

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

180-Day Exp. Date: August 23, 2014

April 11, 2014

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

**REGARDING:** Conservation District Use Application (CDUA) MA-3708  
HonoaPi'ilani Highway Shoreline Erosion Control Boulder Revetment

**APPLICANT:** State of Hawai'i- Department of Transportation (DOT)

**LANDOWNER:** State of Hawai'i

**LOCATION:** Olowalu, Kealahou, Maui

**TAX MAP KEY:** (2) 4-8-003:006 and adjacent submerged land

**SUBZONE:** Limited and Resource

**BACKGROUND:**

Over the years, high surf and tidal conditions have eroded the southwestern coast of Maui. In early July 2001, HonoaPi'ilani Hwy was undermined at the project site and about 40-feet of the asphalt-paved shoulder eroded, creating a vertical drop. Emergency repairs were authorized by the Department with the understanding that an After the Fact CDUA would be filed within 6-months of the emergency repair.

After the fact approval for the emergency shoreline protection structure was gained via Conservation District Use Permit (CDUP) MA-3138 approved by the Board of Land and Natural Resources on October 24, 2003. The existing shoreline protection structure consisted of the placement of approximately 400-yds<sup>3</sup> of boulders along the shoreline of the highway. 200-linear feet of concrete barrier rail [jersey barriers] were positioned near the edge of the pavement to protect commuters from rocks thrown by overtopping waves. Wave action and coastal erosion continue to threaten the stability of the roadway pavement, creating a public safety concern.

The Final Environmental Assessment (EA) states "Long-term plans are currently in progress to relocate the highway further inland to preserve the State's coastal resources and mitigate the hazards from storm waves and shoreline erosion." The highway relocation alternative is viewed as a long-term solution. Currently the immediate action is to provide shoreline protection to maintain the functional integrity of the highway.

**DESCRIPTION OF AREA (EXHIBIT A, B & C)**

The project area is located in Olowalu, Maui and is a portion of the government beach reserve that is on the makai side of HonoaPi'ilani Highway, outside of the highway right of way. The

highway has two 12-foot wide lanes with paved shoulders and is the only major roadway facility providing vehicular access to and from West Maui to the rest of the island. The land side of the project lies within the Limited subzone that is eroding into the ocean and the submerged land of the project lie within the Resource subzone of the Conservation District.

The project coastline is comprised of black sand and cobbles with patches of calcareous sand. There does not appear to be sandy beach along the project site. This portion of the shoreline is part of a government beach reserve for public access to ocean recreational activities such as swimming, surfing, fishing and snorkeling.

The parcel is principally located within Flood Zone VE –areas subject to 100-year flood and additional velocity hazard (wave action). The shoreline is exposed to southerly swells, generally in the summer months. The composition of the southwest-facing shore ranges from large boulders and rock rubble to the south and water worn cobbles and deposits of black sand in the north. A nearshore fringing reef fronting this shoreline reach provides protection from deep water wave energy. The shallow near shore waters in the project area are generally less than 2.8-ft. deep and create a broad intertidal zone.

A marine biology assessment was done by AECOS in April 2008 that included an assessment of flora and fauna of the intertidal and shallow near shore zones. Dried molts of crustaceans and algae were cast on the uppermost part of the shore with pipipi, opihi and periwinkle in the intertidal zone clustered on existing boulders and cobbles. Spotted drupes were observed grazing on algae and sea lettuce and huluilio algae were also present in the littoral zone. In the shallow waters, a red alga was identified on boulders and giant opihi and shingle urchins were noted. Four fish species were observed: the endemic Hawaiian white-spotted toby, the endemic Hawaiian sergeant major, the reef triggerfish and an unidentified silver fish. Much of the shallow bottom offshore on the north end is shifting sand and to the south algal growth is prominent. Corals were rare with live coral cover at less than 1%. No sea turtles or other endangered or threatened species were observed in the project site during the marine survey. However endangered Sea Turtles and Monk Seals are known to visit the area.

Avifauna and mammals present include introduced species such as the Mejiro, Bar Doves, Myna birds and Rats, Mice and Mongoose. Native plants observed in close proximity to the project site include hau, ilima, and naio; along with the Polynesian introduced coconut palm. Other types of vegetation consist of false Kamani, Kiawe and small shrubs and grasses. The project site is devoid of coastal vegetation except for a few coconut palms and scattered road side weeds and grasses.

An Archaeological Inventory Survey was completed in February 2009 and a Cultural Impact Assessment was completed in May 2008 for the project site. The State Historic Preservation Division (SHPD) concluded *no effect on historic resources* provided an accepted Archaeological Monitoring plan be completed. On February 7, 2011, SHPD approved the Archaeological Monitoring Plan for the project.

A portion of the project is utilized by fishermen and surfers. While there is no direct access to the shoreline due to the immediate adjacency to the Highway, vehicular access to the site is

provided along a strip of land located north of the project area. Lateral access along the shoreline would include walking along a cobble beach.

The scenic and open space resources include views and vistas of the Pacific Ocean as well as the islands of Lanai and Kaho'olawe and the islet of Molokini. Mauka is the West Maui Mountains and Olowalu Valley to the northeast.

A study of long-term shoreline change by the University of Hawaii Coastal Geology Group completed in 2003 indicates shoreline erosion rates of approximately -0.5 to -0.8 ft/yr since the early 1900s<sup>1</sup>. According to the Atlas of Natural Hazards in the Hawaiian Coastal Zone<sup>2</sup> The overall hazard assessment of this area is moderate to high (5) due to the low coastal slope of this area. This southwest facing coastline may receive the brunt of passing storms that track to the west. "Sections of the coastal highway, the sole southern access to West Maui, are threatened by coastal erosion and have been protected with armoring by the DOT." **(EXHIBIT D)**

This area has been identified as part of the proposed Pali to Puamana Parkway project that is intended to preserve open space and shoreline access along the coastline. This plan also proposes relocation of HonoaPi'ilani Highway further inland out of the eroding shoreline. **(EXHIBIT E)**

#### **PROPOSED USE (F, G, H & I)**

The proposed use involves the placement of boulder fill to replace the existing shoreline protection structure. According to the information submitted, the proposed revetment structure will consist of  $\approx 3,100\text{-yds}^3$  of clean boulders along approximately 900-ft of the shoreline of HonoaPi'ilani Highway. The boulders range in size of 1.5-tons -2.5-tons and will be underlain with smaller rock and geotextile fabric to prevent leaching of backfill material through the voids between the boulders. The revetment extends 12-feet at the crest elevation of  $\approx 10.5$ -feet mean sea level and 2.5-feet above the elevation of the road; and then slopes down to the shoreline for another 10-feet.

In addition, the existing drain line that crosses beneath the roadway to the ocean will be extended across the width of the revetment and a new headwall will be installed at the outlet. Other improvements include new guardrails, asphalt concrete paving, and highway striping. Updated plans now place a temporary staging area on the mauka side of the highway outside of the Conservation District.

The toe of the revetment is proposed to be excavated to -4-feet or to the depth of the hard limestone platform, if found at shallower depth, in order to address the potential for continued erosion and scouring at the base of the rock slope. The ends of the revetment will be recurved to prevent flanking of the rock slope. The ungrouted boulder fill is designed for stability under

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<sup>1</sup> Fletcher, C.H. and co-authors (2001-2003) Erosion hazard maps of the West Maui coastline, <http://www.soest.hawaii.edu/coasts/erosion/maui/>

<sup>2</sup> [http://pubs.usgs.gov/imap/i2761/sections/5\\_Maui.pdf](http://pubs.usgs.gov/imap/i2761/sections/5_Maui.pdf) Atlas of Natural Hazards in the Hawaiian Coastal Zone (2002) Fletcher III, Charles H.; Grossman, Eric E.; Richmond, Bruce M.; and Gibbs, Ann E.

hurricane wave attack. According to the Environmental Assessment for the project, the boulder slope will reduce run up and overtopping. However minor overtopping of storm waves may be experienced during severe storm conditions. Provided the adjacent unprotected shorelines do not continue to erode, the lifespan of the revetment is indefinite.

Construction plans note that geotextile fabric will be installed first, followed by the boulder fill. Smaller rocks will be installed under the large boulders for stabilization. The proposed action is anticipated to reduce terrigenous inputs or clay substrate into the marine environment. Minor grading will occur in areas already disturbed by coastal erosion or previous highway grading and construction.

Should significant cultural finds be encountered, work will stop in the immediate vicinity and the State Historic Preservation Division (SHPD) will be contacted. An archaeological monitoring plan has been submitted and approved by SHPD.

Best Management Practices (BMPs) relating to drainage and erosion control measures will be implemented such as daily inspection at the project site will also be conducted to ensure that erosion control measures are maintained. All earth-altering work will comply with Maui County code. A monitoring program of the project area shoreline will be carried out to establish pre-construction and post-construction conditions and will determine if more specific mitigation measures will be warranted.

It is expected that temporary increase in turbidity in the near shore will occur as a result of construction activities. However, once construction is completed, this should cease. Coordination with the Department of Health, Clean Water Branch will be undertaken to address this under a National Pollutant Discharge Elimination System permit requirement. According to the applicant, the existing storm water runoff flow patterns will not be altered by the proposed project. Like air quality, ambient noise conditions may be temporarily impacted by construction activities. No long-term impacts are expected upon construction completion.

During the placement of the boulder fill, benthic organisms that include algae, snails, crustaceans, and other invertebrates may be buried. Most fishes will leave the area during construction activities and most likely will return after construction is complete. Effects on the marine environment will be minimized by conducting construction work during low tide and by using a silt curtain to mitigate potential increased turbidity and siltation. Construction will only be during daylight hours. Under the Army Corp of Engineers permitting process, consultation with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service will be undertaken to ensure that the proposed action will not likely jeopardize the existence of listed, endangered or threatened species. The applicant has identified recommended BMPs by the National Oceanic Atmospheric Administration (NOAA) and USFWS to minimize degradation of water quality and minimize the impacts to fish and wildlife resources. No critical habitats have been defined in the project area. **(J & K)**

Public use of the shoreline may be restricted during the construction period. Lateral shoreline access will be available over the boulder and rock fill. Public access along the shoreline area is expected to continue upon completion of the shoreline revetment. The proposed project will not impact access and recreational opportunities that exist along the coastline.

*Other Alternatives Considered*

The Applicant considered a number of other alternatives: Do nothing; Sandbag revetment; Cobble beach nourishment; moving the highway mauka and alternative construction material.

According to the July 2010 Environmental Assessment, the project area is suffering from chronic erosion and the highway pavement is in imminent danger of collapsing due to undermining by erosion. As the highway is the only access road to West Maui, and relocation of the highway is not yet possible, the no action /no build alternative were not considered.

A sandbag revetment is seen as a short term temporary fix to hold the line. Moving the highway will take time and a sandbag revetment needs to be maintained and may not hold up until the highway is relocated. In addition, the geotextile fabric of the sandbags would not be aesthetically compatible with the existing cobble shoreline. This alternative was rejected.

The cobble beach nourishment would require adequate beach width, elevation and length along the shoreline reach within the defined shoreline area or littoral cell. However like the existing beach, the cobble shoreline will erode and future nourishment would be required to maintain this design profile. As such, this alternative was rejected.

While moving the highway mauka most likely will be the long term solution, challenges such as time constraints and land acquisition does not make this alternative feasible for the immediate required shoring up of the makai side of the highway.

Alternative materials such as the use of tetra-pods or similar concrete armor units were also reviewed. This type of material is utilized when it is impractical to obtain large enough stones that would be required for stability. However, the use of boulders is more cost-effective. Further, concrete armor units are not suitable for areas accessible to the public as it is hazardous to traverse. In addition, the concrete armor units do not appear to be aesthetically acceptable for a scenic coastal highway, this type of material was rejected.

**SUMMARY OF COMMENTS**

The Office of Conservation and Coastal Lands referred this application to the following agencies for review and comment: the Federal Department of the Army; the State-Department of Health; the Office of Hawaiian Affairs; the Office of Environmental Quality Control; the Department of Land and Natural Resources Divisions of: Aquatic Resources, Conservation and Resource Enforcement, Historic Preservation Division and the Maui District Land Office; the County of Maui- Planning Department and the Puamana Community Association. In addition, the CDUA was also sent to the nearest public library, the Lāhainā Public Library to make this information readily available to those who may wish to review it.

Comments were received by the following agencies and summarized by Staff as follows:

THE STATE

DEPARTMENT OF HEALTH

*Environmental Planning Office*

No comments

DEPARTMENT OF LAND AND NATURAL RESOURCES

*Division of Aquatic Resources (DAR)*

The Olowalu shoreline is healthy with a good diversity of organisms. We have the Hawai'i Coral Reef Assessment and Monitoring Program (CRAMP) and fish survey sites on the southern side of Hekili Point. DAR has collaborated with other agencies such as the U.S. Geological Survey and University of Hawai'i Zoology Researchers to survey fish tumors in butterfly fishes and assess coral diseases on Olowalu reefs.

In regard to the boulder fill plan, DAR recommends large boulders be placed to prevent large swells from reaching over the concrete barriers. Larger boulders will provide more stability than smaller rocks or cobbles which erode from the beach. The larger boulders should help reduce wave wash that goes onto the highway and allow some absorption of wave energy.

*Applicant's response*

The proposed revetment structure has been 'engineered' based on the calculated design wave height. The sized of boulders for the revetment should be more than adequate to withstand the storm waves expected in the project area. Dimensions for the revetment have been calculated by geographical topography and seasonal swell heights in the Olowalu area. Boulders at the toe of the slope have been sized to be 2.5 tons. Toe boulders will be keyed into competent rock at a depth of -4-feet to ensure the toe of the revetment will not scour away. The height of the revetment was determined by run up calculations.

*Division of Resource Enforcement*

An endangered Hawaiian Monk Seal has been attracted to the ongoing construction along HonoaPi'ilani Highway. Witnesses state that construction in and along this area has at infrequent times stopped due to the proximity of a large male Hawaiian Monk Seal.

We suggest and recommend as a precautionary measure that some type of Endangered Species monitoring plan be added to deal with the eventuality that the seal shows up at the construction site and puts itself in danger.

*Applicant's response*

Coordination with U.S. Fish and Wildlife Service (USFWS) regarding Section 7 [Endangered Species Act] compliance has taken place. We have provided information on Best Management Practices and how the site will be inspected for endangered species before construction begins. **(Exhibit J & K)** Should endangered species be located at the construction site, an endangered species monitoring program will be implemented.

*Maui District Land Office (HDLO)*

No comments

## COUNTY OF MAUI

### *Planning Department*

The Maui County Planning Department has compared the project description and basic plans in the CDUA to those approved by the Maui Planning Commission with conditions (and then later with minor modifications by the Planning Department). We find them essentially equivalent, have no objections to issuance of the requested CDUA by the Board of Land and Natural Resources, and support the issuance of a CDUA for the project which meets the conditions of the Maui Planning Commission's approval of the Special Management Area Use Permit and Shoreline Setback Variance.

### **ANALYSIS**

After reviewing the application, by correspondence dated February 25, 2014, the Department has found that:

1. The proposed use is an identified land use in the Resource subzone of the Conservation District, pursuant to §13-5-22, Hawaii Administrative Rules (HAR), P-15 SHORELINE EROSION CONTROL Seawall, revetment, groin, or other coastal erosion control structure or device, including sand placement, to control erosion of land or inland area by coastal waters, provided that the applicant shows that (1) the applicant would be deprived of all reasonable use of the land or building without the permit; (2) the use would not adversely affect beach processes or lateral public access along the shoreline, without adequately compensating the State for its loss; or (3) public facilities (e.g., public roads) critical to public health, safety, and welfare would be severely damaged or destroyed without a shoreline erosion control structure, and there are no reasonable alternatives (e.g., relocation). Requires a shoreline certification. Please be advised, however, that this finding does not constitute approval of the proposal;
2. Pursuant to §13-5-40(a) (4), HAR, a Public Hearing is not required;
3. In conformance with Chapter 343, Hawaii Revised Statutes (HRS), as amended, and Chapter 11-200, HAR, the Final Environmental Assessment has been reviewed, accepted and a Finding of No Significant Impact has been determined by the State of Hawaii-Department of Transportation. Notice was published in the July 23, 2010 issue of the Environmental Notice; and
4. On April 26, 2011, the Maui Planning Commission approved the application for a Special Management Area (SMA) Use Permit and Shoreline Setback Variance (SSV) [SM1 2009/0005 and SSV 2009/0001] for the proposed Honoapi'ilani Hwy. shoreline protection. On September 4, 2012, the Mau'i County Planning Director approved a non-substantive design change for the SMA and SSV that is the subject of this CDUA.

Notice of the CDUA was published in the March 8, 2014 issue of the Environmental Notice.

### **CONSERVATION CRITERIA**

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



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

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

Implementation of the project is to provide a more stable structure to protect life, property and the highway that is the only road to and from West Maui. People, labor, goods and services utilize the highway on a daily basis.

The proposed action is anticipated to reduce terrigenous inputs or clay substrate into the marine environment.

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

The objective of the Limited subzone is to limit uses where natural conditions suggest constraints on human activities. The objective of the Resource Subzone is to ensure with proper management, the sustainable use of the natural resources of those areas.

The proposed use is an identified land use in the Limited and Resource subzone of the Conservation District, pursuant to §13-5-22, Hawaii Administrative Rules (HAR), P-15 SHORELINE EROSION CONTROL Seawall, revetment, groin, or other coastal erosion control structure or device, including sand placement, to control erosion of land or inland area by coastal waters, provided that the applicant shows that (1) the applicant would be deprived of all reasonable use of the land or building without the permit; (2) the use would not adversely affect beach processes or lateral public access along the shoreline, without adequately compensating the State for its loss; or (3) public facilities (e.g., public roads) critical to public health, safety, and welfare would be severely damaged or destroyed without a shoreline erosion control structure, and there are no reasonable alternatives (e.g., relocation). Requires a certified shoreline.

Regarding demonstrating the need of the erosion control structure, based upon the noted criteria: 1) Should the proposed use **not** be allowed, the State Highway would continue to be damaged and potentially make travel to West Maui unsafe or curtail all travel upon it. In addition, lateral shoreline may also be compromised; 2) It is expected that the beach fronting the revetment will continue to erode, however traversing the shoreline over the boulder fill will still be possible; 3) The proposed use would protect the public facility that is a State highway that is critical to deliver goods and services and to maintain vehicular and emergency access to and from West Maui. A certified shoreline was gained in September 2012.

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

On April 26, 2011, the Maui Planning Commission approved the application for a Special Management Area (SMA) Use Permit and Shoreline Setback Variance (SSV) [SM1



2009/0005 and SSV 2009/0001] for the proposed Honoapi'ilani Hwy. shoreline protection. On September 4, 2012, the Maui County Planning Director approved a non-substantive design change for the SMA and SSV that is the subject of this CDUA.

Staff believes the project is not inconsistent with the provisions and guidelines of 205A, HRS in regards to the following criteria:

*Recreational resources:* Shoreline access may be limited for public safety concerns during construction. However upon completion, according to the applicant, lateral access across the revetment will be possible;

*Historic resources:* No archaeological or cultural resources are expected in the project site, however an archaeological monitor shall be present during construction;

*Scenic and open space resource:* There may be a slight change to the ocean scenery due to the bulk of the revetment. However view planes of the ocean will still be available;

*Marine and Coastal ecosystems:* BMPs will be deployed and will be in place and functional before project activities begin and maintained throughout the construction period;

*Coastal hazards and Beach protection:* 'The beach' in this particular location is cobble rocks with limited sand. This project is intended to protect the highway while retaining some aesthetics of the shorefront, and minimizing adverse effects of erosion.

Staff notes that it is a Coastal Zone Management policy to "Minimize the construction of public erosion-protection structures seaward of the shoreline." The term "minimize" suggests that shoreline armoring might be feasible under some circumstances.

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

During construction, Staff believes through the implementation of best management practices, marine waters will be protected. Not mitigating the eroding shoreline and protecting the highway would cause substantial adverse impacts to the community and West Maui region.

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

The proposed land use is designed to be compatible to the physical conditions and capabilities of the area. The visual character of the project area may be somewhat less natural and rustic. The proposed land use does not change the existing use of the area.

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

Staff believes that proposed land use attempts to preserve the open space characteristics. Implementation will not change the use of the subject area that is a scenic coastal highway. Staff believes the natural beauty and open space characteristic of the land will be preserved

- 7) *Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.*

No subdivision of land is proposed.

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

The implementation of the proposed land use will act to protect both life and property by reducing potential hazards within a transportation corridor. The proposed land use is to protect a public road that is the only vehicular travel corridor to get from/to Central Maui to/from West Maui. The project will be implemented to comply with Federal, State, and County of Maui rules and regulations governing public safety and health. Potential sources of adverse impacts have been identified and appropriate mitigative measures have been developed. Anticipated short term concerns are associated with construction activities that may involve air, water, noise and traffic impacts. Staff is of the opinion that the proposed improvements will not be materially detrimental to the public health, safety and welfare.

#### CULTURAL IMPACT ANALYSIS

The site is a dynamic shoreline that is experiencing coastal erosion. An archaeological inventory survey was prepared by Scientific Consultant Services (SCS) for the proposed project in June 2008. During the survey, 3 subsurface features consisting of a single site were located within a naturally occurring bank-cut. The features identified were charcoal concentrations and a fire hearth and had been interpreted as a temporary habitation site possibly associated with the procurement of marine resources. Wave action in this area is undermining the highway and may expose an extension of a known subsurface historic property. The findings suggest the potential for additional sites or site remnants, including human burials and habitation to be present in the subsurface deposits of the surrounding area.

Archaeological monitoring has been recommended as a precautionary measure, during all construction related ground alterations within the project area and the adjacent sections of the highway. The State Historic Preservation Division (SHPD) concluded *no effect on historic resources* provided an accepted Archaeological Monitoring plan be completed. On February 7, 2011 SHPD approved the Archaeological Monitoring Plan for the project. The project shall be conditioned that if cultural finds are discovered, all work will cease and SHPD will be notified.

A Cultural Impact Assessment was also completed by SCS for the project in May 2008. Archival research was conducted and interviews with individuals that have particular knowledge of traditions were sought through the Office of Hawaiian Affairs, the Cultural Resources Commission of the Maui Planning Department, the Lahaina Hawaiian Civic Club, Na Kupuna O

Maui and the State Historic Preservation Division, Maui Office. No interviews were conducted as none of the sought organizations replied to the inquiry. Staff of SHPD informed Scientific Consultant Services that gathering of limu and a`ama occurs in the area.

Traditional cultural practices would include gathering, fishing, diving, and ocean recreational activities. During construction, use of this portion shoreline area may be prevented for public safety reasons. Upon completion, the project would not curtail these activities.

During the processing of this application, no comments were received from native practitioners, the Office of Hawaiian Affairs or the Historic Preservation Division. To the extent to which traditional and customary native Hawaiian rights are exercised, the proposed action does not appear to affect traditional Hawaiian rights; it is believed that no action is necessary to protect these rights.

## **DISCUSSION**

Where there exists a potential threat to the long-term conservation of a beach; whether it is in the form of a proposed coastal development, an application for shoreline armoring, the existence of an unauthorized shoreline structure, or a request for emergency shore protection, or otherwise; the Department and Board should and does consider and weigh all potential impacts, issues and alternatives.

Towards this end, the Board of Land and Natural Resources (BLNR) adopted the Hawaii Coastal Erosion Management Plan (COEMAP). COEMAP provides for five (5) alternatives to protect land from erosion: abandonment, beach restoration, erosion control, adaptation, and hardening.

### Abandonment

Abandonment involves taking no action to protect human developments or infrastructure along an eroding shoreline. This alternative is not feasible at this time because the highway provides a vital transportation linkage between West Maui and the rest of the island. In the short-term, the potential to create major harm to public health, safety and welfare from loss of the highway is far too serious to consider abandonment. Abandonment of the existing highway cannot be considered until a more landward route is constructed as proposed by DOT and Maui County.

### Beach Restoration

Beach restoration involves the placement of sand on an eroding shoreline to re-supply deficiencies in natural sand volume lost to waves, currents and/or human activities. Beach restoration has been used in numerous locations in Hawaii to repair beach ecosystems and improve protection for coastal communities and public infrastructure from coastal hazards. While it may be feasible to construct a beach in lieu of a revetment at this location, other considerations suggest that this may not be the best course of action. The shoreline in the vicinity of the project area is characterized by a steep slope of basalt cobbles and boulders. Aerial photographs from the UH Coastal Geology Group indicate that little or no sandy beach has existed in the Olowalu revetment project area since at least the 1960. While it may be possible to construct a sand beach fronting the project area, engineered structures, such as shore-perpendicular rock groins would likely

be needed to hold the sand in-place. Covering the existing rocky intertidal area with sand would also result in significant changes to the marine ecosystem. One could endeavor to improve the cobble and boulder shoreline. However, the environmental impacts of filling the shoreline with loose rock and cobble would be similar to those from the proposed engineered rock revetment and protection to the road bed would not be as reliable as with a properly-engineered structure.

#### Erosion Control

Coastal erosion control techniques use structures that are designed to reduce sediment losses and thus slow the rate of erosion. Breakwaters or groins could be installed offshore to reduce currents and waves that cause erosion. This approach may also be impractical given reason stated in the preceding section (i.e., impacts would be similar and protection would be less than a revetment) as well as concerns over impacts to surfing, fishing, and other water based activities.

#### Adaptation

Adaptation requires that development patterns change in order to allow natural shoreline processes to continue without interference. Adaptation in this case could be interpreted to mean that sections of the highway currently threatened by erosion and flooding could be relocated landward as an alternative to hardening the shoreline. Landward relocation of the highway is the best long-term solution to conserve coastal ecosystems and public beach resources and would alleviate the need for future requests for shoreline hardening in this area. The DOT should continue to pursue landward relocation of HonoaPi'ilani Highway away from the shoreline. Staff understands that this is being given serious consideration by the DOT and Maui County as a long-term adaptation measure.

In January, 2014 the Maui County Council voted to move forward with the purchase of 185 acres of open land mauka of the highway to the north of Olowalu (Launiupoko) with the intent of realigning the highway. However, such a plan cannot be completed fast enough to alleviate the present erosion problem at Olowalu. Environmental review, planning and land acquisition would be a lengthy process. According to DOT, the cost of relocation ranges between \$450 and \$750 million. Thus, this is not a viable short term solution to address the needs at Olowalu.

#### Hardening

In some cases, shoreline hardening may be necessary to protect infrastructure that is critical to public services and safety such as this case. Shoreline hardening is usually the approach of last resort (COEMAP) and may be given more consideration where beach resources are not expected to be impacted (e.g., rocky shoreline).

Generally, allowance for natural coastal processes to occur and retreating from the shoreline would be the preferred alternative. Accelerated sea level rise will hasten beach loss and increase the frequency and severity of coastal hazard events here and throughout Hawai'i. The State of Hawai'i needs to develop a long term Sea Level Rise Vulnerability and Adaption Plan to guide future public infrastructure siting.

This is the second application being submitted to mitigate coastal erosion at this site. The proposed boulder fill revetment is an interim solution to protect the highway as action is necessary to keep the highway open. The proposed project is deemed necessary for maintaining the functional integrity of the existing highway and public safety.

The low-lying section of HonoaPi'ilani Highway between Pāpalaua State Wayside Park and Lāhainā, a distance of approximately 8 miles, is particularly vulnerable to coastal hazards including erosion and flooding from high waves, temporary and long-term changes in sea level and tsunamis. Minimal dry land exists between the highway shoulder and the sea, save for a few beach parks and narrow sandy or cobble beaches. The remaining areas along the highway are either armored haphazardly with boulders, or engineered structures.

The highway was constructed too close to the shoreline. Portions of the highway appear to be at constant risk of overwash and erosion even during normal wave conditions. A hurricane, major Kona storm or tsunami would likely damage large stretches of the highway. Poor siting coupled with long-term erosion has significantly reduced the dry land area between the highway and the sea. Shoreline erosion maps from the University of Hawaii Coastal Geology Group indicate long-term erosion rates in this area of HonoaPi'ilani Highway between a half foot and one foot per year for most beaches. Little or no beach remains fronting most areas of shoreline armoring.

Beach nourishment is not a feasible option here. There is no existing beach resource in the project area. Covering the existing rocky intertidal with sand would have unknown impacts and would require groins or other engineering to hold the sand in place. Environmental impacts of rock/cobble nourishment is unknown and may not provide sufficient protection to the roadway or improve public beach resources or shoreline access.

In the present case, the shoreline is presently haphazardly armored with boulders. DOT would like to create an engineered revetment in its place. Staff appreciates the use of no mortar for the rocks as the boulders could be recycled and utilized for other expected proposed highway shoreline protection structures. The long term solution of relocating HonoaPi'ilani Highway further inland out of the eroding shoreline has been included with the County's Pali to Puamana Parkway Master Plan also known as the Pali to Puamana Coastline Park, has identified this particular shoreline area as part of the parkway that is intended to preserve open space and shoreline access along the coastline.

Eventually, the un-mortared revetment could be removed and the shoreline restored so that the natural features of the cobble beach may return. Staff believes this would be consistent with the County's proposed Pali to Puamana Park Plan. Staff is recommending a condition to seek federal highway funding (MAP-21, Scenic Byways) to restore the beach reserve area upon completion of the highway relocation.

Staff believes that there will be some incremental impact on the makai view plane. The revetment is proposed to be constructed to 10-feet msl and 2.5-feet above the existing road that is about the same height as the existing jersey barriers. The bulk of the structure that extends 22-feet makai will interrupt the ocean scenery.

Public use of the shoreline may be restricted during the construction period. Lateral shoreline access will be available over the boulder and rock fill. Public access along the shoreline area is expected to continue upon completion of the shoreline revetment. The proposed project will not impact access and recreational opportunities that exist along the coastline.

Effects on the marine environment will be minimized by conducting construction work during low tide and by using a silt curtain to mitigate potential increased turbidity and siltation. Construction will only be during daylight hours. Under the Army Corp of Engineers permitting process, consultation with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service will be undertaken to ensure that the proposed action will not likely jeopardize the existence of listed, endangered or threatened species. The applicant has identified recommended BMPs by NOAA and USFWS to minimize degradation of water quality and minimize the impacts to fish and wildlife resources. No critical habitats have been defined in the project area.

HonoaPi'ilani Hwy is the major road into the West Maui region from central, south and east Maui. It is a vital link of the island's transportation system. Damage or loss of a portion of the highway may potentially create significant delays and traffic congestion. The proposed action will allow for the reliable movement of goods, services, residents and visitors over a highway segment currently threatened by closure during storm or emergency events. Upon completion of the relocation of the highway, the impacted shoreline shall be restored.

## **RECOMMENDATION**

Based on the preceding analysis, Staff recommends that the Board of Land and Natural Resources APPROVE this application for the Department of Transportation's Conservation District Use Application (CDUA) MA-3708 for the HonoaPi'ilani Highway Shoreline Erosion Control Boulder Revetment located at Olowalu, Kealahou, Maui, tax map key: (2) 4-8-003:006 and upon adjacent submerged land subject to the following conditions:

1. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;
2. The permittee, its successors and assigns, shall indemnify and hold the State of Hawai'i harmless from and against any loss, liability, claim, or demand for property damage, personal injury, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;
3. The permittee shall obtain a land disposition from the department for the use of state lands;
4. The permittee shall comply with all applicable department of health administrative rules;
5. Before proceeding with any work authorized by the department or the board, the permittee shall submit four copies of the construction plans and specifications to the chairperson or an authorized representative for approval for consistency with the conditions of the permit



and the declarations set forth in the permit application. Three of the copies will be returned to the permittee. Plan approval by the chairperson does not constitute approval required from other agencies;

6. A qualified Archaeological Monitor shall be present during all ground-altering activities as required by the Archaeological Monitoring Plan approved by SHPD;
7. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within two years of the approval of such use, in accordance with construction plans that have been signed by the chairperson, and shall be completed within three years of the approval of such use. The permittee shall notify the department in writing when construction activity is initiated and when it is completed;
8. All representations relative to mitigation set forth in the accepted environmental assessment, within the CDUA and submitted during the processing of the application are incorporated as conditions of the permit;
9. The permittee understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;
10. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;
11. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;
12. Obstruction of public roads, trails, lateral shoreline access, and pathways shall be avoided or minimized. If obstruction is unavoidable, the permittee shall provide alternative roads, trails, lateral beach access, or pathways acceptable to the department;
13. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;
14. The permittee shall obtain a county building or grading permit or both as required, for the use prior to final construction plan approval by the department;
15. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law;
16. Should historic remains such as artifacts, burials or concentration of charcoal be encountered during construction activities, work shall cease immediately in the vicinity of

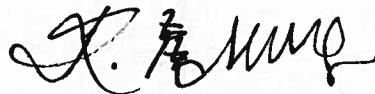


the find, and the find shall be protected from further damage. The Historic Preservation Division shall be contacted (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;

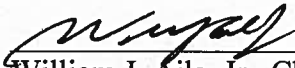
17. Work shall be conducted during calm weather periods to the most practical extent possible and no work shall occur if there is high surf or ocean conditions that will create unsafe work or beach conditions;
18. The permittee shall implement the proposed Best Management Practices (BMPs) and monitoring and assessment plan to maintain BMPs to minimize dirt and silt from entering the ocean and the ability to contain and clean up fuel, fluid, or oil spills immediately under this authorization and immediately report any spills or other contamination(s) that occurs at the project site to the Department of Health and other appropriate agencies;
19. The permittee shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of all appropriate agencies, through silt containment devices or barriers, or other requirements as necessary;
20. Appropriate safety and notification procedures shall be implemented. This shall include high visibility safety fencing, tape or barriers to keep people away from the active construction site and a notification to the public informing them of the project;
21. All placed material shall be free of contaminants of any kind including: excessive silt, sludge, anoxic or decaying organic matter, turbidity, temperature or abnormal water chemistry, clay, dirt, organic material, oil, floating debris, grease or foam or any other pollutant that would produce an undesirable condition to the beach or water quality;
22. The activity shall not adversely affect a federally listed threatened or endangered species or a species proposed for such designation, or destroy or adversely modify its designated critical habitat;
23. The permittee shall adhere to the recommended Best Management Practices attached as **Exhibits J & K** for Endangered Species, Seabirds and Wildlife;
24. The activities shall not substantially disrupt the movement of those species of aquatic life indigenous to the area, including those species, which normally migrate through the area;
25. When the Department is notified that an individual activity deviates from the scope of work approved by this authorization or activities are adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the permittee to undertake corrective measures to address the condition affecting these resources. The permittee must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect;
26. No contamination of the marine or coastal environment (trash or debris) shall result from project-related activities authorized under this permit;

27. The Office of Conservation and Coastal Lands shall be notified in advance of the anticipated construction dates and shall be notified immediately if any changes to the scope or schedule are anticipated;
28. The permittee shall seek and apply for applicable federal highway funding for implementation of the restoration of the beach reserve parcel and shoreline;
29. Other terms and conditions as may be prescribed by the Chairperson; and
30. Failure to comply with any of these conditions shall render this Conservation District Use Permit null and void.

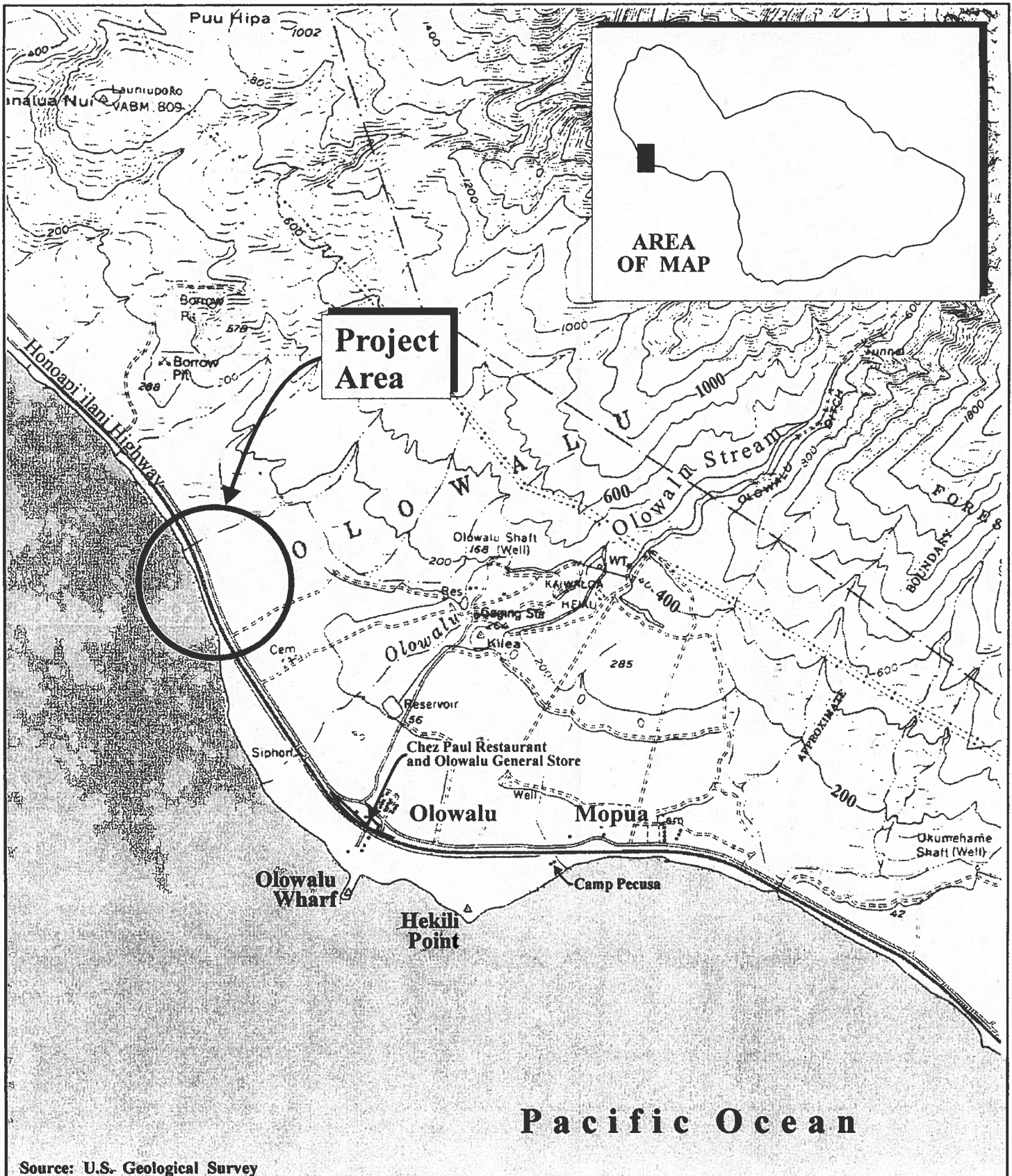
Respectfully submitted,



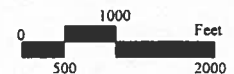
K. Tiger Mills, Staff Planner  
Office of Conservation and Coastal Lands



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



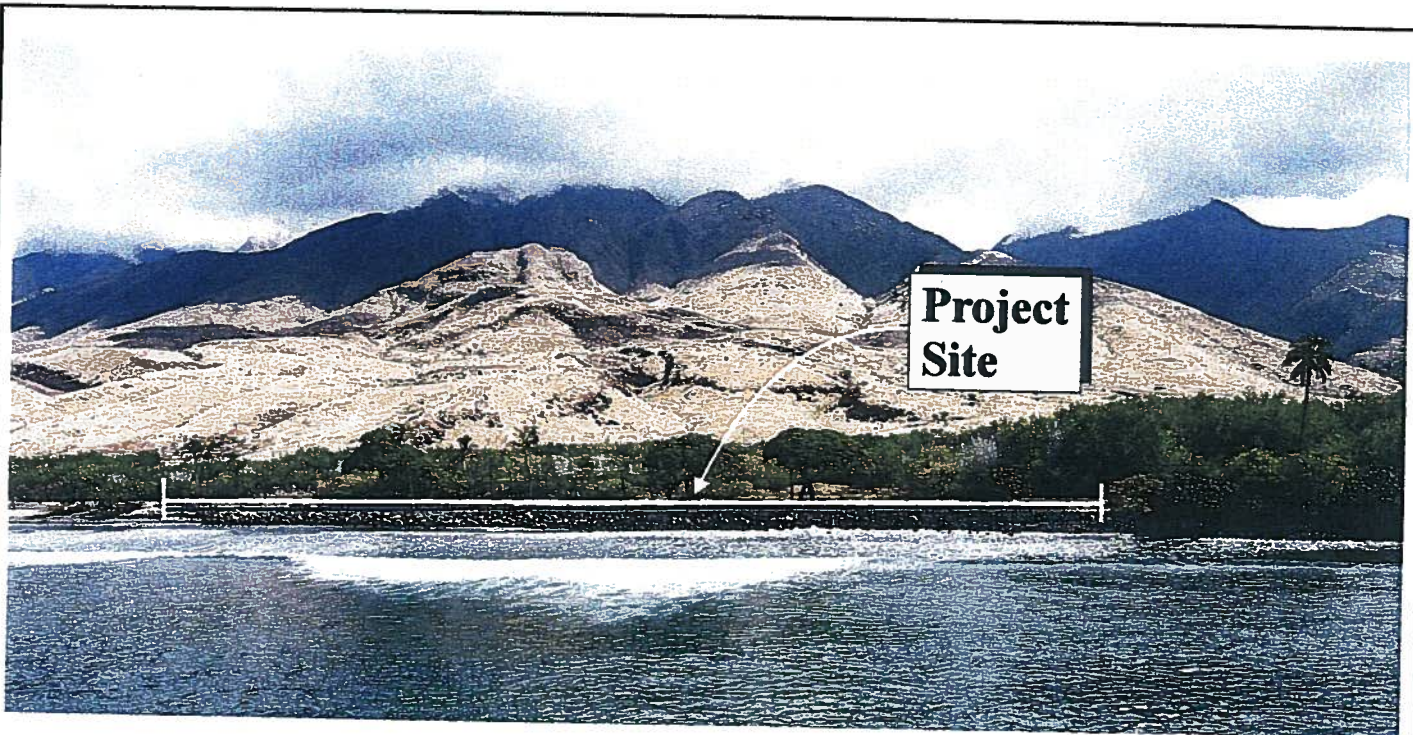
# Proposed Honoapiilani Highway Shoreline Protection Regional Location Map



**EXHIBIT A**







**Photo No. 1. View of project area, facing east;  
Pacific Ocean in foreground, Olowalu located on right.**



**Photo No. 2. View of project area facing west. Agricultural and vacant lands  
in foreground. Olowalu located on left.**

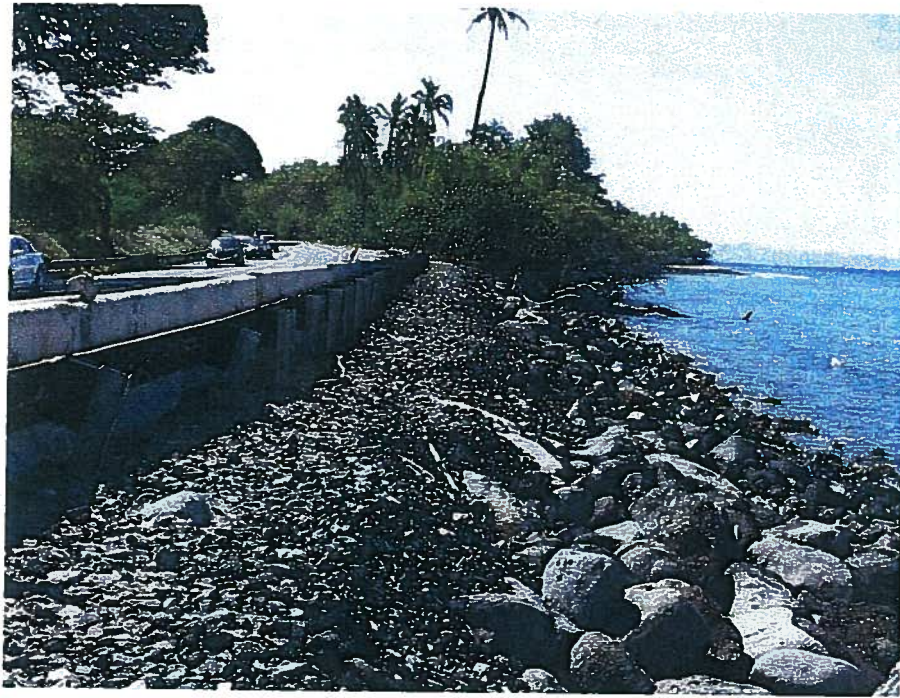
Source: Sato & Associates, Inc.

# **Proposed Honoapiilani Highway Shoreline Protection Aerial Photograph of Project Area**

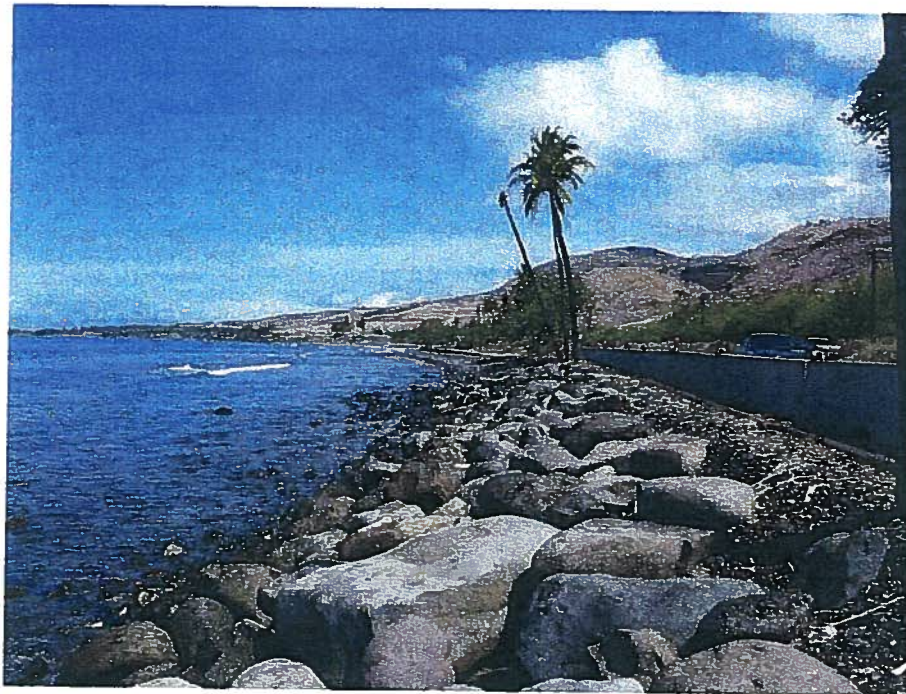
**EXHIBIT B**

Prepared for: State of Hawaii, Department of Transportation





**Photo No. 1. View of Shoreline Facing South**



**Photo No. 2. View of Shoreline Facing North**

Source: Sato & Associates, Inc.

## Proposed Honoapiilani Highway Shoreline Protection

Site Photos

EXHIBIT C

Prepared for: State of Hawaii, Department of Transportation



# Olowalu, Maui, Hawaii

Smoothed Erosion Rates

156°39'W 746200m E 30" 40" 50" 60" 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 757900m E

Annual Erosion Hazard Rates (t/yr)

Awatua Beach

Honoapiʻilani Highway

Maui

Olowalu



## EROSION RATES

■ Annual Erosion Hazard Rates (AEHR)

Erosion rates are measured every 20 m along the shoreline. These sites are denoted by yellow shore normal transects. The Annual Erosion Hazard Rate (red), is a spatially smoothed center weighted average of calculated erosion rates. Five contiguous transects are incorporated in the smoothing process. The transects are weighted: 1-3-5-3-1 with the smoothed rate assigned to the center transect. The AEHRs are shown on the shore-parallel histogram graph. Colored bars on the graph correspond to shore-normal transects; approximately every fifth transect and bar are numbered. Where necessary, some transects have been purposely deleted during data processing; as a result, transect numbering is not consecutive everywhere. Where complete beach loss has occurred, erosion rate calculations apply only to the time period when a beach existed.

AEHRs for the Olowalu area were calculated using all data available between 1912 and 1997. Despite some scatter, shorelines between 1912 and 1997 show a reasonably consistent trend and are used to calculate AEHRs for this area.

## HISTORICAL SHORELINES

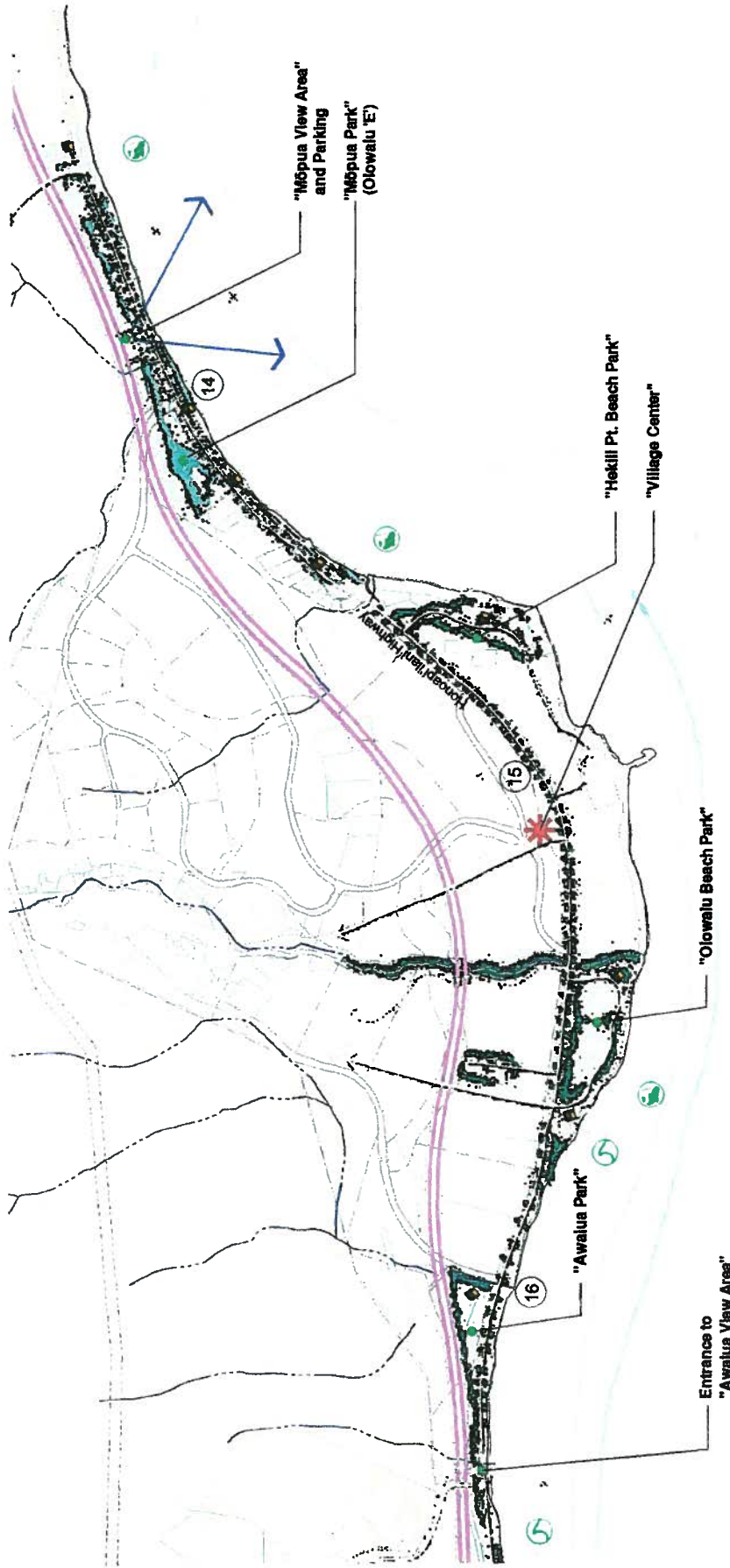


EXHIBIT D<sub>1</sub>









# Legend

Proposed By-Pass Road	Park Landscape	Shoreline
Exst. Homestead Hwy	Natural Open Space	Surf
Proposed Multipurpose Parkway (Homestead Hwy Alignment)	Trees	Fish
Maui-Makai Access	Streams	Camping
Maui Post	Comfort Station	Views
	Pavilion	
(16)		

## FOCUS ON OLOWALU Pali to Puamana Parkway MASTER PLAN County of Maui, Hawaii



0 500 1,000  
R. M. Towill Corporation

2,500 Feet  
December 16, 2004



M.L. & STA. 561+00  
REFER TO SHT. 18

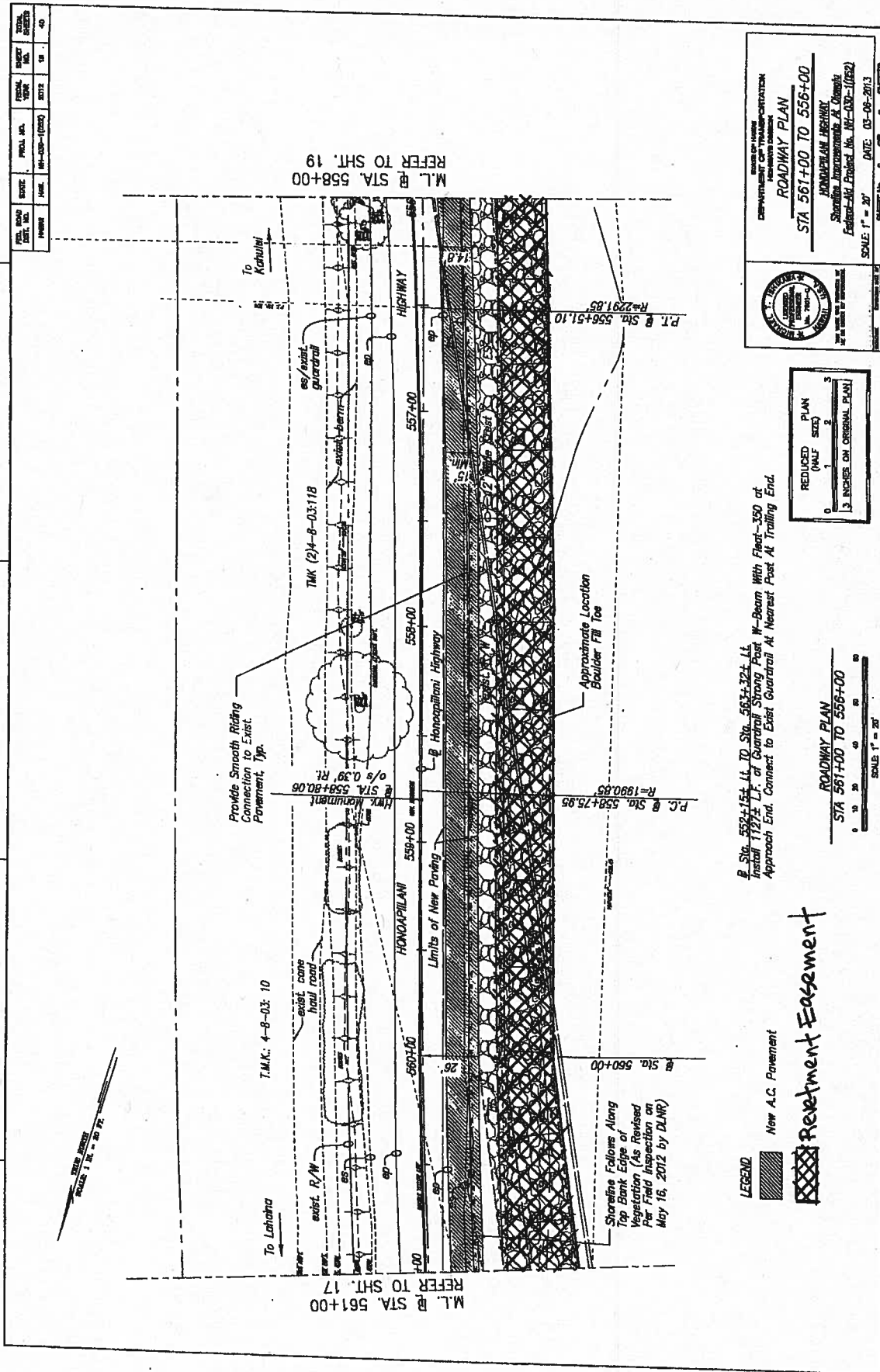


Mon 08, 2012 - 11:44am  
 H:\Projects\04031.00\Design\Woodway.dwg

# EXHIBIT H

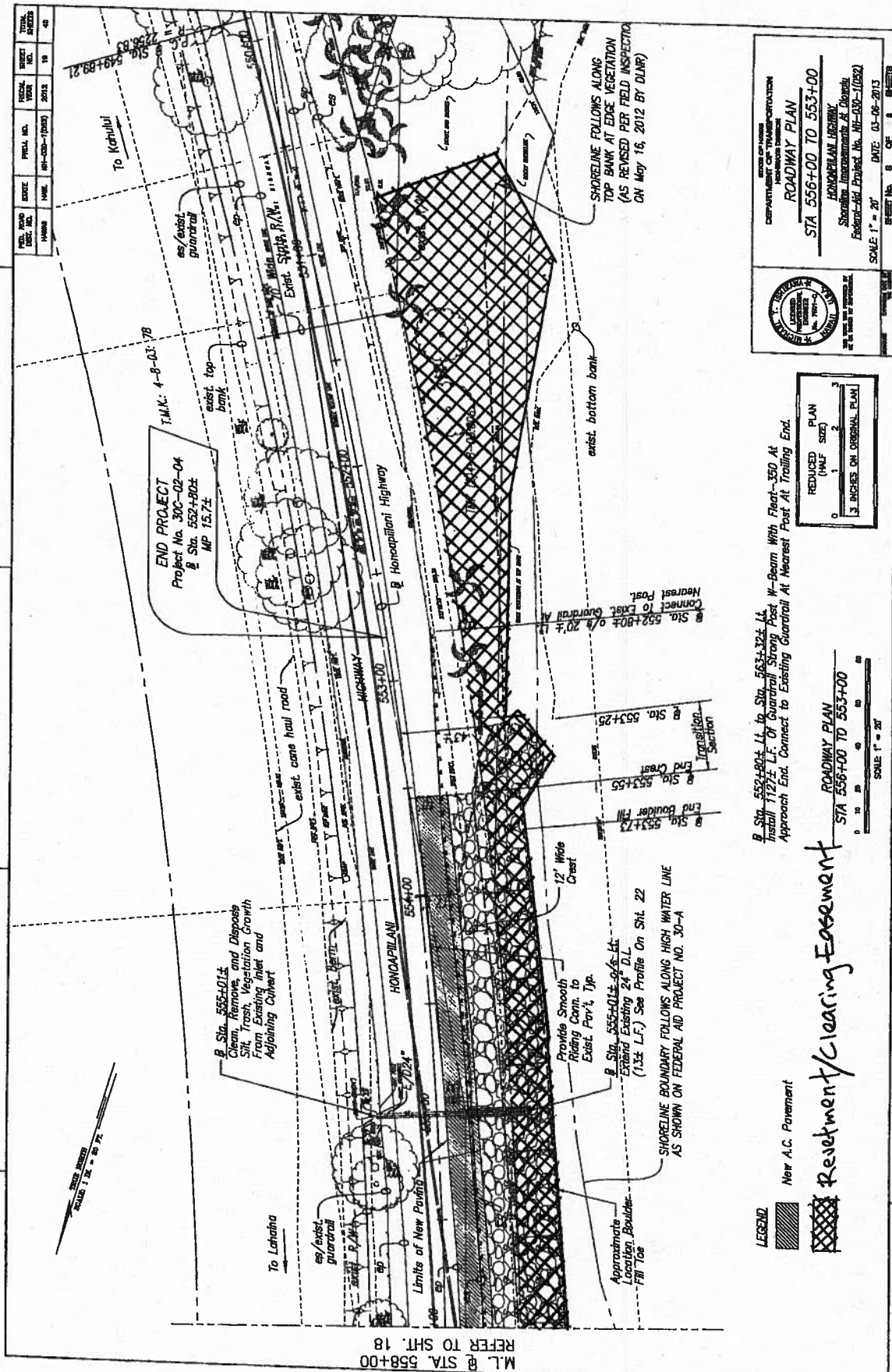
Rev 08, 2013 - 11/16/14  
M:\projects\04031100\Drawings\Roadway\08

NO.	DATE	BY	CHKD.	APP'D.
1	08/13/13	JL	JL	JL
2	08/13/13	JL	JL	JL
3	08/13/13	JL	JL	JL
4	08/13/13	JL	JL	JL
5	08/13/13	JL	JL	JL
6	08/13/13	JL	JL	JL
7	08/13/13	JL	JL	JL
8	08/13/13	JL	JL	JL
9	08/13/13	JL	JL	JL
10	08/13/13	JL	JL	JL



## EXHIBIT 1

FED. ROAD DIST. NO.	STATE	FYELL NO.	FISCAL YEAR	BRIEF NO.	TOTAL SHEETS
148888	14888	MS-CSD-7(2032)	2012	10	40



**New A.C. Pavement**

## Revestment/Clearing Easement

§ Sta. 552+80± L.L. to Sta. 563+32± L.L.  
Install 1127± L.F. Of Guardrail Strong Post W-Beam With Flact-350 At  
Approach End. Connect to Existing Guardrail At Nearest Post At Trailing End.

STA 556+00 TO 553+00

HONOLULU HARBOR  
Shoreline Improvements At Olapohu  
Federal-Aid Project No. MH-030-1(052)

SCALE: 1" = 20'      DATE: 03-06-2013

11336

5

#### **BEST MANAGEMENT PRACTICES (BMPs)**

To minimize any impacts that may occur to ESA species from the in-water construction, the following BMP's have been recommended by NOAA PIRO Protected Resources Division:

1. Turbidity and siltation from project-related work should be minimized and contained to within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal and weather conditions.
2. Any construction-related debris that may pose an entanglement hazard to marine protected species must be removed from the project site if not actively being used and/or at the conclusion of the construction work.
3. All project-related materials and equipment placed in the water should be free of pollutants.
4. No project-related materials (fill, revetment, rock, pipe, etc.) should be stockpiled in the water (intertidal zones, reef flats, stream channels, etc.)
5. No contamination (trash or debris disposal, alien species introductions, etc.) of marine (reef flats, lagoons, open ocean, etc.) environments adjacent to the project site should result from project-related activities.
6. Fueling of project-related vehicles and equipment should take place away from the water. A contingency plan to control the accidental spills of petroleum products at the construction site should be developed. Absorbent pads, containment booms, and skimmers will be stored on-site to facilitate the cleanup of petroleum spills.
7. Attempts must be made to prevent discharge of dredged material into the marine environment during the transporting and off-loading of dredged material.
8. Return flow of or run-off from dredged material stored at inland dewatering or storage sites must be prevented.
9. A visual survey of the project area (by either the contractor or State personnel) must be performed just prior to commencement or resumption of construction activity to ensure that no protected species are in the area. If protected species are detected, construction activities must be postponed until they voluntarily leave the area.
10. If any ESA-listed species enters the area during the conduct of construction activities, all activities must cease until they voluntarily depart the area.
11. Any incidental take of marine mammals must be reported immediately to NOAA Fisheries' 24-hour hotline at 1-888-256-9840. Any injuries to sea turtles must be reported immediately to NOAA Fisheries at 1-808-983-5730. Information must include the name and phone number of a point of contact, location of the incident, and the nature of the take and/or injury.

EXHIBIT J



**U.S. Fish and Wildlife Service  
Recommended Standard Best Management Practices**

The U.S. Fish and Wildlife Service recommends that the measures below be incorporated into projects to minimize the degradation of water quality and minimize the impacts to fish and wildlife resources.

1. Turbidity and siltation from project-related work shall be minimized and contained within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal and weather conditions.
2. Dredging/filling in the marine environment shall be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods.
3. Dredging and filling in the marine/aquatic environment shall be designed to avoid or minimize the loss special aquatic site habitat (beaches, coral reefs, wetlands, etc.) and the function of such habitat shall be replaced.
4. All project-related materials and equipment (dredges, barges, backhoes, etc.) to be placed in the water shall be cleaned of pollutants prior to use.
5. No project-related materials (fill, revetment rock, pipe, etc.) should be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.
6. All debris removed from the marine/aquatic environment shall be disposed of at an approved upland or ocean dumping site.
7. No contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of adjacent habitats (reef flats, channels, open ocean, stream channels, wetlands, beaches, forests, etc.) shall result from project-related activities. This shall be accomplished by implementing a litter-control plan and developing a Hazard Analysis and Critical Control Point Plan (HACCP – see <http://www.haccp-nrm.org/Wizard/default.asp>) to prevent attraction and introduction of non-native species.
8. Fueling of project-related vehicles and equipment should take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.
9. Any under-layer fills used in the project shall be protected from erosion with stones (or core-loc units) as soon after placement as practicable.
10. Any soil exposed near water as part of the project shall be protected from erosion (with plastic sheeting, filter fabric etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydroseeding, etc.).