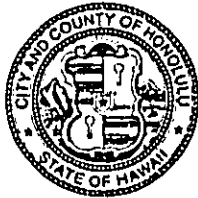


DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR



RECEIVED
ERIC G. CRISPIN, AIA
DIRECTOR

'03 OCT 28 P 4:09
BARBARA KIM STANTON
DEPUTY DIRECTOR

OFF. OF ENV. QUALITY CONTROL
2003/ED-20(GU)
2003/SV-12(GU)
2003/SV-14(GU)

October 28, 2003

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Shoreline Setback Variances, Chapter 343
Environmental Assessment (EA)/Determination
Finding of No Significant Impact



Recorded Owners/ Applicants	:	Ronald L. Lee (parcel 92) and Bernard J. Wilson (Parcel 93)
Agent	:	Sea Engineering, Inc.
Location	:	Laie
Tax Map Key	:	5-5-02:92 & 5-5-02:93
Request	:	Shoreline Setback Variances
Proposal	:	Sloping Rock Revetment
Determination	:	A Finding of No Significant Impact is Issued

Attached and incorporated by reference is the Final EA prepared by the applicant for the project. Based on the significance criteria outlined in Title 11, Chapter 200, Hawaii Administrative Rules, we have determined that preparation of an Environmental Impact Statement is not required.

Ms. Genevieve Salmonson, Director
Page 2
October 28, 2003

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the Final EA. Should you have any questions, please contact Geri Ung of our staff at 527-6044.

Sincerely yours,


ERIC G. CRISPIN, AIA
 Director of Planning
and Permitting

EGC:cs
Encls.

POSSE Doc. 248355

NOV 8 2003
FILE COPY

WILSON
FINAL
ENVIRONMENTAL ASSESSMENT AND
COASTAL ENGINEERING EVALUATION FOR
SHORELINE SETBACK VARIANCE APPLICATION

TMK: 5-5-02:92 (Ronald N. Lee)
TMK: 5-5-02:93 (Bernard J. Wilson)
Laie, Oahu, Hawaii

2003 - 11 - 03 - 0A - FEA

2003 OCT 16 PM 4 12
ENVIRONMENTAL ENGINEERING
CITY & COUNTY OF HONOLULU

(LEE-WILSON ROCK)
FINAL

**ENVIRONMENTAL ASSESSMENT AND
COASTAL ENGINEERING EVALUATION FOR
SHORELINE SETBACK VARIANCE APPLICATION**

TMK: 5-5-02:92 (Ronald N. Lee)
TMK: 5-5-02:93 (Bernard J. Wilson)
Laie, Oahu, Hawaii

October 2003

Prepared by:

Sea Engineering, Inc.
Makai Research Pier
Waimanalo, Hawaii 96795

#3-7

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1.0 GENERAL INFORMATION

A. PROJECT LOCATION

55-313 Kamehameha Hwy. and 55-315A Kamehameha Hwy.
Laie, Oahu

B. TMK, APPLICANT AND RECORDED FEE OWNER

TMK: 5-5-02:92 Applicant: Ronald N. Lee
975 Kapiolani Blvd., Suite 200
Honolulu, Hawaii 96814

Recorded Fee Owner: Elizabeth K.F. Takara
Michael Y. Harada
Ronald N. Lee
William H. Montelongo

TMK: 5-5-02:93 Applicant: Bernard J. Wilson
55-313 Kamehameha Hwy.
Laie, Hawaii 96762

Recorded Fee Owner: Bernard J. Wilson

C. AGENT

Sea Engineering, Inc.
Attn: Scott Sullivan
Makai Research Pier
Waimanalo, HI 96795
Phone: (808) 259-7966
Fax: (808) 259-8143
Email: scotts@seaengineering.com

D. LOT AREA

	<u>Total</u>	<u>Erosion</u>	<u>Net</u>
TMK: 5-5-02:92	9,270 SF	1,365 SF	7,905 SF
TMK: 5-5-02:93	7,794 SF	1,210 SF	6,584 SF

E. ZONING: R-5 Residential District

2.0 LOCATION AND GENERAL DESCRIPTION OF THE PROPOSED PROJECT

This report has been prepared to accompany Shoreline Setback Variance application to the City and County of Honolulu, Department of Planning and Permitting (DPP), for two shoreline lots in Laie, Oahu. The project site is located at 55-313 and 55-315A Kamehameha Highway on the northeastern coast of Oahu. The makai (ocean) side of the highway is completely developed with single-family homes, and the Polynesian Cultural Center is located on the mauka (landward) side. South of the cultural center the mauka land is undeveloped open space. The house lots on the makai side of the road are typically small, and many originally larger lots have been subdivided. As a result, many homes are constructed as near the shore as legally possible, and where shoreline erosion has occurred many homes now extend into what would be the shoreline setback zone today. A general location map for the project area is shown on Figure 2-1, and a tax map key for the area is shown on Figure 2-2.

The project site is located on Laniloa Beach, an approximately one-mile long stretch of shoreline bounded by Laie Point to the north and Kehukuuna Point to the south. The beach typically varies in width from 20 to 50 feet, and is composed primarily of fine calcareous sand. The shoreline has a history of significant and chronic erosion, and the majority of shoreline homes have vertical seawall or sloping rock revetment shore protection. The report *Oahu Shoreline Study, Part 1 - Data on Beach Changes* (prepared by Sea Engineering, Inc. (SEI) for the City and County of Honolulu, Department of Land Utilization, 1989) documents a landward recession of the of the vegetation line since 1949, and states that "The south end of Laniloa Beach has a history of shoreline erosion problems, and this trend is expected to continue." Shoreline recession of about 65 feet through 1988 at the project site was documented in the report, and additional erosion was documented during the 1990's. Between 1991 and 2000 the State "Certified Shoreline" position for the project parcels receded landward 20 to 30 feet. In 1998 the property owner received approval from the State Department of Land and Natural Resources to place large sandbags (Seabags) on the beach in order to try and curb the erosion.

The applicants at TMK: 5-5-02:92/93 recently constructed single-family homes on their lots. The homes were constructed 40 to 50 feet landward of the October 2000 certified shoreline, which was the shoreline used for house building permit purposes. Thus the homes were constructed landward of the shoreline setback zone. Continuing erosion has resulted in the top of the eroding bank to now be within 20 feet of the houses, i.e. erosion of 20 feet in a little over two years. In 2002 the applicants constructed a Keystone wall system against the eroding bank in an effort to halt the erosion and protect their homes, and they also constructed low elevation concrete and rock (CRM) toe protection for the Keystone wall which was rapidly being undermined.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

2.0 LOCATION AND GENERAL DESCRIPTION OF THE PROPOSED PROJECT

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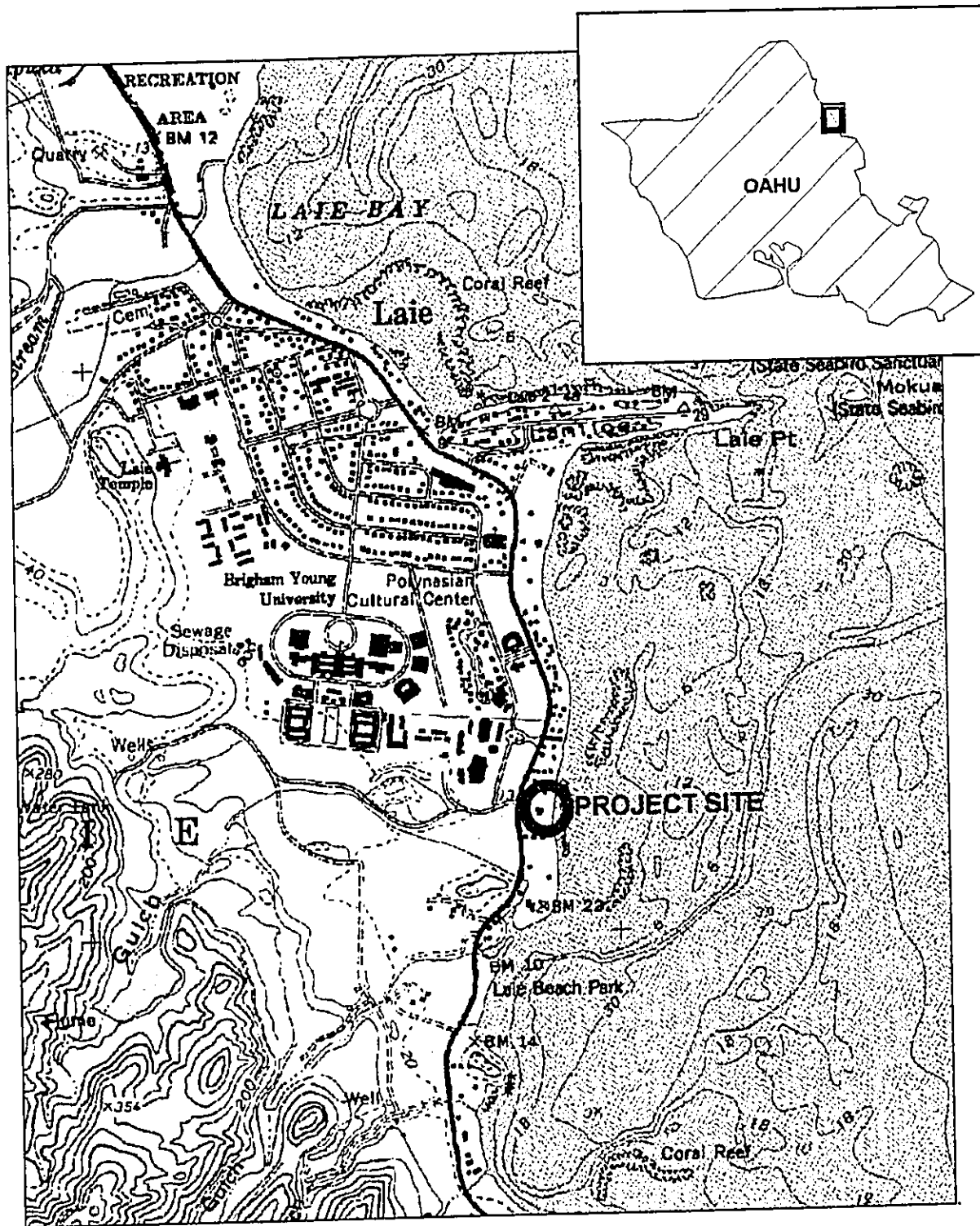
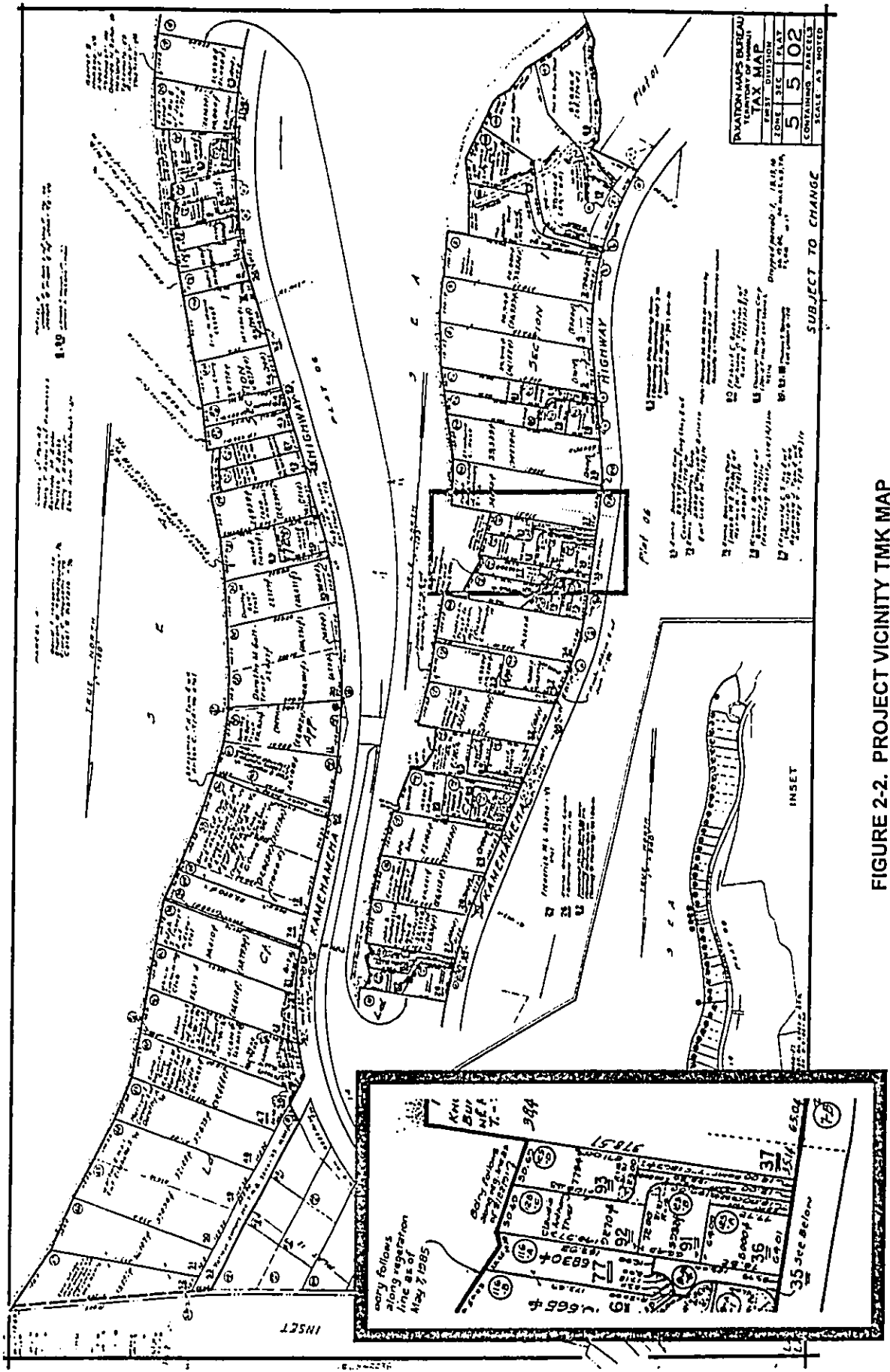


FIGURE 2-1. PROJECT LOCATION

The Keystone wall system and the CRM toe protection were constructed landward of the October 2000 certified shoreline, however they were built without obtaining a building permit or a Shoreline Setback Variance (SSV) from the City and County of Honolulu, Department of Planning and Permitting (DPP). In October and November of 2002 the applicants were given a Notice of Violation by DPP for the lack of a building permit and SSV. The existing condition of the shoreline and the Keystone wall system is shown on Figures 2-3, 2-4 and 2-5.

The applicants at TMK 5-5-02:92 and 93 propose to remove the Keystone wall system and the CRM toe protection, and construct a properly engineered sloping rock revetment to prevent further erosion and stabilize the shore fronting their homes. The revetment would be constructed landward of the May 9, 2003 certified shoreline and approximately 25 feet inland from the intersection of the mean higher high water line (+1.1-foot MSL) at the existing shoreline. Rock riprap with stones weighing 120 to 1,200 pounds (median weight of 300 pounds) would be placed over an underlayer of 10 to 30 pound stone and geotextile filter fabric. The revetment slope would be 1 vertical on 1.5 horizontal, and the toe elevation would be -1 foot below mean sea level (MSL) and the crest elevation would be +8 feet MSL. A 5-foot-wide toe apron would be constructed to protect against scour and possible undermining of the revetment toe. The Keystone retaining wall system would be rebuilt above the revetment crest to terrace and stabilize the sand bank in order to protect the house foundation. A plan view layout drawing and typical cross section of the proposed shore protection are shown on Figures 2-6 and 2-7, respectively.



PLANNING MAPS BUREAU UNIVERSITY OF HAWAII	
DATE	1985
SCALE	AS SHOWN
ZONE	5 5 02
CONTAINING PARCELS	5 5 02
SCALE	AS NOTED

SUBJECT TO CHANGE

FIGURE 2-2. PROJECT VICINITY TMK MAP

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

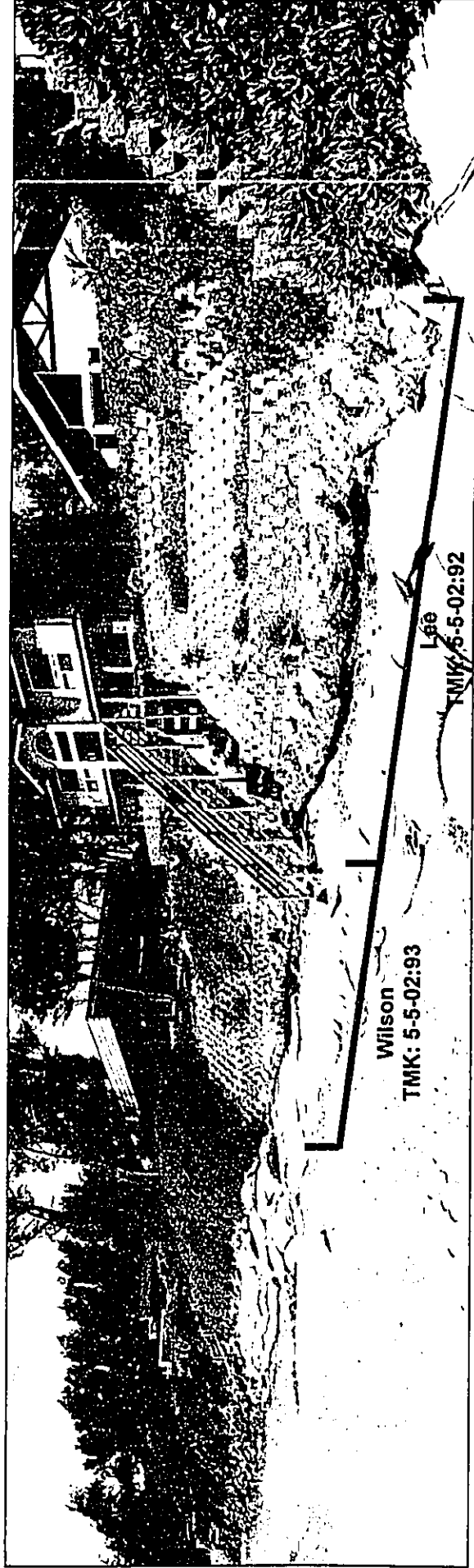


FIGURE 2-3. PROJECT SITE EXISTING CONDITIONS
(May 6, 2003)

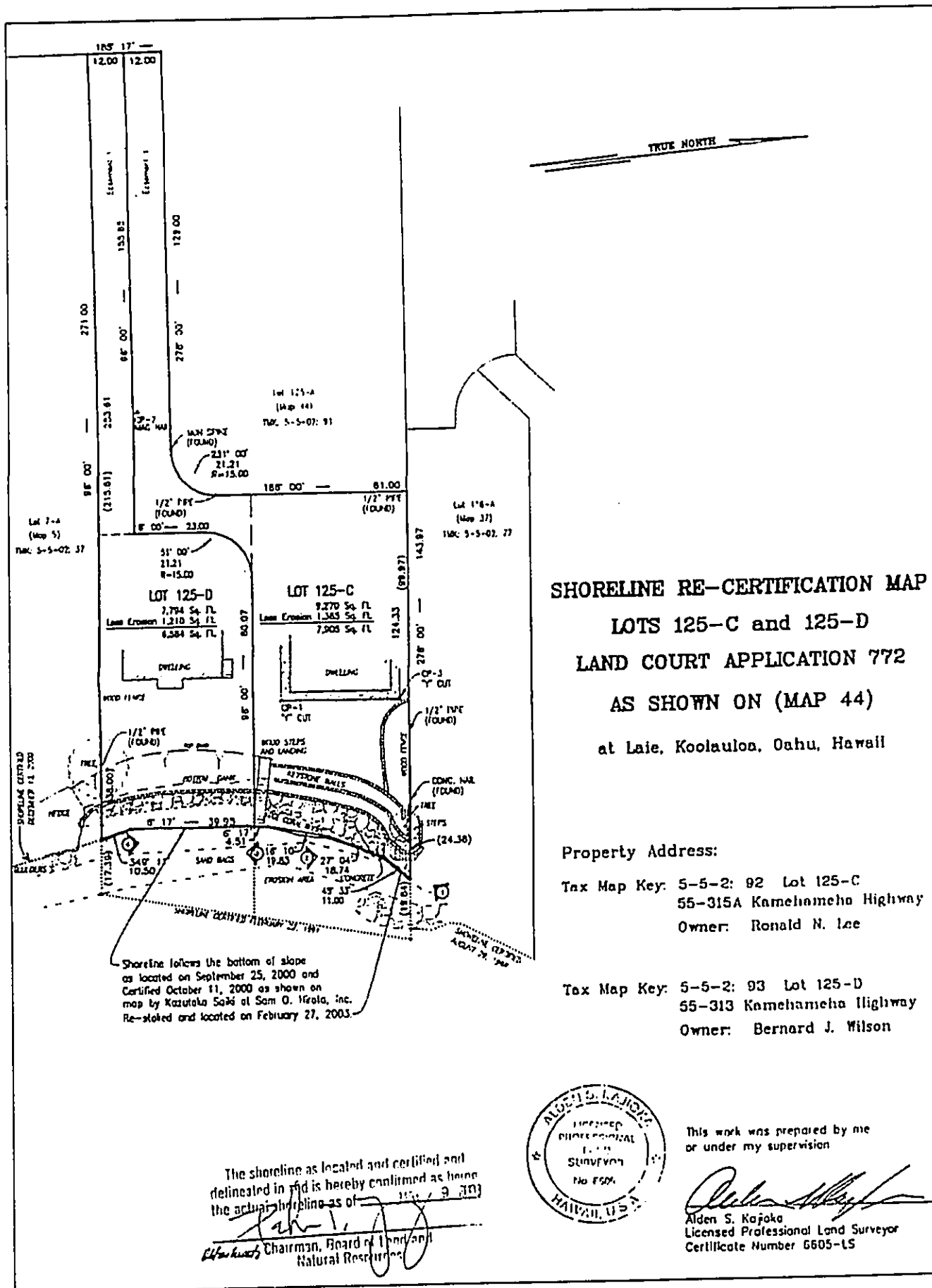


FIGURE 2.4. SHORELINE CERTIFICATION MAP

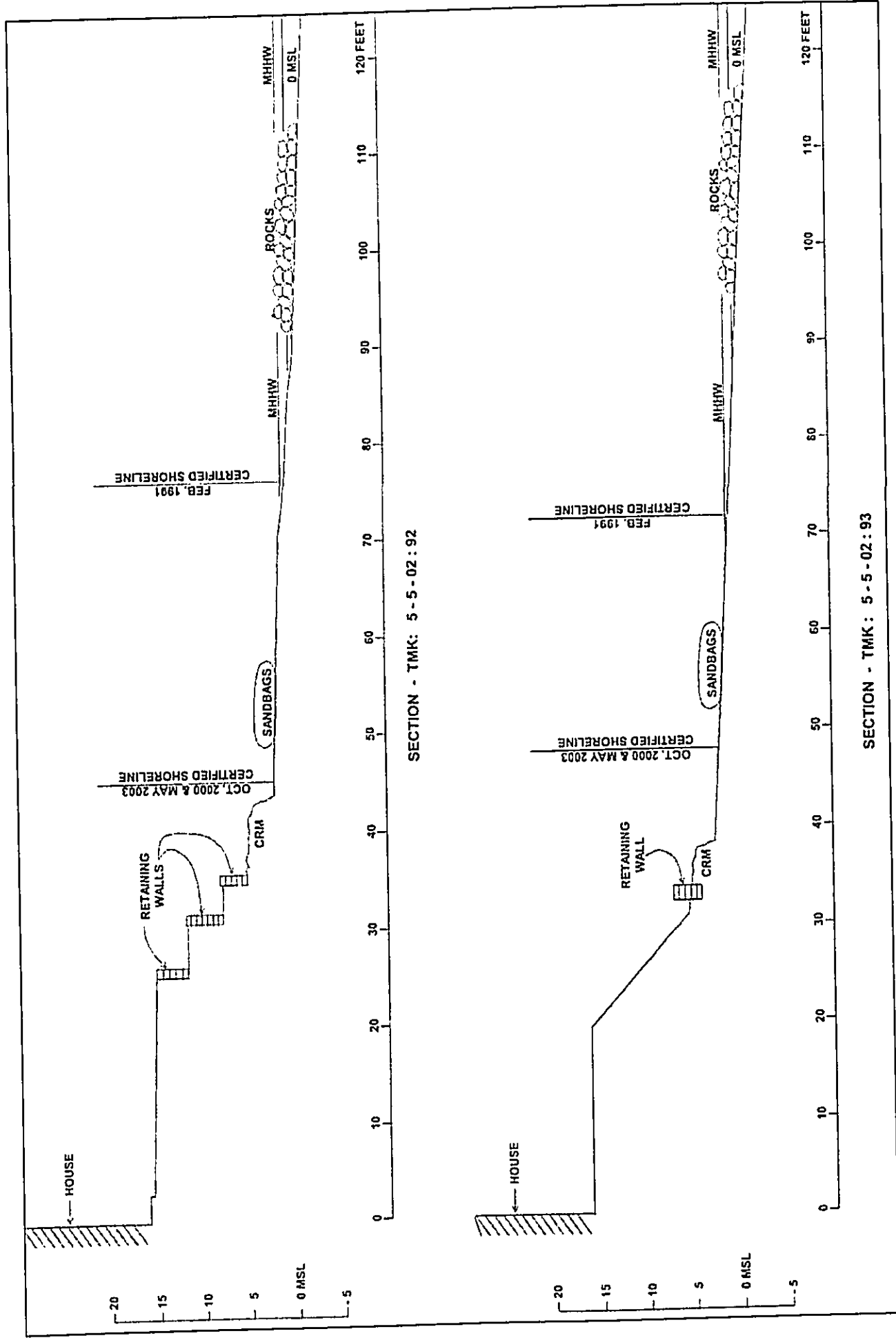


FIGURE 2-5. EXISTING SHORELINE PROFILES

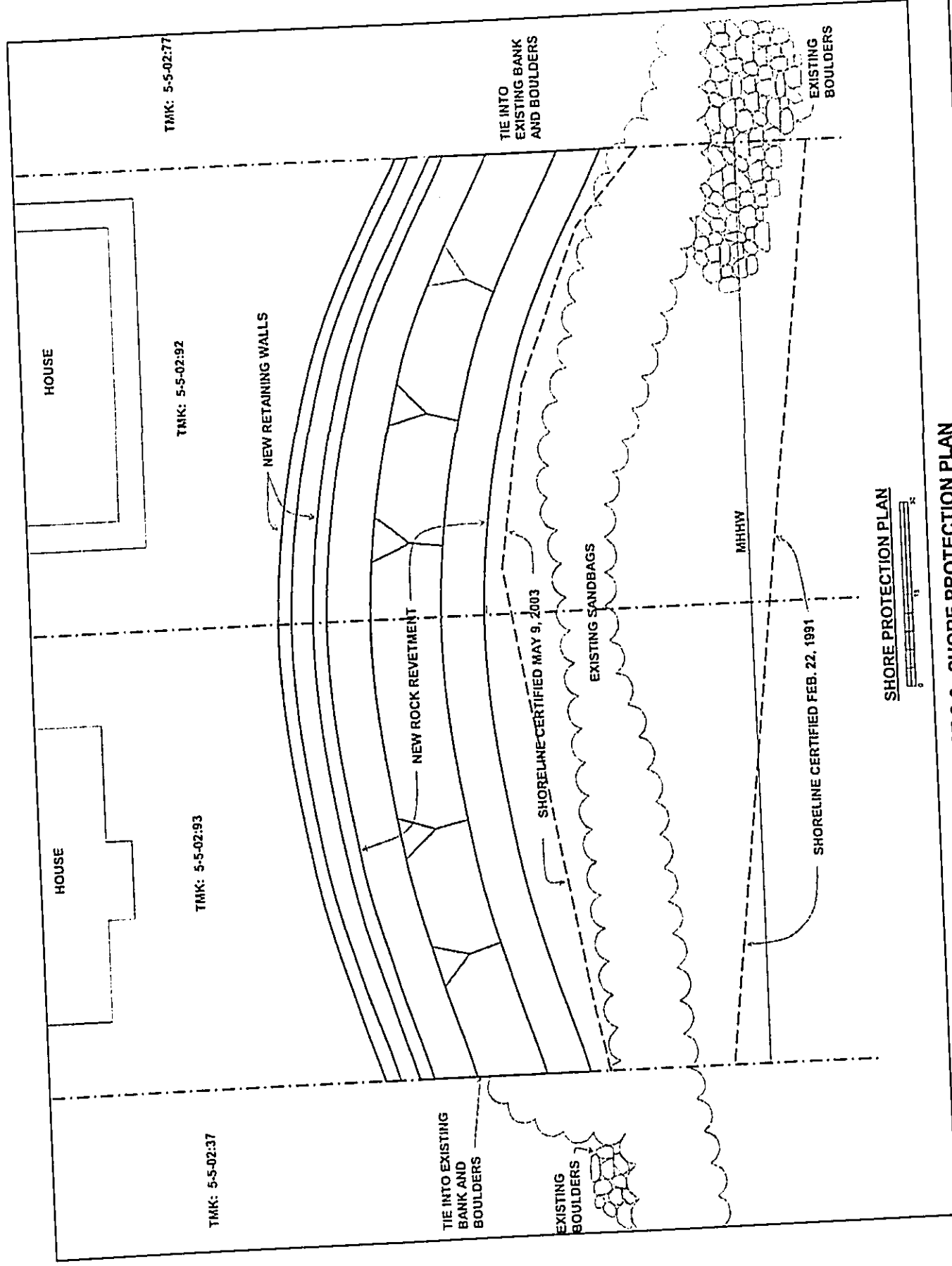


FIGURE 2-6. SHORE PROTECTION PLAN

Shoreline Setback Variance Application
Lāie, Oāhū, Hawai'i

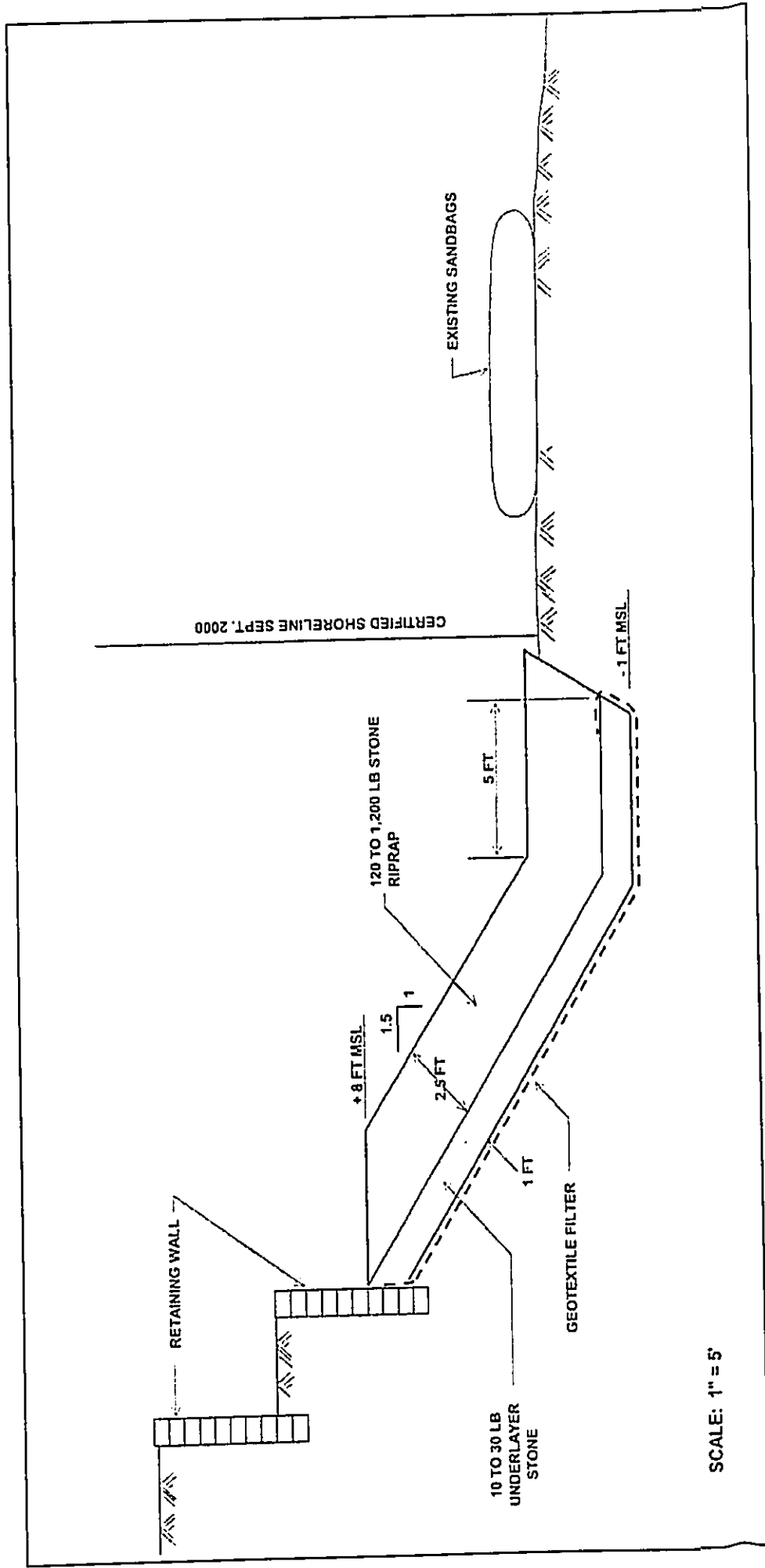


FIGURE 2-7. SHORE PROTECTION REVETMENT TYPICAL SECTION

3.0 COASTAL ENGINEERING EVALUATION

3.1 Shoreline Type and Characteristics

The project site is near the southern end of Laniloa Beach, an approximate one-mile long stretch of shoreline running north-south between Laie (Laniloa) Point to the north and Kehuku'una Point to the south. The shoreline is primarily sand and exposed beachrock, fronted by a shallow fringing reef. An emergent beach rock bench is located about 150 feet offshore, and parallels the shore for a distance of about 600 feet north and south of the project site. The shoreline landward of this feature is known locally as "bathtub beach." The nearshore reef flat is primarily consolidated limestone rock with pockets of sand and rubble. General shoreline and nearshore physical characteristics are shown on Figure 3-1. The shoreline is heavily eroded, with almost all of the shoreline in the project vicinity protected by rock revetment or seawalls, and a rock groin approximately 500 feet north of the project site blocks longshore sand transport. In fact, the applicants' properties are two of the only three home sites along this shore without permanent shore protection.

The applicant's shoreline consists of a steep sand bank extending from the lot elevation of about +15 feet above mean sea level (msl) down to the top of the sand shore at about +2 to +3 feet msl, and a sand beach about 30 feet wide with a slope of about 1 vertical on 12 horizontal. A loose pile of rocks in the water is located immediately seaward of the applicants shoreline, the origin of which is unknown. A rectangular cemented rock wall is located immediately seaward of the shoreline fronting the property to the north of the applicant, the origin of which is also unknown. The elevation of the top of the rock pile and the cemented rock wall is about +1.5 feet above mean sea level (msl). The shoreline in the project vicinity is shown on the photographs on Figure 3-2.

3.2 Existing Shoreline Structures

As previously stated, almost all of the residential home sites in the "bathtub beach" area are protected by sloping rock revetments or concrete-rubble-masonry seawalls. Most of these shore protection structures were built in the 1970's and '80's in response to the chronic erosion, and allegedly most if not all were built without permits, although some have subsequently received after-the-fact permits from the City and County. The existing structures are identified on Figure 3-3.

In 1989 the owner of the property immediately north of the project site (TMK: 5-5-02:77) placed boulders on the beach fronting the property in an effort to stop erosion. The boulders actually encroached part way on to the applicants shoreline (different owner at that time). End effects and flanking of the boulders resulted in accelerated erosion to the adjacent property (TMK: 5-5-02:92), with the shoreline adjacent to the boulders eroding landward 25 feet within a year or so of placing the boulders.

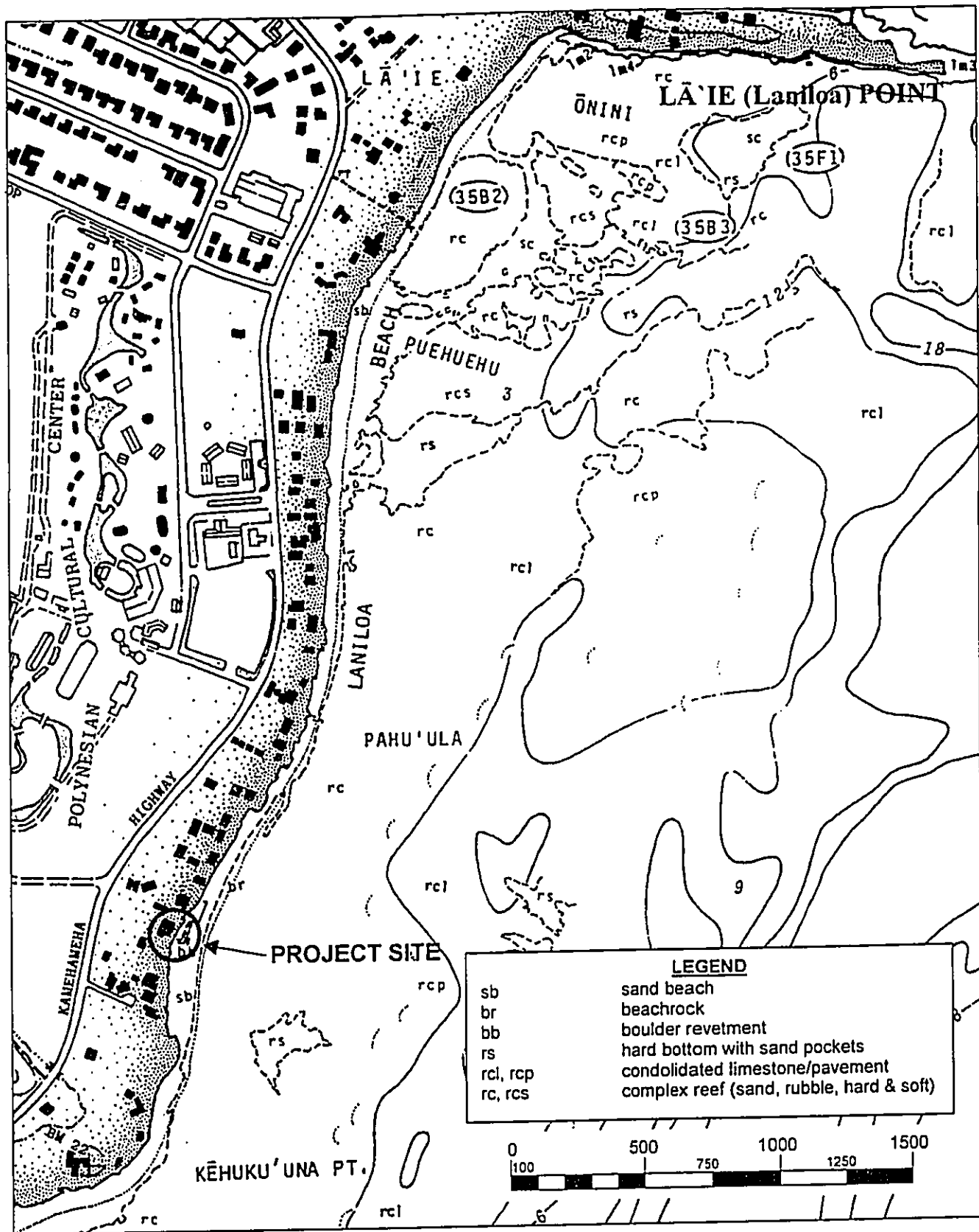


FIGURE 3-1. SHORE AND NEARSHORE CHARACTERISTICS
(from AECOS, 1981)



Looking North



Looking South

FIGURE 3-2. PROJECT VICINITY SHORELINE PHOTOGRAPHS
(May 6, 2003)

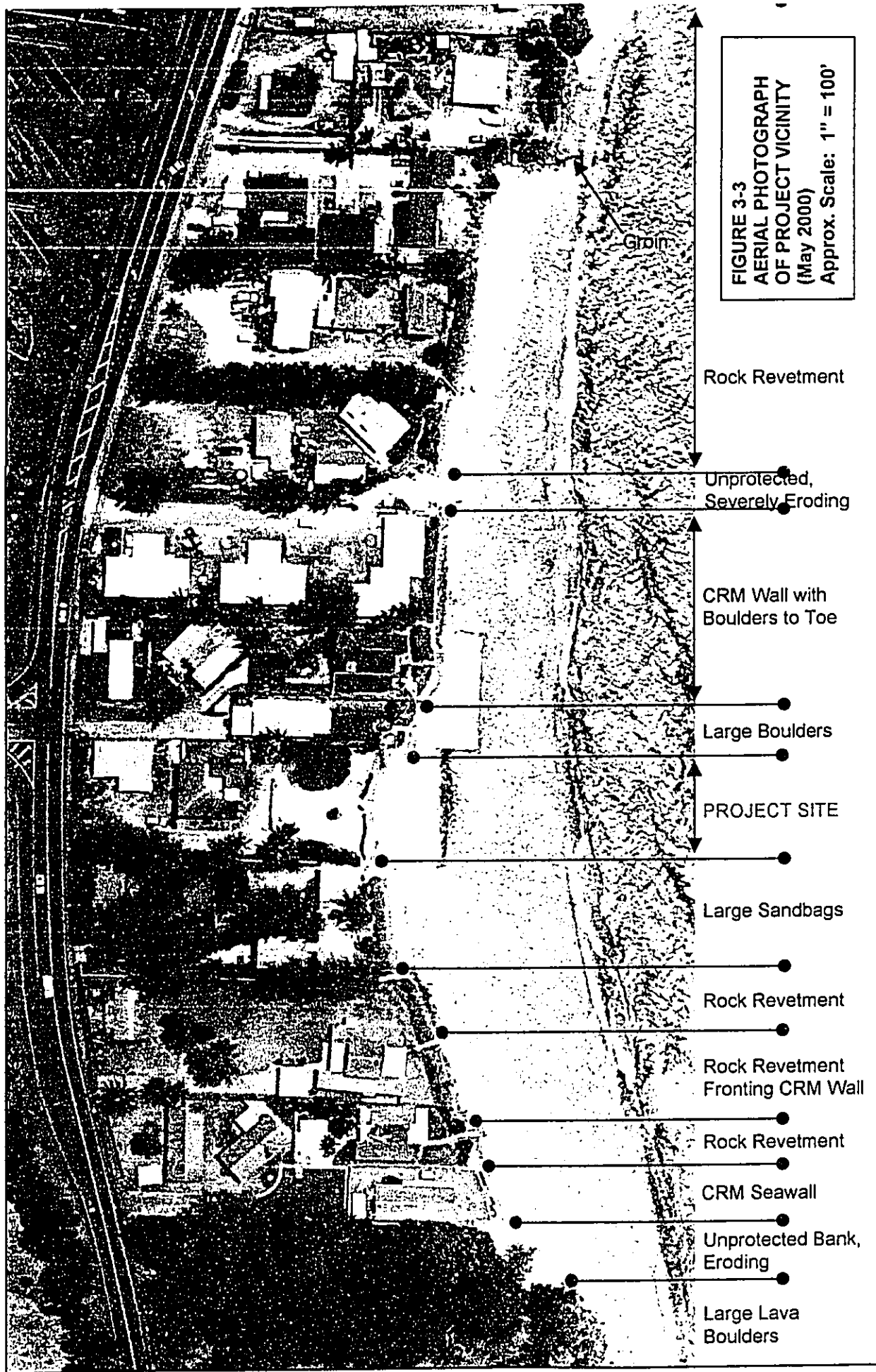


FIGURE 3-3. AERIAL PHOTOGRAPH OF PROJECT VICINITY (MAY 2000)

In 1997 the applicants' neighbor on the south side (TMK: 5-5-02:37) received permission from the State DLNR to place Seabags (large sandbags) on the beach fronting his property to protect his home, the north corner of which was within about 15 feet of the eroding bank (DLNR letter dated November 28, 1997). In 1998 the previous owner of TMK: 5-5-02:92/93, also received permission from State DLNR to place Seabags along the shore fronting his property (DLNR letter dated September 23, 1998). This permission was primarily granted because of the continuing accelerated erosion resulting from the boulder revetment to the north and the newly placed Seabag protection to the south. Permission was also granted to place 200 cubic yards of beach sand on the eroded shore at TMK: 5-5-02:92/93.

In 2000 the applicants, Lee and Wilson, purchased lots 92 and 93, respectively, and obtained building permits for home construction based on a October 11, 2000 certified shoreline. Shortly after commencing house construction it became obvious that the erosion problem was continuing at a rapid rate - the top of the eroding bank receded to within 20 feet of their homes - and they constructed a Keystone retaining wall system in an attempt to stabilize the bank. Erosion seaward of the Keystone wall threatened to undermine them, and the owners then constructed a low elevation CRM toe protection wall at the base of the retaining walls. Unfortunately the Keystone and CRM wall system proved to be relatively unstable under wave attack, and the walls were damaged by high waves during high tides during the winter of 2002-03. Despite the old rock pile located seaward of the shore, large sandbags placed on the beach, and a retaining wall system against the bank, the damage to the shore persists. Thus, the applicants wish to obtain approval to install properly engineered and constructed rock revetment shore protection.

3.3 Shoreline History

Hwang (1981) used historical aerial photograph analysis to assess shoreline change around Oahu, based on movement of the vegetation line. During the 25-year period between 1949 - 1975 the middle and south ends of Laniloa Beach experienced "severe erosion." The shoreline in the vicinity of the applicants' property had the worst erosion problem, with continuous erosion throughout the period. The shoreline eroded as much as 70 feet, or about 3 feet per year. Hwang noted fallen trees on the aerial photographs, and during a 1980 field check he noted waves breaking against the 15-foot-high shoreline escarpment and large trees on the beach and being undermined. He also noted stone walls and piles of boulders place to protect the homes. Hwang reports that between 1972 and 1975 one house was removed as a result of the erosion, and in 1975 several homes were within 30 feet of the vegetation line.

Sea Engineering, Inc. (1988) updated Hwang's work through 1988 for the City and County Department of Land Utilization (now Department of Planning and Permitting). Erosion continued on the unprotected Laniloa Beach shorelines, and erosion was also apparent at the north end of the beach, adjacent to Laie Point, which had previously been relatively stable. The shoreline just north just north of the applicants property continued to erode between 1975 and 1988, with the vegetation line receding another 32 feet. Immediately south of the applicants property little change in the shoreline position was noted, presumably due to the presence of rock

shore protection. A summary of the Hwang and Sea Engineering data is shown on Figure 3-4. The project site is located at Transect Number 5.

In 1991 Sea Engineering, Inc. prepared a coastal engineering assessment of shoreline erosion at TMK: 5-5-02:92/93 for the previous owner. Analysis of aerial photographs taken in February 1987, February 1988 and November 1990 was made. The shoreline position was relatively stable from 1987 to 1988, and then showed a significant (up to 25 feet) recession of the vegetation line between 1988 and 1990. The recession primarily occurred immediately adjacent to the boulders placed on the shore in 1989 by the adjacent property owner to the north.

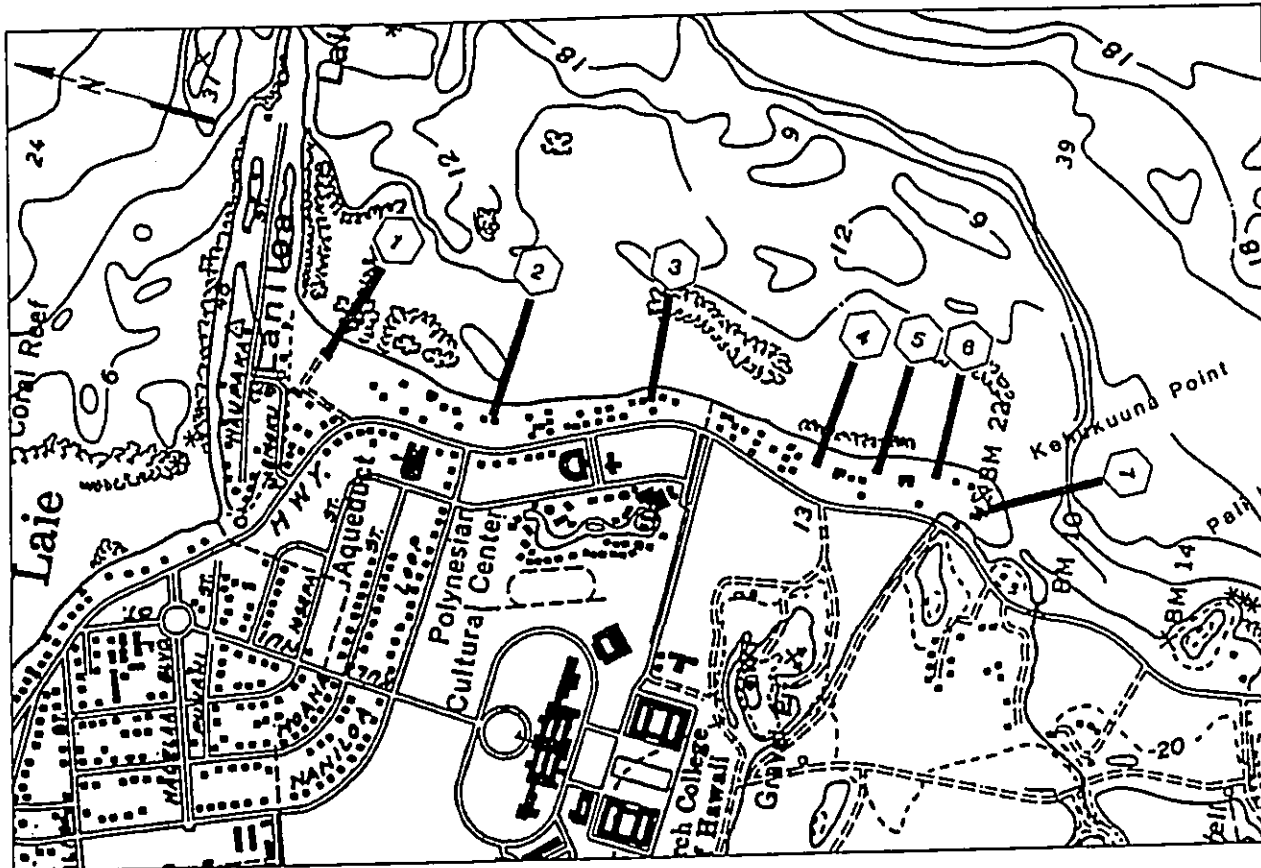
A certified shoreline was obtained for the Lee and Wilson property in February 1991, and again in October 2000. During that almost 10-year period the certified shoreline moved landward between 17 and 31 feet, or about 2.5 feet per year. During construction of homes on the property in 2001-02 the shoreline continued to erode, prompting the homeowners to construct shore protection measures in an effort to stop the erosion and protect their homes. The top of the eroding bank had receded to within 20 feet of the Lee and Wilson homes.

3.4 Coastal Processes and Sand Transport

The history of shoreline change tells much about the sand transport characteristics along Laniloa Beach. At the north end of the beach, in the lee of Laie Point and thus partially protected from winter season large north swell, sand appears to move predominantly northerly, presumably in response to the prevailing northeast tradewind generated seas. Northerly transport is consistent with the overall accretion at the north end of the beach over the past fifty years.

A storm drain outlet structure is located a little south of the middle of the beach, which extends through the beach and about fifty feet into the water, thus acting like a groin. The beach is roughly similar on both sides of the drain, thus no predominant direction of sand transport is evident by an accreted up drift side or eroded downdrift side of the groin-like structure. The shoreline change analysis shows relative stability in this vicinity, with small movement of the vegetation line but no net change over 50 years. There are also fewer shore protection structures located along this stretch of the beach.

The southern end of the beach, the "bathtub beach" area, shows a strong and dominant southerly sand transport. This is presumably due to the effect of the shallow emergent limestone bench which parallels the shore about 100 to 150 feet seaward of the waterline top elevation about 0 to +1-foot msl). Waves approaching the shore break on the shallow bench, and water ponds between the bench and the shore causing a slight water level increase or setup at the shore. This setup is relieved by a current flow along the shore to the south and out the southern end of the bench in the vicinity of the deeper water near the Koloa Stream mouth at Kehuku'una Point.



LEGEND



Laniloa Beach. Changes in the Vegetation Line (in feet)

Observation Period	Transect Number						
	1	2	3	4	5	6	7
Sep 28, 1949 – Jul 23, 1959	-8	8	2	-35	-44	-22	-4
Jul 23, 1959 – May 12, 1964	11	1	-9	4	-6	-5 ¹	*
May 12, 1964 – Apr 23, 1967	-8	1	-1	2	-2	*	-28 ²
Apr 23, 1967 – May 26, 1972	3	-3	11	-2	-14	*	8
May 26, 1972 – Apr 13, 1975	1	8	-6	-3	-4	*	-6
Apr 13, 1975 – Feb 03, 1988	-11	-15	4	-32	5	*	-4
Net Change – Vegetation Line	-12	0	1	-66	-65	-27	-34
Range – Vegetation Line	15	15	11	66	70	27	34

* No Data

1 To Boulder Wall

2 Change from 1959 – 1967

Net change is the total change in the position of a beach index line between the earliest and most recent observation year.

Range is the difference between the observed extremes in the position of a beach index line.

Transect locations and historical data from Hwang, Table 17.

Transect 8 was outside the study area.

FIGURE 3-4. SHORELINE CHANGE 1949 – 1988
(from Sea Engineering, Inc., 1989)

A rock groin constructed at the north end of the bench restricts water flow northward, further forcing the southern flow of water. The effect of the bench can be seen in the photograph on Figure 3-3. The old crib wall and rock pile on the shore of the applicants property appear to offer no significant erosion protection, and may actually cause wave reflection and water turbulence which increases erosion.

The erosion along Laniloa Beach has almost certainly been exacerbated by the proliferation of shoreline hardening structures. It is typical for structures on a sandy shoreline to have an adverse impact on adjacent unprotected shores. Reflection and turbulence at the ends of the structures, plus their impact on the natural sand transport processes, typically result in an increase in erosion for some distance from the ends of the structures. For these reasons, shore protection structures on sandy shores should be carefully designed, and should not be constructed randomly or piecemeal along the shore. Ideally, all the property owners along a shoreline requiring shore protection should work together to effect a common solution. If they don't, the first person to build a wall may simply start a chain reaction, as one property owner after another is forced to build something to stop the erosion aggravated by his neighbor's structure, and the problem gets transferred down the shore from one property to the next. This is certainly evident in the recent history of Laniloa Beach.

3.5 Coastal Hazards

In addition to the chronic erosion hazard, the project site is exposed to storm waves and possible tsunami inundation. The coast is directly exposed to the prevailing tradewind generated seas, as well as partially to directly exposed to large winter season north swell generated by north Pacific storms. The coast could also be subject to possible hurricane generated waves and high water levels.

North swell can occur any time during the year, but is largest and most frequent during the winter months of October through March. North swell can approach from the northwest through northeast, but typically the most frequent large swell is from the northwest. These waves refract and diffract around Kahuku Point and approach the project site obliquely. North swell does occasionally approach the site more directly from the north to northeast. The shoreline is protected from direct large wave attack by the wide, shallow fringing reef fronting the shoreline. Large waves break offshore, and then reform and continue shoreward as smaller waves. Wave breaking and reforming may occur several times before the wave finally expends its remaining energy on the shore. The waves reaching the shore are limited by the nearshore water depth, and on a wide and shallow reef typically have a height equal to about 0.6 times the water depth. Winter high tides can be +1.5 to +2 feet above msl, and wave setup along the shore during periods of high surf may add another 0.5 feet to the water level. Assuming a high tide of +1.5 feet, a 0.5-foot wave setup, and a water depth of -3 feet below msl immediately seaward of the offshore emergent limestone bench, wave heights of about three feet can be expected to break on the offshore bench. Wave heights on the beach at the base of the shoreline escarpment would be

less than three feet. Thus, although the occurrence of large north swell is a significant factor in the erosion problem, they do not directly pose a hazard to homes located on the high escarpment.

Although they occur with relative infrequency, hurricane storm wind and waves pose a potential threat to Hawaii. The report *Windward Oahu Hurricane Vulnerability Study, Determination of Coastal Inundation Limits* (Sea Engineering, Inc., 1990) estimates the possible water level rise and wave runup along the shore for various scenario hurricane events. Typical and worst case wave runup elevations along the shore in the vicinity of the project site were determined to be 7.2 feet and 8.7 feet above msl, respectively. Thus the applicants' homes, located 15 feet above msl, are well above the direct hurricane storm wave impact zone. The effect of hurricane storm waves on erosion of the unprotected shore, however, could well pose a hazard to the homes.

The Federal Emergency Management Agency (FEMA), Flood Insurance Rate Maps (FIRM), label the shoreline in the general project area as an AE Zone – Special Flood Hazard Area Inundated By a 100-Year Flood, with a base flood elevation of +9 feet. Thus, again, the applicants' home sites are above the flood hazard zone.

4.0 ENVIRONMENTAL SETTING

4.1 General Description

The project area is a well-developed residential neighborhood, with single-family homes along the shore. Land use designation by the State is Urban, and City and County of Honolulu zoning is R-5 Residential. Many of the lots are owned in fee simple, while others are owned by Zion Security Corporation and leased to the homeowners. All but three of the lots in the project vicinity, the applicants and their neighbor to the south, have revetments or seawalls to provide shoreline erosion protection.

The only public access to Laniloa Beach is located at the north end, at 55-479 Kamehameha Highway. Two sand pockets on the reef near the access (Onini and Puehuehu) provide the only good swimming spots along the entire beach (Clark, 1977). The closest public park is located at Pounders Beach, south of Kehuku'una Point and 2,000 feet south of the project site.

The shoreline in the project vicinity is sandy, with considerable beachrock and raised limestone reef rock. Backshore elevations range between about 10 to 15 feet above msl. The applicants' shoreline is a high, steep sand and earth escarpment, with an elevation of 15 feet plus above msl. The shoreline has a long history of serious and chronic erosion and recession. Almost all of the shoreline in the project vicinity is presently hardened against erosion. The shoreline is fronted by a fringing reef, composed primarily of consolidated limestone reef pavement with some sand and rubble. Large storm waves break offshore in deeper water, and proceed shoreward as smaller reformed waves. Wave action breaking over a raised limestone bench which parallels the shore about 100 to 150 feet offshore of the project site results in a south flowing current along the shore which contributes significantly to the erosion problem.

4.2 Oceanographic Conditions

Wind - The prevailing winds are the northeast tradewinds, which blow onshore in the project area. The tradewinds are typically present 80 percent of the time during the summer season from April to November, with wind speeds of 10 to 20 mph. During the winter months there is a general weakening of the tradewind system and the occurrence of southerly and westerly winds (kona winds) due to frontal systems passing through the islands and local low-pressure systems.

Waves - The general Hawaiian wave climate can be described by four primary wave types: 1) northeast tradewind seas, 2) North Pacific swell, 3) South Pacific Swell, and 4) westerly (kona) storm waves. The project site is completely sheltered from south swell and kona storm waves by the island of Oahu. The site is directly exposed to tradewind seas approaching from the northeast. These waves result from the strong and steady tradewinds blowing from the northeast quadrant over long fetches of open ocean. Typical deepwater tradewind waves have periods of 5 to 10 seconds and heights of 3 to 10 feet.

North Pacific swell is produced by severe winter storms in the Aleutian area of the North Pacific and by mid-latitude low-pressure systems. North swell may arrive in Hawaiian waters throughout the year, but is largest and most frequent during the winter months of October through March. North swell approached from the west through north, and occasionally from east of north, with periods of 12 to 20 seconds and typical deepwater heights of 5 to 10 feet, and heights of 20 feet plus are common. The project site is partially sheltered from the approach of north swell by the northern tip of the island, with only the more northerly waves arriving at the windward shoreline without extensive height reduction due to refraction and diffraction.

Approaching deepwater waves break offshore in deeper water, then reform and proceed shoreward as smaller waves until finally reaching the shore. Nearshore wave heights on the fringing reef are 3 feet or less during typically prevailing annual wave conditions.

Tide - The tides in Hawaii are semi-diurnal with pronounced diurnal inequalities; i.e. two tidal cycles per day with unequal water level ranges. The mean tidal range is 1.3 feet and the diurnal range is 2.2 feet at Laie Bay, immediately north of the project site. General tide data for the site is as follows, based on a mean sea level (msl) datum:

mean higher high water	1.1 feet
mean high water	0.7 feet
mean sea level	0.0 feet
mean low water	-0.6 feet
mean lower low water	-1.1 feet

Hurricanes - Tropical cyclones originate over the warm ocean, and when the wind speed exceeds 64 knots they are considered hurricane strength. Hurricanes form near the equator, and in the central North Pacific usually move toward the west or northwest. During the primary hurricane season of July through September, hurricanes generally form off the west coast of Mexico and move westward across the Central Pacific. These storms typically pass south of the Hawaiian Islands, and sometimes have a northward curvature near the islands. Late season hurricanes

follow a somewhat different track, forming south of Hawaii and moving north toward the islands. Two hurricanes have actually passed through the Hawaiian islands in the past 20 years, hurricane Iwa in 1982 and Iniki in 1992, both passing near or over the island of Kauai. These storms caused high surf and wave damage on the south and west shores of all the islands. No significant wave action was experienced on the northeast facing shore in the project area from either of these storms. Possible wave runup elevations on the shoreline resulting from direct hurricane storm attack on the project site has been estimated by Sea Engineering, Inc. (1990) to be 7.2 feet and 8.7 feet for a typical and worst case hurricane event, respectively. The applicants' homes are thus above the estimated hurricane runup elevation.

Tsunamis – The Hawaiian Islands have a history of destructive tsunami occurrences. Four significant tsunamis have occurred in recent history – 1946, 1957, 1960 and 1964. The 1946 tsunami was generated in the Aleutian islands, and was one of the most destructive tsunamis to strike Hawaii. The water level rise at the shoreline in the project area was 9 to 14 feet (Loomis, 1976). Based on methodology used to develop the Flood Insurance Rate Maps (FIRM) for the state, the predicted 10 and 100-year tsunami elevations are +3 and +8.5 feet msl, respectively (M&E Pacific, Inc., 1978). The applicants' homes are thus above the estimated tsunami runup elevation.

4.3 Marina Flora and Fauna

The following discussion of marine flora and fauna in the vicinity of Laniloa Beach is taken from the *Hawaii Coral Reef Inventory, Island of Oahu* (AECOS, 1979). "Coral cover is sparse (not exceeding 3%) on the shallow reef flat and reef slope off Laniloa Beach. *Porites lobata* is the predominant coral. Algal cover, on the other hand, is high in these areas, reaching 90% of the bottom in some places. Directly south of Laie Point, *Porolithon* sp. and *Asparagopsis taxiforma* are abundant. Coral cover reaches 20% near the breaker zone. *Montipora flabellata* is the dominant species, followed in abundance by *Porites lobata*. *Abudefduf abdominalis* (sergeant major or "mamo") is common on the reef flat. In deeper water (-5 to -15 feet) of the reef front at least 27 species of fish are recorded. However, none can be considered common in occurrence."

4.4 Water Quality

Nearshore waters are designated "Class A" open coastal waters (HAR 11-54-6). Nonpoint source runoff and stream discharges are significant, and coastal waters are generally discolored by red sediment after heavy rains (AECOS, 1979).

4.5 Coastal Use

The only public access is located at the north end of the beach, approximately 3,000 feet from the project site. A sand channel and two sandy-bottomed pockets in the reef in the vicinity of the public access form the only good swimming spots along the entire beach (Clark, 1977). Laie Point and the reef flat off Laniloa Beach are moderately fished by sport and subsistence fishermen (AECOS, 1979). Generally, pole and throw-net fishing for reef fishes is commonest along Laie Point. Spearfishing, pole fishing, and net laying occur primarily on the reef flat off the beach. There is some board surfing in the vicinity of Laie Point when the waves are high.

5.0 ALTERNATIVES CONSIDERED

Alternatives to the proposed revetment construction include no action, sandbags, beach restoration and nourishment, and construction of a vertical seawall.

5.1 No Action

The project site has a 50-year history of severe, chronic erosion. The shoreline has receded as much as 31 feet during the 10-year period between 1991 and 2000. The top of the eroded bank is presently within 20 feet of brand new homes built on the lots. Almost all the other homes in the project vicinity have either seawalls or sloping rock revetment shore protection. If shore protection is not provided for the applicants' property it is estimated that the existing homes would be undermined and damaged due to the ongoing erosion within 10 years or less. Thus no action is not a viable option for this site.

5.2 Sandbags

State DLNR granted permission for the property owners to place large sandbags (Seabags) on the beach fronting their property beginning in 1997, and the Seabags are currently in place in front of all three properties. The bags provide some short term erosion protection, but they have been undermined and displaced by wave action, and waves overtop them at high tide to still reach the toe of the escarpment. In addition, the bags require constant maintenance. Any cut or damage to a bag results in the rapid displacement of sand from the bag rendering it useless. Vandalism is a particular problem, and has resulted in the loss of numerous bags. Therefore, the continued use of sandbags is not considered a satisfactory permanent solution to the erosion problem.

5.3 Beach Nourishment

Constructing and nourishing a protective beach by placing suitable sand in an appropriately designed manner along a shoreline can be an effective and attractive means of mitigating beach loss and protecting against shoreline recession. Unfortunately, the erosion potential of the project site as demonstrated by the long history of shoreline recession makes maintaining a protective beach at this site virtually impossible. In 1998, at the time of sandbag installation, 200 cubic yards of sand was placed on the beach fronting the applicants' property. This sand was rapidly eroded and quickly disappeared. It would take significant stabilization structures, such as groins extending perpendicular from the shore into the water or an offshore breakwater parallel to the shore, to retain sand at the site, and even then there would likely be a need for extensive maintenance and regular renourishment. In addition, beach stabilization structures would have to be built seaward of the certified shoreline, on State Conservation District submerged land. Beach restoration is also not very compatible with the existing seawall and revetment shore protection on both sides of the applicants' property. Beach restoration and nourishment is therefore not considered a viable long-term erosion control measure for this site.

5.4 Seawall

A seawall is a vertical or sloping concrete or concrete-rock-masonry wall used to protect the land from wave damage and erosion. A seawall, if properly designed and constructed, is a proven, long lasting, and relatively low maintenance shore protection method. Seawalls also have the advantage of requiring limited horizontal space along the shore. However the impervious and vertical face of a seawall results in very little wave energy dissipation. 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, and thus the foundation of a seawall is critical for its stability, particularly on a sandy and eroding shoreline. Ideally a seawall should be constructed on solid, non-erodible substrate. Seawalls are not flexible structures, and their structural stability is dependent on the stability of their foundations. Reflected wave energy can inhibit beach formation in front of the wall, and thus seawalls are not the best alternative if maintaining a beach seaward of the structure is desired.

5.5 Revetment

A revetment is a sloping uncemented 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 filter designed to distribute the weight of the armor layer and to prevent loss of fine shoreline material through voids in the revetment. Toe scour 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 a scour apron of excess stone. Properly designed and constructed 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 and dissipate more wave energy than smooth vertical walls, thus reducing wave reflection, runup and overtopping. Thus there is a greater likelihood of sand accumulation seaward of the structure. The sloping revetment does occupy more horizontal space and has a larger footprint than a seawall would. Because of its durability, particularly considering the potential instability of the erodible sand shoreline on which it would be constructed, and the greater likelihood of sand retention on the shore fronting the structure, a rock revetment is considered the best erosion control/shore protection measure for the site.

6.0 PROJECT IMPACTS

Impacts are addressed in terms of the following significance criteria as presented in *A Guidebook for the Hawaii State Environmental Review Process*, prepared by the State Office of Environmental Quality Control, 1997.

- (1) *"Irrevocable commitment to loss or destruction of any natural or cultural resource."* The project site is a severely eroded sandy shoreline, with no vegetation except for naupaka planted by the homeowners in an effort to curb the erosion. There is no significant flora or fauna which would be lost due to construction of the revetment. No threatened or endangered species would be impacted by the project. The revetment will occupy approximately 2,000 square feet of shoreline area, replacing the eroding bank with a stable sloping rock revetment. The overall appearance of the site will be improved. Implementation of the project will permit the removal of the existing sandbags, which presently occupy about 1,000 square feet of shoreline area. No known cultural resources are located on the property.
- (2) *"Curtails the range of beneficial uses of the environment."* There will be no impact on public access to the shoreline – the closest public access is 3,000 feet to the north. There will be no significant change in lateral access along the shore, which is already hampered by the almost completely armored Laniloa beach shoreline. There will be no impact to fishing on the reef flat seaward of the project site.
- (3) *"Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS."* The project will be constructed landward of the certified shoreline as of May 9, 2003, and thus the project will be constructed entirely out of the State Conservation District along the shore. The project will also be constructed landward of the mean higher high tide line along the shore, and thus will be separated from the nearshore water by the existing sandy shoreline. The natural barrier provided by the beach will be maintained throughout the construction, and will prevent environmental impact to nearshore State waters.
- (4) *"Substantially affects the economic or social welfare of the community or state."* The project would have no adverse social or economic impact to the state. The revetment would have some positive economic impact to the applicants and their neighbors by preventing further erosion and loss of land, as well as providing flanking erosion protection for the existing shore protection on adjacent properties.
- (5) *"Substantially affects public health."* The project has no public health impacts.
- (6) *"Involves substantial secondary impacts."* The project will have no impact on public services or facilities.
- (7) *"Involves a substantial degradation of environmental quality."* The project will have no significant adverse environmental impacts nor will it degrade environmental quality. It will not degrade water quality, nor impact marine flora and fauna. It will be constructed

entirely behind the shoreline, on what is now bare eroded sand and earth. The project will permit landscaping of the shore above the revetment, improving the visual and aesthetic nature of the shore. The proposed rock revetment is visually consistent with the existing protected shore on both sides of the project site.

- (8) *"Has cumulative impacts."* The revetment would be a stand-alone project, with no cumulative impacts or commitment for larger actions.
- (9) *"Substantially affects a rare, threatened, or endangered species or its habitat."* No plant or animal species listed as endangered, threatened, proposed or candidate species by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973, as amended, or by the State of Hawaii under its endangered species program, were detected during site surveys and none is known or anticipated to utilize the property.
- (10) *"Detrimentially affects air or water quality or ambient noise levels."* The revetment will be located behind the mean higher high tide shoreline, and the existing sand beach will be maintained during construction to act as a natural turbidity barrier. No material will be placed in the nearshore water. No debris, petroleum products, or other construction-related substances or materials will be allowed to flow, fall, leach or otherwise enter the coastal waters. All construction material will be free of contaminants or pollutants. Stone would come from existing operating quarries or field stone borrow sites. Best Management Practices will be adhered to during construction to minimize environmental pollution and damage. There will be some additional noise above ambient during construction resulting from equipment operation (trucks, back hoe or front end loader). Construction work would be restricted to the hours of 7:30 am to 5 pm Monday through Friday to reduce noise impacts to the neighbors.
- (11) *"Affects or is likely to suffer damage by being in an environmentally sensitive area such as a flood plain, tsunami zone, beach or erosion prone area, or coastal waters."* The project site is subject to severe, chronic shoreline erosion, existing homes are located less than 20 feet from the top of the eroding bank – the proposed revetment will eliminate the erosion hazard to the homes. The Federal Flood Insurance Rate Map (FIRM) indicates that the general project area is within the AE Zone (special flood hazard area inundated by a 100-year flood) with base flood elevation of +9 feet msl – thus the proposed revetment would be in the 100-year tsunami zone. A Flood Hazard District Certification has been provided with the Shoreline Setback Variance application to the City & County. The revetment may be subject to prevailing wave conditions at the shoreline, particularly during winter season high surf from North Pacific storms, and the revetment has been designed to be stable under possible severe wave conditions at the site. The revetment will provide erosion and storm wave protection for the existing homes.
- (12) *"Substantially affects scenic vistas and viewplanes identified in county or state plans or studies."* Several rows of homes lie between the coastal highway and shoreline in the project area, and it is not possible to see the shore for a significant distance either side of the project site. In addition, existing ground elevation at the site is about +15 feet msl, thus the +8-foot crest of the proposed revetment will be well below existing ground level.

There is no public access to the shore for several thousand feet north or south of the project site, so the revetment will not be readily visible to the public.

- (13) *"Requires substantial energy consumption."* No significant energy would be expended by construction of the revetment, nor would it entail any long-term commitment to energy use.

7.0 MITIGATION MEASURES

1. All construction would be done landward of the mean higher high tide elevation, and the natural sand beach would be maintained as a barrier between the nearshore water and the construction activity. In addition, a silt fence seaward of the revetment toe will be erected and maintained during the construction period.
2. Work would be limited to the hours between 7:30 am and 5 pm to reduce the disturbance to neighboring properties.
3. The following Best Management Practices will be adhered to during construction.
 - a) The Contractor shall perform the work in a manner which minimizes environmental pollution and damage as a result of construction operations. Environmental resources outside the limits of construction shall be protected during the construction period.
 - b) The Contractor shall confine all construction activity to areas defined by the construction plans. No construction material shall be placed or stockpiled outside of the immediate area of construction.
 - c) All construction materials shall be free of contaminants or pollutants.
 - d) No debris, petroleum products, or other construction-related substances or materials will be allowed to flow, fall, leach or otherwise enter the coastal waters.

8.0 SHORELINE SETBACK VARIANCE JUSTIFICATION

The shoreline at the project site is subject to well-documented, chronic erosion. The vegetation line receded up to about 70 feet during the 25-year period between 1949 and 1975, after which various forms of shore protection was constructed along the majority of the shoreline in the project vicinity. The applicants' property is presently two of only three properties without permanent shore protection along the entire south end of Laniloa Beach. During the period between 1991 and 2000, the certified shoreline receded landward between 17 and 31 feet, or about 2.5 feet per year. Between October 2000 and the spring of 2003 the shoreline receded landward an additional 20 feet, and the top of the eroding shoreline escarpment is presently less than 20 feet from the existing Lee and Wilson homes. In 1998 the property owners received permission from the State Department of Land and Natural Resources to place large sandbags on the beach fronting their property. The sandbags have been only moderately successful at reducing the erosion - they are not high enough to prevent winter waves at high tide from overtopping them and reaching the eroding bank, and they have been vandalized by slicing them

open or cutting holes in them which quickly results in a loss of sand from the bags rendering them useless. The use of sandbags is not an effective long-term or permanent solution to the erosion problem.

Properly designed and constructed shore protection is required to stop the erosion and protect the homes. The proposed sloping rock revetment is considered the best alternative for this location. The revetment would be constructed entirely landward of the mean higher high tide elevation, and landward of the May 9, 2003 certified shoreline. No significant environmental impacts would result from the construction. The revetment will provide permanent protection for the homes, and will be consistent with the shore protection already in place along the rest of the shoreline in the project area. The Keystone wall system to be constructed above the +8-foot revetment crest elevation will stabilize the sand and earth bank, permitting it to be vegetated and landscaped. This will greatly improve the overall appearance of the shoreline. Construction of the revetment will also permit removal of the deteriorated sandbags, also improving the shoreline appearance.

9.0 PUBLIC AND AGENCY INVOLVEMENT, REVIEW AND CONSULTATION

The following agencies were consulted during preparation of the Draft Environmental Assessment (DEA):

- City and County of Honolulu, Department of Planning and Permitting
- State of Hawaii, Department of Land and Natural Resources
- U.S. Army Corps of Engineers, Honolulu Engineer District

Notice of the availability of the Draft EA was published in *The Environmental Notice*, published by the State Office of Environmental Quality Control, in the August 23, 2003 issue. The Draft EA was also sent to concerned Federal, State and County agencies. Draft EA review comments were received from the following agencies:

- Koolauloa Neighborhood Board No. 28
- State of Hawaii, Department of Land and Natural Resources, Office of Conservation and Coastal Lands
- State of Hawaii, Department of Land and Natural Resources, Land Division
- State of Hawaii, Department of Land and Natural Resources, Engineering Division
- State of Hawaii, Office of Environmental Quality Control
- U.S. Army Engineer District, Honolulu, Civil Works Technical Branch

The project will require the following permits:

- Shoreline Setback Variance pursuant to Chapter 23, Revised Ordinances of Honolulu
- Building permit from the City and County of Honolulu

REFERENCES

- AECOS, Inc., 1979, *Oahu Coral Reef Inventory*, prepared for the U.S. Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawaii.
- AECOS, Inc., 1981, *Oahu Coastal Zone Atlas*, prepared for the U.S. Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawaii.
- Clark, John R.K., 1977, *The Beaches of Oahu*, The University Press of Hawaii.
- Hwang, Dennis, 1981, *Beach Changes on Oahu as Revealed by Aerial Photographs*, Hawaii Institute of Geophysics, University of Hawaii.
- Loomis, Harold G., 1976, *Tsunami Wave Runup Heights in Hawaii*, Hawaii Institute of Geophysics, University of Hawaii.
- M&E Pacific, Inc., 1978, *Manual for Determining Tsunami Runup Profiles on Coastal Areas of Hawaii*, prepared for U.S. Army Corps of Engineers, Pacific Ocean Division.
- Sea Engineering, Inc., 1989, *Oahu shoreline Study, Part 1, Data on Beach Changes (1988)*, prepared for City and County of Honolulu, Department of Land Utilization.
- Sea Engineering, Inc., 1990, *Windward Oahu Hurricane Vulnerability Study – Determination of Coastal Inundation Limits*, prepared for the State of Hawaii, Civil Defense and the U.S. Army Corps of Engineers, Honolulu Engineer District.

APPENDIX

**Draft Environmental Assessment
Review Comments and Response Letters**



Sea Engineering, Inc.

Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

October 7, 2003

Creighton U. Mattoon, Chair
Koolauloa Neighborhood Board No. 28
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, HI 96813

Dear Mr. Mattoon:

Subject: Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application, TMK 5-5-02:92 and 5-5-02:93,
Laie, Oahu

Thank you for your review of the Draft Environmental Assessment and Coastal Engineering Evaluation for the subject project, and the review comments in your letter of September 2, 2003.

The homeowners who are proposing to construct shore protection for their homes are two of only three properties in this area of Laniloa Beach that do not presently have rock revetment or concrete seawall shore protection. The homeowner on the south side of the project site (TMK 5-5-02:37) received permission from the State DLNR to place Seabags (large sandbags) on the beach fronting his property in 1997 and these bags are currently in place and functioning well to protect the property from erosion. The owner of the property immediately north of the project site (TMK 5-5-02:77) placed boulders on the shoreline in 1989 to stop erosion. All of the other homes in the project area are similarly protected by sloping rock revetments or concrete-rubble-masonry seawalls, as illustrated on Figure 3-3 of the Environmental Assessment. There are no adjacent unhardened properties, and thus no risk of the proposed shore protection project having an adverse impact to unprotected properties.

Sincerely,

Scott P. Sullivan
Vice President

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



KOOLAULOA NEIGHBORHOOD BOARD NO. 28
(Kahuku, Laie, Haaui, Punahoa, Kaaawa-Kahana)

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

2003/SV-12

September 2, 2003

Department of Planning and Permitting
650 South King Street
Honolulu, Hawai'i 96813

RE: Draft environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application – TMKs 5-5-02:92 and 5-5-02:93 La'ie,
O'ahu

Dear Persons:

Neighborhood Board #28 would like the Planning and Permitting Department to carefully assess the impact of granting this permit on adjacent properties that have no hardened shoreline. Our understanding of shoreline hardening projects such as these is that they tend to adversely affect unprotected properties by increasing the erosion to these properties.

Mahalo for this opportunity to comment.

Sincerely,

Creighton U. Mattoon, Chair

2003 SEP 11 PM 3:17
CITY AND COUNTY OF HONOLULU



Oahu's Neighborhood Board System-Established 1973



Sea Engineering, Inc.

Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

October 7, 2003

Ms. Dierdre S. Mamiya, Acting Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
State of Hawaii
650 South King Street
Honolulu, HI 96813

Dear Ms. Mamiya:

Subject: Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application, TMK 5-5-02:92 and 5-5-02:93,
Laie, Oahu

Thank you for your review of the Draft Environmental Assessment and Coastal Engineering Evaluation for the subject project, and the review comments in your letter of September 3, 2003.

Exactly why erosion of the project area shoreline has accelerated in recent years is not known. As you suggest, the increase in erosion is likely at least partially due to the fact that these are the only unprotected lots remaining along this portion of Laniloa Beach. Other factors which may be contributing to the problem are the average or greater north swell wave activity the past few years and periods of higher than normal still water levels in the mid-pacific region. Sea level measuring stations have shown periods of still water levels 0.5 feet or greater above the average water level, which has effectively caused the high tide to be 0.5 feet or more above the predicted elevation. To my knowledge, the cause of the high still water levels is presently unknown. The higher tide levels permits wave action to reach higher elevations which may have exacerbated the erosion problem.

Removal of the existing rock pile and crib wall located offshore is beyond the scope of this project. Work in the water would require additional permits, including Department of the Army approval for work in navigable waters of the U.S. (Section 10 of the River and Harbor Act), and would be very costly to the homeowners.

Stairs are not included in the presently proposed shore protection project. It is understood, however, that if stairs were to be built they would have to be entirely behind the Certified Shoreline and could not impinge on the State Conservation District.

We concur that efforts should be made at every opportunity to effectively manage the use and development of our shorelines and coastal resources.

Sincerely,



Scott P. Sullivan
Vice President

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

2003/SV-12

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER
COMMISSION ON WATER RESOURCE MANAGEMENT

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

2003 SEP 4 11 20
9/3/03
CITY AND COUNTY OF HONOLULU

Mr. Eric Crispin, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King St
Honolulu, HI 96813

Subject: Review and comments on Draft EA for Shoreline setback variance application for TMK 5-5-02:92 (Lee) and TMK 5-5-02:93 (Wilson).

Dear Mr. Crispin:

The State of Hawaii Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) has reviewed the July 2003 Draft EA for Shoreline setback variance application for 55-313 and 55-315A Kamehameha Hwy, Laie, Hawaii. In December, 1998 a Conservation District Use Permit was issued to the owners for placement of sand bags (Sea Bags) on the beach fronting their property. These sandbags we authorized in the hope that they would provide temporary stabilization of the shoreline and slow or stop the chronic erosion occurring at the site. Apparently the bags have only been moderately successful at reducing the rate of shoreline erosion and other options need to be considered. We offer the following comments and suggestions as these matters are outside the conservation district regulations.

After reviewing the draft EA it is clear that the erosion rate poses a significant problem to the site. The Draft EA states that the rate of erosion between 1991 and 2000 is about 2.5 feet per year. Additionally, between October 2000 and Spring of 2003 the shoreline receded an additional 20 feet landward posing a significant threat to the existing homes. The recent erosion at the project site represents some of the highest erosion rates in the state and warrants some investigation into why the erosion rate has accelerated. We presume the increased erosion is partially due to the fact that this is one of the few remaining lots in this area without any hard shoreline protection. There is a well-documented history of erosion in this vicinity as the draft EA points out. *This should have been recognized as a potential threat to the proposed development when the lot*

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

DOCUMENT CAPTURED AS RECEIVED

2003/5/12

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER
COMMISSION ON WATER RESOURCE MANAGEMENT

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

2003 SEP 3 PM 3 20
9/3/03

Mr. Eric Crispin, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King St
Honolulu, HI 96813

Subject: Review and comments on Draft EA for Shoreline setback variance application for TMK 5-5-02:92 (Lee) and TMK 5-5-02:93 (Wilson).

Dear Mr. Crispin:

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After reviewing the draft EA it is clear that the erosion rate poses a significant problem to the site. The Draft EA states that the rate of erosion between 1991 and 2000 is about 2.5 feet per year. Additionally, between October 2000 and Spring of 2003 the shoreline receded an additional 20 feet landward posing a significant threat to the existing homes. The recent erosion at the project site represents some of the highest erosion rates in the state and warrants some investigation into why the erosion rate has accelerated. We presume the increased erosion is partially due to the fact that this is one of the few remaining lots in this area without any hard shoreline protection. There is a well-documented history of erosion in this vicinity as the draft EA points out. *This should have been recognized as a potential threat to the proposed development when the lot*

was originally subdivided and permits issued in 2000 for the construction of the two new homes.

The OCCL suggests that the existing rock pile and crib wall in the inter tidal shoreline fronting the subject property be removed. These structures are both easily identifiable in Figure 3-3 of the Draft EA as are clearly within State lands. The rock pile and old crib wall to the immediate north appear to offer no significant shore protection. It is possible these unauthorized structure may actually be accelerating the erosion in this area by increasing the long shore transport rate of sediment. It may be possible to use the basalt boulders from the rock pile fronting the project site as material for the proposed revetment. This would provide a cost savings to the applicant as well as remove a derelict shoreline structure from State land.

The proposed design calls for the removal of the existing Keystone wall and installation of a sloping rock revetment with subsequent reconstruction of a keystone wall above the revetment. The revetment is to be constructed landward of the May 9, 2003 certified shoreline and approximately 25 feet inland from the intersection of the mean high water line (+1.1' MSL). The landward position of this design may allow for the possibility of a sand beach to form seaward of the revetment. The revetment design calls for a slope of 1:1.5 which is presumably the lowest slope that would "fit" in the area available. The revetment design calls for a base toe elevation of -1' MSL. The toe apron base elevation is essential to protect against scour and undermining of the revetment toe. It may be possible to tie in the base of the toe apron to the existing beachrock at approximately the elevation proposed.

Private beach access does not appear to be addressed in this proposed design. Are there any plans to install stairs or other methods of beach access? While it may not be the priority of the current owners, subsequent owners may want better beach access than that proposed. Will the existing wood stairway providing access to the beach be reconstructed in a similar manner after construction? It is presumed the base of any rebuilt stairway would continue to be landward of the certified shoreline.

The OCCL would like to acknowledge that this is yet another example of the need for improved proactive coastal planning and development strategies with regard to development in areas with eroding shorelines. Avoidance of erosion hazards is the best way to protect coastal development and beaches simultaneously. It should be noted that numerous guidelines have been developed addressing development along the shoreline. The DLNR Coastal Lands Program adopted the Coastal Erosion Management Plan (COEMAP) in 1999 which has been endorsed by all County, State and Federal stakeholders as "the State's policy framework to guide land use and policy decisions affecting the State's coastlines and beaches."

The OCCL also provides guidance to developers, homeowners, and County regulatory agencies on coastal erosion avoidance strategies. The OCCL has developed Hawaii's first Coastal Construction Guidebook *Hawaii's Hazard Mitigation Guidebook for Coastal Development* (In Publication), which emphasizes early planning to avoid coastal erosion hazards. The OCCL is also in the process of developing an on-site-specific sand

management plans for coastal management agencies on Oahu. These guidance materials will eventually be distributed to State, county and private planning and consulting agencies as an information resource and method of establishing improved coastal hazard mitigation and development.

The armoring of our State's shorelines has caused significant damages to our public beaches. It is incumbent upon all government agencies to consider the effect of their actions on our beaches and to consider long-term measures to protect coastal development and beaches simultaneously. The cost of remedial shore protection is a significant problem for shore owners and government, in of itself, but the loss of beaches is an even greater concern.

Contact Sam Lemmo of the Land Division, Planning Branch at 587-0381, or Dolan Eversole of the University of Hawaii Sea Grant Program at 587-0439, should you have any questions regarding this matter.

Thank You,



Dierdre S. Mamiya, Acting Administrator
Office of Conservation and Coastal Lands



Sea Engineering, Inc.

Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

October 8, 2003

Ms. Dierdre S. Mamiya, Administrator
Land Division
Department of Land and Natural Resources
State of Hawaii
P.O. box 621
Honolulu, HI 96809


Dear Ms. Mamiya:

Subject: Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application, TMK 5-5-02:92 and 5-5-02:93.
Laie, Oahu

Thank you for your review of the Draft environmental Assessment and Coastal
Engineering Evaluation for the subject project, and the review comments in your letter of
August 28, 2003.

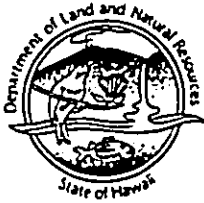
The proposed rock riprap revetment will be constructed entirely behind the Certified
Shoreline, and thus will be landward of the State Conservation District. Therefore no
land disposition from DLNR Land Division will be required. We also understand that the
project must comply with the rules and regulations of the National Flood Insurance
Program.

Sincerely,


Scott P. Sullivan
Vice President

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

LINDA LINGLE
GOVERNOR OF HAWAII



2003 SEP 18 PM 4 24



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809
August 28, 2003

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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

LD-NAV

2003-ED-20.RCM

Honorable Eric G. Crispin, AIA
Director, Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

SUBJECT: Review: Draft Environmental Assessment and Coastal
Engineering Evaluation for Shoreline Setback
Variance
Property: 55-313 & 55-316A Kamehameha Highway, Laie
Consultant: Sea Engineering, Inc.
Authority: C&CoH Department of Design and Construction
Project: Remove Keystone Wall & Rock/Concrete Toe
Protection and Construct Engineered Sloping Rock
Riprap Revetment

Thank you for the opportunity to review and comment on the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of the subject DEA to the following DLNR Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Division of Boating and Ocean Recreation
- Engineering Division
- Division of State Parks
- Office of Conservation and Coastal Lands
- Land-Oahu District Land Office

Attached is a copy of the Engineering Division and Oahu District Land Office comment.

The Department of Land and Natural Resources has no other comment to offer on the subject matter. If you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: ODLO

LINDA LINGLE
GOVERNOR



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

August 19, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
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CONSERVATION AND RESOURCES
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

2003 SEP 18 PM 4 24

CITY OF

MEMORANDUM

TO: Dierdre S. Mamiya, Administrator
ATTN: Sam Lemmo

FROM: Robert M. Ing, Land Agent *RI*
Land Division *R*

SUBJECT: Request for Comments
(Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance)
55-313 & 55-315A Kamehameha Highway, Laie, Hawaii.

COMMENTS:

The Applicant may be required to obtain a land disposition from DLNR Land Division should any portion of the Engineered Sloping Rock Riprap Revetment extend beyond the property line.

To Mr. Yong
527-6743

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/NAV

Ref: 2003 - ED - 20

COMMENTS

- We confirm that the project site is located in Zone AE.
- Please note that the project site is located in Zone _____.
- Please note that the correct Flood Zone designation for the project site is _____.
- Please note that the 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 questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0248. If there are questions regarding flood ordinances, please call the applicable County coordinators below:
 - Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
 - Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
 - Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning..
 - Mr. Wallace Kudo at (808) 241-6620 of the County of Kauai, Department of Public Works
- The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- The applicant should provide the water demands and calculations to the Engineering Division the water demands will be included in the State Water Projects Plan update.
- Additional Comments: _____

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER
Date: 8/21/03



Sea Engineering, Inc.

Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

October 8, 2003

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, HI 96813


Dear Ms. Salmonson:

Subject: Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application, TMK 5-5-02:92 and 5-5-02:93,
Laie, Oahu

Thank you for your review of the Draft Environmental Assessment and Coastal Engineering Evaluation for the subject project, and the review comments in your letter of September 22, 2003.

The coastal engineering and environmental assessment of the project site has been prepared in accordance with the 13 general topics suggested by the "Shoreline Hardening Policy and Environmental Assessment Guidelines" as promulgated by OEQC. The project has been discussed with the neighbors on both sides of the project site. In addition, as part of the Shoreline Setback Variance process, the City and County of Honolulu, Department of Planning and Permitting, will conduct a public hearing to solicit input from agencies and the community. Notice of the hearing and proposed action will be given to individual property owners within 300 feet on either side of the applicants.

Sincerely,


Scott P. Sullivan
Vice President

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

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

SEP 23 2003

September 22, 2003

Mr. Eric Crispin, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawai'i 96813

Dear Mr. Crispin:

Subject: Draft Environmental Assessment for Lee-Wilson Rock Revetment on Laniloa Beach,
Laie, O'ahu

Thank you for the opportunity to review and comment on the subject project. We have the following comments.

1. For assistance in completing the assessment, please review the attached "Shoreline Hardening Policy and Environmental Assessment Guidelines."
2. Please consult with the affected neighbors and shoreline users.

Sincerely,

Genevieve Salmonson
Genevieve Salmonson
Director

c: Sea Engineering
R. Lee
B. Wilson



Sea Engineering, Inc.

Makai Research Pier, 41-202 Kalaniana'ole Hwy, Suite 8, Waimānalo, Hawai'i 96795-1820
(808) 259-7966/FAX (808) 259-8143 E-MAIL: seaeng@lava.net

October 7, 2003

Mr. James Pennaz, P.E.
Chief, Civil Works Technical Branch
U.S. Army Engineer District, Honolulu
Fort Shafter, HI 96858-5440

Dear Mr. Pennaz:

Subject: Draft Environmental Assessment and Coastal Engineering Evaluation for
Shoreline Setback Variance Application, TMK 5-5-02:92 and 5-5-02:93,
Laie, Oahu

Thank you for your review of the Draft Environmental Assessment and Coastal Engineering Evaluation for the subject project, and the review comments in your letter of September 3, 2003. We understand that a DA permit is not required for the proposed project, and that the flood hazard information presented in the Draft Environmental Assessment is correct.

Sincerely,

Scott P. Sullivan
Vice President

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



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

REPLY TO
ATTENTION OF:

September 3, 2003

2003 SEP 4 PM 12 46

Civil Works Technical Branch

CITY & COUNTY OF HONOLULU

Mr. Geri Ung
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Ung:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Shoreline Setback Variance for Revetment Construction on Kam Highway, Oahu (TMKs 5-5-2; 92 and 93). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

- a. Based on the information provided, a DA permit is not required for the project.
- b. The flood hazard information provided on page 19 of the DEA is correct.

For further information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876 and refer to file number 200300266.

Sincerely,

James Pennaz
James Pennaz, P.E.
Chief, Civil Works
Technical Branch