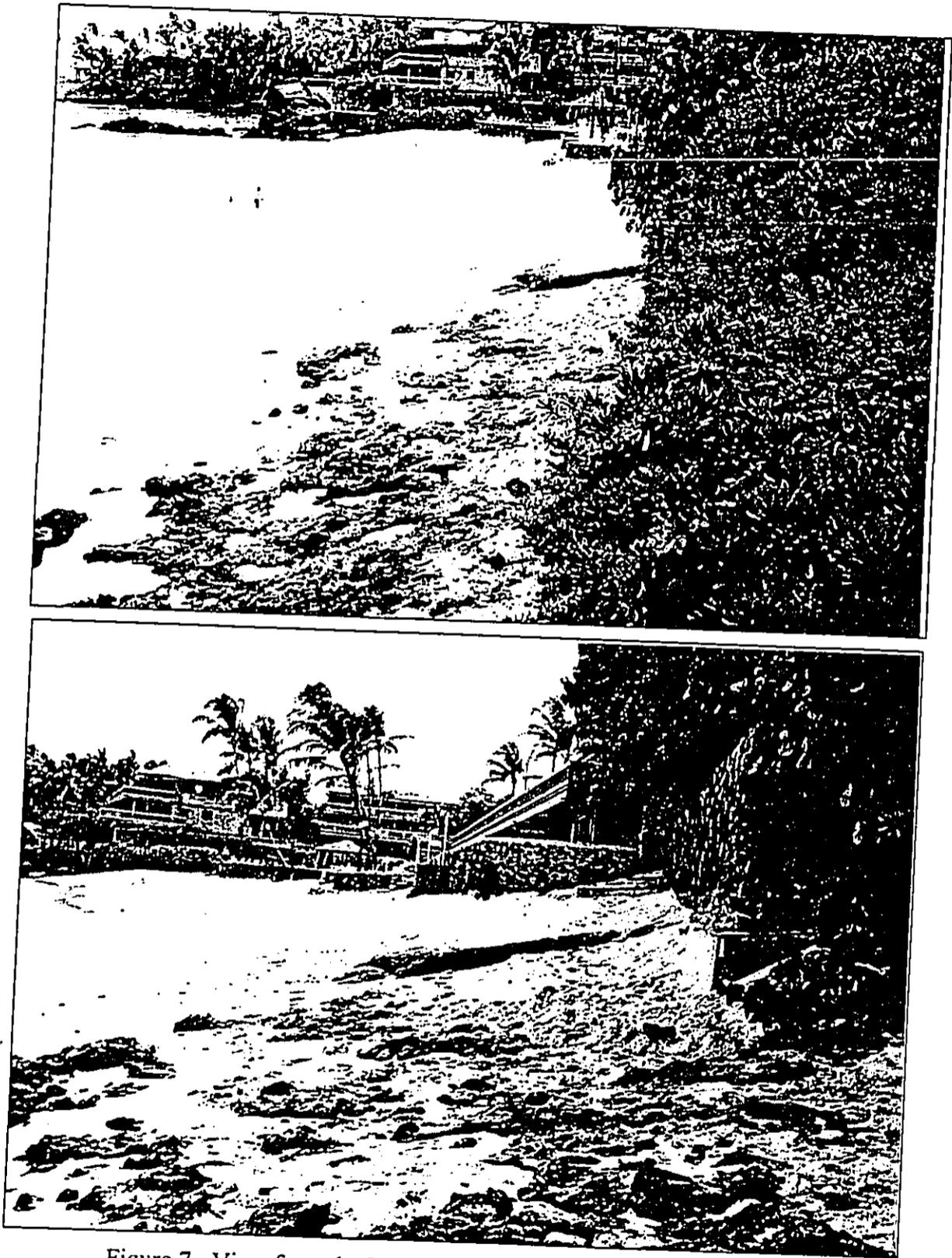


Figure 7. View from the Lusardi property of the beach to the north.



Figure 8. View showing adjacent seawall to north, the Lusardi property and stairs, and adjacent seawalls to the south.

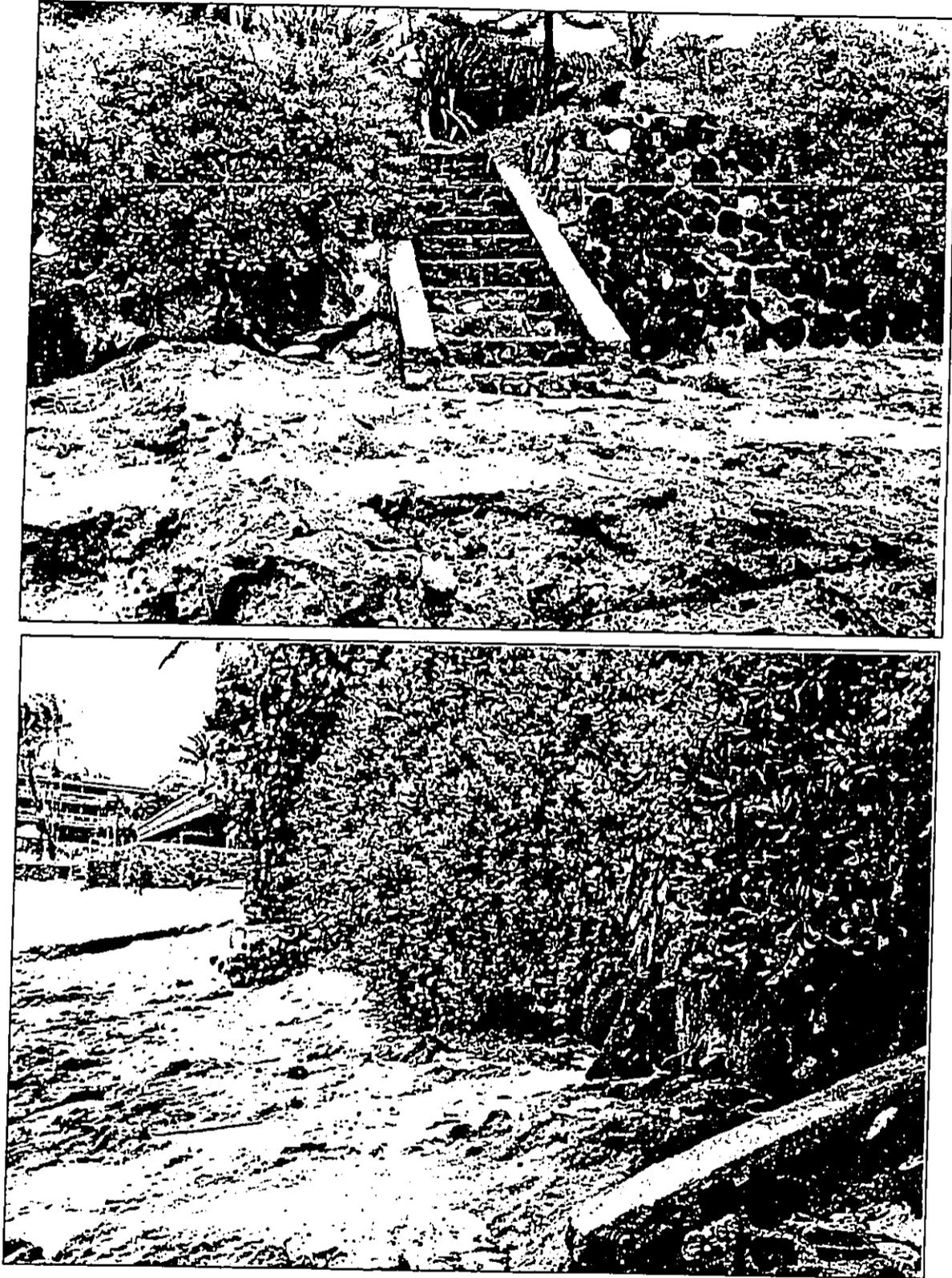


Figure 9. Lusardi steps (top) and remaining 20 feet of wall north of the step.



Figure 10. Undermined wall (top), and undermined earthen bank next to the neighboring wall to the north (middle and bottom).

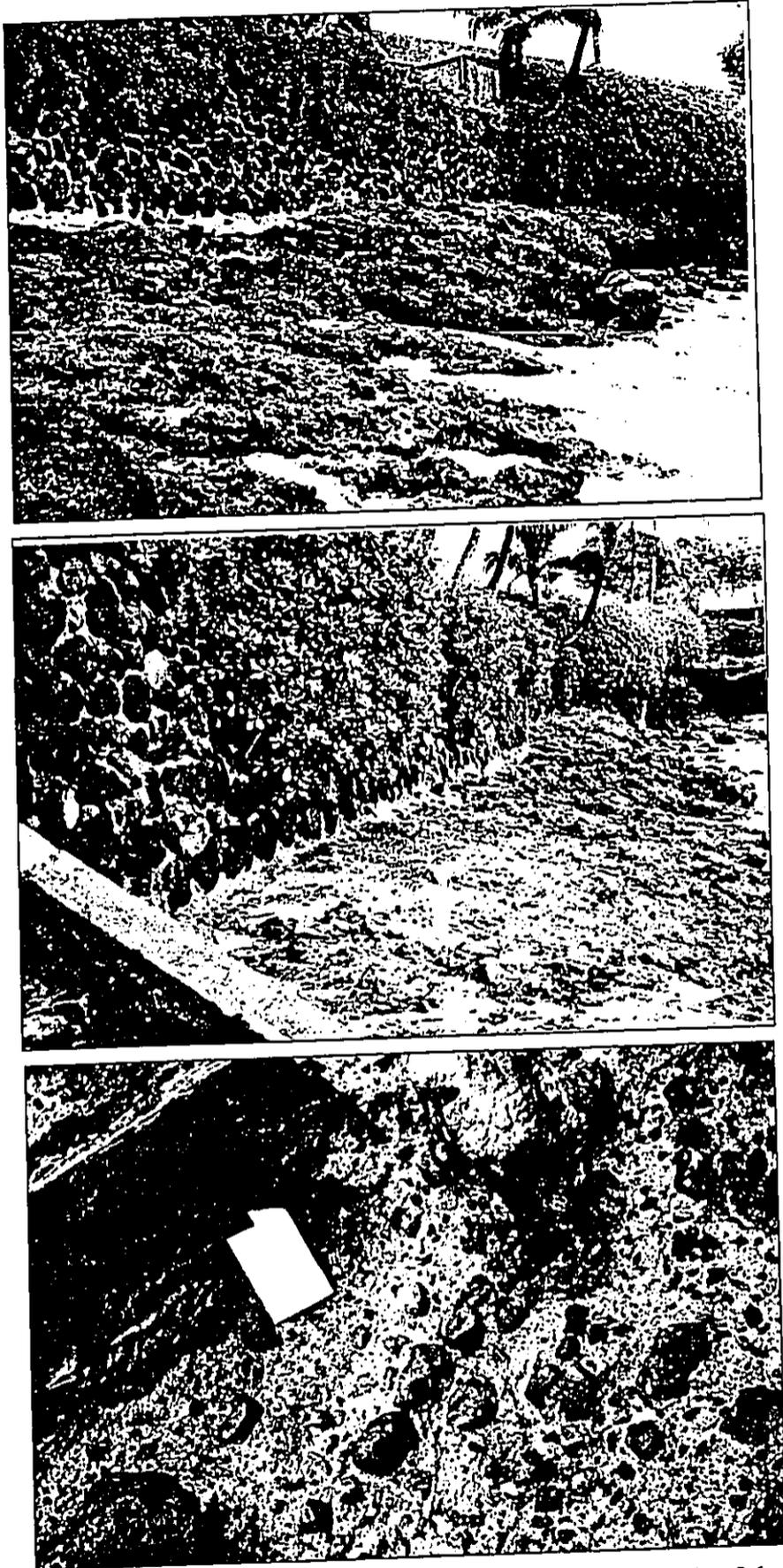
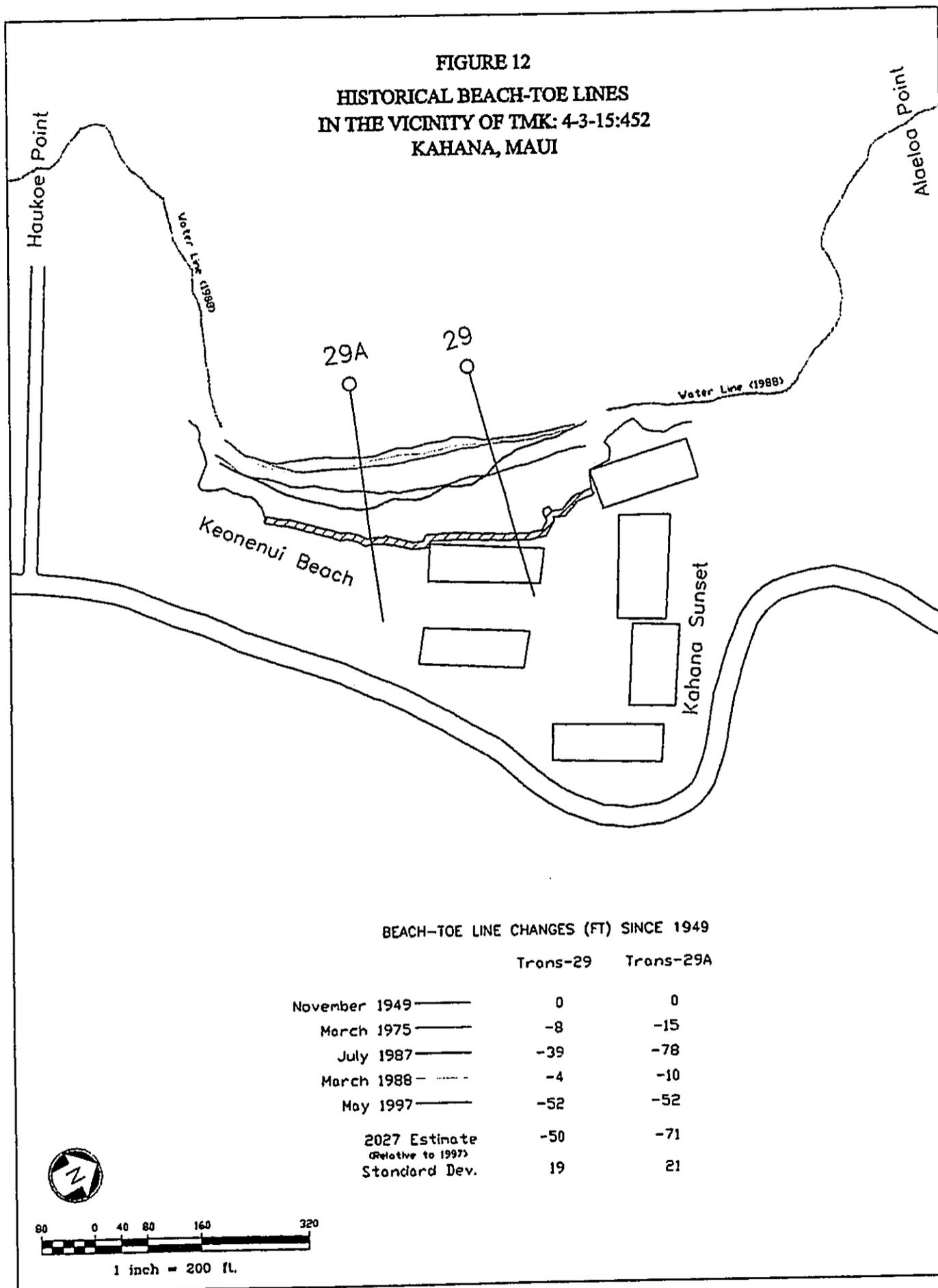
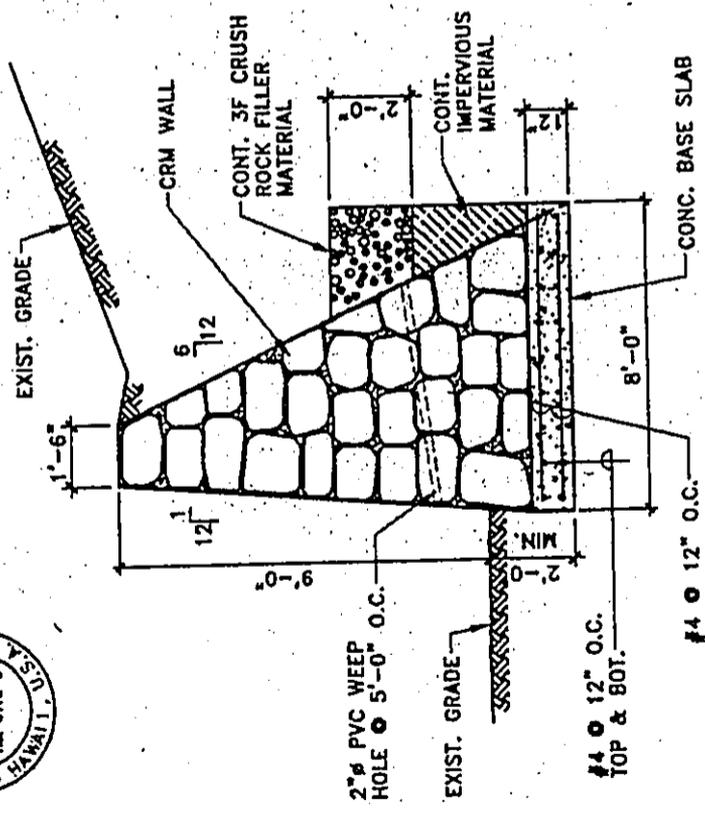
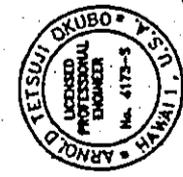


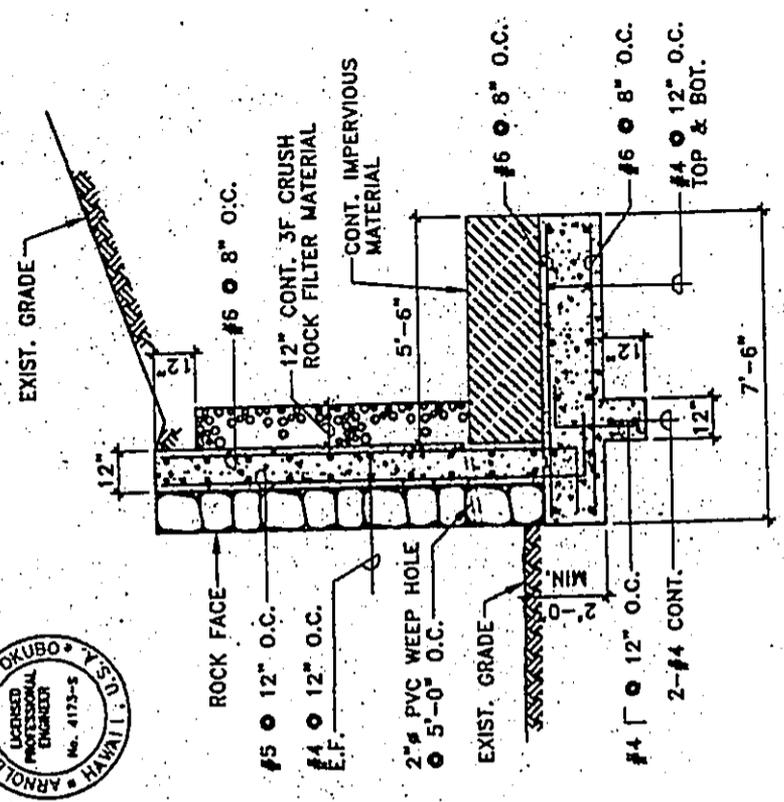
Figure 11. Rock walls built on mudstone conglomerate immediately south of the Lusardi property (top and middle). Close up of mudstone conglomerate (bottom).

FIGURE 12
 HISTORICAL BEACH-TOE LINES
 IN THE VICINITY OF TMK: 4-3-15:452
 KAHANA, MAUI



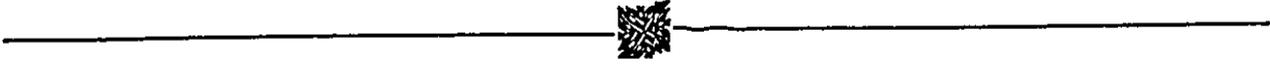


① TYPICAL CRM WALL DETAIL
SCALE: 3/8" = 1'-0"



② ALTERNATE DESIGN
TYPICAL CONCRETE RETAINING
WALL WITH ROCK FACE DETAIL
SCALE: 3/8" = 1'-0"

FIGURE 14



APPENDIX B
PRIOR SHPD REVIEW



JOHN WADSWORTH
GOVERNOR OF HAWAII



KATHY AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCE

DEPUTIES

JOHN P. KEPPELER II
DONA L. HANAUKE

'93 SEP 30 P3:46

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 8TH FLOOR
HONOLULU, HAWAII 96813

RESOURCES PLANNING
COUNTY OF MAUI
RECEIVED

AQUACULTURE DEVELOPMENT
PROGRAM

AQUATIC RESOURCES
CONSERVATION AND

ENVIRONMENTAL AFFAIRS
CONSERVATION AND

RESOURCE ENFORCEMENT
CONVEYANCES

FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
DIVISION

LAND MANAGEMENT
STATE PARKS

WATER AND LAND DEVELOPMENT

September 20, 1993

MEMORANDUM

LOG NO: 9330
DOC NO: 9309AG17

TO: Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs

FROM: Don Hibbard, Administrator *[Signature]*

SUBJECT: Historic Preservation Review of a Coastal Engineering
Evaluation for the Edmundson Shoreline Revetment (File
No.: 94-106)
Alaeloa, Lahaina, Maui
TMK: 4-3-15: 3

We have no comments on this engineering report. We have previously determined that the proposed project will have "no effect" on historic sites (memorandum of June 18, 1993).

Please contact Annie Griffin at 587-0013 if you have any questions.

✓c: Gerald Unabia, Maui County Planning Department

AG:111

DEPT OF PLANNING	
Deputy Dir.	<input type="checkbox"/> Assign
Secretary	<input type="checkbox"/> Rush
Current Div.	<input checked="" type="checkbox"/> See Me
Long Range	<input type="checkbox"/> Comments
Energy Div.	<input type="checkbox"/> Draft
Admin.	<input type="checkbox"/> Handle
	<input type="checkbox"/> File
	<input type="checkbox"/> FYI
Copy to:	<input type="checkbox"/> CIRCULATE
	<input type="checkbox"/> Recycle
Today's date <u>10/1</u>	
Date Due _____	
By _____	

JOHN WAIHEE
GOVERNOR OF HAWAII



WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
Keith W. Ahue
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 521
HONOLULU, HAWAII 96804

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA-VIN

FEB 6 1990

File: 90-335
Doc.: 7369E

Honorable Christopher L. Hart, Director
Planning Department
County of Maui
200 S. High Street
Wailuku, Hawaii 96793

EXHIBIT 2

Dear Mr. Hart:

Subject: Erosion Control Wall, Special Management Area Permit,
Environmental Assessment, Shoreline Set Back Variance
(89/SM2-208, 89/EA-015, 89/SSV-006)
TMK: 4-3-15: 2

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

A review of our records indicates the absence of known historic sites in the project area. The EA indicates that this parcel has been developed for a residence. Thus, the proposed project will have "no effect" on significant historic sites because it is unlikely that these features still exist. However, we recommend the following condition for the approval of this permit to cover the possibility of encountering cultural materials during construction work:

If historic remains such as artifacts, shell or charcoal deposits, or burials, the contractor shall stop work in the immediate area and contact the State Historic Preservation Program at 548-7460 immediately. This office will assess the situation and make recommendations for mitigative action, if needed.

In addition, no significant impact adverse to aquatic resource values is expected from the placement of the seawall for erosion control. However, the seawall should only be constructed and be entirely mauka of the applicants property line with precautions taken during construction and clearing activities to prevent debris, wastes, eroded materials or other contaminants from entering the marine environment.

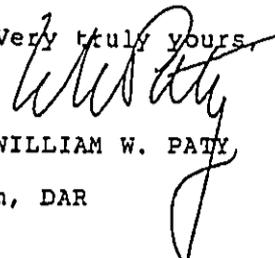
Honorable Christoph L. Hart

- 2 -

File No.: 90-335

If you have any questions, please feel free to call me or Cathy Tilton at our Office of Conservation and Environmental Affairs at 548-7837.

Very truly yours,


WILLIAM W. PATY

cc: Historic Preservation Program, DAR



APPENDIX C
PRIOR CORRESPONDENCE AND PERMITS



ROBERT LYN
NELSON
STUDIOS

Via Facsimile 270-7634
Mr. John Min
Director, Department of Planning
County of Maui
250 South High Street
Wailuku, Maui, HI 96793
Telephone 270-7735

August 24, 1999

Dear Sir,

You should be in receipt of letters from our neighbors that own properties adjacent to our property at 4871 Lower Honoapiilani Highway. Please give these letters your consideration and read them prior to your decision about the issuance of an emergency permit.

I am available for the meeting you will be having to review the request for a permit should you need me to provide any information about the property.

All of the adjacent properties have hard sea wall structures except for our property and that status continues to increase the chance of a cave-in where the sea wall has collapsed.

Please issue an emergency permit to fill in the cave and make it safe for the beach users. The condition of the area is not the same as it was two years ago. It presents a real danger and threatens to cave in. Just last month, Ed Valera, who is a licensed land surveyor, confirmed the location of the stakes on our property. It appears that the cave is located entirely on State lands. While a permanent answer is obtained, a temporary measure must be addressed.

Thank you very much in advance for your attention and consideration in this matter.

With aloha,



Ulani Nelson
Owner
4871 Lower Honoapiilani Highway
Telephone 661-1150

Robert L. Nelson, Inc. dba Robert Lyn Nelson Studios
Mailing Address: 910 Honoapiilani Highway, Suite 15, Lahaina, Maui, Hawaii 96761
E-mail rlms@aloha.net • phone (808) 667-2100 • fax (808) 667-2100

by using recycled and recyclable paper.

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07/05/00 16:10 FAX 17604714892

AUG-24-99 TUE 12:19 PM BERT LYN NELSON STUDIO 1808 1 5221

021
P.01

Via Facsimile 270-7634
Mr. John Min
Director, Department of Planning
County of Maui
250 South High Street
Wahiakua, Maui, HI 96793
Telephone 270-7735

August 24, 1999

Dear Sir,

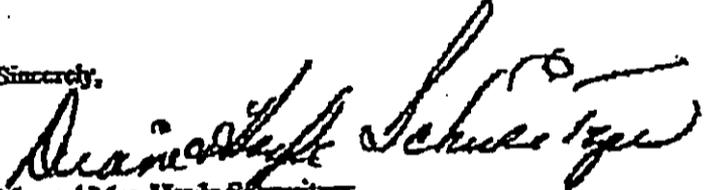
We own the property next to Mr. and Mrs. Robert Lyn Nelson, on the north side, whose address is 4871 Lower Honoapiʻālanui Highway.

The cave created by the collapse of the sea wall at the ocean side of the property has recently gotten worse. It presents a real danger to our child. This condition is a real threat to caving in on many others who use the beach. It should immediately be addressed and must be safe for all of the property owners.

An emergency permit should be issued as soon as possible to fill in this very unsafe area while a permanent remedy is found.

Thank you for your kokua.

Sincerely,


Mr. and Mrs. Hoyle Schweitzer
4885 Lower Honoapiʻālanui Highway
Kahana, Maui, HI 96761
Telephone (703) 756-2343

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07/05/00 16:10 FAX 17604714892

AUG-24-99 TUE 11:26 AM BERT LYN NELSON STUDIO 1808 1 5221

022
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P.01

AUG-24-99 10:49A

UWE H. H. SCHULZ AND ASSOCIATES, INC.

ARCHITECT A.I.A.

Via Facsimile 270-7634
Mr. John Min
Director, Department of Planning
County of Maui
250 South High St.
Wailuku, HI 96793
Telephone: 270-7735

August 24, 1999

Dear Sir,

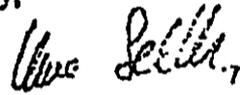
I understand that there has been a recent development at the property next to mine, on the North side, owned by Mr. and Mrs. Robert Lyn Nelson with the address of 4871 Lower Honoapiilani Highway.

I ask that an emergency permit be issued to fill in this very unsafe area while a sea wall or other permanent measure is sought.

The collapse of the sea wall and the cave that exists is a real danger and threat that needs to be addressed. The situation affects my legal sea wall as well.

Thank you for your prompt attention.

Sincerely,



Uwe Schulz
Uwe Schulz Architect
1022 Front St.
Lahaina, HI 96761
and resident at
4869 Lower Honoapiilani Road
Lahaina, HI 96761
Telephone: 661-8317

1022 Front Street / Lahaina, Maui, Hawaii 96761 / (808) 661-8317 / Fax (808) 667-5063

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07/05/00 16:11 FAX 17604714892

U8/24/98 11:07 FAX 000 0 110

KAHANA SUNSET

023
WU1



Luxury Beach Condominium
August 24, 1999

Mr. Dave Atkinson

[REDACTED]
Mokulele Highway
Kahului, HI 96732

Dear Mr. Atkinson:

This letter is in regards to an adjacent property to the Kahana Sunset owned by Mr. And Mrs. Robert Lyn Nelson. The Nelson property is located at 4871 Lower Honoapiilani Highway and we are at 4909 Lower Honoapiilani Highway.

As you are probably aware, there is currently a large cavern area on the front of the Nelson's property created by the collapse of the sea wall. Our guests, which include many children, frequently walk the beach to the south end past the cave area. The condition of the area has continued to deteriorate and now poses a significant hazard to anyone walking in the area. It is paramount from a safety standpoint that this area be repaired as soon as possible to prevent a serious accident from occurring.

We urge that an emergency permit be issued to repair this unsafe area until a permanent solution can be found.

Mahalo for your time and consideration.

With Fond Aloha,

Richard A. Meaney
Richard A. Meaney
General Manager

Discover Maui's Secret Beach!
Kahana Sunset Resort - P.O. Box 10219 - Lahaina, Maui, Hawaii 96761
Toll Free: 1-800-669-1488 - Office: 1-808-669-8011 - Fax: 1-808-669-9170

07/05/00 16:11 FAX 17604714892

024

CARL EDMUNDSON
4855 L. Honoapiilani Highway
Maui, Hawaii 96761

April 28, 2000

Mr. John Min
Director, Department of Planning
County of Maui
250 South High Street
Wailuku, HI 96793

RE: Seawall Permit for Mr. & Mrs. Warner Lusardi
4871 L. Honoapiilani Highway

Dear Mr. Min:

I am the owner of 4855 L. Honoapiilani Highway located near referenced property and I am writing this letter to show my strong support for the County's issuance of a permit for a new seawall at 4871 L. Honoapiilani Highway.

The seawall which was previously in place on the Lusardi property protected their property, and other nearby properties, from damage caused by heavy surf which has now become a serious problem.

Since the collapse of the previous seawall, the high surf is eroding the beachfront cliff and undermining the foundation of seawalls belonging to fellow neighbors. The shoreline had been protected by a reef. This reef has suffered from years of runoff so it no longer offers adequate protection. Erosion of the shoreline has accelerated over the years and the level of the ocean is rising.

The beach, used by many families, is accessed by utilizing the easement across the Lusardi property and we are all at risk due to the possible collapse of the undermined cliff. I strongly support the issuance of a seawall permit for referenced property.

Sincerely,


Carl Edmundson

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JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

August 27, 1999

Ms. Nina Uilani Nelson
4871 Lower Honoapiilani Road
Lahaina, Hawaii 96761

Dear Ms. Nelson:

RE: Special Management Area (SMA) Emergency Permit -- Temporary Placement of SEABAGS® to Fill Cave Fronting Residence at 4871 Lower Honoapiilani Highway, TMK: 4-3-15:452, Kahana, Maui (SM3 990001)

In response to your application received on August 26, 1999, the Maui Planning Department (Department) finds that a cave has been formed by wave action undermining the unprotected bank of the subject property. The cave walls are relatively unstable and could be hazardous should someone crawl in and the cave collapses.

In accordance with the Special Management Area Rules for the Maui Planning Commission, Section 12-202-16, a determination has been made relative to the above project that the proposed development is immediately required to prevent substantial physical harm to persons. As such, the Department finds that the criteria set forth in Sections 205A-22 and 30, Hawaii Revised Statutes (HRS), as amended, have been met, and the granting of an SMA Emergency Permit is justified.

Pursuant to conversation with the Department of Land and Natural Resources (DLNR), Land Management Division, Maui Branch, no certified shoreline surveys were done for the property. Furthermore, subsequent field surveys done for the property may not be reliable. Therefore, the Department is unable to establish jurisdiction of the proposed development. All applicable permits from DLNR should also be secured for the removal of the collapsed seawall and proposed development within portions of the cave area.

Based on the aforementioned, you are hereby granted an SMA Emergency Permit subject to the following conditions:

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Ms. Nina Uilani Nelson
August 27, 1999
Page 2

1. That construction shall be in accordance with plans submitted on August 26, 1999.
2. That any portion of the SEABAGS® shall not encroach seaward of the mouth of the cave.
3. That all applicable permits shall be obtained from the Department of Land and Natural Resources, prior to initiation of construction.
4. That the collapsed seawall shall be removed from the beach area within thirty (30) days from the date of this permit.
5. That the cave voids and SEABAGS® shall be filled with beach-quality clean-screened sand from an outside source. No sand from the beach area shall be used for this project.
6. That pursuant to Section 12-202-16(g) of the SMA Rules, the SEABAGS® shall be removed by February 29, 2000, subject to extensions, provided that the permit holder apply for applicable Special Management Area and Shoreline Area permits for a long-term solution to address the impacts to coastal erosion by October 31, 1999. Said long-term solution shall be prepared by a licensed professional engineer knowledgeable in coastal processes.
7. Condition No. 6 shall run with the land and shall be set forth in a unilateral agreement recorded by the applicant with the Bureau of Conveyances within sixty (60) days from the date of receipt of this decision. A copy of the recorded unilateral agreement shall be filed with the Planning Director and the Director of the Department of Public Works and Waste Management within ten (10) days of recordation.
8. That appropriate measures shall be taken during construction to mitigate the short-term impacts of the project relative to soil erosion from wind and water, ambient noise levels, and traffic disruptions.
9. That the conditions of this SMA Emergency Permit shall be self-enforcing, and accordingly, upon due notice by the Planning

Ms. Nina Uilani Nelson
August 27, 1999
Page 3

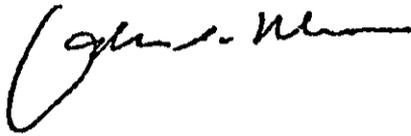
Department to the permit holder that there is prima facie evidence that a breach has occurred, the permit shall be automatically suspended pending a hearing on the continuity of such SMA Emergency Permit, provided that written request for such a hearing is filed with the Department within ten (10) days of the date of receipt of such notice of alleged breach. If no request for hearing is filed within said ten (10) day period, the Maui Planning Department may revoke said SMA Emergency Permit.

10. That full compliance with all applicable governmental requirements shall be rendered.
11. That enforcement and penalty actions may be taken pursuant to Section 12-202-23 and 25 of the SMA Rules of the Maui Planning Commission should there be noncompliance with the conditions established with this permit.
12. That the applicant, its successors and permitted assigns shall exercise reasonable due care as to third parties with respect to all areas affected by subject SMA Emergency Permit and shall procure at its own cost and expense, and shall maintain during the entire period of this SMA Emergency Permit, a policy or policies of comprehensive liability insurance in the minimum amount of ONE MILLION AND NO/100 DOLLARS (\$1,000,000.00) naming the County of Maui as an additional named insured, insuring and defending the applicant and County of Maui against any and all claims or demands for property damage, personal injury and/or death arising out of this permit, including but not limited to: (1) claims from any accident in connection with the permitted use, or occasioned by any act or nuisance made or suffered in connection with the permitted use in the exercise by the applicant of said rights; and (2) all actions, suits, damages and claims by whomsoever brought or made by reason of the nonobservance or nonperformance of any of the terms and conditions of this permit. Copies of a hold harmless agreement and the policy naming County of Maui as an additional named insured shall be submitted to the Department within fifteen (15) calendar days from the date of this letter. Within two (2) days from the date of this permit, the applicant shall submit a binder to the Planning Department which verifies that the hold harmless agreement and policy will be executed.

Ms. Nina Uilani Nelson
August 27, 1999
Page 4

Should you have any questions, please contact Mr. Daren Suzuki, Staff Planner,
of this office at 270-7735.

Very truly yours,



JOHN E. MIN
Planning Director

JEM:DMS:cmb

c: Clayton Yoshida, AICP, Deputy Director of Planning
Aaron Shinmoto, Planning Program Administrator
Philip Ohta, Department of Land and Natural Resources, Land Division
Rob Mullane, Sea Grant Extension Agent
Daren Suzuki, Staff Planner
CZM File
SM3 File
General File
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JAMES "KIMO" APANA
Mayor
JOHN E. MIN
Director
CLAYTON I. YOSHIDA
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

July 26, 2000

Mr. Richard Takase
Kaikane Corporation
70 Kanoa Street
Wailuku, Hawaii 96793

Dear Mr. Takase:

RE: Special Management Area (SMA) Emergency Permit Amendment for a Time Extension for the Temporary Placement of SEABAGS® to Fill Cave Fronting Residence at 4871 Lower Honoapiilani Highway, TMK: 4-3-15:052, Kahana, Maui, Hawaii (SM3 990001)

In response to your request received on July 12, 2000, the Maui Planning Department (Department) finds that the landowner has demonstrated a good faith effort in complying with Condition No. 6 of the original permit granted on August 27, 1999.

As such, you are hereby granted a time extension, subject to all of the conditions placed on the original permit dated August 27, 1999, provided that Condition No. 6 shall be amended to read as follows:

- 6. That pursuant to Section 12-202-16(g) of the SMA Rules, the SEABAGS® shall be removed by July 31, 2002, subject to extensions, provided that the permit holder apply for applicable Special Management Area and Shoreline Area permits for a long-term solution to address the impacts to coastal erosion by January 1, 2001. Said long-term solution shall be prepared by a licensed professional engineer knowledgeable in coastal processes.

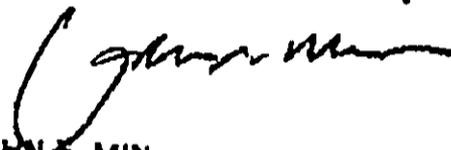
250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7834

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Mr. Richard Takase
July 26, 2000
Page 2

Should you have any questions, please contact Mr. Daren Suzuki, Staff Planner,
of this office at 270-7735.

Very truly yours,



JOHN E. MIN
Planning Director

JEM:DMS:cmb

- c: Clayton Yoshida, AICP, Deputy Director of Planning
- Aaron Shinmoto, Planning Program Administrator (2)
- Philip Ohta, Department of Land and Natural Resources, Land Division
- Rob Mullane, Sea Grant Extension Agent
- Daren Suzuki, Staff Planner
- OO/CZM File
- SM3 File
- General File
- S:\ALLIDARENISMAMINDRINEEXT.SM3

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Right of Entry -- Richard Takase
7/27/00

damage caused by or in any way connected with the permission granted herein.

- 4. That the applicant shall obtain a liability insurance policy naming the State of Hawaii as additional insured, with the following limits to be established:

Bodily Injury	\$1,000,000.00
Property Damage	50,000.00
Medical Benefits	5,000.00

- 5. All tools, equipment and other property brought or placed upon the subject property by the applicant shall remain the property of same and be removed within a reasonable time upon expiration of the subject right of entry.
- 6. That the applicant shall be responsible for clearing and restoring the area to its original condition or a condition acceptable to the Maui District Land Office.
- 7. That the applicant shall comply with all applicable rules, regulations, ordinances and statutes of the County, State and Federal governments relative to the use of the subject land including those relating to public health and safety.
- 8. That this right of entry shall be made available at the project site to any government official and/or member of the public, if requested.
- 9. Upon completion of the project, the applicant shall provide the Maui District Land Office with a twenty-four (24) hour notice to schedule a field inspection of the subject land.
- 10. That the applicant shall be responsible for its contractors' and consultants' compliance of the terms and conditions of this right of entry.
- 11. That the applicant shall implement mitigative measures to avoid dirt and petroleum runoff into the ocean and State land.
- 12. That the Department of Land and Natural Resources and its Chairperson reserve the right to impose additional terms and conditions if deemed necessary.

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Right of Entry - Richard Takase
7/27/00

3

B

Please indicate your acceptance and compliance with the above terms and conditions by placing your signature in the space provided on the next page and return a copy to this office.

Should you have any questions regarding this matter, please contact the Maui District Land Office at the address described on the letter head or by telephone at (808) 984-8100.

Very truly yours,

PHILIP OHTA
Maui District Land Agent

The foregoing terms and conditions of the above described right of entry is hereby accepted and acknowledged:

RICHARD TAKASE

DATE

cc: Central File
Maui Land Board Member



APPENDIX D
PRE-CONSULTATION CORRESPONDENCE

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JAMES "KIMO" APANA
Mayor

DAVID C. GOODE
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

November 1, 2001

Mr. Rory Frampton
CHRIS HART & PARTNERS, INC.
1955 Main Street, Suite 200
Wailuku, Hawaii 96793-1706

RECEIVED
NOV 05 2001

CHRIS HART & PARTNERS, INC.
Landscape Architecture & Planning

Dear Mr. Frampton:

SUBJECT: PRE-CONSULTATION
LUSARDI RESIDENCE - SEAWALL REPAIRS
TMK: (2) 4-3-015:052

We have reviewed the pre-consultation information for the Environmental Assessment and have the following comment:

1. Please comply with the provisions of the grading ordinance including the provision which requires that any fill placed within the Shoreline Setback Area shall be sand.

We would appreciate receiving a copy of the Draft Environmental Assessment for review. If you have any questions regarding this letter, please call Milton Arakawa at 270-7845.

Very truly yours,

DAVID GOODE
Director

MA:jso
S:\LUCA\CZM\Lusardi

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January 18, 2002

TO: Mr. David Goode, Director
County of Maui Department of Public Works and Waste Management
200 South High Street
Wailuku, Hawaii 96793

RE: Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii, TMK (2) 4-3-015: 52
Draft EA Preconsultation

Dear Mr. Goode,

Thank you for your comments dated November 1, 2001. To address your comment, we are providing the information below:

Grading Ordinance. The project will comply with the Grading Ordinance.

If you have any further questions or concerns, please call Mr. Robb Cole or myself at (808) 242-1955.

Respectfully Submitted,


Rory Frampton

CC: Mr. Paul Mancini, Esq.

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JOHN E. MIN
Director
CLAYTON I. YOSHIDA
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

November 9, 2001

Mr. Rory Frampton
Chris Hart & Partners, Inc.
1955 Main Street, Suite 200
Wailuku, Maui, Hawaii 96793-1706

Dear Mr. Frampton:

RE: Environmental Assessment Pre-Consultation -- For the
Construction of a Seawall at the Lusardi Residence,
TMK: 4-3-015: 052, Napili, Maui, Hawaii

Thank you for the opportunity to comment on the above-referenced project prior to the preparation of a draft environmental assessment (DEA). In addition to all relevant State and County regulations, the DEA should specifically address the potential inconsistency of the project with the West Maui Community Plan policy to "prohibit the construction of vertical seawalls and revetments except as may be permitted by rules adopted by the Maui Planning Commission governing the issuance of Shoreline [Special] Management Area (SMA) emergency permits, and encourage beach nourishment by building dunes and adding sand as a sustainable alternative." Please be advised that the previous wall at the location was illegally constructed, and thus any work to restore the wall would be ineligible for an emergency permit.

Additionally, the coastal evaluation provided for the project indicates that the proposed wall "would be located behind rock outcrops on the beachface, and above the normal reach of the water. This will minimize the negative impacts of the wall." This statement appears to be inconsistent with observations made during a site visit under relatively moderate wave and tide conditions, when wave runup frequently entered the area in which the proposed wall would be located. The DEA should address this apparent inconsistency.

Finally, the DEA should include an analysis of the feasibility of conducting a small-scale beach nourishment project as an alternative at the location. The shoreline in the area has been hardened by legal and illegal seawalls, and a beach nourishment project may accomplish project goals while restoring lost recreational opportunities on

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

Quality Seamless Service - Now and for the Future

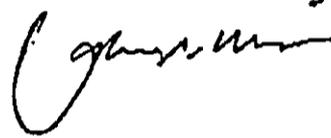
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Mr. Rory Frampton
November 9, 2001
Page 2

the beach, for which the existing seawalls may be to blame and the proposed additional seawall may exacerbate.

Thank you for your cooperation. If additional clarification is required, please contact Matt Niles, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN
Planning Director

JEM:MCN:cmb

c: Clayton Yoshida, AICP, Deputy Director of Planning
Matt Niles, Staff Planner
01/CZM File
Project File
General File
S:\ALL\Matt\em1\Lusardi Seawall\preconsultation.wpd



January 18, 2002

TO: Mr. John Min, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

RE: Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii, TMK (2) 4-3-015: 52
Draft EA Preconsultation

Dear Mr. Min,

Thank you for your letter dated November 9, 2001, which provided preliminary comments regarding the submission of a Draft EA. We have the following responses to your comments:

Regulatory Consistency

The following information will provide you with a greater understanding of the regulatory background and direction of the project, and illuminate how it is consistent with the West Maui Community Plan and with relation to SMA emergency permits.

This project initiated in 1999, when storm waves undermined a section of the cliff-like backshore of Keonenui Beach fronting the subject property, creating a hazardous unstable cave. The subject property owner, supported by all other landowners in the bay, applied for a SMA emergency permit to place sandbags in the cave. In its letter dated August 27, 1999, the Maui Planning Department approved the emergency permit, finding that the "development is immediately required to prevent substantial physical harm to persons". The Department conditioned the permit with a requirement that the landowner apply for applicable Special Management Area and Shoreline Area permits for a long-term solution, and that said solution be prepared by a licensed professional engineer knowledgeable in coastal processes.

Submission of a long-term solution to the County was initially delayed due to the sale of the property by the previous landowner (Ms. Uilani Nelson). The current owner, Mr. Warner Lusardi re-initiated the development of a long term solution shortly after purchase, however was delayed from submitting to the County because portions of the

remnant wall were found to be encroaching on State Land. The applicant is in the process of resolving the encroachments and obtaining the necessary State approvals that are prerequisite to the SMA/SSV consideration.

A Draft Environmental Assessment (EA) that is being prepared for the project will include an analysis of relevant government plans policies and controls. In your letter, you refer to a portion of the West Maui Community Plan that incorporates the review associated with SMA emergency permits. That policy states:

Prohibit the construction of vertical seawalls and revetments except as may be permitted by rules adopted by the Maui Planning Commission governing the issuance of Shoreline Management Area (SMA) emergency permits, and encourage beach nourishment by building dunes and adding sand as a sustainable alternative.

The purpose of the SMA Emergency Permit is provided in section §205A-22 of Hawaii Revised Statutes and section §12-202 of the *Special Management Area Rules for the Maui Planning Commission*. The definition provided in the HRS specifies that an emergency permit may allow development in either of two conditions: *to prevent substantial physical harm to persons or property or to allow the reconstruction of structures damaged by natural hazards.* (por. §205A-22, HRS. emphasis added).

As mentioned above, the original 1999 SMA emergency permit for the project was granted because it met the first of the criteria; *to prevent substantial physical harm to persons*. The subject project is the long-term solution to address the same physical hazard.

In your letter, you make reference to section of the *Special Management Area Rules for the Maui Planning Commission* that addresses the second criteria, *to allow the reconstruction of structures damaged by natural hazards*. This section states:

No special management area emergency permit shall allow the reconstruction of structures damaged by natural hazards to their original form if such structures were previously found not to be in compliance with the federal flood insurance program or where not legally constructed. (§12-202-16(e))

While section (e) elaborates on how an emergency cannot be used to legalize a nonconforming or illegal wall, it is generally not applicable to the regulatory consideration of this project for the following reasons:

- The section does not prohibit an action that is pursued *to prevent substantial physical harm to persons* (the first criteria).
- The project does not intend to rebuild the wall to its "original form". Instead a new solution is proposed, which will be a) compliant with the Federal Flood Insurance Program, and b) designed by a licensed professional engineer knowledgeable in coastal processes.
- While the project has been initiated under a SMA Emergency Permit, entitlement of the proposed long-term solution is anticipated to entail CDUA, SMA and SSV permit consideration as well as an easement for use of State land.

Project Location with regards to Reach of Water

The draft coastal evaluation has been updated in this regard.

Feasibility of Beach Nourishment

Beach nourishment is one of the discussed alternatives in the Draft Environmental Assessment. Following your letter, the coastal engineer has provided more detailed information and comments on the practicality of a nourishment strategy which we have included below

An analysis of the feasibility of a beach nourishment project along the beach reveals the following:

1. Beach sand placed only in front of the Lusardi residence without the construction of retaining structures would quickly be spread along the entire beach. Therefore, to be effective, beach nourishment would have to occur along the entire length of Keonenui Beach, approximately 500 feet.
2. The beach slope in front of the Lusardi residence is 1V:6H and in front of the Kahana Sunset is 1V:9H. A representative beach nourishment project would entail building a horizontal beach crest width of 25 feet at an elevation of +8 feet and a beach slope of 1V:9H down to the approximate -5-foot elevation. Factoring in overfill and compaction factors, this translates to about 11000 cubic yards of sand required for nourishment.
3. Detailed coastal, engineering, environmental and design studies would be required prior to initiation of the nourishment. The coastal and engineering studies would include investigation of possible sand sources, analysis of coastal processes, design of retaining structures and a nourishment plan. The only known sand source on Maui is dune sand, which contains a significant percentage of fine material. This fine material would be released into the nearshore waters in the bay, with possibly significant negative impacts on the coastal water quality and marine biology. A detailed environmental assessment would be required that would evaluate impacts on marine biology, water quality, as well as construction impacts to road traffic and other land issues. Retaining structures may be required to maintain the sand on the beach. A groin constructed along the north side of the beach would likely help retain the nourished sand on the beach. Detailed design of the structures and the sand nourishment plan would be required.
4. Required permits and documents include an environmental assessment, a conservation district use application, U.S. Army Corps of Engineers Section 10 (work in U.S. navigable waters) and Section 404 (sand placement in U.S. waters), and a Section 401 water quality certification from the State Department of Health.
5. The possible costs to accomplish the items above are: a) sand placement on beach - \$300,000 to \$600,000; b) groin construction - \$100,000; c) environmental, coastal, design and permit preparation - \$150,000.
6. The possible time required to complete the coastal, environmental, design and permit process is 18 to 24 months.
7. Given the dynamic nature of the beach, it is reasonable to assume that the beach could require maintenance nourishment of up to 50% of the initial volume every five years.

Further, and perhaps most difficult, the project would require financial participation of all owners on the beach, and close cooperation and participation of federal, county and state agencies. Once the process is initiated, there is no guarantee that permits will be granted, or that negative environmental impacts will not kill the project. If the project is constructed, there is also no guarantee that a large storm will not quickly erode away all the nourished sand.

Given the expense, length, difficulty and uncertainty in the process, we conclude that beach nourishment is not a feasible alternative to impose on a single homeowner attempting to replace 35 feet of seawall fronting his property.

If you have any further questions or concerns, please call Mr. Robb Cole or myself at (808) 242-1955.

Respectfully Submitted,


Rory Frampton

CC: Mr. Paul Mancini, Esq.
Mr. Marc Erickson, P.E.



APPENDIX E
DRAFT EA COMMENTS AND RESPONSE
LETTERS

COPY

MEMORANDUM

Ref: CDUA MA-3081B
Author: MDLO\hw

DATE: March 4, 2002

TO: Mr. Harry Yada
Acting Land Division Administrator

ATTN: Mr. Masa Alkire
DLNR Conservation Planner

FROM: Jason K. Koga
Maui District Land Agent

SUBJECT: Request for Comments, CDUA File No. MA-3081B [Warner Lusardi],
TMK: (2) 4-3-015: Seaward of 052, Napili, Lahaina, Maui

The Maui District Land Office has reviewed the subject application and has the following comments to offer at this time.

1. Upon Land Board approval of CDUA, applicant may apply for a construction right-of-entry through the Maui District Office.

Pursuant to your conversation with Louis Wada on 3/4/02, the File No. should read "*MA-3081B*" instead of "*OA-3081B*".

Thank you for affording us the opportunity to review the application.



November 18, 2002

Mr. Jason K. Koga, Maui District Land Agent
Division of Land Management, Maui District Office
State of Hawaii Department of Land and Natural Resources
54 South High Street, Room 101
Wailuku, HI 96793

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Mr. Koga,

Thank you for your comments dated March 4, 2002, which state that upon Land Board approval of the CDUA, the applicant may apply for a construction right-of-entry through the Maui District Office.

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 • Honolulu, HI 96813 • (808) 587-0166 • Fax: (808) 587-0160

March 21, 2002

MEMORANDUM

TO: Dawn Hegger, Planner
Land Division

THRU: Harry Yada, Acting Administrator
Land Division

FROM: Michael G. Buck, Administrator
Division of Forestry and Wildlife

SUBJECT: Request for Comments: CDUA No. MA-3081B Conservation District Use Application by Warner C. Lusardi to reconstruct a portion of a seawall fronting parcel TMK (1) 4-4-006-014 at 4871 Lower Honoapiilani Road, Lahaina, Maui, Hawaii.

The Division of Forestry & Wildlife (DOFAW) has reviewed the subject document regarding impacts the project may have on DOFAW management programs and we have no objections to the applicant's CDUA (MA-3081B) with the Department. Thank you for the opportunity to comment on this project.

C: Maui DOFAW Branch



November 18, 2002

Michael G. Buck, Administrator
Division of Forestry and Wildlife
State of Hawaii Department of Land and Natural Resources
1151 Punchbowl Street, Room 325
Honolulu Hawaii 96813

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Mr. Buck,

Thank you for your letter dated March 21, 2002, which states that your Division has no objection to the subject project.

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

PHONE (808) 594-1888

FAX (808) 594-1865



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD02-532

March 28, 2002

Mr. Harry Yada
Acting Administrator
Land Division
Department of Land and Natural
Resources
P.O. Box 621
Honolulu, HI 96809

SUBJECT: CONSERVATION DISTRICT USE APPLICATION (CDUA)

Dear Mr. Yada:

Thank you for the opportunity to review the above referenced CDUA, which will allow for the reconstruction of a portion of a seawall fronting parcel TMK: (1) 4-4-006-014 at 4871 Lower Honoapiilani Road.

The Office of Hawaiian Affairs (OHA) requests that you amend the Archaeological/Historical Resources section (page 18) and the Historical/Cultural Resources section to reflect that the State Historic Preservation Division and the Oahu Island Burial Council be advised if cultural artifacts or burials are discovered.

If you have any questions, please contact Jerry B. Norris at 594-1847 or email him at jerryn@oha.org.

Sincerely,

A handwritten signature in cursive script, appearing to read "Puaalaokalani Aiu".

Puaalaokalani Aiu
Acting Director, Hawaiian Rights Division

cc: OHA Board of Trustees
Clyde W. Namu'o, OHA Administrator
Thelma Shimaoka, Maui CAC

RECEIVED
LAND DIVISION

2002 APR -2 A 10: 25



November 18, 2002

Puaalaokalani Aiu
Acting Director, Hawaiian Rights Division
State of Hawai'i
Office of Hawaiian Affairs
711 Kapi`olani Boulevard, Suite 500
Honolulu Hawai'i 96813

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Ms. Aiu,

Thank you for your comments dated March 28, 2002. The Final EA has been amended to state that State Historic Preservation Division of DLNR and the appropriate Island Burial Council will be advised if cultural artifacts or burials are discovered (in this case the Maui-Lana`i Island Burial Council).

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted

Rory Erampton, Senior Planner
Chris Hart & Partners, Inc.

DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Engineering Branch

COMMENTS

We confirm that the seaward portion of the proposed project site, according to FEMA Community-Panel No. 155003 0138 B, is located in Zone V24. This is an area of 100-year coastal flooding with velocity (wave action), and base elevations and flood hazard factors determined.

Also, we confirm that the residential parcel of the proposed project site, located immediately mauka of the seaward portion, is located in Zones A4 and C. Zone A4 is an area within the 100-year flood plain, with base flood elevations and flood hazard factors determined. Zone C (no shading) is an area of minimal flooding.

Please note that this project must comply with rules and regulations of the National Flood Insurance Program (NFIP), whenever work is required within a flood zone. If there are any questions regarding the NFIP, please contact the State NFIP Coordinator, Sterling Yong, of the Department of Land and Natural Resources at 587-0248.

We acknowledge that the consultant is taking steps to ensure that this project complies with applicable County Flood Ordinances. If there are further questions regarding flood ordinances, the applicable County representative should be contacted.

Signed: Andrew M. Monden
ANDREW MONDEN, CHIEF ENGINEER

Date: 4/9/02



November 18, 2002

Mr. Andrew Monden, Chief Engineer
Division of Land Management, Engineering Branch
State of Hawaii Department of Land and Natural Resources
PO Box 621
Honolulu, Hawaii 96809

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Mr. Monden,

Thank you for your comments dated April 9, 2002. We have the following responses.

Flood Zone Identification and Permits. Thank you for confirming that the subject repairs is located in Zone V24, and that the areas immediately mauka are located in Zones A4 and C. The project will comply with the rules and regulations of the National Flood Insurance Program (NFIP).

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Kory Frampton, Senior Planner
Chris Hart & Partners, Inc.

STATE OF HAWAII
Department of Land and Natural Resources
Division of Aquatic Resources

SUSPENSE DATE: April 10, 2002

MEMORANDUM

To: *for* William Devick, Administrator *SD*
From: Richard Sixberry, Aquatic Biologist
Subject: Comments on Conservation District Use Permit MA-3081B
Comments Requested By: Dede Mamiya, Land Division
Date of Request: 3/20/02 Date Received: 3/22/02

Summary of Project

Title: Reconstruct Portion of Damaged Seawall
Proj. By: Warner Lusardi
Location: Napili, Maui

Brief Description:

The applicant seeks to reconstruct a deteriorating seawall to protect the parcel from wave erosion, remove a public hazard from an unstable cave, and prevent undermining of neighboring shore protection structures.

Comments:

Significant impact adverse to aquatic resource values is not expected from the activities proposed since adequate mitigation measures would be in place, including silt curtains, to prevent eroded material, debris, construction materials, petroleum products and other potential contaminants from blowing, flowing or leaching into coastal waters during reconstruction of the seawall.

Richard Sixberry
Aquatic Biologist



November 18, 2002

Mr. Richard Sixberry, Aquatic Biologist
Division of Aquatic Resources
State of Hawaii Department of Land and Natural Resources
1151 Punchbowl Street, Room 330
Honolulu Hawaii 96813

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Mr. Sixberry,

Thank you for your comments dated April 10, 2002, which state that you do not expect significant impacts adverse to aquatic resources since mitigation measures would be in place to prevent eroded material, debris, construction materials, petroleum products, or other potential contaminants from blowing, flowing, or leaching into coastal waters during reconstruction of the seawall.

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

April 15, 2002

RECEIVED
LAND DIVISION

2002 APR 18 A 11:32

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

Regulatory Branch

Mr. Harry Yada, Acting Administrator
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Yada:

This is in response to your request regarding the Lusardi Residence Seawall Repairs located in Napili, Maui, Hawaii. The project involves the demolition and removal of the remaining 20 feet of a deteriorating seawall and the construction of a new 55 feet wall. Storm waves have eroded the property boundaries and the potential undermining of the neighboring shoreline protection structures may occur. With the wall in place, this will stabilize and prevent future erosion of the property.

Based on the information provided, it was not possible to reach a conclusive determination regarding Department of the Army (DA) permit requirements at this time. For your information, the proposed work will not require a DA permit provided: (a) all work is conducted above the high tide line; and (b) the project does not involve any work or activity which will result in the discharge of dredge or fill material into waters of the U.S. A final determination regarding DA permit requirements for this project will be made after our office has had the opportunity to visit the site.

Thank you for the opportunity to comment on the draft Environmental Assessment and the Conservation District Use Application. File Number 200200247 is assigned to this project. Please refer to this number in any future correspondence with our office. Should you need additional information, please feel free to contact Ms. Lolly Silva of my staff at 438-7023 or by fax at 438-4060.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch



November 18, 2002

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052
File No # 200200247

Dear Mr. Young,

Thanks for your comments dated April 15, 2002. In response to your letter, the proposed work will be conducted above the high tide line; the base of the wall will be approximately 8' above msl. Secondly, the nature of the project does not require the release or discharge of dredge/fill materials or require construction dewatering. As mentioned in the Draft EA, silt fences and similar barriers will be utilized during excavation to isolate the construction area from the adjacent beach and ocean. A detailed plan showing these site-specific best-management-practices will be submitted to Maui County along with construction plans during the building permit application process.

Thank you for your comments. If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



DR. ART S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNELL NISHIOKA

RECEIVED
LAND DIVISION

STATE OF HAWAII

2002 APR 24 DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
801 KAMOMILA BOULEVARD
KAPOLEI, HAWAII 96707

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

HAWAII HISTORIC PRESERVATION
DIVISION REVIEW

Log #: 29695
Doc #: 0204CD32

MEMORANDUM

TO: Harry T. Yada, Acting Administrator
Land Division

FROM: Don Hibbard, Administrator
Historic Preservation Division

SUBJECT: Chapter 6E-42 Historic Preservation Review Pertaining to the
Conservation District Use Application and Draft Environmental
Assessment for the Proposed Seawall Reconstruction
(File No.: MA-3081B)

Ahupua'a: Alaeloa
District, Island: Lahaina, Maui
TMK: (2) 4-3-015:052 (formerly portion of parcel 2)

1. We believe there are no historic properties present, because:

- a) intensive cultivation has altered the land.
 b) residential development/urbanization has altered the land.
 c) previous grubbing/grading has altered the land.
 d) an acceptable archaeological assessment or inventory survey found no historic properties.
 e) other: In the event that historic sites (human skeletal remains, etc.) are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Office needs to be contacted immediately at 243-5169, on Maui, or at (808) 692-8023, on O'ahu.

Thus, we believe that "no historic properties will be affected" by this undertaking.

2. This project has already gone through the historic preservation review process, and mitigation has been completed .

Staff: Cathleen A. Dagher Date: 18 April 2002
Cathleen A. Dagher, Assistant Maui/Lana'i Island Archaeologist
(808) 692-8023



November 18, 2002

Mr. Don Hibbard, Administrator
Historic Preservation Division
State of Hawaii Department of Land and Natural Resources
555 Kakuhihewa Building, 601 Kamokila Blvd
Kapolei HI 96707

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Mr. Hibbard,

Thank you for your comments dated April 18 2002, stating that there are no historic properties anticipated at the project site due to prior alteration from residential development.

We also write to confirm that if any cultural artifacts or burials are discovered, the State Historic Preservation Division will be contacted and consulted for proper treatment.

If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

4156F

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director



RECEIVED
LAND DIVISION

RECEIVED

02 APR 23 A 8: 03

2002 APR 23 A 8: 46

COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 19, 2002

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Mr. Gilbert S. Coloma-Agaran, Chairperson
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Agaran:

RE: Conservation District Use Application (MA-3081B) – For the Construction of a Seawall at TMK: 4-3-015:052, Napili, Maui, Hawaii

The Maui Planning Department (Department) has reviewed the Draft Environmental Assessment (DEA) submitted in support of the above-referenced application. Given the nature of the shoreline fronting the subject property, we generally concur that a seawall may be the best solution to the ongoing coastal erosion problem in that location. However, we have serious concerns regarding the proposal to locate a portion of the structure on the public beach and the ways in which the placement of a seawall at this location may be contrary to the objectives and policies of Chapter 205A, HRS.

Specifically, an objective of Chapter 205A, HRS, is to protect beaches for public use and recreation. Specific policies include prohibiting construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities.

Contrary to information provided in the DEA, the proposed location of the seawall on the beach is currently used by the public for both lateral access and recreation purposes. Given the narrow beach width and high wave energy present at the site, this area of the beach is often the only passable area during high wave conditions that frequently occur there during winter months. We are concerned that the placement of a seawall in the proposed location would interfere with public recreation and access both directly as a result of the immediate elimination of beach

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

Quality Seamless Service - Now and for the Future

Mr. Gilbert S. Coloma-Agaran, Chairperson
April 19, 2002
Page 2

area available for use by the public and indirectly as a result of the potential for future beach narrowing resulting from the increased interaction with coastal processes.

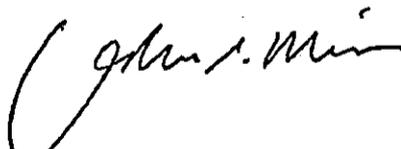
As noted in the DEA, locating the wall at a more landward position was considered, and according to the applicant, advantages of a more landward position include utilizing less public land and having a lesser impact on coastal processes. Disadvantages include a greater wall height, a greater loss of private land, and lesser protection being afforded to adjacent private shoreline protection structures. We note that these structures do not appear to have received necessary permits.

We do not agree that public beach resources should be eliminated in order to save a relatively small amount of private land and to afford additional protection to an adjacent private structure that has not undergone any agency or public review. Placing the seawall at a more mauka location would resolve the public safety issues resulting from the current condition of the shoreline at the site and would enhance the ability of the public to continue to use what little is left of the beach in the area. Accordingly, the Department recommends that the proposed seawall, if approved, be constructed entirely on private lands mauka of the shoreline.

Finally, the DEA does not include provisions for monitoring the impacts of the proposed seawall on the beach. The Shoreline Hardening Policy and Environmental Assessment Guidelines of the Office of Environmental Quality Control recommends that approval for new shoreline hardening structures should be conditioned on the applicant monitoring shoreline response to the structure in the future. The Department therefore recommends that a long-term monitoring program be required to assess the impacts of the seawall, if approved, and to require removal of the seawall if impacts on the beach are observed.

Thank you for the opportunity to comment on this application. If additional information is required, please contact Matt Niles, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN
Planning Director



November 18, 2002

Mr. John Min, Director
Department of Planning
County of Maui
250 S High Street
Wailuku, Hawaii 96793

Dear Mr. Min

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

ATT: Mr. Matt Niles

Thank you for your comment letter dated April 19, 2002. We have reviewed your comments and have the following response.

According to your letter, you are concerned about the position of the proposed replacement wall as it relates to the objectives and policies of Chapter 205A HRS.

We have revised the proposed position of the wall for the Final EA; the attached figure depicts two new alternative wall positions. In both alternatives, the proposed connection to the neighbor's seawall to the north has been moved about 10 feet landward, which is coincident with the mauka edge of neighbors wall. This position is also approximately 10 feet inside of the current property line, which was established via the 1984 shoreline survey. Although a portion of this area was accessible prior to the collapse of the sea-cliff, the area has not been accessible since the collapse due to the presence of earthen material and the subsequent placement of temporary sand bags. With this new alignment, a potential access area (~170 sf) will be made available along the north half of the repair. Similarly, moving the wall landward is anticipated to lessen any effect the wall may have on coastal processes.

The south half of the repair (which includes demolition of a remnant section) is represented by two options in the attached figure. Option A would continue the wall in a straight line towards the existing stairway, slightly landward of the existing remnant section. Option A encroaches on State land near the stairway (approximately 70 sf). Option B would divert from the Option A midpoint, following the current property line to its intersection with the existing stairway.

The applicant prefers Option A for the following reasons:

- The wall would be straight, and essentially perpendicular to the connecting structures. This simplifies engineering and construction, and provides a compatible aesthetic design.
- Option B creates an acute angle at the intersection with the stairwell, which is not a preferred engineering solution. In large wave events, the acute angle could increase scouring forces, due to the increased refraction of wave energy.
- The additional beach area created along the south repair section by Option B would provide an area of marginal utility from a public access perspective. The area would have an awkward "V" shape and be bordered by vertical walls approximately 10 ft. high, creating an almost cave like feel. Given the presence of the stairway, this area would not likely be used for lateral access. Furthermore, based on the 1984 photographs, the area was not sandy, rather, it was part of the sloping backshore and made up of a combination of rocky matrix and dirt.
- It is not known if the landward portion of the stairway is built upon earth or masonry. Option B would expose this unknown portion of the stairway. If an earthen base is uncovered, it would have to be excavated from the side and the void filled with concrete/masonry. This could cause a collapse of the stairway and create a risk to the construction crew. Option A minimizes the risk of collapse or injury.
- Option B increases the amount of backshore that needs to be excavated. Given that the difference in elevation between the rock matrix and the pool deck is 18 vertical feet, and that the footing of the wall will be 8 feet wide, there is a concern that excavating further inland could create unstable soil conditions.
- The Option A alignment does not appear to be utilizing beach area that was once available to the public. Please see the attached figure showing the annotated shoreline survey and survey photo. Option A appears to be coincident with the steep bank that was present during the 1984 shoreline survey (note slope of ladder); land mauka of the Option A alignment does not appear accessible to a person on the beach.

Secondly, we wanted to address your recommendation for shoreline monitoring based upon the recommendations in the Shoreline Hardening Policy developed by the Office of Environmental Quality Control.

We note that a form of monitoring has taken place in the form of the UH coastal erosion studies prepared for your department. The studies for the Alaehoa region measure beach (toe) changes between 1912 and 1997. According to the model, the Annual Erosion Hazard Rate (AEHR) for the immediate area is about 1.44 ft/year and the End Point Long Term Erosion Rate (EPR) is about 0.1 ft/year, with the beach-wide averages being somewhat lower. (The study notes that it has thrown out earlier data points that would result in a lesser AEHR). The study also shows that the beach is dynamic, as evidenced by a significant fluctuation in the 1987-88 measurements. The study predicts continued shoreline erosion.

Despite this prediction, evaluation of the physical characteristics at the site by the applicant's coastal engineering consultants, the State Department of Land and Natural Resources, and your Department have led to a mutual agreement that a replacement seawall is likely the best solution. This conclusion is supported by the following facts:

- The entire bay is armored by natural features and continuous seawalls
- The subject repair section is a small component of the existing composite of seawalls
- Erosion at the subject repair site has created conditions hazardous to the public

The intent of monitoring would be to provide data that would be used to determine if the structure should be removed at a later date. The applicant feels that additional monitoring will not result in information significant to that decision for the following reasons:

- There is no practical way of linking a measured coastal effect at Keonenui Beach with the proposed repair because the entire bay is armored by natural features and continuous seawalls. The project is a relatively small component of the engineered backshore. Conversely, if the project was a new seawall on a previously unarmored beach, effect could be linked to cause.
- The applicant, the State, and the County have acknowledged considerable hazards to the public created by erosion at the site. Although coastal measurement data should be considered during future evaluation of the

Letter to Mr. John Min
Lusardi Residence Seawall Repairs
November 18, 2002
Page 4 of 4

structure, such information will be less influential than the reasoning behind providing continued public safety at the site.

- Since previously permitted seawalls north and south of the proposed repair compose the bulk of the engineered backshore, potential removal of the proposed section will have little effect on coastal processes.

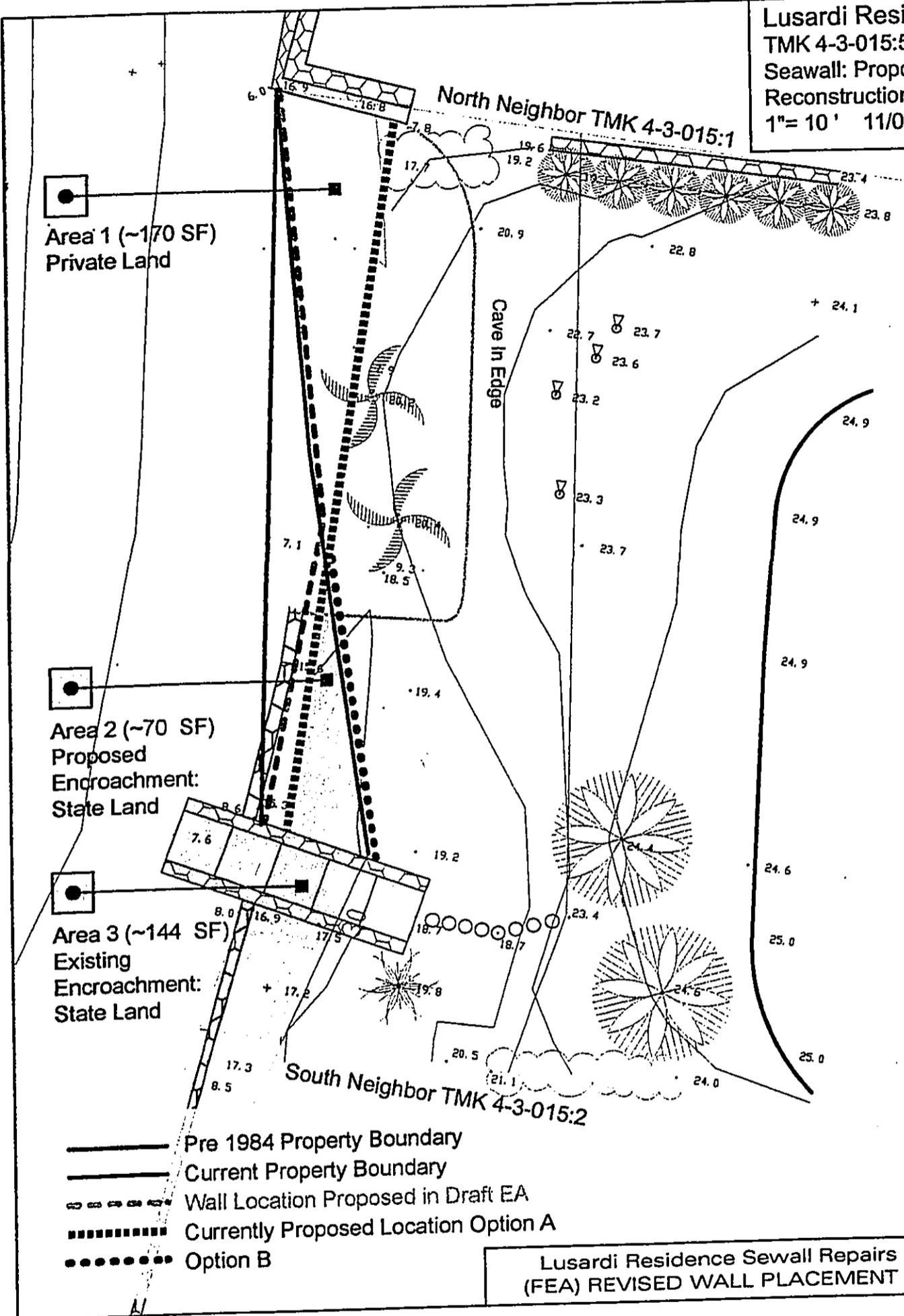
In summary, additional monitoring is unlikely to yield useful data, and a decision to remove the structure is unlikely, despite the data. Comprehensive monitoring would be useful and appropriate on a beach that was previously untouched, but at this location, complete armoring has already taken place.

Respectfully Submitted



Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

Lusardi Residence
 TMK 4-3-015:52
 Seawall: Proposed
 Reconstruction Location
 1" = 10' 11/06/02



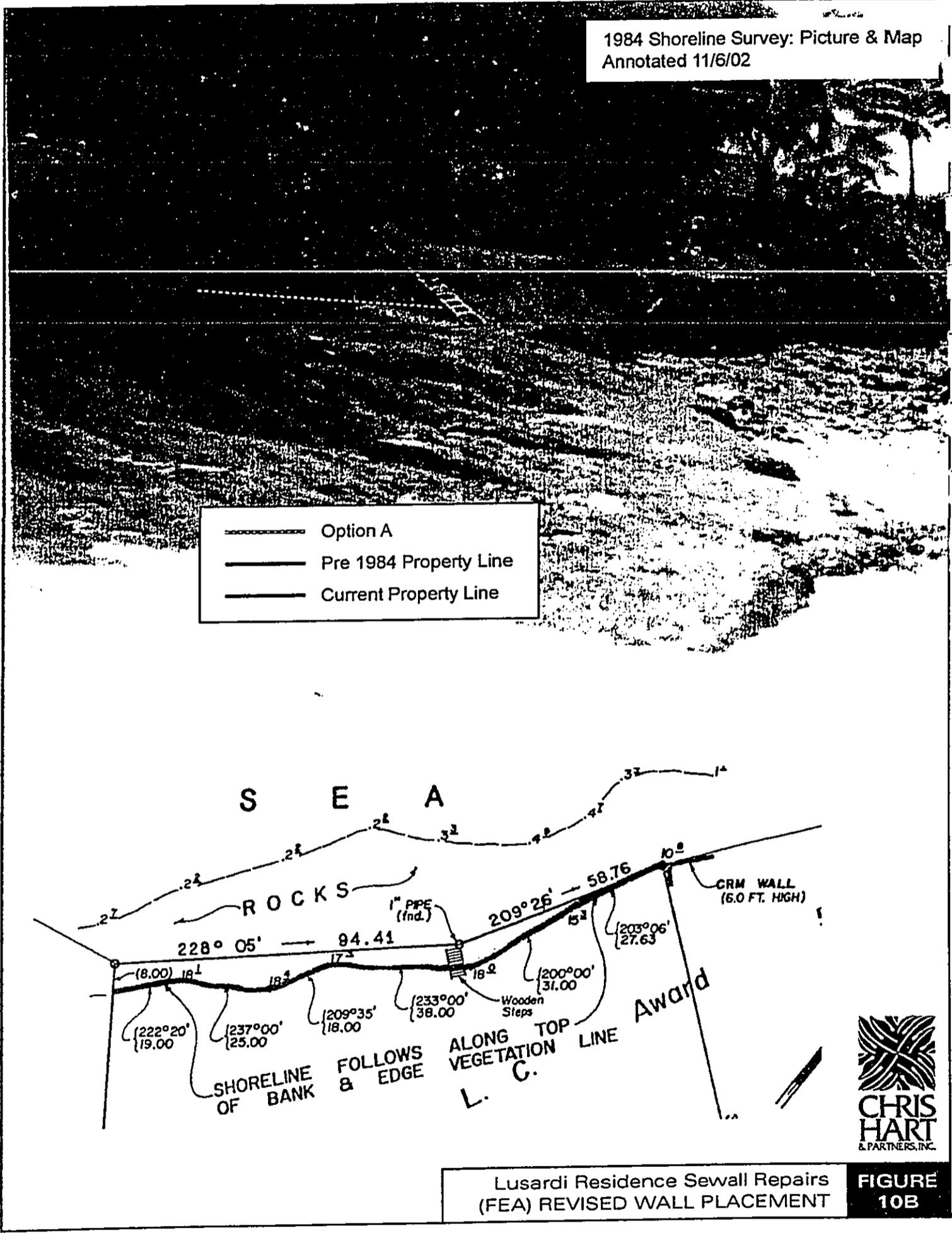
- Pre 1984 Property Boundary
- Current Property Boundary
- - - - - Wall Location Proposed in Draft EA
- Currently Proposed Location Option A
- Option B

Lusardi Residence Sewall Repairs
 (FEA) REVISED WALL PLACEMENT



FIGURE 10A

1984 Shoreline Survey: Picture & Map
Annotated 11/6/02



Lusardi Residence Sewall Repairs (FEA) REVISED WALL PLACEMENT

FIGURE 10B



BENJAMIN J. CAVETANO
GOVERNOR OF HAWAII



BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

02-072/epo

April 23, 2002.

Mr. Harry M. Yada, Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

RECEIVED
LAND DIVISION
2002 APR 25 P 2:57
DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

Dear Mr. Yada:

Subject: Conservation District Use Application (CDUA)
Portion reconstruction of Seawall at 4871 Lower Honoapiilani Road
Tax Map Key: 4-4-006:014

Thank you for the opportunity to review and comment on the subject proposal. The CDUA was routed to the various branches of the Environmental Health Administration. We have the following comments.

Clean Water Branch (CWB)

The applicant is requesting an After-The-Fact (ATF) easement for existing, encroaching structures (seawall and stairway) and to permit a new structure (55-linear feet replacement seawall) to be constructed partially on the State Land. We do not condone with the issuance of any ATF permit. Based on the existing shoreline condition described in the DEA, we will have no objections, if DLNR wishes to issue a CDUA Board Permit to the applicant, provided that:

1. A site-specific Best Management Practices (BMPs) Plan shall be developed and site-specific BMPs measures shall be properly implemented to isolate and confine the seawall construction activity and to contain and prevent the potential pollutant discharges from adversely impacting the State water quality;
2. An applicable monitoring plan shall be developed and implemented to ensure the adequacy of the BMPs measures implemented and ensure that the proposed seawall construction will not result in any violations to the applicable State water quality standards established for the affected water body;

3. A National Pollutant Discharge Elimination System permit authorizing treated dewatering effluent discharges associated with construction activity pursuant to Section 402 of the Federal Clean Water Act, Chapter 342D of the Hawaii Revised Statutes, and Chapter 11-55 of the Hawaii Administrative Rules, is required if discharge of dewatering effluent into State water is anticipated during the seawall construction.

If you have any questions, please contact the Clean Water Branch at (808) 586-4309.

Clean Air Branch (CAB)

The proposed actions that would affect air quality include removing vegetation, grading, trenching, excavation and other construction activities.

Control of Fugitive Dust

Due to the nature and location of the project, there is a significant potential for fugitive dust emissions during the removal of debris, and during grading, trenching, and construction activities that would impact nearby businesses, residents, and beaches. It is recommended that a dust control management plan be developed which identifies and addresses those activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of construction is warranted.

Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust. The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to:

- a. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;
- b. Providing an adequate water source at the site prior to start up of construction activities;
- c. Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d. Controlling of dust from shoulders and access roads;
- e. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f. Controlling of dust from debris being hauled away from project site.

Mr. Harry M. Yada, Administrator
April 23, 2002
Page 3

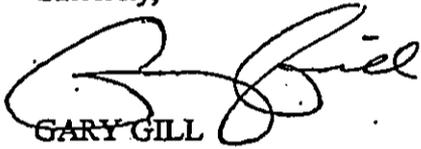
If you have any questions regarding these issues on fugitive dust, please contact the Clean Air Branch at 586-4200.

Noise, Radiation and Indoor Air Quality (NRIAQ) Branch

All project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, on "Community Noise Control".

If you have any questions, please contact the NRIAQ at (808) 586-4701.

Sincerely,



GARY GILL
Deputy Director
Environmental Health Administration

c: CWB
CAB
NRIAQ



November 18, 2002

Mr. Gary Gill, Deputy Director
Environmental Health Administration
State of Hawaii Department of Health
PO Box 3378
Honolulu Hawaii 96801

Dear Mr. Gill

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Thank you for your comments dated April 23, 2002. We have the following responses.

Clean Water Branch

- 1) **BMPs.** As mentioned in the Draft EA, silt fences and similar barriers will be utilized during excavation to isolate the construction area from the adjacent beach and ocean. A detailed plan showing these site-specific best-management-practices will be submitted along with construction plans during the building permit application process.
- 2) **Monitoring Plan.** A monitoring plan consisting of photographic documentation will be implemented to ensure the adequacy of the BMPs.
- 3) **NPDES.** A NPDES permit will be obtained if the project contractor anticipates construction dewatering. At this time, dewatering or discharge activities are not anticipated.

Letter to Mr. Gary Gill
Lusardi Residence Seawall Repairs
November 18, 2002
Page 2 of 2

Clean Air Branch

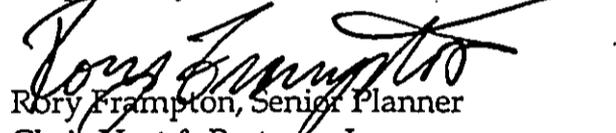
- 1) *Fugitive Dust*. The project will comply with the provisions of HAR 11-60.1 "Air Pollution Control, including the provided measures (a-f) as applicable.

Noise Radiation and Indoor Air Quality Branch

- 1) *Noise*. The project will comply with HAR 11-46 "Community Noise Control".

Thank you for your comments. If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office or myself.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

BENJAMIN J. CAYETANO
GOVERNOR



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENT QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

RECEIVED
MAY 17 2002

May 15, 2002

Mr. Gilbert Coloma-Agaran, Chair
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Coloma-Agaran:

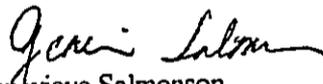
Subject: Draft Environmental Assessment for the Lusardi Residence Seawall Repairs, Maui

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please describe whether the existing seawall was built with all the required permits. If not, list the permits that were not obtained.
2. The proposed seawall is 8 feet above the mean sea level. What is the height of the seawalls surrounding this property?

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,


Genevieve Salmonson
Director

c: Chris Hart & Partners, Inc.



November 18, 2002

Ms. Genevieve Salmonson, Director
The Office of Environment Quality Control
State of Hawaii Department of Health
235 South Beretania Street, Suite 702
Honolulu Hawaii 96813

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Dear Ms. Salmonson,

Thank you for your comments dated May 15, 2002. We have the following answers to your questions.

Permits, Height of Surrounding Walls. We have updated the Background section of the Final EA to describe the permits that were not obtained in the original construction, and have provided additional information regarding the seawalls located on either side of the project.

Thank you for your comments. If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office.

Respectfully Submitted


Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

REF:MA



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

File No: Cдуа MA-3081B
Acceptance Date: 02-19-2002
180 Day Exp. Date: 08-18-2002

Robb Cole
Chris Hart and Partners
1955 Main Street
Wailuku, HI 96793

JUN 12 2002

RECEIVED
JUN 13 2002

Dear Mr. Cole:

CHESHIRE
Landscape Architecture & Planning

Subject: Draft Environmental Assessment and
Conservation District Use Application for Lusardi
Residence Seawall.

The Land Division Planning Branch has reviewed the
submitted Conservation District Use Application and Draft
Environmental Assessment and has the following comments:

It is staff's understanding that the majority of
original alignment of the seawall fronting parcel (2) 4-3-
15:52 was located Makai of the State certified shoreline of
May 7, 1984 (recertified on 8/8/85 and 3/24/86). According
to the EA the original seawall fronting this property was
constructed in 1989. Today, portions of the original
seawall have collapsed (from staircase to the north) and
portions (from staircase to the south) are still intact.

According to Land Division records a CDUP (MA-2707)
was issued for the seawall located Makai of the neighboring
parcel to the south, TMK (2) 4-3-15:02. The seawall on the
neighboring parcel is contiguous with the seawall fronting
the subject parcel. It is Land Division staff's
understanding that the contiguous seawall fronting both
parcels was built at one time. However the landowner of
the neighboring parcel applied for and received after-the-
fact approval for the portion of the wall fronting his
parcel. In receiving this after the fact approval the
neighboring landowner resolved the Conservation District
violation associated with the wall by paying a fine. In
the September 9, 1994, Board submittal regarding the

neighboring seawall, staff's recommendation states:
"removal of the encroaching portions would likely undermine the strength and integrity of the remaining structure, and could potentially create a public safety problem".

Staff observations of the site on Monday May 20, 2002 confirm the applicant's claim that the seawall structure from the staircase to the south appears to be intact and structurally sound. It is staff's understanding that the applicant's CDUA request is, in part, to gain after the fact approval for this existing portion of the wall and staircase.

It is staff's understanding that much of the seawall to the north of the staircase was undermined by wave action and thus collapsed recently. It is staff's understanding that the portion of the original wall to the north of the staircase that has not collapsed is proposed to be removed by the applicant. A new wall will then be built from the north side of the staircase and run to the existing wall fronting the neighboring parcel to the north.

Land Division Planning Branch staff has some concerns about the proposed alignment of this new section of wall:

1) The application proposes that the new section of wall be located on State land Makai of the parcel boundary. In 1997 the Board established policies regarding the disposition of shoreline encroachments. In carrying-out this policy, the Department established criteria to guide decision-making over specific cases. The criteria are as follows:

1. Protect/preserve/enhance public shoreline access;
2. Protect/preserve/enhance public beach areas;
3. Protect adjacent properties;
4. Protect property and important facilities/structures from erosion damages; and
5. Apply "no tolerance" policy for recent or new unauthorized shoreline structures

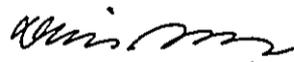
The proposed location of the reconstructed wall on State land could be seen as conflicting with criteria 1, 2 and 5. It is staff's understanding that the shoreline area in front of the wall is a public recreational beach and is used for shoreline access.

2) Staff has attached photos from the May 7, 1984, DAGS State Survey shoreline certification file for the subject property. These photos show the top of the bank that was used as the certified shoreline. The bank in question appears to be almost vertical in these photos. Thus it appears to staff that in order to build the original 1989 seawall some fill material must have been placed Makai of the property boundary at the time of construction. Now that this original unauthorized and unpermitted wall has collapsed this application is requesting a new wall located Makai of the 1984 certified shoreline. It appears to staff that there was no fast land Makai of the property boundary at the time of the 1984 certified shoreline. Thus placing the wall in the location proposed in the application will serve to stabilize an unauthorized fill area placed after the 1984 shoreline certification.

Please include a response to this letter in the Final Environmental Assessment document and also respond to the Planning Branch directly. In order to expedite the processing of the Final Environmental Assessment please submit 6 copies of the Final Environmental Assessment document to the Department by Monday, June 24, 2002.

If there are any questions regarding this letter please contact Masa Alkire of our Planning Branch at 587-0382.

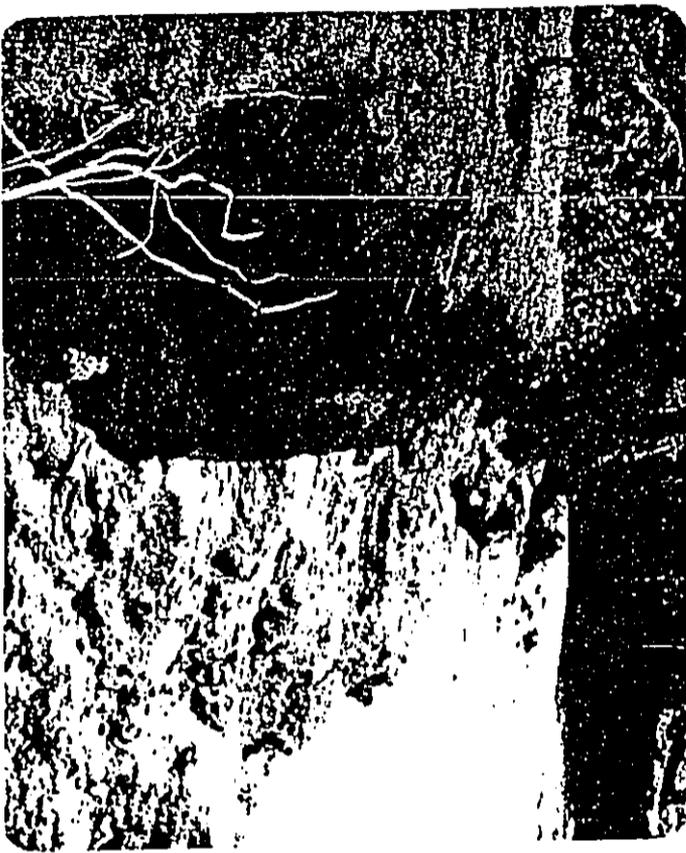
Sincerely,


Dierdre S. Mamiya
Administrator

CC: County of Maui
Maui District Land Office
Maui Board Member

Attachment

Photos from DAGS State Survey File Showing location of certified shoreline. 1984 (May 7)





November 18, 2002

Dierdre S. Mamiya, Administrator
Division of Land Management
Department of Land and Natural Resources
PO Box 621
Honolulu Hawaii 96809

Dear Ms. Mamiya,

RE: Comments on Draft EA/ CDUA MA2081B
Lusardi Residence Seawall Repairs
Napili, Maui, Hawaii. TMK (2) 4-3-015:052

Thank you for your comment letter dated June 12, 2002. We have the following responses.

According to your letter, you are concerned about the position of the proposed replacement wall. In your letter, you express concerns for the physical (access) issues regarding the land that is currently (or previously) available to the public as accessible beach land, and also the 1997 criteria established by the Land Board to evaluate such projects.

We have revised the proposed position of the wall for the Final EA; the attached figure depicts two new alternative wall positions. In both alternatives, the proposed connection to the neighbor's seawall to the north has been moved about 10 feet landward, which is coincident with the mauka edge of neighbors wall. This position is also approximately 10 feet inside of the current property line, which was established via the 1984 shoreline survey. Although a portion of this area was accessible prior to the collapse of the sea-cliff, the area has not been accessible since the collapse due to the presence of earthen material and the subsequent placement of temporary sand bags. With this new alignment, a potential access area (~170 sf) will be made available along the north half of the repair.

The south half of the repair (which includes demolition of a remnant section) is represented by two options. Option A would continue the wall in a straight line towards the existing stairway, slightly landward of the existing remnant section. Option A encroaches on State land near the stairway (approximately 70 sf). Option B would divert from the Option A midpoint, following the current property line to its intersection with the existing stairway.

The applicant prefers Option A for the following reasons:

- The wall would be straight, and essentially perpendicular to the connecting structures. This simplifies engineering and construction, and provides a compatible aesthetic design.
- Option B creates an acute angle at the intersection with the stairwell, which is not a preferred engineering solution. In large wave events, the acute angle could increase scouring forces, due to the increased refraction of wave energy.
- The additional beach area created along the south repair section by Option B would provide an area of marginal utility from a public access perspective. The area would have an awkward "V" shape and be bordered by vertical walls approximately 10 ft. high, creating an almost cave like feel. Given the presence of the stairway, this area would not likely be used for lateral access. Furthermore, based on the 1984 photographs, the area was not sandy, rather, it was part of the sloping backshore and made up of a combination of rocky matrix and dirt.
- It is not known if the landward portion of the stairway is built upon earth or masonry. Option B would expose this unknown portion of the stairway. If an earthen base is uncovered, it would have to be excavated from the side and the void filled with concrete/masonry. This could cause a collapse of the stairway and create a risk to the construction crew. Option A minimizes the risk of collapse or injury.
- Option B increases the amount of backshore that needs to be excavated. Given that the difference in elevation between the rock matrix and the pool deck is 18 vertical feet, and that the footing of the wall will be 8 feet wide, there is a concern that excavating further inland could create unstable soil conditions near the swimming pool and pool deck.

To address the concerns you mentioned regarding criteria 1, 2, & 5, we feel that Option A is consistent with current policy in that it does not conflict with 1) preserving shoreline access, and 2) preserving public beach areas. Reasons for this conclusion include:

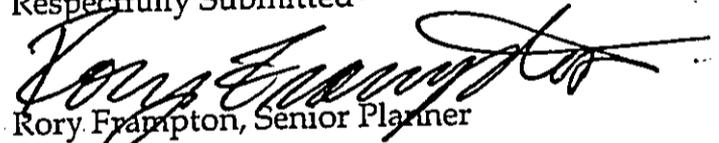
Letter to Ms. Dierdre S. Mamiya
Lusardi Residence Seawall Repairs
November 18, 2002
Page 3 of 3

- The repositioned wall locations (both A and B) will re-establish a potentially accessible area near the north of the repair section (approximately 170 sf) that is currently not available for public use.
- The Option A alignment does not appear to be utilizing beach area that was once available to the public. Please see the attached figure showing the annotated shoreline survey and survey photo. Option A appears to be coincident with the steep bank that was present during the 1984 shoreline survey (note slope of ladder); land mauka of the Option A alignment does not appear accessible to a person on the beach.
- Lateral traversal along the shoreline is primarily affected by the protrusion of the north neighbor's seawall and the (south) stairway, not the location of the repaired section.

Since the unauthorized wall will be removed and the new wall will be properly permitted, either option is consistent with criteria 5 ("no tolerance policy"). Likewise, either option is consistent with criteria 3 & 4, protecting adjacent properties, and protecting property from erosion damages.

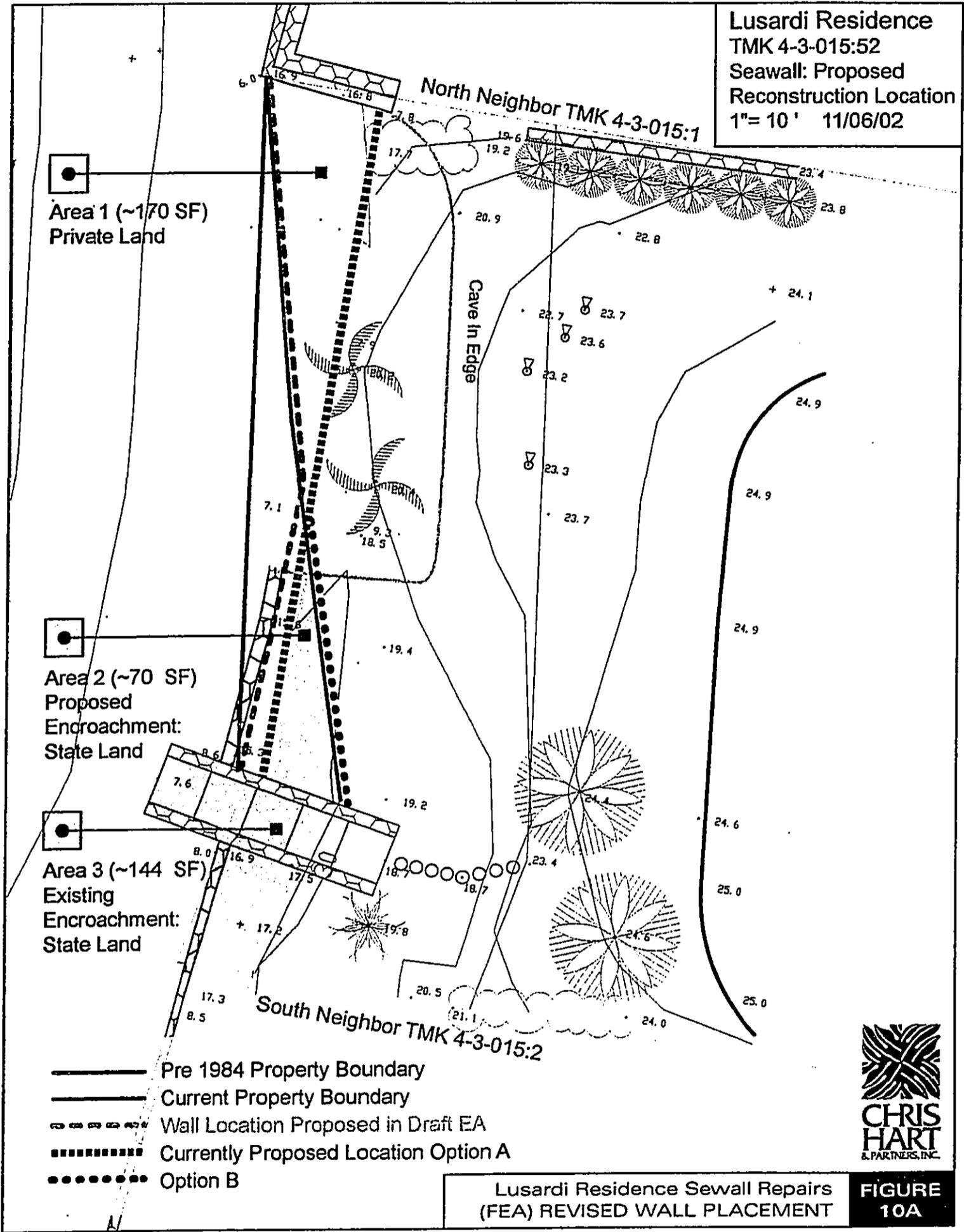
Thank you for your comments. If you have any further questions or require clarification on our responses, please contact Mr. Robb Cole at our office or myself.

Respectfully Submitted.



Rory Frampton, Senior Planner
Chris Hart & Partners, Inc.

Lusardi Residence
 TMK 4-3-015:52
 Seawall: Proposed
 Reconstruction Location
 1"= 10' 11/06/02



Area 1 (~170 SF)
 Private Land

Area 2 (~70 SF)
 Proposed
 Encroachment:
 State Land

Area 3 (~144 SF)
 Existing
 Encroachment:
 State Land

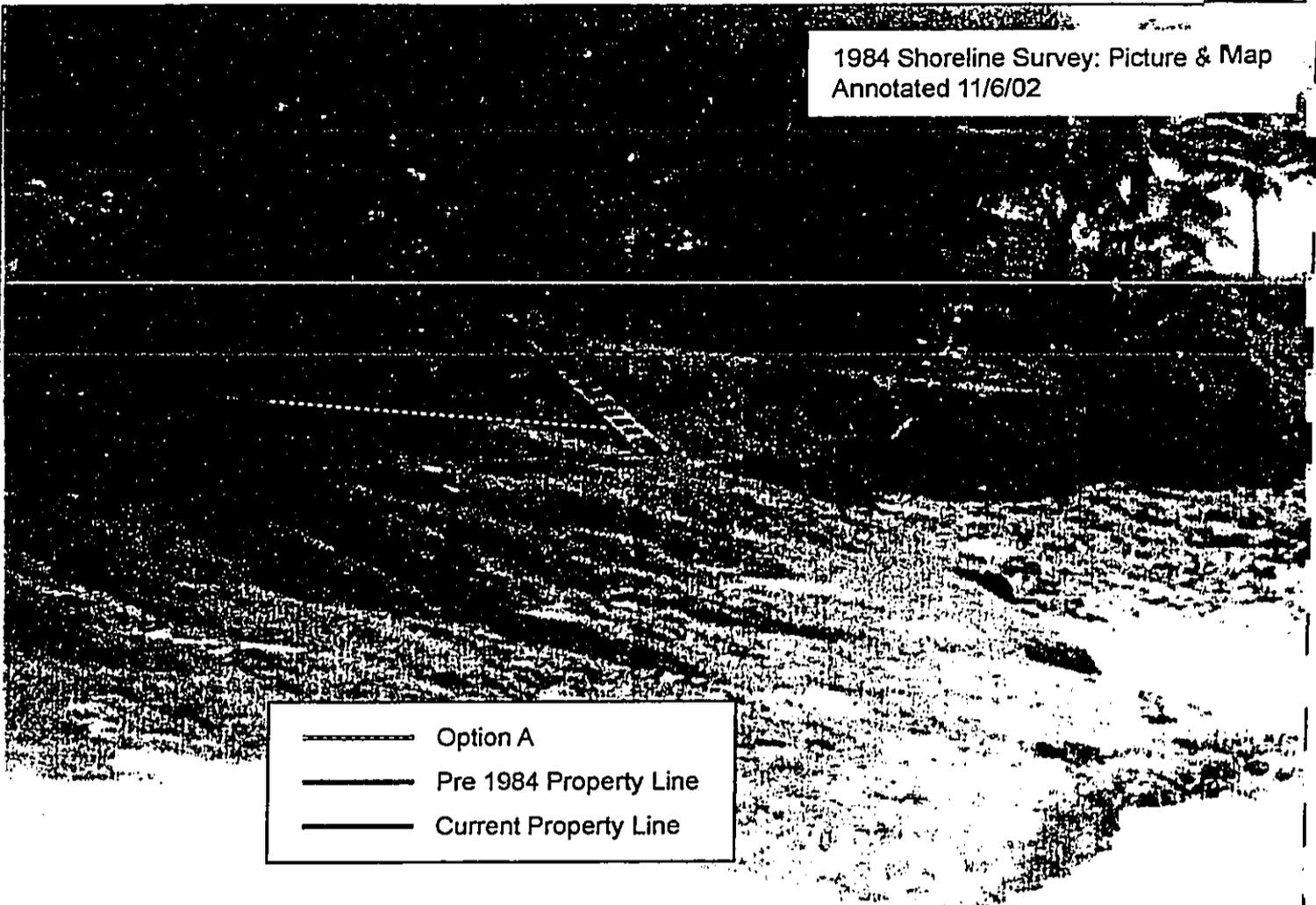
- Pre 1984 Property Boundary
- Current Property Boundary
- - - - - Wall Location Proposed in Draft EA
- Currently Proposed Location Option A
- Option B

Lusardi Residence Sewall Repairs
 (FEA) REVISED WALL PLACEMENT

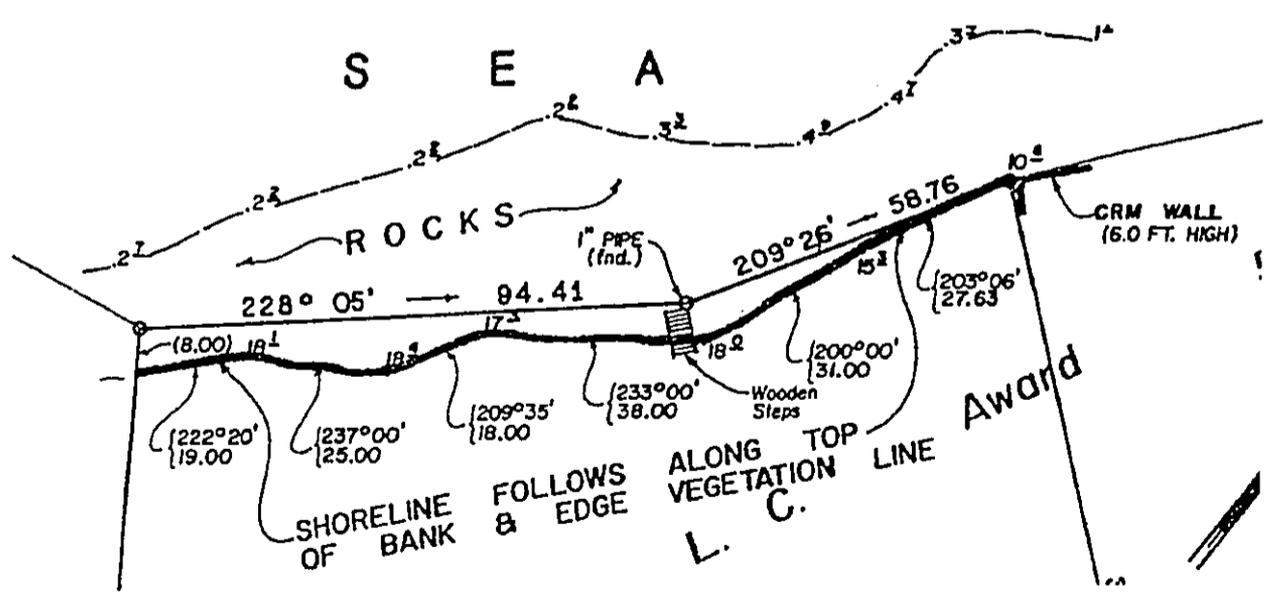


FIGURE
 10A

1984 Shoreline Survey: Picture & Map
Annotated 11/6/02



-  Option A
-  Pre 1984 Property Line
-  Current Property Line



Lusardi Residence Sewall Repairs (FEA) REVISED WALL PLACEMENT

FIGURE 10B

END

CERTIFICATION

I HEREBY CERTIFY THAT THE MICROPHOTOGRAPH APPEARING IN THIS REEL OF
FILM ARE TRUE COPIES OF THE ORIGINAL DOCUMENTS.

2004

DATE

Jelle Kaai

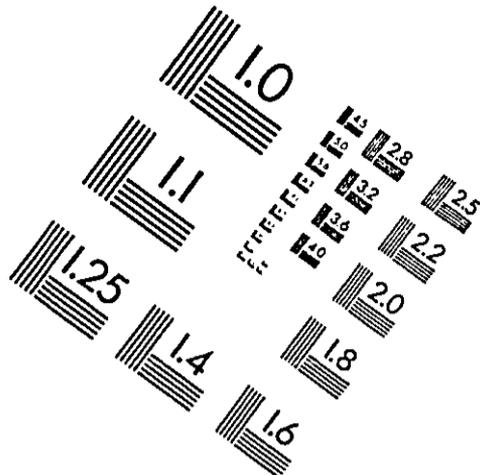
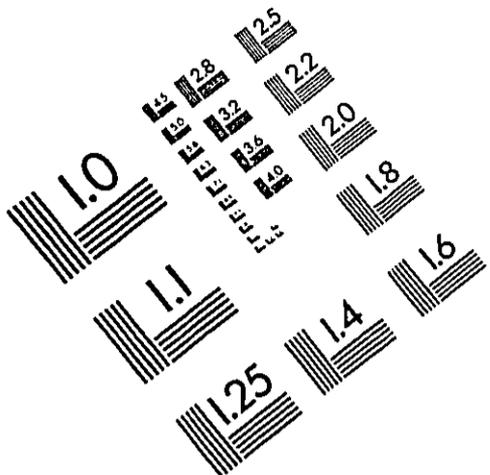
SIGNATURE OF OPERATOR



AIM

Association for Information and Image Management

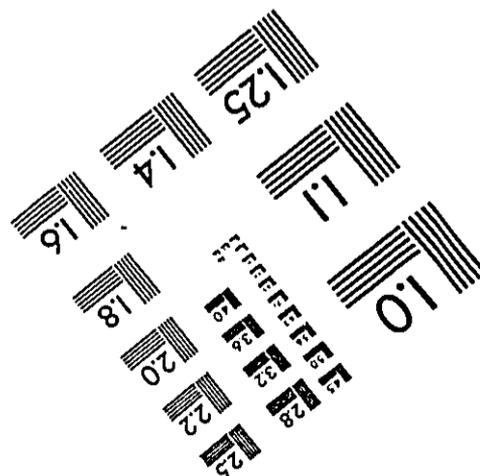
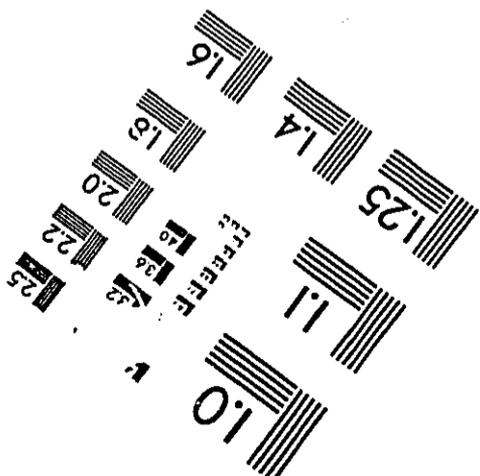
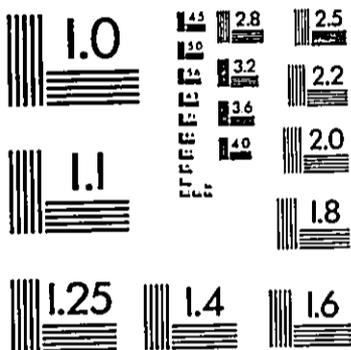
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202



Centimeter



Inches



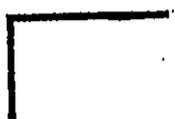
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