



U.S. Army Corps of Engineers
Honolulu District

PUBLIC NOTICE

Public Notice No. **POH-2005-552**

Date: March 13, 2009

Reply to:
District Engineer
U.S. Army Corps of Engineers
Building 230
Fort Shafter, Hawai'i 96858-5440

Respond by: April 13, 2009

WATERWAY NAME: Māmala Bay (Pacific Ocean). Approximately 4,200 linear feet of sandy shoreline located along the Iroquois Point Housing Area between Keahi Point and Hammer Point in Hono‘uli‘uli (‘Ewa Beach), O‘ahu Island, Hawai‘i Tax Map Key (TMK) (1) 9-1-001: 001.

Interested parties are hereby notified that the U.S. Army Corps of Engineers has received an application for a Department of the Army (DA) Standard Permit to restore and stabilize the eroded shoreline, to include replenishing the beach with sand dredged from the Pearl Harbor entrance channel, as described below and shown on the attached sheets.

1. **APPLICANT:** Mr. Steven Colon (VP), Ford Island Housing, LLC, 737 Bishop Street, Mauka Tower, Suite 2750, Honolulu, HI 96813.
2. **AGENT:** Mr. Scott P. Sullivan (VP), Sea Engineering, Inc., Makai Research Pier, 41-305 Kalaniana‘ole Highway, Waimanalo, HI 96795.
3. **APPLICABLE STATUTORY AUTHORITY:** Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344); and with due consideration of the public interest and potential environmental effects.
4. **LOCATION OF THE PROPOSED ACTIVITY:** The sandy shoreline along Iroquois Avenue and Edgewater Drive located at the Iroquois Point Housing Area (Figure 1 and 2).
5. **PURPOSE AND PROJECT DESCRIPTION:**

The purpose of this Public Notice is to solicit comments from the public, Federal, State, and local agencies and officials, Native Hawaiian organizations and individuals, and other interested parties in order to consider and evaluate the impacts of the Applicant's proposed activity. The Applicant proposes to restore and stabilize approximately 4,200 linear feet of sandy shoreline, which has receded approximately 150 feet between 1961 and 2003 and 30 to 50 feet more between 2004 and 2008, resulting in the loss of 16 shoreline homes. The proposed project is intended to stabilize the shoreline in order to prevent the loss of additional homes and to prevent the flooding of the backshore area by waves in high surf conditions.

The proposed action would take place in navigable waters of the U.S. and involve the permanent installation of nine (9) rock rubblemound T-head groins along the shoreline (Figures 3 and 4). The Applicant would dredge sand from the Pearl Harbor channel, temporarily stockpile the sand at designated locations, and ultimately place it on the beach between the T-head groins (Figure 5). An estimated 97,000 cubic yards of sand would be required for the beach nourishment. Of this amount, the total calculated fill that would be placed below the mean higher high water (MHHW) is 73,200 cubic yards (15,200 cubic yards of stone for the T-head groins and 58,000 cubic yards of dredged sand). The Applicant has submitted summarized descriptions of the proposed project entitled “*Attachment to Application for the Department of the Army Permit*” and “*Sand Recovery and Stockpiling*”, which were prepared by Sea Engineering (2008) and are attached to this Public Notice (Enclosures 6 and 7). A copy of the proposed project’s draft Environmental Assessment (DEA) prepared by Sea Engineering, Inc on behalf of the Applicant, Ford Island Housing, LLC is available and can be viewed online at: http://www.poh.usace.army.mil/PA/PublicNotices/PN_Linked_Info/Append_Ipt_DEA_102808.pdf and http://www.poh.usace.army.mil/PA/PublicNotices/PN_Linked_info/SEI_Ipt_DEA_Report_102808.pdf

6. The following information is pertinent to the Applicant’s proposed project:

(i) The proposed project site encompasses approximately 4,200 linear feet of shoreline located at coordinate latitude 21.31906° N and longitude 157.97503° W;

(ii) A permit from the Corps is required because the proposed project involves work in navigable waters of the United States regulated under Section 10 of the Rivers and Harbors Act of 1899 and a discharge of fill material into waters of the United States regulated under Section 404 of the Clean Water Act (33 U.S.C. 1344);

(iii) Pursuant to the April 10, 2008 Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (33 CFR 325 and 332), and October 10, 2008, U.S. Army Corps of Engineers, Regulatory Guidance Letter No. 08-03, a compensatory mitigation plan must be submitted for review and approval by the Corps prior to issuance of this permit. The Applicant has submitted a draft compensatory mitigation plan for review and approval entitled “*Mitigation for Losses of Aquatic Resources, Iroquois Point Beach Restoration and Stabilization, Ford Island Housing, LCC*”, which was prepared by Sea Engineering, Inc (2008) and is attached to this Public Notice (Enclosure 8, 6 pages);

(iv) The Applicant has not provided a schedule of the estimated duration of construction of the proposed project; and

(v) The Applicant, in section 7.2.2 of the DEA, has proposed best management practices (BMPs) for construction operations to help minimize adverse impacts to coastal water quality and marine ecosystem.

7. **IMPACTS OF PROPOSED ACTIVITIES IF AUTHORIZED:**

The anticipated impacts of the proposed activities would include permanent coverage of approximately 200,000 square feet (4.6 acres) of ocean bottom below the mean higher high water (MHHW) with stone and dredged sand fill. Access to the

shoreline would be temporarily restricted during work activities. The proposed activities would also have temporary negative impacts to noise, ambient air quality, and near shore water quality to the Iroquois Point community. However, upon project completion, an overall improvement to water quality is anticipated. The Applicant's DEA analyzes some of the anticipated impacts on the environment and can be viewed online at:

http://www.poh.usace.army.mil/PA/PublicNotices/PN_Linked_Info/Append_IPT_DEA_102808.pdf

and

http://www.poh.usace.army.mil/PA/PublicNotices/PN_Linked_info/SEI_IPT_DEA_Report_102808.pdf

8. IMPACT ON TRADITIONAL CULTURAL AND HISTORIC PROPERTIES:

In its September 21, 2007 letter, the State Historic Preservation Division (SHPD) issued a determination of "no adverse effect on historic properties" for the identified historic properties and sites located within the proposed project's potential area of affect (APE). The determination is provisional and is based on the Applicant complying with the five stipulations identified in the DEA and in the archeological inventory study (AIS) report, "Archaeological Inventory Survey at Iroquois Point Beach Development parcel, Pu'uloa" prepared by Mike T. Carson (April 2007). The five stipulations identified for this undertaking are summarized in Appendix E of the DEA.

This notice has been sent to the State Historic Preservation Officer, the State Office of Hawaiian Affairs, Hui Mālama I Nā Kūpuna, and the 'Aha Ki'ole Advisory Council. Any comments these potentially interested parties have regarding historic properties and cultural resources in the APE will be considered before a final decision is made on the DA permit.

9. IMPACT ON ENDANGERED SPECIES, ESSENTIAL FISH HABITAT:

In their May 21, 2008 concurrence letter, the National Marine Fisheries Service, Protected Resources Division issued a not likely to adversely affect (NLTA) determination for the proposed action. The federally listed marine species considered include the Hawaiian monk seal (*Monachus schauinslandi*), hawksbill sea turtle (*Eretmochelys imbricata*), and green sea turtle (*Chelonia mydas*). Based on NFMS's Conclusion of Analysis, the effects of the proposed action are expected to be insignificant, discountable, or beneficial, and are summarized in the letter in the Appendix F of the DEA.

Based on the information provided in the DEA, the Corps has preliminarily determined the proposed project may adversely affect essential fish habitat (EFH). Appendix G of the DEA contains a draft EFH assessment and includes suggested mitigation and BMPs for the proposed project. Pursuant to the consultation requirements of Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)), the Corps is requesting NFMS provide comments and recommendations on compensatory mitigation for the proposed activity.

This notice has been sent to the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the State of Hawai‘i Division of Aquatic Resources. Any additional comments on endangered or threatened species, designated critical habitat, or essential fish habitat will be considered before a final decision is made on the DA permit.

10. OTHER GOVERNMENT AUTHORIZATIONS/CERTIFICATIONS:

Prior to the issuance of a valid DA permit, the applicant is required to obtain a Coastal Zone Management (CZM) Program consistency determination, or waiver, from the State of Hawai‘i Office of Planning, Department of Business, Economic Development, and Tourism (DBEDT). The requirements for a CZM consistency statement and accompanying information are available for public review at the Department of Business, Economic Development & Tourism, Office of Planning, CZM Program Office, 235 S. Beretania Street, 6th Floor, Honolulu, HI 96813. Comments on the consistency statement should be submitted in writing to the Department of Business, Economic Development & Tourism, Office of Planning, CZM Program Office, P.O. Box 2359, Honolulu, HI 96804 no later than 30 days from the date of this notice.

Prior to the issuance of a valid DA permit, the applicant is required to obtain an approved Section 401 Water Quality Certification (WQC), or waiver, from the Department of Health, Clean Water Branch. The requirements for an approved Section 401 WQC and accompanying information are available for public review at the Department of Health, Clean Water Branch, 919 Ala Moana Boulevard, Room 300, Honolulu, HI 96815. Comments on the WQC application should be submitted in writing to the Department of Health, Clean Water Branch, P.O. Box 3378, Honolulu, HI 96801-3378 no later than 30 days from the date of this notice.

Other State and local approvals may be required, including a Community Noise Control Permit from the State Department of Health and a Special Management Area Use Permit or Building/Grading Permit(s) from the City and County of Honolulu, Department of Planning. The applicable state and local government offices may be contacted directly regarding applicability and necessary requirements.

11. EVALUATION FACTORS:

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. The decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof. Among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

12. COMMENTS AND INQUIRIES:

The U.S. Army Corps of Engineers (USACE) is soliciting comments from the public, Federal, State and local agencies and officials, Native Hawaiian organizations and individuals, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the USACE to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Interested parties may submit in writing any comments that they have on issuance of a permit for the proposed activity. Comments on the proposed action should reference **Public Notice No. POH-2005-522** and be received by this office no later than Monday, April 13, 2009, to become part of the record and be considered in the decision. Please contact Ms. Joy Anamizu at 808-438-7023, if further information is needed concerning this Public Notice. Facsimile comments can be sent to 808-438-4060. Electronic comments can be sent by e-mail to joy.n.anamizu@usace.army.mil.

It is Corps of Engineers policy that any objections will be forwarded to the applicant for comment or rebuttal before the objection is resolved. If the objecting party so requests, all personal information will be deleted from the forwarded letter, or the objections will be sent in paraphrased, summary form.

13. REQUEST FOR PUBLIC HEARING:

Any person may request, in writing, within 30 days from the date of this notice that a public hearing be held to consider issuance of a permit for the proposed project. Requests for public hearing must specifically state the reasons for holding a public hearing.

14. Attachments:

Figure 1. Project Location

Figure 2. Project Vicinity Map

Figure 3. Beach and T-Head Groin Plan

Figure 4. Project Plan and Section Details

Figure 5. Sand Recovery and Stockpile Areas

Enclosure 6. Attachment to Application for the Department of the Army Permit (6 pages)

Enclosure 7. Sand Recovery and Stockpiling (1 page)

Enclosure 8. Mitigation for Losses of Aquatic Resources (6 pages)

15. Additional references relevant to this proposed project can be requested from the Applicant's Agent, Mr. Scott P. Sullivan, at 808-259-7966 or by e-mail at ssullivan@seaengineering.com.



Figure 1. Project Location



Figure 2. Project Vicinity Map

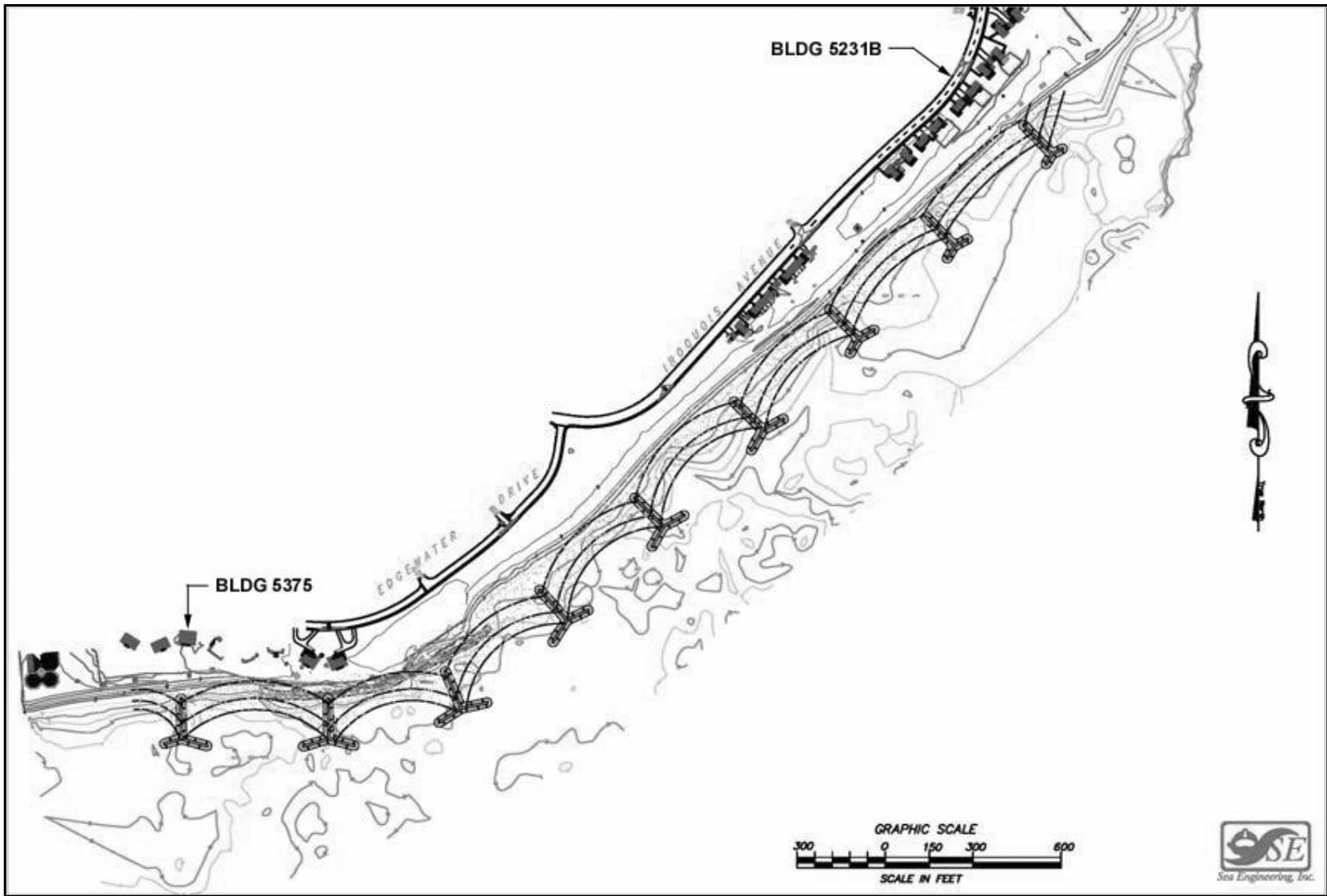


Figure 3. Beach and T-Head Groin Plan

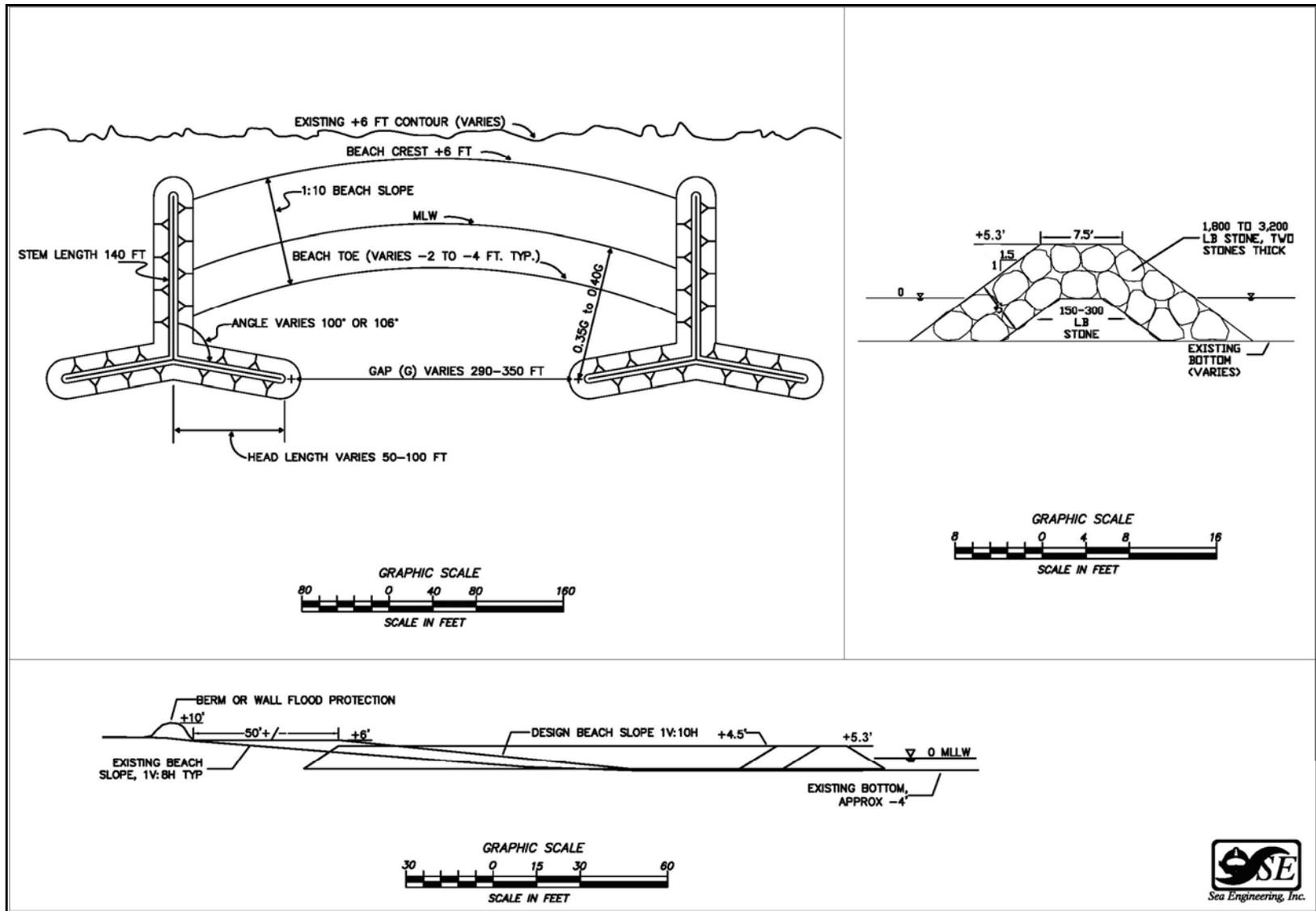


Figure 4. Project Plan and Section Details



Figure 5. Sand Recovery and Stockpile Areas

ATTACHMENT TO APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

**Iroquois Point Beach Restoration and Stabilization
Ford Island Housing, LLC**

Section 18 – Nature of Activity

Summary Description of the Proposed Action

The Ford Island Housing proposed beach restoration plan consists of 9 T-head groin structures extending along the Iroquois Point housing area shoreline, dividing the beach into eight cells 400 to 450 feet long. The groin stems would be 140 feet long, extending seaward from the approximate existing low water line, and would have heads varying in total length (both sides of the stem) from 100 to 200 feet. The crest elevation of the groin stem and head would be +5.3 feet mean lower low water (mllw), and the crest width would be 7.5 feet. The groins would be constructed of 1,800 to 3,200 pound armor stone, two stones thick, over a 150-300 pound stone core, with a 1.5H:1V side slope. Sand fill with appropriate characteristics to match the existing sand would be placed to the design beach plan and section within each cell, with a design slope of 1V:10H up to a crest elevation of +6 feet. The total volume of sand fill required is approximately 97,000 cubic yards. The sand will be obtained by maintenance dredging of accreted sand along the west side of the Pearl Harbor entrance channel in the vicinity of the Iroquois Lagoon entrance.

The Iroquois Point housing area is located on the central south shore of Oahu, immediately west of the Pearl Harbor entrance channel and adjacent to the community of Ewa Beach. The project area extends along 4,200 feet of shoreline, from the western boundary of the housing area at the Puuloa rifle range, to the east along Keahi Point and to the wastewater pumping station at Hammer Point. The project site is bordered on all sides by military reservation land, and the offshore waters are part of the Naval Defensive Sea Area.

In 2003, under special legislation enacted by Congress, the Iroquois Point housing area was leased by the U.S. Navy to Ford Island Housing, LLC, to maintain and operate for 65 years. This lease has recently been extended to 99 years. The nearshore waters below the high water line are in the Pearl Harbor Naval Defensive Sea Area, and remain under the jurisdiction and control of the U. S. Navy. The chronic shoreline erosion problem was noted during the lease negotiations, and a lease “credit” was given by the Navy to Ford Island Housing in recognition of the erosion problem. The Navy, as the lessor, has granted Ford Island Housing the requisite property interest and accompanying authority to undertake the proposed beach restoration and stabilization project. Ford Island Housing will be responsible for conduct of the work, and ownership and maintenance of the project features will also be the responsibility of Ford Island

Housing for the duration of the lease. Upon expiration of the lease, ownership of and responsibility for the beach stabilization project features will revert back to the Navy.

The housing area, built in 1960, lies on a fossil reef platform, with a layer of earthen fill placed over coral rubble reef deposits. The existing nearshore ground elevation is +5 to +7 feet above mean lower low water. The shoreline along the entire 4,200-foot-long project reach consists of a sandy beach. Chronic erosion and shoreline recession, coupled with backshore flooding due to wave overtopping of the low-lying shore, have resulted in the abandonment and demolition of 16 shoreline homes to-date. Several more homes are threatened by shoreline recession, and emergency shore protection for these homes was constructed in February 2004. Sewer lines running along the shore were abandoned and relocated in the 1980's, and now the old concrete sewer pipe lies exposed and broken on the beach. Analysis of aerial photographs and other information shows that the beach in the project area receded as much as 130 feet between 1928 and 1961, and an additional 150 feet between 1961 and 2003. A project site topographic survey was completed in January 2004, and recently updated in June 2008. The survey shows that along the project reach the shoreline typically receded 30 to 50 feet, and up to 70 feet at one location, over the 4.5 year period. This equates to erosion of over 30,000 cubic yards of sand, or 6,700 cubic yards per year. Sand berms, wooden walls, and CMU walls have been constructed behind the beach crest to prevent flooding. All of these measures have ultimately failed, some failing almost immediately, as a result of the on-going erosion. The eroded sand is transported to the east and into the Pearl Harbor entrance channel, and has resulted in the need for maintenance dredging by the Navy due to sand infill in the channel.

Alternatives Considered

Four alternatives to the 9 T-head groin plan were considered to address the flooding and erosion problems: no action, beach nourishment with 5 T-head groins, beach nourishment without stabilizing structures, and revetment shore protection. These alternatives are summarized below.

No Action: An option for the Iroquois Point housing area would be to simply abandon the nearshore area and provide an adequate setback for the beach to continue its position adjustment. Based on the erosion trends from 1990 to 2003, the entire project shoreline is projected to recede up to an additional 146 feet by the year 2033. This erosion data suggests that the No Action alternative will result in abandoning all homes seaward of Edgewater Drive and Iroquois Avenue, loss of portions of the road along Edgewater Drive and Iroquois Avenue, and possibly loss of some housing mauka of Iroquois Avenue. It is estimated that 30 more homes may be lost within the next 25 years. The present ongoing erosion has exposed dirt fill, which is being released into the ocean – a brown plume emanating from the beach is frequently visible in the nearshore water. The No Action alternative is projected to result in as much as 146 feet of shoreline recession by 2033. It would therefore likely result in the release of substantial additional quantities of dirt fill into the water, and thus, would have negative impacts to the

marine environment. If all threatened shoreline structures are continually removed, and the shoreline continually cleared of erosion debris, this alternative would maintain the sand beach shoreline, with its recreational and aesthetic value, until all the sand is gone and only reef rock, coral rubble and earth fill remains.

The eroded shoreline material would be transported along the shore to the east, and would continue to infill the Pearl Harbor entrance channel. Periodic maintenance dredging would continue to be required.

Beach Nourishment with 5 T-head Groins: An alternative to the proposed action is to reduce to 5 the number of T-head groins used to stabilize the beach fill. The plan consists of 5 T-head groin structures extending along the project shoreline, dividing the beach into four cells approximately 900 feet long. Reducing the number of groins requires increasing the groin stem and head lengths in order to maintain a stable beach at the desired location. The groin stems would be about 480 feet long, extending seaward from the approximate existing low water line, and would have heads approximately 275 feet long (total for both sides of the stem). The gap width between the T-heads would be approximately 540 feet. The groin and sand fill characteristics would be the same as in the 9 groin configuration. The total volume of sand fill required is approximately 128,000 cubic yards. The sand will be obtained by maintenance dredging of accreted sand along the west side of the Pearl Harbor entrance channel in the vicinity of the Iroquois Lagoon entrance, north of Hammer Point. The groins in this alternative are significantly longer than for the 9 groin plan. The structures required for this alternative therefore cover nearly double the area of seafloor surface than do the 9 groin structures.

Beach Nourishment (without stabilization structures): Constructing or 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, protecting against shoreline recession, protecting the backshore area, and providing for recreational and aesthetic enjoyment. However, for shorelines with chronic erosion, regular nourishment and an inexhaustible source of sand would be required to maintain an adequate beach. Sand fill with appropriate characteristics to match the existing sand would be placed with a design slope of 1V:10H up to a crest elevation of +6 feet. The horizontal beach crest width would be about 50 feet. The total volume of sand fill required is approximately 136,000 cubic yards. The sand will be obtained by maintenance dredging of accreted sand along the west side of the Pearl Harbor entrance channel in the vicinity of the Iroquois Lagoon entrance, north of Hammer Point. On a chronically eroding shoreline such as Iroquois Point, new sand placed on the beach would likely be transported to the east, and then washed into the Pearl Harbor entrance channel or deposited along the shoreline near the mouth of the harbor adjacent to Iroquois Lagoon. The success of this alternative would therefore require a long-term commitment to renourishment as necessary to maintain the beach. A conservative maintenance nourishment quantity is estimated to be approximately 30,000 cubic

yards every 5 years. This is a major difficulty given the relative scarcity of available beach quality sand, and its high cost.

Rock Revetment Shore Protection: Shore protection and erosion control can be provided by constructing structures to “harden” the shore and prevent erosion of unconsolidated sandy sediment. A revetment is a sloped structure built of wave resistant material. Revetments are usually the preferred wall type on sandy shorelines, due to their rough and porous surface and sloping face which absorbs more energy than smooth vertical walls, thus reducing wave reflection, runup and overtopping. These characteristics also increase the possibility of sand accumulation in front of the structure. Revetment construction would entail placement of an armor layer of stone, sized according to the design wave height, over an underlayer and bedding layer designed to distribute the weight of the armor layer and to prevent loss of the shoreline material through voids in the revetment. To maintain the present sand beach at Iroquois Point, the revetment would be placed at the approximate location of the present vegetation line. The revetment would be constructed of 1,800 to 3,200 pound armor stone, two stones thick, over 150-300 pound stone core, with a 1.5H:1V side slope. Excavation to -4 feet mllw would be required to place the revetment on solid limestone foundation, and below scour depth. On shorelines suffering chronic erosion such as Iroquois Point, the revetment would fix the shoreline position and protect the homes behind it, but would likely eventually result in the loss of the recreational sand beach area.

Summary of Environmental Impacts and Mitigation Measures

A comparative analysis of environmental impacts indicates that beach nourishment with 9 T-head groin structures would have the least environmental impact of all the alternatives considered. Minor impacts due to construction activity will include localized increases in noise, dust formation, heavy equipment emissions, restricted coastal access in the vicinity of construction, and short-term increases in nearshore water turbidity during sand placement. The proposed project will not result in any significant long-term degradation of the environment or loss of habitat. Rather, the project will remove hazardous debris, restore a recreational beach at the site, and improve water quality by eliminating erosion of dirt fill. Construction of the groins will cover areas of seafloor, however impacts to coral growth would be minimal as these areas have very sparse coral cover. The proposed groin structures will provide vertical relief and increase available habitat, particularly for coral growth and shelter for small and juvenile fish.

Best Management Practices (BMPs) for construction operations will be developed to help minimize adverse impacts to coastal water quality and the marine ecosystem. Project monitoring will include water quality monitoring and beach profile measurement before, during and after construction. No significant impacts to the local environment are expected to result from the proposed project.

Section 19 – Project Purpose

The purpose of the proposed project is to restore and stabilize the sandy beach along the Iroquois Point housing area shoreline in order to eliminate the on-going erosion and shoreline recession, to stop the loss of homes and home sites, and to prevent flooding of the backshore area and homes therein by storm wave overtopping of the shore. The project will also remove scattered rocks, concrete and steel debris, and other rubble from the beach and nearshore waters, and improve sandy beach recreation opportunities. The eroded sand is transported to the east and into the Pearl Harbor entrance channel, and has resulted in the need for maintenance dredging by the Navy due to sand infill in the channel. The proposed project will eliminate the on-going erosion, and the resultant migration of sand into the Pearl Harbor entrance channel. The nearshore marine environment will be improved by eliminating shoreline erosion of earthen material which contributes to poor water quality, and the rock groin beach stabilization structures will increase habitat for small fish and provide solid substrate for colonization by corals.

Section 21 – Types and Amounts of Material to be Discharged

Construction of the project would require the placement of stone to build the groins and sand fill to restore the beach into the water. The stones would be obtained from existing quarries or field stone sources. The sand fill would be clean, natural beach sand, recovered from the Pearl Harbor entrance channel where sand eroded from the project site has been transported and deposited by currents and wave action. The project Best Management Practices (BMPs) would include the requirement that all construction material, including stone and sand, shall be free of contaminants of any kind, including excessive clay, silt, dirt, organic material, or any other material which could result in water turbidity or affect water quality.

The following quantities of stone and sand would be required to construct the project. Mean higher high water (MHHW) is +2.0 feet above the mean lower low water project datum.

<u>Material Type</u>	<u>Quantity Below MHHW</u>	<u>Quantity Above MHHW</u>	<u>Total</u>
Stone: 150 to 300 lb	3,535 cy	0	3,535 cy
1,000 to 3,200 lb	<u>11,665 cy</u>	<u>3,760 cy</u>	<u>15,425 cy</u>
Total Stone	15,200 cy	3,760 cy	18,960 cy
Sand:	<u>58,000 cy</u>	<u>39,000 cy</u>	<u>97,000 cy</u>
Total Material	73,200 cy	42,760 cy	115,960 cy

Construction of the project would also require the temporary placement of silt curtains and their anchoring system, marker buoys etc., all of which would be inert materials and would be removed immediately upon completion of the construction activity for which they are associated.

Section 22 – Surface Area of Fill in the Water

The total surface area of ocean bottom covered below MHHW, or footprint, of the proposed project is approximately 200,000 square feet (4.6 acres).

**Iroquois Point Beach Restoration and Stabilization
Ford Island Housing, LLC**

Sand Recovery and Stockpiling

Approximately 97,000 cubic yards of sand fill is required for the proposed beach restoration project. This sand fill will be obtained as part of the project by dredging to recover accreted sand deposits from the Pearl Harbor entrance channel. A historical shoreline analysis shows that as the shoreline along the ocean side of the Iroquois Point housing area eroded between 1960 and the present, the shoreline along the west side of the entrance channel began to accrete as the eroded sand was moved eastward toward the channel, engulfing a previously used dock and channel marker and infilling the channel. In conjunction with recent (2006) scheduled maintenance dredging of the Pearl Harbor entrance channel approximately 22,000 cy of sand was removed from the area proposed as the beach restoration sand source. This sand was stockpiled on backshore land with an elevation of about +6 feet, well above the mean higher high water line (MHHW), in the area shown on the attached figure as the Primary Sand Stockpile Area. Analysis of this sand indicates it is nearly identical to the sand on the eroding portion of the shoreline, which is consistent with the premise that that is where it came from.

The proposed beach restoration project includes the recovery of an additional 75,000 cy of accreted sand from the same location as previously dredged. The sand would be dredged by using a drag line or clamshell bucket from shore-based equipment. The equipment would be located completely on dry land, above MHHW, and no equipment would operate in the water. The sand would be placed into trucks for hauling to the primary stockpile area. A berm would be constructed around the stockpile area to prevent any water runoff back into coastal waters. Pumping of sand in a water-sand slurry will not be permitted, thus the sand recovery operation will not result in any significant amount of residual water in the sand. Once the sand has dried by evaporation and percolation it will be trucked to secondary sand stockpile sites in the vicinity of the beach restoration work. The secondary stockpile sites would be located back from the shore, on existing ground elevation of about +6 feet, well above the MHHW line. Following completion of cells formed by pairs of groins the sand would be placed to build the beach to the design lines and grades. All sand movement would be done by land-based equipment, pushing sand seaward, and no equipment would be working in the water. A silt curtain would be deployed between the groin heads to contain any increase in water turbidity during the sand placement.

The project plans and specifications will include Best Management Practices for construction operations in coastal waters in order to protect and minimize impacts to water resources.

MITIGATION FOR LOSSES OF AQUATIC RESOURCES

Iroquois Point Beach Restoration and Stabilization Ford Island Housing, LLC

References

1. Draft Environmental Assessment, Iroquois Point Beach Restoration and Stabilization, November 2008, prepared by Sea Engineering, Inc. for Ford Island Housing, LLC.
2. Federal Register, Vol. 73, No 70, Thursday, April 10, 2008, Rules and Regulations, Part 325-Processing of Department of the Army Permits and Part 332-Compensatory Mitigation for Losses of Aquatic Resources.

For activities involving discharges of dredged or fill material into waters of the United States (U.S.), the Department of the Army permit application must include a statement describing how impacts to waters of the U.S. are to be avoided and minimized. The application must also include either a statement describing how impacts to waters of the U.S. are to be compensated for or a statement explaining why compensatory mitigation should not be required for the proposed impacts [33 CFR 325.1.d.7].

Water Quality Impact Minimization

The existing marine water quality in the project area is discussed in detail in Section 4.4 of the Draft Environmental Assessment (DEA), and water quality impacts are discussed in Section 6.2. Water quality investigations over a three year period (October 2004 to February 2007) have shown that the basic water quality parameters of temperature, salinity, dissolved oxygen and pH in the nearshore waters of Iroquois Point are in compliance with State water quality criteria. However, turbidity levels, chlorophyll α concentration, and nutrients were not in compliance. Turbidity levels and chlorophyll α concentrations are influenced mainly by wave action and shoreline erosion. Nutrient levels exceeded the State's geometric mean for compliance and there was a tendency for all nutrients to increase from west to east indicating that inputs from Pearl Harbor influence nutrient concentrations. The highest turbidity levels occurred near the middle of the project area, where a turbid plume was typically visible coming from the shoreline. This is caused by erosion of earthen material landward of the beach. The proposed project will stop the shoreline erosion, eliminating this continual source of turbidity in the nearshore waters, and result in a long-term improvement in water quality in the area.

Best Management Practices (BMPs) for construction operations will be developed to help minimize adverse impacts to coastal water quality and the marine ecosystem (see DEA Section 7.2.2). The project specifications will require the Construction Contractor to adhere to environmental protection measures, including, but not limited to, the following.

- Daily inspection of equipment for conditions that could cause spills or leaks; cleaning of equipment prior to operation near the water; proper location of storage, refueling and servicing sites; and implementation of adequate spill response procedures, stormy weather preparation plans, and the use of silt curtains and other containment devices.
- The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface or marine waters. Construction related turbidity at the project site shall be controlled so as to meet water quality standards. All water areas affected by construction activities shall be monitored by the Contractor. If monitoring indicates that the turbidity standards are being

exceeded due to construction activities, the Contractor shall suspend the operations causing excessive turbidity levels until the condition is corrected. Effective silt containment devices shall be deployed where practicable to isolate the construction activity, and to avoid degradation of marine water quality and impacts to the marine ecosystem. In-water construction shall be curtailed during sea conditions that are sufficiently adverse to render the silt containment devices ineffective.

- Waste materials and waste waters directly derived from construction activities shall not be allowed to leak, leach or otherwise enter marine waters.
- 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.

State Department of Health (DOH) guidelines state that a beach nourishment project should not introduce objectionable color and turbidity into the water. Water quality monitoring is therefore required before construction begins to document ambient conditions, during construction to monitor impacts during construction, and after construction to determine if there are any lasting effects of the project. Monitoring will consist of visual and photographic documentation of nearshore conditions, and measurement of pH, turbidity, and total suspended solids. A proposed Water Quality Monitoring Plan prepared in accordance with State Department of Health guidelines is presented in Appendix E of the DEA.

Mitigation for Losses of Aquatic Resources

Mitigation objective: A development objective for the proposed project has been to produce a net environmental benefit, i.e. a project that provides a larger and more diverse habitat for aquatic species than the one that it will displace. In doing this we developed and evaluated alternative approaches to stopping the erosion and maintaining a stable sand beach along this shoreline. The principal objective of the mitigation that the applicant proposes is to create sufficient new habitat to replace the habitat that is lost as a result of the placement of sand and rock on the existing bottom. By addressing mitigation within the design of the project itself it eliminates the need for compensatory mitigation elsewhere.

The loss of existing aquatic habitat as a direct result of the project (i.e. burial of existing sea floor), and the new habitat to be created by the project are discussed in Appendix G, Essential Fish Habitat Assessment, in the DEA. This assessment was prepared in consultation with the National Oceanic and Atmospheric Administration/National Marine Fisheries Service, Pacific Islands Regional Office (NMFS/PIRO). Pre-application scoping meetings have also been held with the Honolulu District, USACE; U.S. Fish & Wildlife Service; the State Coastal Zone Management Program; and the State Department of Health.

Assessment of Adverse Effects

Benthic substrata and associated biota: The shallow subtidal zone of Iroquois Point is marginal fish habitat due to the low habitat complexity and poor water quality found there. Boulders and sand fill will bury a portion of the existing subtidal environment, which is primarily low relief habitat: sand, rubble and consolidated limestone reef. The footprint of the boulder groins and sand fill below mean lower low water will be approximately 4.6 acres. It should be noted, however that much of the footprint area is relatively new sea bottom created by the erosion and recession of the shore, and thus does not have a long term established benthic flora and fauna. It is also an area of active sand movement, which results in scour of and stress on benthic organisms. Placement of boulders and sand will result in the temporary loss of some benthic organisms (fish foraging resources) including: algae, crustaceans, sponges, and other invertebrates. Benthic

invertebrates will repopulate from surrounding habitat after construction is complete and sessile organisms will colonize new exposed hard surfaces.

Fishes: A short-term reduction in fish habitat would occur during project construction. Adult and juvenile fishes are mobile and are expected to avoid the area during construction activities. However, some adult fish such as eels could be buried. There is potential for demersal fish eggs to be buried, however new hard substrata created would provide greater surface area for these species to lay eggs in the future. No rare or endangered fish species would be lost in this already disturbed environment. After construction, fishes are expected to repopulate newly provided habitat.

Corals: Placement of boulders in the nearshore area may bury some coral colonies. These corals are not highly functional, as they provide minimal shelter, reef consolidation, or coral gametes to the coral reef ecosystem.

Endangered species: Endangered Species Act (ESA), Section 7, consultation has been conducted with the NMFS/PIRO and the United States Fish and Wildlife Service (USFWS). Best Management Practices (BMPs) for the project have been recommended by NMFS which will be incorporated into the project plan. ESA analysis by NMFS concluded the following (NMFS, 2008):

“Given the insignificant probability of exposure of protected species to the construction and dredging activities, the anticipated insignificant effects to sea turtles and monk seals from turbidity, sedimentation, noise disturbance, and changes to forage habitat, coupled with the BMPs previously described, we do not expect the proposed action to result in adverse behavioral effects to Hawaiian monk seals or hawksbill and green sea turtles.”

By letter dated May 21, 2008 the NMFS concurred with the determination that the proposed beach stabilization project is not likely to adversely affect the Hawaiian monk seal, the hawksbill sea turtle, or the green sea turtle, and stated that this concludes the consultation responsibilities under the ESA for species under NMFS’s jurisdiction.

Assessment of Improvements

Benthic habitat: The shoreline restoration project of Iroquois Point will create new reef fish habitat in the form of boulder groins and sand fill. Approximately 0.4 acres of intertidal (between mean higher high water [mhhw] and mean lower low water [mllw]) boulder habitat, and 0.7 acres of shallow subtidal (below mllw) boulder habitat, will be created. Boulder groins will provide bare, stable surfaces for recruitment of corals, algae and other invertebrates. The boulder groins are porous, permeable structures, with approximately 37 percent interstitial void space between boulders within the envelope of the groins. Approximately 86,000 cubic feet of interstitial space between the stones below mllw will be created. The interstitial spaces found amongst placed boulders will provide additional habitat for cryptic benthic (crabs, shrimps, and worms) and sessile (sponges and tunicates) organisms which will provide additional foraging resources for fishes. Areas of greater reef habitat complexity generally host greater species diversity, and this interstitial space represents physically complex habitat.

Approximately 1.7 acres of intertidal sand habitat and 2.9 acres of subtidal sand habitat will be created. Additional sand will provide additional habitat for infauna such as small worms, crustaceans and echinoderms. It is likely that these would be foraged by goatfishes (Mullidae) and other bottom feeding fishes. The proportion of infauna eaten by fishes that feed over sand is not known for the area. Most infaunal organisms are in the 0.02 to 0.4 in (0.5 mm to 1 cm) size range. The time it will take for infauna to recover is unknown, but is anticipated to be rapid due to the small size and rapid regeneration time of infauna.

Fishes: Obligate reef dwellers are often limited by the availability of suitable shelter, especially juveniles. Reef fishes prefer reef holes and crevices commensurate with the size of the fish, smaller fishes preferring smaller crevices. Topographically complex reefs have significantly more fish associated with them than simple structure reefs. The boulder groin structure and associated interstitial spaces will provide habitat for many fish, invertebrate, and algal taxa (fish foraging resources). Fish and invertebrate densities within the project area will likely increase after work is complete.

An increase in available sand bottom will provide additional foraging for fishes such as carnivorous goatfishes, spotted eagle rays, and jacks. Also, additional sand shelter will be provided to wrasses, many of which bury in the sand to rest and to escape predators.

Corals: The basalt boulders that will be used for groin construction are not ideal for coral larvae settlement, however basalt boulders are used by corals as observed at other locations in Hawai'i. Corals that recruit to the groin structure will likely benefit from being elevated above shifting sand and rubble. *P. damicornis* is fast growing and planulates monthly throughout the year in Hawai'i.

Water quality: Shoreline stabilization will reduce sediment plumes that plague the nearshore environment. Siltation events are problematic to fishes, corals, and sessile invertebrates. Fish rely on their gills for oxygen exchange and are compromised by high levels of gill-clogging silt. Fine sediments are well known to inhibit settlement of coral larvae and to smother established colonies. Elevated turbidity reduces light penetration to the benthos, further reducing productivity of corals and algae. The present adverse turbidity conditions at Iroquois Point will be improved by the shoreline stabilization proposed. Reduction in terrigenous inputs to the marine environment is a management priority identified in Executive Order 13089 (Clinton, 1996) for protection of coral reefs.

Endangered species: The NMFS ESA analysis included the following anticipated benefits to endangered species which would be provided by the project (NMFS, 2008):

“Completion of the beach stabilization at Iroquois Point will likely provide a few benefits to marine listed species. For instance, the project will retain, and even expand the beach area for seal haul out. The area will also be clear of scattered rocks, concrete and steel debris, and other rubble from the beach and nearshore waters. The groins are also likely to result in a greater diversity and biomass of fishes and crustaceans, which may provide nearshore forage resources for monk seals.”

Mitigation

Long-term mitigation: The proposed project will not result in any significant long-term degradation of the environment or loss of habitat. Rather, the project will improve the shoreline condition, restore a recreational beach at the site, improve water quality by eliminating erosion of dirt fill, and increase potential biological habitat in a relatively barren reef flat area. Ecological services of reef flat habitat will be lost under the project footprint (sand and groins), but will recover over time as the benthic community reestablishes. A biological and water quality monitoring program will be implemented to measure project construction impacts.

Performance Standards and Monitoring: A monitoring plan will be implemented that addresses water quality, benthic biota, and fishes before and after construction to determine if the project is performing as expected and is, therefore providing a net biological benefit, and if adaptive management is needed to address unforeseen issues. Preconstruction water quality monitoring has been conducted for turbidity levels and similar methods will be followed during and after construction for comparability of data. Three areas proposed for groin placement (east end, middle of project, west end) were previously surveyed and will be surveyed before and after construction for benthic biota, fish diversity, and fish biomass. These sites will be monitored once before construction and three times after construction (immediately post-construction, and one and two years post-construction). At each interval the following surveys will be conducted;

1. a survey of marine biota for compilation of a species list with DACOR (Dominant, Abundant, Common, Occasional, and Rare) abundance categories,
2. a survey of benthic cover using the point-intercept quadrat method or photoquadrats and Coral Point Count with Excell Extension, to include the following categories: sand, bare hard substrata, turf algae, fleshy algae, crustose corraling algae, coral and other macroinvertebrates,
3. a survey of coral recruitment using a quadrat count-and-measure method with the following size class categories: 0-1, 1-5, and 5-10 cm, and
4. a survey of fishes using the belt transect method.

In addition, habitat complexity will be determined for the three groin sites once before and once after groin construction using the chain-link rugosity measurement method.

Endangered Species Mitigation During Construction: The following endangered species BMPs as recommended by NMFS will be adhered to during construction of the project.

- A. Conduct a survey for marine protected species before any work starts, and postpone or halt all work if a marine protected species is seen in the area. If a marine protected species is in the area, either hauled out onshore or in the nearshore waters, a 150 foot buffer must be observed with no humans approaching them. If a monk seal/pup pair is seen, a minimum 300 foot buffer must be observed.
- B. Establish a safety zone around the project area whereby observers will visually monitor this zone for marine protected species 30 minutes prior to, during, and 30 minutes post project activity. Record information on the species, numbers, behavior, time of observation, location, start and end

times of project activity, sex or age class (when possible), and any other disturbances (visual or acoustic).

- C. Conduct activities only if the safety zone is clear of monk seals or turtles.
- D. Upon sighting of a monk seal or turtle within the safety zone during project activity, immediately halt the activity until the animal has left the zone. In the event a marine protected species enters the safety zone and the project activity cannot be halted, conduct observations and immediately contact NMFS staff in Honolulu to facilitate agency assessment of collected data. For monk seals contact the Marine Mammal Response Coordinator, David Schofield, at (808) 944-2269, as well as the monk seal hotline at (888) 256-9840. For turtles, contact the turtle hotline at 983-5730.
- E. For on-site project personnel that may interact with a listed species potentially present in the action area, provide education on the status of any listed species and the protections afforded to those species under Federal laws. NMFS may be contacted for scheduling educational briefings to convey information on marine mammal behavior, and explain why and when to call NMFS and other resource agencies.

Maintenance Plan: In 2003, under special legislation enacted by Congress, the Iroquois Point housing area was leased by the U.S. Navy to Ford Island Housing, LLC, to maintain and operate for 65 years. This lease has recently been extended to 99 years. The nearshore waters below the high water line are in the Pearl Harbor Naval Defensive Sea Area, and remain under the jurisdiction and control of the U. S. Navy. The Navy, as the lessor, has granted Ford Island Housing the requisite property interest and accompanying authority to undertake the proposed beach restoration and stabilization project. Ford Island Housing will be responsible for conduct of the work, and ownership and maintenance of the project features will also be the responsibility of Ford Island Housing for the duration of the lease. Upon expiration of the lease, ownership of and responsibility for the beach stabilization project features will revert back to the Navy. The rock groins and beach fill have been designed to be stable through a wide range of environmental conditions, including design of the groins for possible hurricane storm conditions. Thus, it is expected that the project will require very little maintenance, particularly the new rock groin habitat.

Conclusion

Aquatic resources are expected to improve upon implementation of this project – improved water quality, increased fish shelter, and increased fish foraging resources. The rock rubblemound groins will provide additional benthic habitat complexity (fish shelter), will create new splash and intertidal zone habitat, will provide additional habitat for benthic and sessile biota (algae, crustaceans, sponges, and other invertebrates and fish foraging resources), and provide a stable substratum for corals to colonize. The larger, stable sand beach will provide additional foraging and resting habitat for fishes, as well as an expanded beach area for Hawaiian monk seal haulout. In addition, stabilizing the shoreline will improve water quality through the reduction of terrigenous inputs to the marine environment, a management priority for protection of coral reefs and their inhabitants identified in Executive Order 13089 (Clinton, 1996), as well as by the 2008 Coral Reef Task Force.

Based on the foregoing discussion, the applicant believes that the proposed project will create sufficient new habitat to replace the habitat that would be lost as a result of project construction. The addition of the rock groins and sand fill will enhance the quality and quantity of habitat over present conditions, making compensatory mitigation elsewhere unnecessary.

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