STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Office of Conservation and Coastal Lands
Honolulu, Hawaii

April 26, 2019

Board of Land and
Natural Resources
State of Hawaii
Honolulu, Hawaii

REGARDING: Proposed AMENDED AND RESTATED MEMORANDUM OF UNDERSTANDING between THE STATE OF HAWAII, Department of Land and Natural Resources, by its Board of Land and Natural Resources and the WAIKIKI BEACH SPECIAL IMPROVEMENT DISTRICT ASSOCIATION to Help Fund the Construction of the Royal Hawaiian Groin Improvement Project and MEMORANDUM OF UNDERSTANDING for the Kuhio Beach Stub Groin and Sand Back Passing Project, at Waikiki, Oahu, Hawaii

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT

The Department of Land and Natural Resources (DLNR) has an on-going partnership with the Waikiki Beach Special Improvement District Association (WBSIDA) to coordinate and fund Waikiki Beach Improvement projects. On February 12, 2016, the DLNR entered into an agreement with WBSIDA to fund 50 percent of the cost to replace/repair the Royal Hawaiian Groin (RHG) **(Exhibit 1)**. The Board of Land and Natural Resources (BLNR) authorized the project on June 9, 2017 under CDUP OA-3784, subject to staff obtaining a second coastal engineering opinion as to whether the proposed T-head groin fulfilled three project goals that had been previously articulated in the approved environmental assessment for the project **(Exhibit 2)**. The goals are as follows:

1. Maintain the approximate beach width of the 2012 Waikiki Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits;
2. Facilitate lateral access along the shoreline; and
3. Provide a first line of defense for the backshore area by maintaining a sufficiently wide beach.

The DLNR Engineering Division hired Oceanit to perform an evaluation of the project. Oceanit submitted their final report to the DLNR in June 2018 **(Exhibit 3)** and concluded as follows:

> "The adaptive reuse repair design generally meets the goals of the project. The existing groin functions to partially stabilize the existing Royal Hawaiian Beach by preventing sand migration through the structure. The repair of the aging structure is critical for maintaining existing beach width and the associated recreational and aesthetic benefits, lateral access along the shoreline and defense for the backshore area.
>
> The proposed adaptive reuse repair may include the addition of new rubble mound breakwater heads or it may maintain a straight groin layout. Oceanit evaluated the differences in beach formations, wave diffraction patterns, rip currents, reflected wave energy, construction costs and natural aesthetics of these options to help with the decision-making process. While most of these differences are likely small, the most significant difference of the T-head over the straight groin layout may be the added construction cost of over $500,000 and the aesthetical impact of a larger structure placed in the natural environment."

The DLNR subsequently decided to eliminate the west stub (arm) of the T-head groin such that the project consists of a straight rubble mound groin constructed around the older Royal Hawaiian Groin that ends with a stub/arm which faces east **(Exhibit 4)**.

Due to project delays funds that had been appropriated for project construction lapsed. The DLNR initiated a new CIP request in the current Executive Biennium Budget to reauthorize funds for the project. The present request is for $2.5M of which $1.25M will come from the State and the other $1.25M will come from WBSIDA. This Amended and Restated Memorandum of Understanding for the Royal Hawaiian Groin Improvement Project requires the approval of the BLNR as project construction costs increased necessitating an amendment to the MOU **(Exhibit 5, Amended and Restated MOU and red line version)**. Despite the downsizing of the groin structure, project construction costs are estimated to be higher than originally anticipated.

KUHIO BEACH STUB GROIN AND SAND BACK PASSING PROJECT

The other purpose of today's request is to seek the BLNR's approval of a new Memorandum of Understanding with WBSIDA for the Kuhio Beach Stub Groin and Sand Backpacking Project **(Exhibit 6)**. The Kuhio Beach Stub Groin and Sand Back Passing Project was approved by the Chairperson as a Small Scale Beach Restoration Project on April 8, 2019 **(Exhibit 7)**. Construction cost for the Kuhio Stub Groin and Sand Back Passing project is estimated to be $670K.

The proposed public-private partnership between DLNR and WBSIDA follows on the success of the 2012 Waikiki Beach Restoration Project to restore and maintain the vital public and visitor beach resources at Waikiki, which have suffered from chronic and

seasonal erosion over the past few decades. The RHG is essential to the stability of Waikiki Beach. If the structure fails, much of Waikiki Beach will be rapidly lost to erosion. Construction is anticipated to commence in early 2020.

The purpose of the Kuhio Beach Sub Groin and Sand Back Passing Project is to repair an erosion hotspot on the east end of Royal Hawaiian Beach which developed after the DLNR removed two derelict sand bag groins during the 2012 Waikiki Beach Maintenance Project. Beach Restoration Special Funds will be used for construction. WBSID has agreed to pay up to 50 percent ($335K) of the construction cost. Construction is anticipated to commence in the late spring/early summer 2019.

The Department of the Attorney General has conducted a preliminary review of both MOUs and finds them to be acceptable **(Exhibit 8)**. If significant changes to the MOU are required, the matter will be resubmitted to the Board for review and approval. The proposed donor, WBSIDA, agrees with the proposed language of the MOUs **(Exhibit 9)**.

RECOMMEDATION:

That the Board of Land and Natural Resources (BLNR) approve the Department entering into MOUs for the subject projects and authorize the Chairperson to finalize and sign the MOUs subject to the approval, as to form, by the Department of the Attorney General.

Respectfully submitted,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands

Approved for submittal:

By: _____
SUZANNE CASE, Chairperson
Board of Land and Natural Resources

MEMORANDUM OF UNDERSTANDING
(ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT)

This memorandum of understanding ("MOU"), dated Feb. 23, 2017, outlines the agreement between the State of Hawaii, Department of Land and Natural Resources ("DLNR") and the Waikiki Beach Special Improvement District Association ("WBSIDA") regarding the Royal Hawaiian Groin Improvement Project at Waikiki, Oahu, Hawaii.

RECITALS

A. WBSIDA and DLNR enter into this MOU regarding the joint funding of the construction, construction monitoring, environmental monitoring, and after action report of the Royal Hawaiian Groin Improvement Project (the "Project").

B. The Project will entail planning, design, permitting, construction, construction monitoring, environmental monitoring, and an after action report for the improvement of the Royal Hawaiian Groin, an engineered shoreline erosion control structure at the Ewa (West) end of Waikiki Beach which has been in place since 1927 and is at risk of failure.

C. The intent of the Project is to protect and preserve the beach resource at Waikiki for the benefit of the public at large, to alleviate hazards to upland development from long-term and seasonal beach erosion, and to plan for and design the optimal solution for beach stabilization in full compliance with environmentally sound planning and design principles as determined through the establishment of an acceptable design and environmental assessment ("EA"), to gain all permitting necessary to initiate the project, and to provide for construction, construction monitoring, environmental monitoring, and an after action report.

D. DLNR engaged the services of a coastal engineering company, to produce the EA and a comprehensive conceptual design report. The final EA and Finding of No Significant Impact for the Project were published on the Office of Environmental Quality Control website on May 23, 2016. DLNR has also engaged the services of a coastal engineering company to complete permitting and design for the Project. The State of Hawaii has appropriated $1,500,000, total, for the Project, for which a 50% cost match is required from public and private partners. Thus, the purpose of the MOU is to provide the mechanism by which WBSIDA will deposit $750,000 with DLNR to cover the costs of construction, construction monitoring, environmental monitoring, and an after action report for the Project. The source of public and private funds for the cost match is from WBSIDA through financing from the Waikiki Beach Special Improvement District No. 3.

E. DLNR will manage planning, permitting, and construction for the Project.

EXHIBIT 1

F. DLNR and WBSIDA desire to memorialize their understanding of the terms and conditions upon which DLNR and WBSIDA will fund the construction, construction monitoring, environmental monitoring, and an after action report for the Project.

Now, THEREFORE, the terms of the MOU are as follows:

1. Estimated Cost of Project: The current estimated cost for the construction, construction monitoring, environmental monitoring, and an after action report for the Project ("MOU Work") is approximately ONE MILLION FIVE HUNDRED THOUSAND DOLLARS ($1,500,000.00).

2. Joint Funding of the Project: DLNR and WBSIDA agree to jointly fund the MOU Work, with WBSIDA and DLNR each, respectively, funding 50% of the total cost.

3. Contribution: WBSIDA agrees to contribute to DLNR SEVEN HUNDRED AND FIFTY THOUSAND DOLLARS ($750,000.00) (the "WBSIDA Contribution"), upon and subject to the terms and conditions set forth in this MOU.

4. Use of WBSIDA Contribution: The WBSIDA Contribution shall be used solely as set forth in the MOU to fund the MOU Work.

5. Deposit of the WBSIDA Contribution: The WBSIDA Contribution shall be held in a separate account and shall not be commingled with other funds of the State. WBSIDA shall deposit the WBSIDA Contribution upon written request from DLNR to WBSIDA.

6. Payment of Money for MOU Work: DLNR shall make each progress payment for the MOU Work by making payments by or on behalf of DLNR and from the WBSIDA separate account in equal amounts.

7. Return of Funds: The WBSIDA Contribution or any portion thereof remaining, as the situation may be, shall be returned to WBSIDA as set forth herein below:

    a. If for any reason DLNR is unable to award a contract for the MOU Work by June 30, 2018, DLNR shall provide written notification to WBSIDA and shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA. If, however, DLNR is unable to award a contract because the bid opening reveals that the total cost of the MOU Work is expected to exceed $1,500,000.00, the parties shall, in good faith, discuss potential options for moving forward with the MOU Work prior to the return of any unused portion of the WBSIDA Contribution to WBSIDA.

    b. If for any reason a contract for the MOU Work is awarded but there are circumstances that arise by June 30, 2018, that prevent or otherwise make impracticable the contract's completion, then upon termination or cancellation of

the contract, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

c. If, after the DLNR's final acceptance of the MOU Work and DLNR's final payment is made, there is an unused portion of the WBSIDA Contribution, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

8. Miscellaneous Provisions:

a. Partial Invalidity: If any provision of the MOU or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remaining provisions of this MOU, or the application of such provision to person or circumstances other than those as to which it is invalid or unenforceable, shall not be affected.

b. Governing Law: This MOU shall be construed, interpreted and applied in accordance with the laws of the State of Hawaii.

c. No Warranty: Nothing in this MOU shall be construed as a warranty or guaranty of the successful or full completion of the Project or the MOU Work, or of the quality of the Project or the MOU Work.

d. No Third Party Beneficiaries: No term or provision of the MOU is intended to be, or shall it be, for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

e. No Partnership: Any intention to create a joint venture or partnership relation between the parties hereto is hereby expressly disclaimed.

f. Modifications: This MOU may not be modified except by a written agreement signed by both parties.

g. Binding on and Inuring to Benefit of Successors and Assigns: This MOU shall be binding upon, and shall insure to the benefit of the parties, and their respective successors and assigns.

h. Notices: All notices and other communications in connection with this MOU shall be in writing and shall be deemed to have been received by a party when actually received in the case of hand delivery, facsimile transmission, e-mail, or internationally recognized courier services, or three (3) days after being sent by United States mail, as the case may be, using the information of the DLNR and WBSIDA as shown below. Any refusal to accept delivery of a written notice delivered or mailed to the addresses set forth below resulting in non-operation of

the receiving party's facsimile equipment, shall be deemed to be receipt of such notice for the purpose of this MOU.

DLNR: Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street
Honolulu, Hawaii 96822
Facsimile No.: (808) 587-0377

WBSIDA: Waikiki Beach Special Improvement District Association
2250 Kalakaua Avenue, Suite 315
Honolulu, Hawaii 96815
Facsimile No.: (808) 923-2622

i. Counterparts; Facsimile Execution: The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding upon all of the parties hereto, notwithstanding that all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. An executed counterpart of this instrument transmitted and received by facsimile or email shall be deemed for all purposes to be an original, executed counterpart thereof.

IN WITNESS WHEREOF, DLNR and WBSIDA have executed this Memorandum of Understanding as of the date stated above.

Waikiki Beach Special Improvement District Association

By: _____

Print name: Richard Eggert

Title: President

Approved as to form:

By: _____
David D. Day
Deputy Attorney General

State of Hawaii, Department of Land and Natural Resources

By: _____
Suzanne D. Case, Chairperson
Board of Land and Natural Resources

Approved by the Board of Land and Natural Resources at its meeting held on February 12, 2016

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DLNR:OCCL:NF

CDUA OA-3784

MEMORANDUM

JUL 18 2017

TO: Suzanne D. Case, Chairperson
Board of Land and Natural Resources

FROM: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

SUBJECT: Conservation District Use Permit OA-3784 for the Royal Hawaiian Groin Improvement Project Located at Waikīkī Beach, Honolulu, O'ahu, Seaward of Tax Map Keys (1) 2-6-002:005 and 006

On June 9, 2017, the Board of Land and Natural Resources approved the Conservation District Use Application OA-3784 for the Royal Hawaiian Groin Improvement Project located at Waikīkī Beach, Honolulu, O'ahu, seaward of Tax Map Keys (1) 2-6-002:005 and 006, 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 shall comply with all applicable Department of Health administrative rules;

3. This authorization allows the Department to remediate the remaining derelict material of the existing groin after construction has been completed;

4. 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;

5. The proposed work shall not be initiated prior to the completion of the State Historic Preservation Division's review to ensure compliance and satisfaction of HRS, 6E;

EXHIBIT 2

6. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within two years of the approval of such use, in accordance with construction plans that have been signed by the Chairperson or an authorized representative, and shall be completed within three years of the approval of such use. The permittee shall notify the Department in writing when construction activity is initiated and when it is completed;

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

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

9. 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;

10. At the conclusion of work, the area shall be cleaned of all construction material and the site shall be restored to a condition acceptable to the Chairperson, including smoothing the beach to remove any tracks or indentions from the work;

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

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

13. The permittee 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 Hawai'i, and by Hawai'i statutory and case law;

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

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

16. 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;

17. A summary project completion report to the Department shall be submitted within 90 days of completion of the project describing the status of the groin, as-built plans if any changes were made to the proposed design, what maintenance actions took place and include photographic or other quantitative evidence (beach profiles or volume calculations) of the beach conditions;

18. The permittee shall implement the proposed 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 activities shall not substantially disrupt the movement of those species of aquatic life indigenous to the area, including those species, which normally migrate through the area;

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

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

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

27. The permittee shall maintain safe lateral beach access during project construction;

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

29. Failure to comply with any of these conditions shall render a permit void under §13-5, as determined by the Chairperson or Board; and

30. Prior to implementing the project, the Chairperson will seek a second coastal engineering opinion on whether the proposed T-head groin is an appropriate design that meets the goals of the project. If the Chair upon review of the second opinion determines it is, the project shall move forward. If the Chair determines it does not, this matter shall be brought back to the Board for reconsideration. The objectives of the project are: 1) Maintain the approximate beach width of the 2012 Waikiki Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits; 2) facilitate lateral access along the shoreline; and 3) provide a first line of defense for the backshore area by maintaining a sufficiently wide beach. The Board recognizes that this project is intended to be one phase of a long-term effort to stabilize the entire Waikiki beach area, and that a planning process is underway toward that end.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below.

Receipt acknowledged:

Applicant's Signature Date 7/3/17

Cc: LAND
Engineering
DPP
Sea Engineering, Inc

Coastal Engineering Evaluation of the Proposed Adaptive Reuse Alternative Designed to Repair the Damaged Royal Hawai'ian Groin

Prepared for:

Department of Land and
Natural Resources
Engineering Division

Prepared by:

Oceanit Laboratories, Inc.
828 Fort Street Mall, Suite 600
Honolulu, Hawai'i 96813

June 2018

EXHIBIT 3

EXECUTIVE SUMMARY

The State of Hawai'i Department of Land and Natural Resources (DLNR) retained Oceanit Laboratories, Inc. to review the planned repair of the aging Royal Hawai'ian Groin and provide a coastal engineering opinion. The structure was constructed in 1927 between the Sheraton Waikīkī and Royal Hawai'ian hotels at the Royal Hawai'ian Beach, in Waikīkī, O'ahu, Hawai'i. The groin helps to stabilize a beach to the east, while no stable beach typically forms to its west. Over time, the structure has deteriorated and the DLNR is concerned about its eventual failure. To address the issue, the DLNR proposed the Royal Hawai'ian Groin Improvement Project, which plans to adapt the exiting groin by reusing it as the core of a new rock rubblemound groin extending into the ocean at the same location. In addition to sloping bolder buttresses, the proposed "adaptive reuse" alternative may include the addition of L- or T-head rubblemound structures.

The Board of Land and Natural Resources (BLNR) has approved the Conservation District Use Application (CDUA) for the proposal subject to the condition that the Chairperson seek a second coastal engineering opinion on whether the proposed T-head groin is an appropriate design that meets the goals of the project. Oceanit personnel have reviewed all the background documents provided by the DLNR and conducted a field inspection of the project site. Based on an evaluation of this information, we offer the following opinions in regards to the project goals:

Primary Goal: *To replace or significantly repair the failing Royal Hawaiian Groin structure to modern engineering standards to maintain the existing conditions at the project site and avoid catastrophic failure of the existing groin while the State investigates more comprehensive beach improvements within the Waikīkī area.*

Opinion: The adaptive reuse alternative is a feasible option to repair the existing structure. Based on the information provide in the Final Environmental Assessment (FEA), the proposed rock rubblemound structure was generally designed for stability against extreme wave and water level conditions according to modern coastal engineering practice. The sloping rubblemound buttresses on either side of the existing vertical concrete groin will provide support to the historic structure that may prevent a catastrophic failure. To maintain the existing conditions at the project site while saving on construction costs, the State may consider preserving the groin as a straight structure rather than adding a new T- or L-head feature.

Objective 1: *Maintain the approximate beach width of the 2012 Waikīkī Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits;*

Opinion: The existing structure has a proven record of functioning as a groin, effectively trapping longshore drift to build a protective beach to the east. The adaptive reuse repair is critical for maintaining this existing beach. Monitoring of the beach after the 2012 nourishment project has shown that beach erosion continued at about

the documented historic rate. The DLNR does not intend for the proposed adaptive reuse repair to change the overall beach condition to non-erosional. The DLNR understands "that follow-up sand nourishment is needed to keep up with ongoing erosion" to maintain the approximate 2012 beach width.

Objective 2: *Facilitate lateral access along the shoreline;*

Opinion: The Royal Hawai'ian Groin is important for maintaining the beach east of the groin, which presently facilitates lateral access along the shoreline. Should the groin fail, access to the shoreline in this area will likely be more hazardous. By providing lateral support to prevent the collapse of the groin, the adaptive reuse repair meets the objective of preserving the existing condition of lateral shoreline access.

Objective 3: *Provide a first line of defense for the backshore area by maintaining a sufficiently wide beach.*

Opinion: The proposed adaptive reuse project is important for maintaining the existing beach and the shoreline protection benefits it provides. The proposed repair may enhance the backshore defenses by increasing the crest elevation of the groin, which will reduce the likelihood of wave overtopping, and by installing the rock rubblemound buttresses, which will increase wave absorption along the groin. It is unclear from the information provided what affect the addition of an L- or T-head will have on the backshore defense. The new breakwaters will alter the wave diffraction patterns along the shoreline. In the wave shadow zone, the structures will defend the backshore by reducing wave heights. Outside the shadow zone, however, prevailing wave heights may potentially increase by over 10%. The larger waves may unintentionally reduce the defense for the backshore area, especially on the west side of the groin where the beach is typically not sufficiently wide.

Summary Finding

Oceanit finds that the proposed adaptive reuse repair design generally meets the goals of the project. The existing groin functions to partially stabilize the existing Royal Hawai'ian Beach by preventing sand migration through the structure. The aging groin is at risk of collapse, so buttressing the structure is critical for maintaining the existing beach width and the associated recreational and aesthetic benefits, lateral access along the shoreline and defense for the backshore area. The proposed adaptive reuse repair may include the addition of new rubblemound breakwater heads or it may maintain a straight groin layout. Oceanit evaluated the differences in beach formations, wave diffraction patterns, rip currents, reflected wave energy, construction costs and natural aesthetics of these options. Most of these differences are likely small; Oceanit does not expect that the proposed L- or T-heads will result in significant stable curved beach formations in the lee of the structures. Maintaining the straight groin layout rather

than installing a head structure will reduce the risk of changes to wave diffraction and reflection patterns causing negative impacts to existing recreational resources. A straight groin repair may also reduce the construction cost by over $500,000 and minimize the aesthetical impact of a larger structure placed in the natural environment.

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LIST OF FIGURES

1. INTRODUCTION

According to the Final Environmental Assessment (FEA) prepared by Sea Engineering, Inc. (Sea Engineering) and published by the State of Hawai'i Department of Land and Natural Resources (DLNR), the Royal Hawai'ian Groin, originally constructed in 1927, was lengthened and heightened in 1930 to a total length of approximately 370 feet [1]. The structure is located between the Sheraton Waikīkī and Royal Hawai'ian hotels and it currently functions to stabilize a portion of Waikīkī Beach (Figure 1). Over time, the structure has deteriorated and in its existing condition, it may fail.

To address the issue, the DLNR initiated the Royal Hawai'ian Groin Improvement Project and the Office of Conservation and Coastal Lands (OCCL) identified the following three (3) options to repair or replace the failing structure:

1. A new 180-feet-long L- or T-head rock groin;
2. Adaptive reuse of the existing groin as the core of a new 160-foot-long L-head groin;
3. A new 160-foot-long concrete wall groin.

The FEA identified a 280-foot-long rock groin as a fourth alternative, but the OCCL considered this option larger than necessary [2].

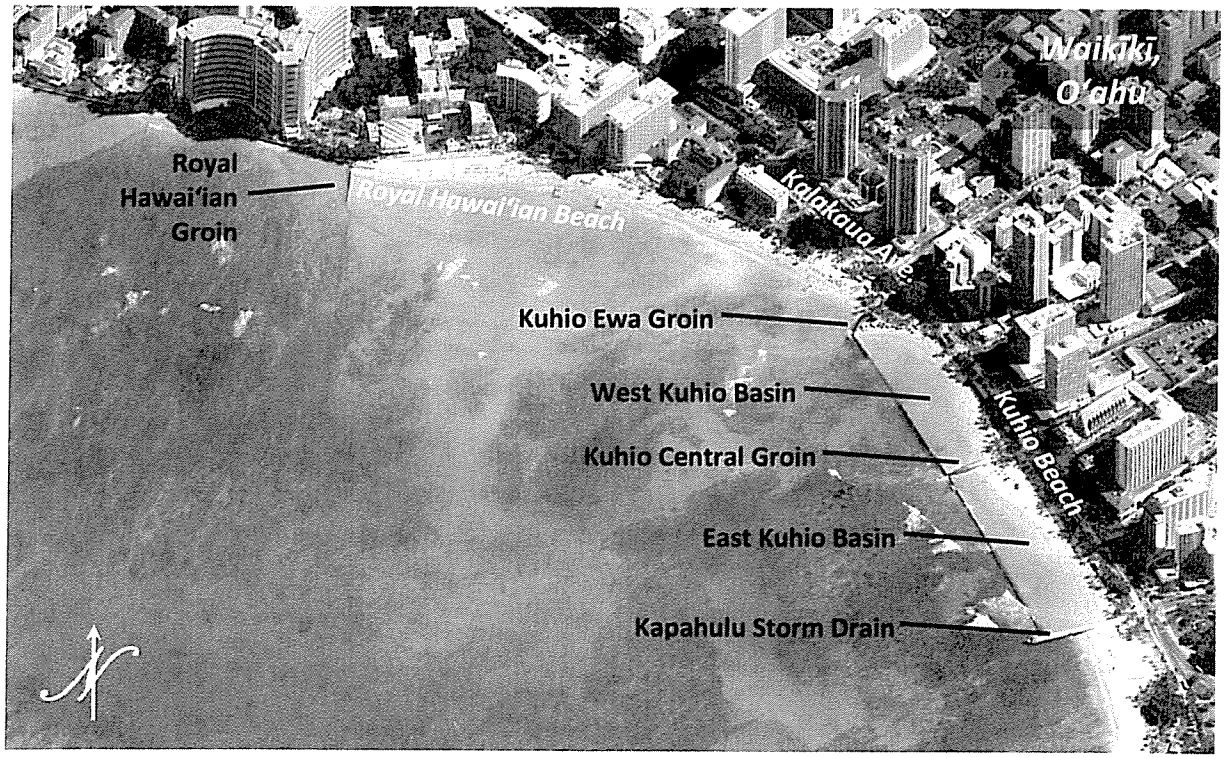

Figure 1. Map of the project area.

In October 2016, the DLNR filed a Conservation District Use Application (CDUA) to obtain a permit from the Board of Land and Natural Resources (BLNR) [3]. The DLNR proposed the adaptive reuse option of repairing the existing concrete groin by reusing it as the core of a new 130-foot-long rock rubblemound groin stem extending into the ocean at the location of the existing structure. The proposed alternative includes a T-head feature composed of two 30-foot-long rubblemound breakwaters installed roughly orthogonal to the seaward end of the groin stem.

Construction of the proposed repair will involve installation of sloping rock rubblemound buttresses on either side of the existing historic structure. Based on the information provide in the Final Environmental Assessment (FEA), the new crest of the repaired structure will be about eight to ten feet wide. The groin section includes a cast-in-place concrete cap to raise the elevation of the existing groin crest by up to two feet. The crest elevation will vary from +7 feet above mean sea level (MSL) at the landward end and will continue at this height for approximately 40 feet. The concrete crest will slope down to +4 feet in the next 70 feet. The crest of the groin will remain at +4 feet for the remaining length of the stem and the T-head. Unlike the stem, the T-head will not include a concrete core.

The FEA does not provide the footprint of the proposed adaptive reuse T-head groin on the seafloor, but from the information provided Oceanit estimated the total footprint of the new structure to about 7,000 square feet. For comparison, the footprint of existing structure in the project area is about 130 square feet. The rubblemound design makes use of single layer of keyed and fit 2,500 to 4,500-pound armor stone placed over 250 to 450-pound underlayer stone. The side slopes of the rock structure will be 1.5 horizontal to one vertical.

The On June 9, 2017, the BLNR approved the CDUA for the Royal Hawai'ian Groin Improvement Project subject to 30 conditions. Condition number 30 states:

> *"Prior to implementing the project, the Chairperson will seek a second coastal engineering opinion on whether the proposed T-head groin is an appropriate design that meets the goals of the project. If the Chair upon review of the second opinion determines it is, the project shall move forward. If the Chair determines it does not, this matter shall be brought back to the Board for reconsideration. The objectives of the project are: 1) Maintain the approximate beach width of the 2012 Waikīkī Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits; 2) facilitate lateral access along the shoreline; and 3) provide a first line of defense for the backshore area by maintaining a sufficiently wide beach. The Board recognizes that this project is intended to be one phase of a long-term effort to stabilize the entire Waikīkī beach area, and that a planning process is underway toward that end"* [4].

The DLNR contracted Oceanit Laboratories, Inc. (Oceanit) to provide professional services for a coastal engineering opinion on whether the proposed T-head groin is an appropriate design that meets the above mentioned project goals. This report provides details of the evaluation and the coastal engineering opinion on the design.

2. METHODOLOGY AND DATA

Oceanit reviewed the FEA [1], DLNR staff report [2], CDUP application [3] and other related background documents provided by the DLNR. Oceanit evaluated the design approach, modeling, and design calculations to determine whether the recommended solution met the above-mentioned project goals. Oceanit developed its coastal engineering opinion based on the evaluation on the information provided. No independent design calculations, field data collection, data analyses, or numerical models were conducted as part of this evaluation. Any assumptions made are included in this report.

In January, Oceanit requested additional information from the DLNR on the proposed T-head design including, but not limited to:

- Basis of design for the proposed T-head groin;
- Calculations showing the beach form after the groin construction;
- The projected future beach replenishment required to maintain the 2012 beach form.

In response to the request, Oceanit received information prepared by Sea Engineering. In addition to the design data and descriptions provided in the FEA, Oceanit learned that, *"the groin length and head orientation were optimized based on the 2012 project, using MEPBAY as a guide so that the predicted shoreline shape meshed with the 2012 shoreline. The proposed groin, if implemented along with another nourishment effort to the 2012 nourishment template, would be properly sized"* [5].

In addition to the review of background information, Oceanit personnel inspected the shoreline area adjacent to the proposed Royal Hawai'ian Groin Improvement Project site on February 21, 2018. The photographs presented in Figure 2 through Figure 11 document observations of the shoreline from the wave wash zone to the most landward extent of the beach. Observations focused on the existing conditions of the Royal Hawai'ian Beach (Figure 2 through Figure 7) and the adjacent Kuhio Beach area (Figure 8 through Figure 11). Field observations included the characteristics of the coastal structures, beach conditions, recreational and aesthetic benefits, lateral access along the shoreline, and the existing defenses for the backshore area.

Oceanit presented a draft report on the findings of the coastal engineering evaluation in March 2018. In a letter to Oceanit, dated April 24, 2018, the DLNR offered additional background information on the project. The letter states, *"The original, primary goal of the project is to replace or significantly repair the failing Royal Hawaiian Groin structure to modern engineering standards to maintain the existing conditions at the project site and avoid catastrophic failure of the existing groin while the State investigates more comprehensive beach improvements within the Waikīkī area."* In addition, *"The Royal Hawaiian Groin replacement project is not intended to change the overall beach condition to non-erosional"* [6]. Oceanit considered the additional information in preparation of this second draft report.

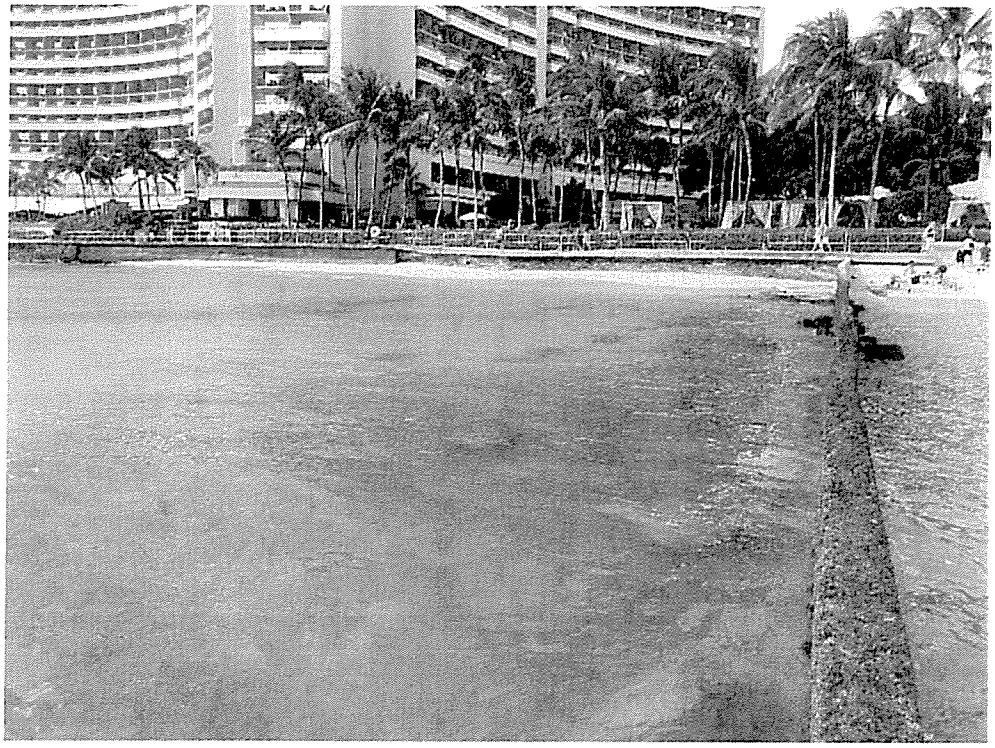

Figure 2: Photograph taken on February 21, 2018, while standing on the crest of the Royal Hawai'ian Groin looking back toward the shoreline on the west side of the structure.

Figure 3: Photograph taken on February 21, 2018, while standing on the crest of the Royal Hawai'ian Groin looking southeast at the submerged portion of the structure.

Figure 4: Photograph taken on February 21, 2018, while standing on the beach looking west at the Royal Hawai'ian Groin and the shoreline west side of the structure.

Figure 5: Photograph taken on February 21, 2018, while standing on the seawall looking south at the Royal Hawai'ian Groin and the beach on the east side of the structure.

Figure 6: Photograph taken on February 21, 2018, while standing on the crest of the Royal Hawai'ian Groin looking toward the shoreline on the east side of the structure.

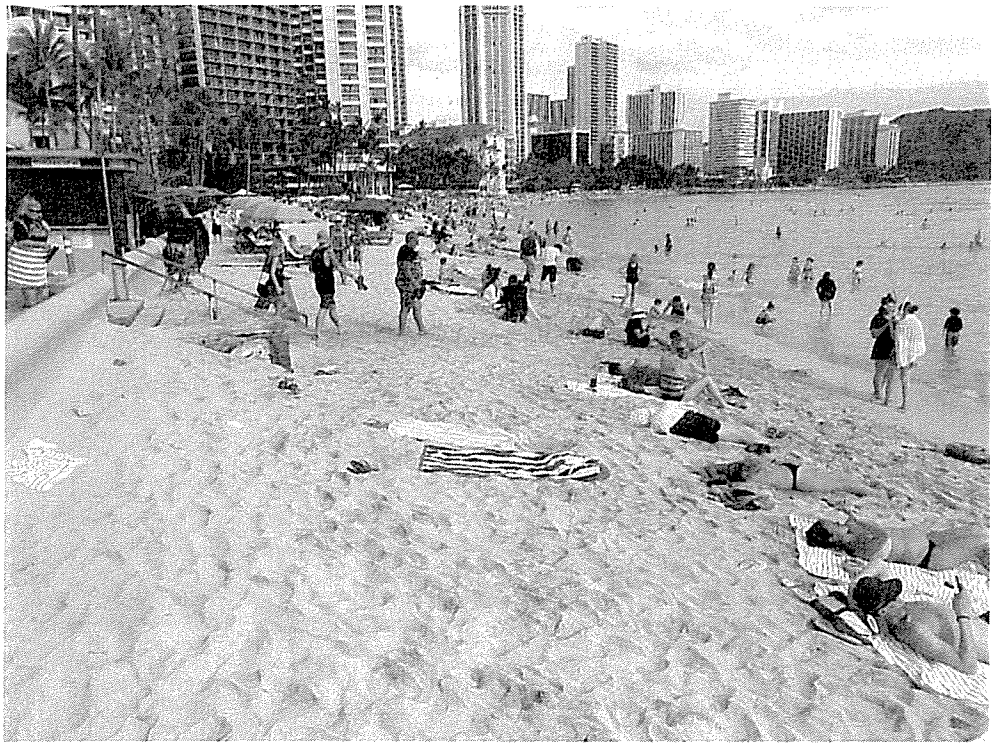

Figure 7: Photograph taken on February 21, 2018, while standing on the seawall east of the Royal Hawai'ian Groin looking east along the shoreline.

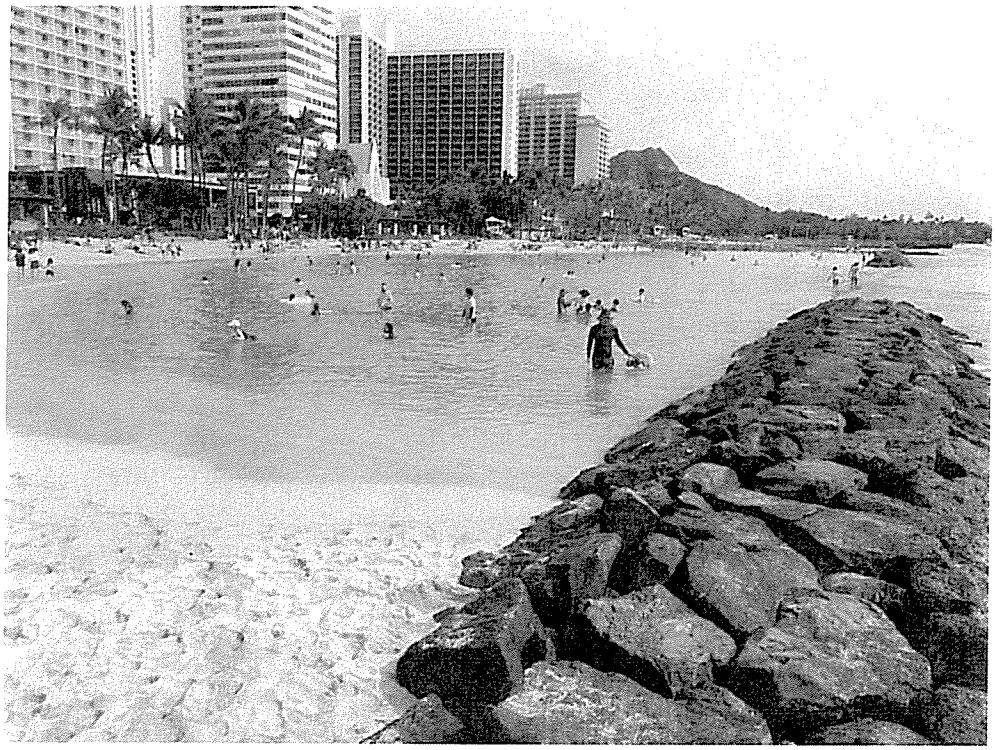

Figure 8: Photograph taken on February 21, 2018, while standing on the Kuhio Beach Ewa Groin looking east along the L-head of the structure and the West Kuhio Basin.

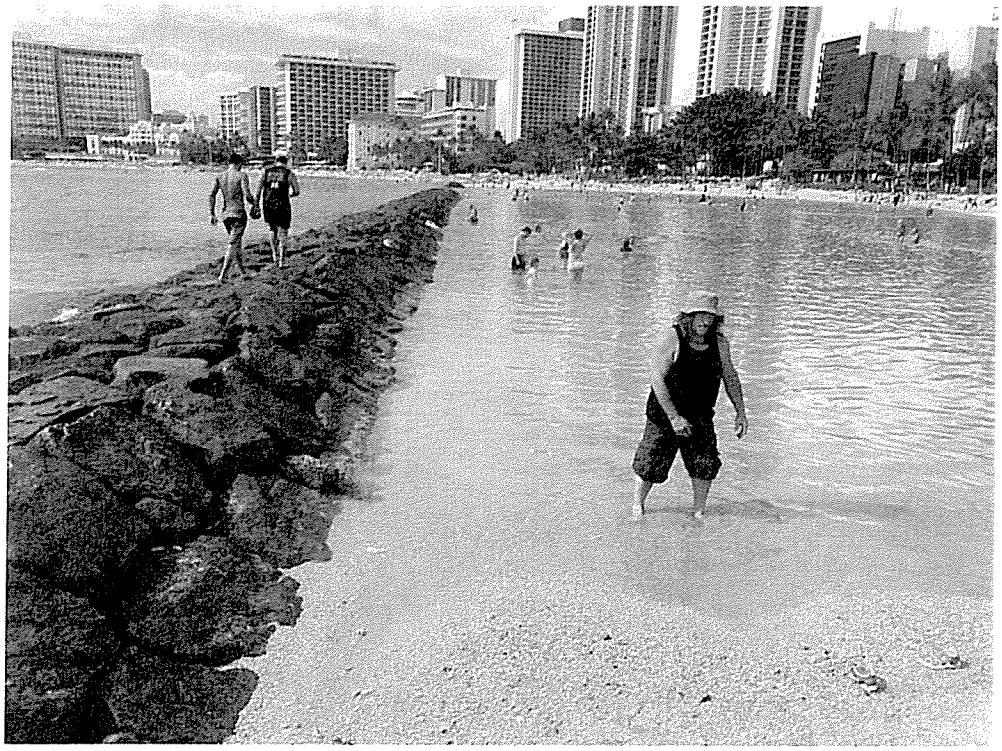

Figure 9: Photograph taken on February 21, 2018, while standing on the Kuhio Beach Central Groin looking west along the rubblemound breakwater and the West Kuhio Basin.

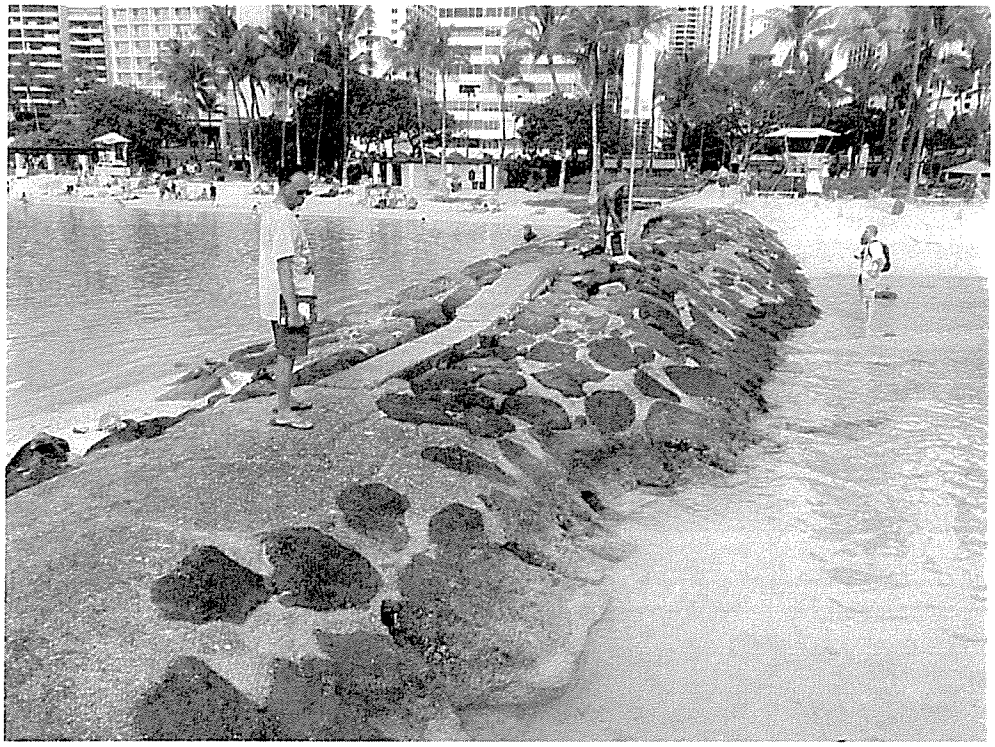

Figure 10: Photograph taken on February 21, 2018, while standing on the Kuhio Beach Central Groin looking north along the stem of the structure.

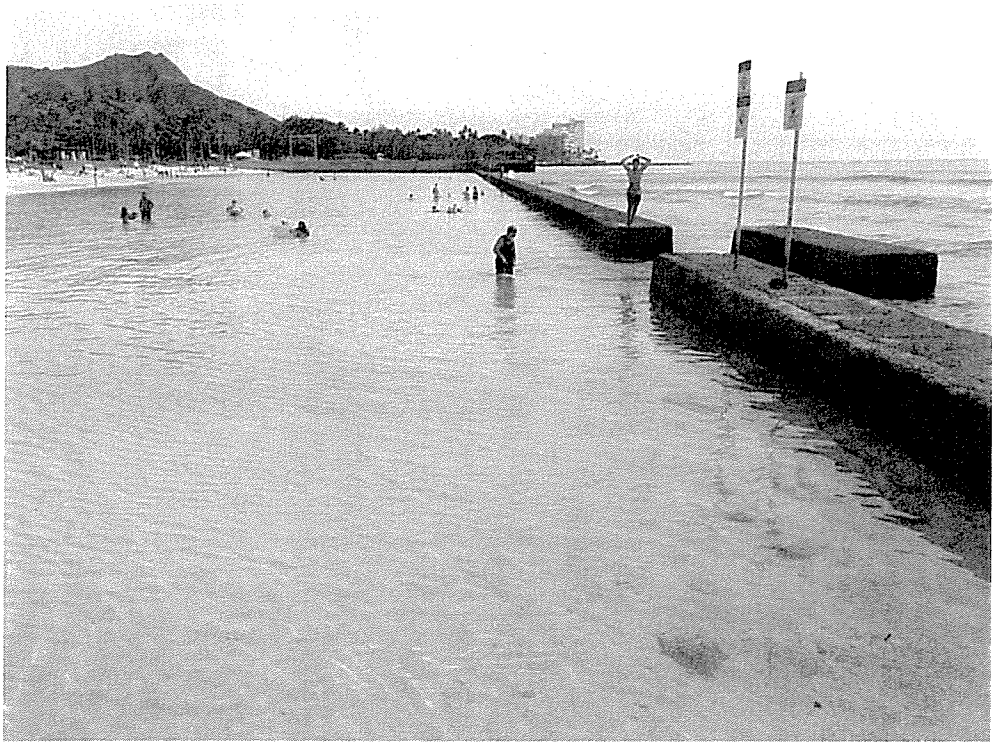

Figure 11: Photograph taken on February 21, 2018, while standing on the Kuhio Beach Central Groin looking east at the concrete breakwater and the East Kuhio Basin.

3. ENGINEERING OPINION

Oceanit offers the following engineering opinions on whether the proposed adaptive reuse option is an appropriate design that meets the primary goal and three objectives of the groin improvement project.

3.1 Primary Goal: To replace or significantly repair the failing Royal Hawaiian Groin structure to modern engineering standards to maintain the existing conditions at the project site and avoid catastrophic failure of the existing groin while the State investigates more comprehensive beach improvements within the Waikīkī area.

Upon review of the provided background materials, Oceanit finds that the adaptive reuse alternative generally meets the primary goal of the project. The design maintains and elevates the existing groin as the core to prevent sand migration through the structure. The proposed rock buttresses on either side of the concrete core will provide protection against the collapse of the historic structure. Based on the information provide in the Final Environmental Assessment (FEA), the proposed rubblemound conceptual design generally follows modern coastal engineering practice as defined in the Shore Protection Manual [7] and Coastal Engineering Manual [8] published by the U.S. Army Corps of Engineers (USACE) in 1984 and 2006, respectively. The armor stone size and placement are for stability during extreme wave and water level conditions. The calculations account for 0.7 feet of sea level rise over an expected 50-year structure lifetime. While this sea level rise estimate is not consistent with the planning target of 3.2 feet recommended by the Hawai'i Climate Change Mitigation and Adaptation Commission, the design concept was developed before their final report was published in December 2017 [9].

The proposed adaptive reuse repair may include the addition of new rubblemound breakwater structures approximately orthogonal to the existing groin stem. Alternatively, the DLNR may decide to pursue the proposed rubblemound buttresses, but maintain the groin layout as a straight structure. Sea Engineering proposed an L-head extending east from the groin's truck "to help maintain beach width adjacent to the groin and reduce the potential for rip (seaward flowing) current formation along the stem." The DLNR also considered a T-head constructed of two 30-foot-long breakwaters. According to the FEA, the T-head is beneficial because it facilitates "possible sand accretion and beach formation fronting the Sheraton Waikiki Hotel" [1].

The discussion below provides a coastal engineering evaluation of the differences between the proposed breakwater head and a straight groin layout. The expected differences in the beach formation, wave diffraction patterns, rip currents, reflected wave energy, construction costs and natural aesthetics are described, if any. This evaluation is intended to help with the decision-making process for selecting the repair scheme that best meets the goals for the project.

3.1.1 Beach Formation

Sea Engineering estimated the curved shape of the beach that may form in the wave shadow zone landward of the L- or T-head structures using the MEPBAY model. This model applies a parabolic bay shape equation to estimate the shape of a headland-bay beach in static equilibrium [10]. A beach cell is in static equilibrium when there is no littoral drift and long-term erosion or accretion under predominate wave conditions. The existing beach is not in a state of static equilibrium according to beach monitoring data [11] collected after the 2012 Royal Hawai'ian Beach nourishment effort [12].

To design a beach in equilibrium, the modern engineering practice described by Bodge (2003) accounts for the gap distance between adjacent structures or headlands and the orientation of the gap compared to the wave crests to estimate the rough position of the post-project beach [13]. Since the proposed design does not identify stable control points on either side of the T-head, the distances of the gaps are undefined. Presumably, future beach improvements may include additional beach stabilization structures, which could provide the stable points required for the proposed head structures to be effective for beach stabilization. Without this, Oceanit is of the opinion that the proposed L- or T-heads are unlikely to result in significantly stable curved beach formations along the shoreline.

3.1.2 Rip Currents

The FEA states, "The head of the new groin will help prevent the formation of offshore rip current formation along the groin stem" [1], however, no evidence was presented to show that rip currents are currently a problem along the existing groin stem. Sea Engineering did attribute a rip current in the Apuakehau Stream paleo-channel formed during high surf to sand transport away from the beach and offshore deposition. Based on the bathymetric data in the FEA, this channel is roughly 800 feet east of the Royal Hawai'ian Groin, so it is unlikely that a project of this scale will have an impact on these rip currents.

The existing groin has a submerged L-head, which bends to the east. The total length of this submerged section seems to be about 200 feet, but a portion of it appears to have collapsed onto the seafloor leaving approximately 50 feet of the submerged L-head directly adjoining to the emerging groin stem. Oceanit personnel observed a relatively brisk exchange of water localized over this portion of the submerged L-head (Figure 3). It is unclear if the original design intended for the L-head portion to be submerged, but the structure appears to be functional; it allows for surface water circulation while partially blocking bottom currents that may otherwise form a rip next to the groin stem and migrate sand away from the beach. To avoid significant changes to existing current patterns, the DLNR may decide to leave the existing submerged L-head structure in-place.

3.1.3 Wave Diffraction

An L- or T-head will change the wave patterns as they diffract around the ends of the new barrier. If it were not for wave diffraction, a phenomenon caused by lateral energy transformation along a wave crest, perfectly calm waters would exist in the shadow zone behind the barrier. To calculate the diffracted wave heights in the lee of a breakwater, the U.S. Army Corps of Engineers recommends use of the diffraction diagrams shown in Figures 2-28 through 2-39 in the Shore Protection Manual [7]. The diffracted wave heights depend on the wave approach angle, shallow-water wavelength, and the distance/position relative to the breakwater tip. Waves in the shadow zone of a barrier will be significantly smaller than incident wave heights. Outside the shadow zone, in areas in line with the wave ray thorough the breakwater head, the prevailing wave heights may increase by more than 10% due to the diffraction patterns [7]. From the information provided in the FEA, it is unclear how the normal wave heights on either side of the proposed T-head could change and what affect this change may have on the existing beach and coastal structures in the area.

3.1.4 Wave Reflection

In addition to changing wave diffraction patterns, the breakwater head will reflect incoming wave energy seaward. The FEA states that the "sloping, permeable rock groin head is similar to that of a sand beach, with about 80% of the incoming energy dissipated by wave runup on the rocks" [1]. Accordingly, the T-head will reflect about 20% of the incoming wave energy seaward toward the popular surfing areas. Sea Engineering does not expect that the increased reflections will cause significant changes to the quality of Waikīkī's surfing due to the distance between the project site and the established surf breaks. To limit the risk of increased reflections causing possible impacts, however, the DLNR can maintain a straight groin layout rather than installing orthogonal breakwater head structures.

3.1.5 Construction Costs

Oceanit estimated the construction cost of various groin head options using the economic figures provided in the FEA. According to Sea Engineering, the construction of the adaptive reuse repair with an L-head will cost about $1,240,000. From the information provided, the T-head will cost an additional $320,000 to construct, raising the total cost of the adaptive reuse T-head option to $1,560,000. If the DLNR maintains a straight groin layout, the total construction cost may be about $920,000, a savings of $640,000.

3.1.6 Aesthetics

Based on observations made in the field, the proposed rock rubblemound groin design is similar to the appearance of other coastal structures in Waikīkī (Figure 8 though Figure 11). To maintain the natural appearance of the coastal environment, the size of the structure should be no larger than necessary. The addition of two 30-foot-long 10-foot-wide breakwaters on either end of the tip of the groin will increase the impact of the manmade structure on the aesthetics of Waikīkī Beach compared to a smaller straight rubblemound groin scheme.

3.2 Objective 1: Maintain the approximate beach width of the 2012 Waikīkī Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits

The 2012 Waikīkī Beach Maintenance Project restored the width of Royal Hawai'ian Beach by 37 feet on average [10]. Previous evaluation of beach monitoring data collected over 2.7 years following the nourishment showed that the restored beach configuration is not stable. On average, the restored sand was lost at a rate of between 400 to 1,600 cubic yards per year and the restored beach width decreased by a rate of between 0.8 to 1.6 feet per year [11].

To maintain a desired beach width, a coastal engineer may design a project that changes the dynamics of the littoral system to restore an equilibrium to the sources and sinks of sediment transport. The DLNR does not intend for the proposed Royal Hawaiian Groin repair project to provide an equilibrium beach condition; it does not expect that the proposed repair will maintain the 2012 Waikīkī Beach Maintenance Project design beach width without periodic sand nourishment and/or additional coastal structures [6].

The repair of the aged Royal Hawai'ian Groin is critical for maintaining the approximate width of the existing Royal Hawai'ian Beach. The existing structure has a proven record of trapping longshore drift to build a protective beach to the east. Should the groin collapse, the sand fronting the Royal Hawai'ian Hotel will likely erode rapidly. To maintain the existing condition of Waikīkī Beach, Oceanit suggests that the DLNR proceed with the proposed repair of the existing structure immediately.

3.3 Objective 2: Facilitate lateral access along the shoreline

The repair of the groin is critical for maintaining the existing lateral shoreline access along the Royal Hawaiian Beach. In the existing condition, there is typically no lateral access along the beach to the west of the existing Royal Hawai'ian Groin. A public walkway on the crest of the concrete seawall fronting the Sheraton Waikīkī Hotel currently facilitates lateral access along the shoreline (Figure 2). To the east of the structure, the Royal Hawai'ian Beach provides lateral shoreline access (Figure 7). This beach erodes seasonally, which has sporadically made shoreline access hazardous especially in the area directly east of the groin.

The proposed adaptive reuse repair will potentially partially mitigate the beach erosion hotspot east of the groin by raising the crest elevation of the structure to reduce overtopping during prevailing wave conditions. In addition, by absorbing significantly more wave energy than the current vertical structure, the proposed rock buttresses installed on the sides of the concrete core will potentially increase the stability of the beach. Oceanit does not expect the proposed L- or T-head additions to cause a significant change to the existing lateral shoreline access compared to the existing straight groin layout.

3.4 Objective 3: Provide a first line of defense for the backshore area by maintaining a sufficiently wide beach.

A sufficiently wide beach will provide the backshore area with partial protection against coastal hazards. Although ongoing chronic erosion and expected sea level rise will reduce the level of protection over time, Oceanit's opinion is the proposed adaptive reuse repair is critical for maintaining the current level of backshore defense provided by the existing beach east of the Royal Hawai'ian Groin. In addition, the proposed rock rubblemound buttresses will increase the defense for the backshore by absorbing wave energy and reducing wave reflections off the existing vertical structure.

From the information provided, it is unclear how the proposed new breakwater structures at the head of the groin stem will affect the backshore defenses. As discussed previously, wave patterns will diffract around the ends of the barrier. The diffraction around a T-head will change the wave heights in the lee of the structure. In the shadow zone, the breakwaters will reduce wave heights and, therefore, increase the protection to the backshore area. Outside the shadow zone, however, prevailing wave heights may increase by over 10%, which may unintentionally reduce the level of defense to the backshore area.

4. CONCLUSION

The DLNR intends to repair the 90-year-old Royal Hawai'ian Groin by installation sloping rock rubblemound buttresses on either side of the existing vertical concrete structure. L- or T-head rubblemound structures may also be added to the end of the groin as part of the project. Oceanit developed a coastal engineering opinion on whether this "adaptive reuse" repair design was appropriate to meet the DLNR's project goals:

Primary Goal: *To replace or significantly repair the failing Royal Hawaiian Groin structure to modern engineering standards to maintain the existing conditions at the project site and avoid catastrophic failure of the existing groin while the State investigates more comprehensive beach improvements within the Waikīkī area.*

Objective 1: *Maintain the approximate beach width of the 2012 Waikīkī Beach Maintenance Project so that it can provide its intended recreational and aesthetic benefits*

Objective 2: *Facilitate lateral access along the shoreline*

Objective 3: *Provide a first line of defense for the backshore area by maintaining a sufficiently wide beach.*

Oceanit finds that the proposed adaptive reuse repair design generally meets the goals of the project. The existing groin functions to partially stabilize the existing Royal Hawai'ian Beach by

preventing sand migration through the structure. In its current condition, the groin is at risk of structural failure. The repair of the aging structure is critical for maintaining existing beach width and the associated recreational and aesthetic benefits, lateral access along the shoreline and defense for the backshore area.

The proposed adaptive reuse repair may include the addition of new rubblemound breakwater heads or it may maintain a straight groin layout. Oceanit evaluated the differences in beach formations, wave diffraction patterns, rip currents, reflected wave energy, construction costs and natural aesthetics of these options to help with the decision-making process. Most of these differences are likely small; Oceanit does not expect that the proposed L- or T-heads will result in significant stable curved beach formations in the lee of the structures. Maintaining the straight groin layout rather than installing a head structure will reduce the risk of changes to wave diffraction and reflection patterns causing negative impacts to existing recreational resources. A straight groin repair may also reduce the construction cost by over $500,000 and minimize the aesthetical impact of a larger structure placed in the natural environment.

5. REFERENCES

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8. U.S. Army Corps of Engineers. *Coastal Engineering Manual.* 2006.
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10. Raabe, André L.A., Antonio H. da F. Klein, Mauricio González, and Raul Medina. "MEPBAY and SMC: Software tools to support different operational levels of headland-bay beach in coastal engineering projects", *Coastal Engineering*, vol. 57, 2010, pp. 213–226.
11. Habel, Shellie, Charles H. Fletcher, Matthew Barbee and Tiffany R. Anderson. "The Influence of Seasonal Patterns on a Beach Nourishment Project in a Complex Reef Environment", *Coastal Engineering*, vol. 116, 2016, pp. 67–76.
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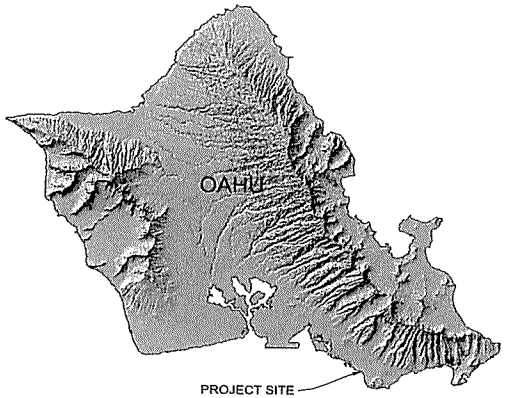
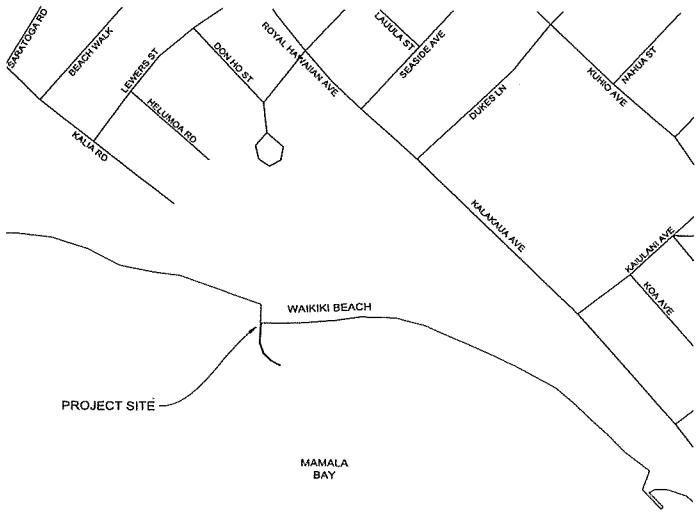
13. Bodge, K.R. "Design Aspects of Groins and Jetties." In: Advances in Coastal Structure Design, Ed. R. Mohan, O. Magoon, M. Pirrello, American Society of Civil Engineers, 2003, pp. 181-199

EXHIBIT 4

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT

HONOLULU, OAHU, HAWAII





Sea Engineering, Inc.

Department of Land and Natural Resources
State of Hawaii

INDEX OF DRAWINGS

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T-001	TITLE SHEET
2	G-101	CONSTRUCTION ACCESS AND STAGING AREAS
3	G-102	WATER QUALITY PROTECTION PLAN
4	C-101	PROJECT PLAN
5	C-301	DETAILS AND TYPICAL SECTIONS
6	C-501	CROSS SECTIONS, STA. 0+00 TO STA. 0+75
7	C-502	CROSS SECTIONS, STA. 1+00 TO STA. 1+75

ABBREVIATIONS

', FT.	FEET	MIN.	MINIMUM
'', IN.	INCHES	MSL	MEAN SEA LEVEL
CIP	CAST-IN-PLACE	(N)	NEW
DET.	DETAIL	NTS	NOT TO SCALE
EG	EXISTING GRADE	SHT(S).	SHEET(S)
EL.	ELEVATION	SQ. FT.	SQUARE FEET
EXIST., (E)	EXISTING	STA.	STATION
LBS	POUNDS	T.O.	TOP OF
LF	LINEAR FEET	TYP.	TYPICAL

30% DESIGN DRAWINGS NOT FOR CONSTRUCTION

Sea Engineering, Inc.
MAKAI RESEARCH PIER
41-305 KALANIANAOLE HWY
WAIMANALO, HI 96795
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REVISION	DATE

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT
HONOLULU, OAHU, HI

PROJECT NUMBER:	25516
CLIENT:	DLNR-OCCL
PROJECT ENGINEER:	DS
DRAWN BY:	DPL
CHECKED BY:	SS
SCALE:	NTS
SHEET SIZE:	ANSI D (22"X34")
DATE:	NOVEMBER 19, 2018

TITLE PAGE

DRAWING NO.:	SHEET NO.:
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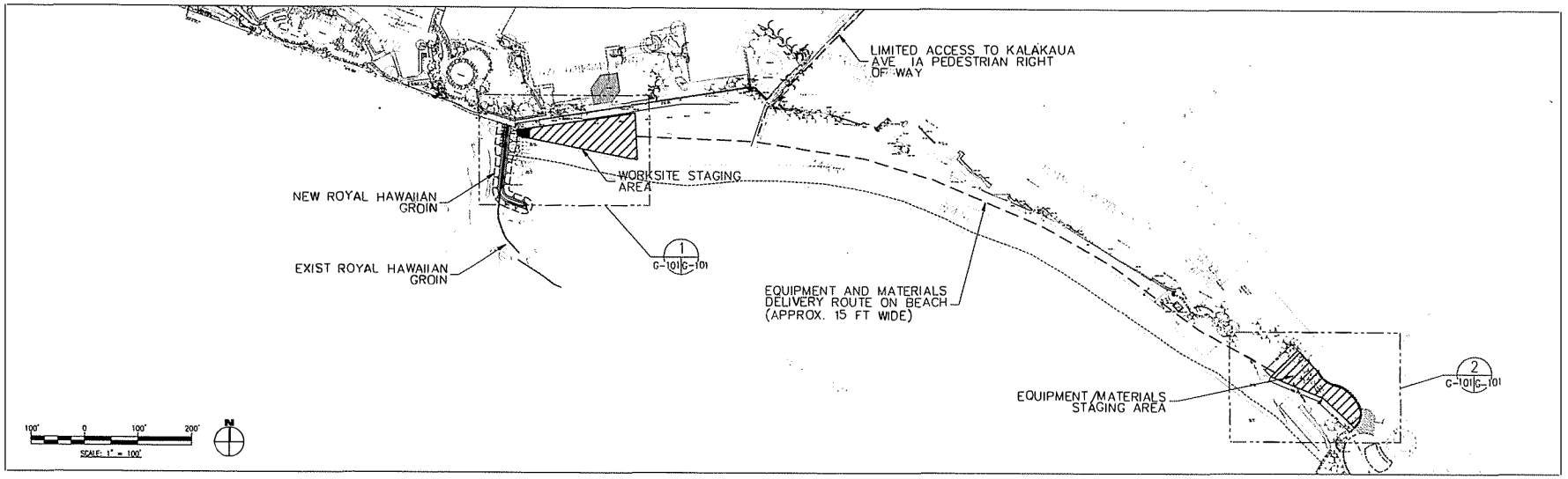

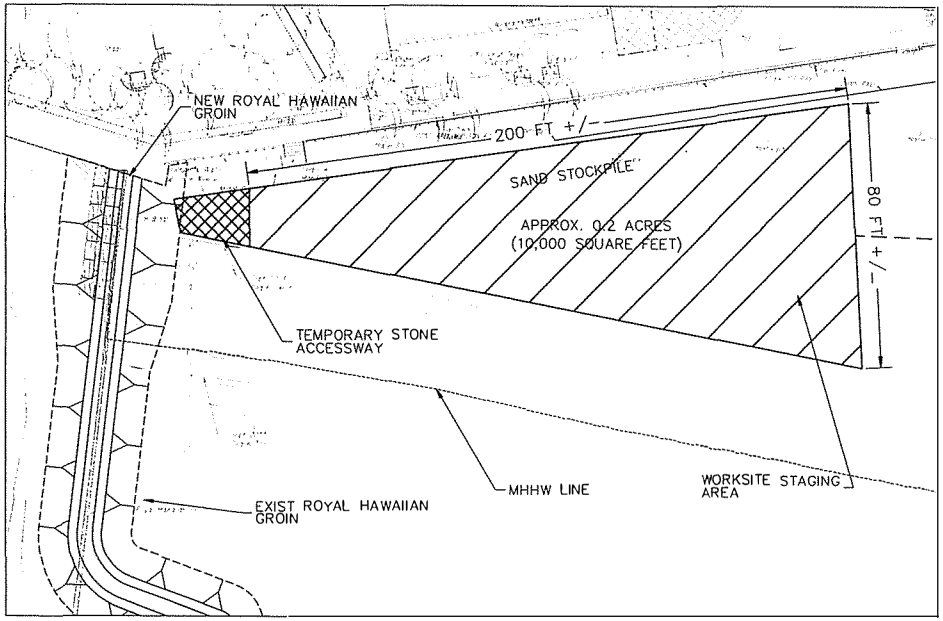

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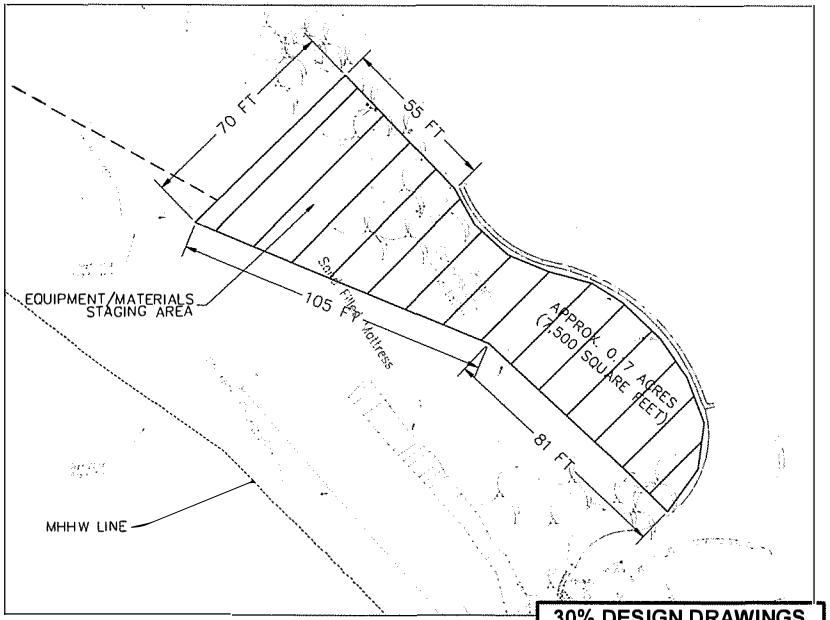

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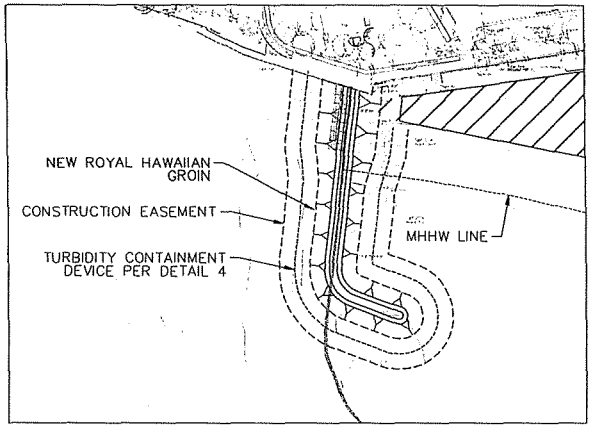
REVISION	DATE

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT
HONOLULU, OAHU, HAWAII

PROJECT NUMBER:	25516
CLIENT:	DLNR-OCCL
PROJECT ENGINEER:	DS
DRAWN BY:	DL
CHECKED BY:	SS
SCALE:	VARIES
SHEET SIZE:	ANSI D (22"X34")
DATE:	NOVEMBER 19, 2018

CONSTRUCTION ACCESS AND STAGING AREAS

DRAWING NO.:	SHEET NO.:
G-101	2 of 7



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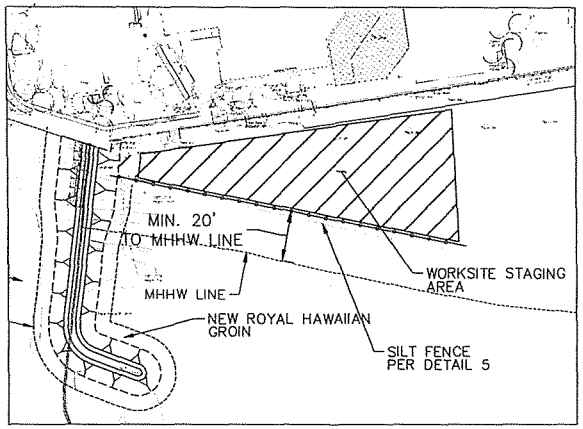

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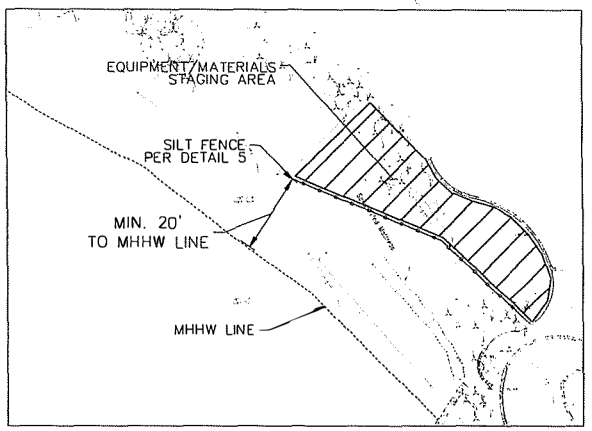

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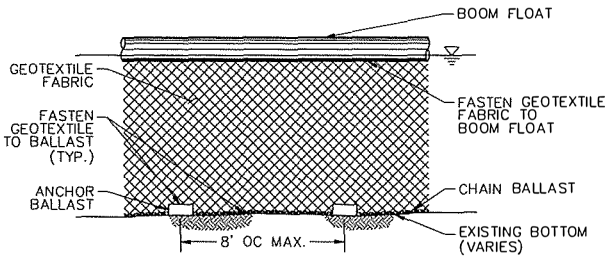
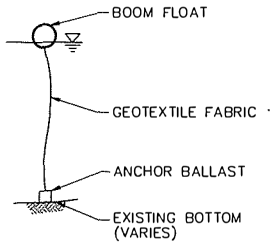
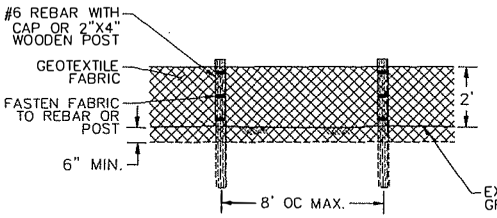


ELEVATION

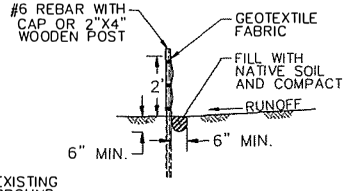


SECTION

4 G-102 G-102 TYPICAL TURBIDITY CONTAINMENT DEVICE DETAIL
SCALE: NTS



ELEVATION



SECTION

5 G-102 G-102 TYPICAL SILT FENCE DETAIL
SCALE: NTS

WATER QUALITY PROTECTION PLAN NOTES:

GENERAL

1. TURBIDITY CONTAINMENT DEVICES AND ON-LAND SILT FENCES SHALL BE OF SUFFICIENT DESIGN, STRENGTH, AND SUITABILITY FOR THEIR INTENDED APPLICATION AND THE OCEAN ENVIRONMENT.

2. SILT FENCE FILTER FABRIC SHALL BE MIRAFI SILT FENCE, AMOCO SILT STOP, OR APPROVED EQUAL.

3. FLOATING TURBIDITY CONTAINMENT DEVICES SHALL GENERALLY BE COMPOSED OF A WATER SURFACE FLOATATION BOOM WITH A MINIMUM FREEBOARD OF 4 INCHES, A SKIRT HANGING VERTICALLY TO THE REQUIRED DEPTH, BALLAST WEIGHT AT THE SKIRT BOTTOM, AND SUFFICIENT ANCHORS TO MAINTAIN THE CURTAIN IN PLACE.

4. THE FLOATING TURBIDITY CONTAINMENT DEVICE SKIRT MATERIAL SHALL BE MONOFILAMENT WOVEN POLYPROPYLENE WITH THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:

PROPERTY	VALUE	TEST METHOD
GRAB STRENGTH	200 LBS	ASTM D 4632
PUNCTURE	90 LBS	ASTM D 4833
TRAPEZOID TEAR	90 LBS	ASTM D 4533

PERVIOUS GEOTEXTILE SKIRT MATERIAL SHALL HAVE A MAXIMUM APPARENT OPENING SIZE (AOS) AND PERCENT OPEN AREA (POA) CAPABLE OF RETAINING FINE SUSPENDED SEDIMENTS 0.004 MM OR LARGER IN DIAMETER.

5. A DESCRIPTION OF THE TURBIDITY CONTAINMENT DEVICE(S), THEIR MATERIALS AND DESIGN, AND THE PROPOSED DEPLOYMENT METHODOLOGY SHALL BE INCLUDED IN THE ENVIRONMENTAL PROTECTION PLAN AND APPROVED BY THE STATE PRIOR TO THEIR USE.

6. TURBIDITY CONTAINMENT DEVICES AND FENCES SHALL BE INSPECTED DAILY, AND IMMEDIATELY REPAIRED OR REPLACED AS NECESSARY TO ENSURE THEIR EFFECTIVENESS.

GROIN CONSTRUCTION AREA (IN-WATER)

1. A TURBIDITY CONTAINMENT DEVICE SHALL BE DEPLOYED TO COMPLETELY SURROUND THE AREA OF ACTIVE IN-WATER CONSTRUCTION.

2. SHOULD WEATHER OR SEA CONDITIONS PROHIBIT PROPER PLACEMENT AND FUNCTION OF THE TURBIDITY CONTAINMENT DEVICE, CONSTRUCTION SHALL CEASE UNTIL CONDITIONS PERMIT PROPER DEPLOYMENT.

WORKSITE AND EQUIPMENT/MATERIALS STAGING AREAS (ON LAND)

1. A SILT FENCE SHALL BE INSTALLED AND MAINTAINED ALONG THE OCEAN SIDE OF THE WORKSITE AND EQUIPMENT/MATERIALS STAGING AREAS.

2. THE SILT FENCE SHALL BE LOCATED A MINIMUM OF 20 FEET LANDWARD OF THE MEAN HIGHER HIGH WATER (MHHW) LINE.

30% DESIGN DRAWINGS NOT FOR CONSTRUCTION

Sea Engineering, Inc.
MAKAI RESEARCH PIER
41-305 KALANIANAOLE HWY
WAIMANALO, HI 96795
808.259.7966
WWW.SEAENGINEERING.COM

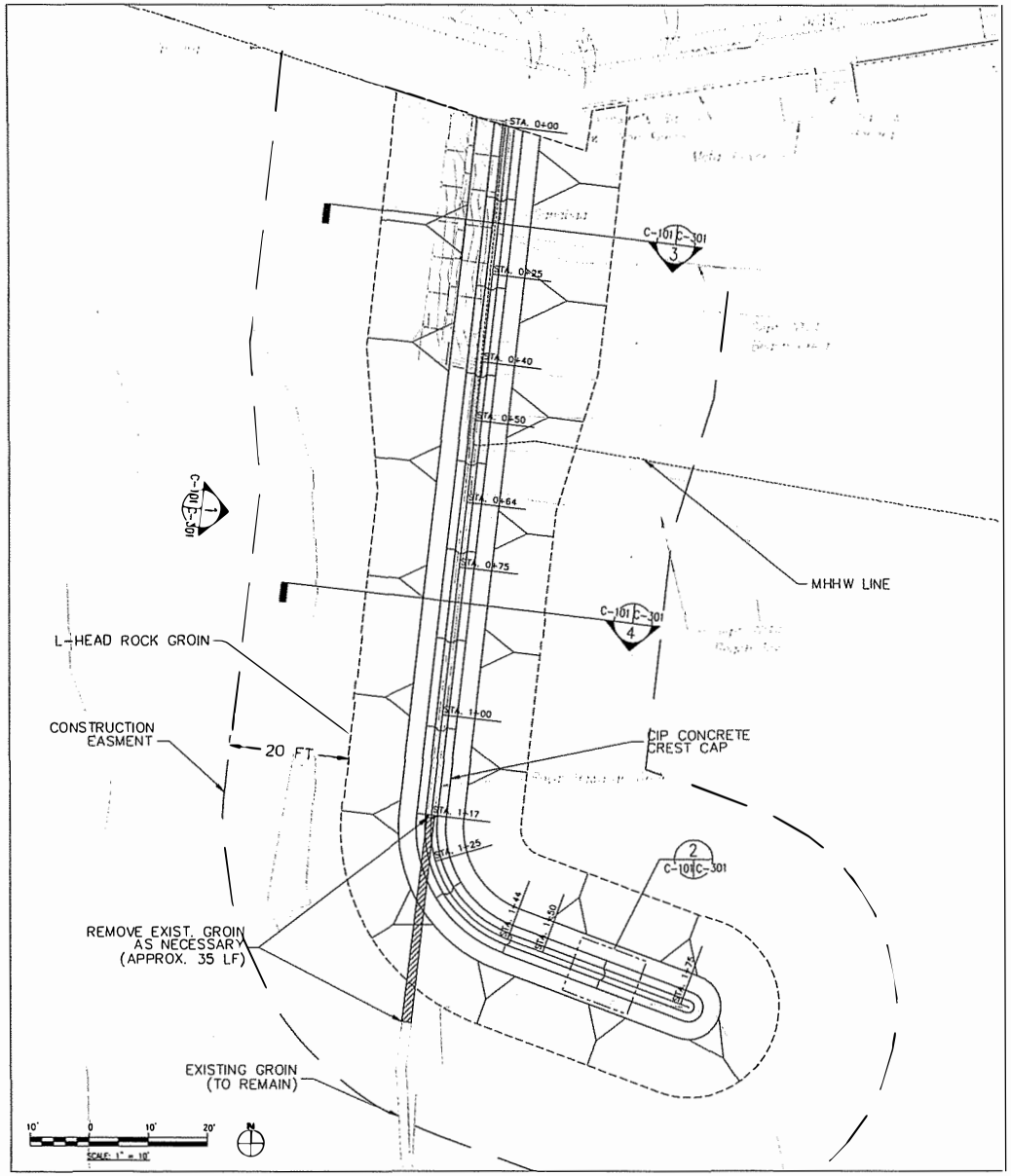
REVISION	DATE

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT
HONOLULU, OAHU, HAWAII

PROJECT NUMBER: 25516
CLIENT: DLNR-OCCL
PROJECT ENGINEER: DS
DRAWN BY: DL
CHECKED BY: SS
SCALE: VARIES
SHEET SIZE: ANSI D (22"X34")
DATE: NOVEMBER 19, 2018

WATER QUALITY PROTECTION PLAN

DRAWING NO.: G-102
SHEET NO.: 3 of 7



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WAIMANALO, HI 96795
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WWW.SEAENGINEERING.COM

REVISION	DATE

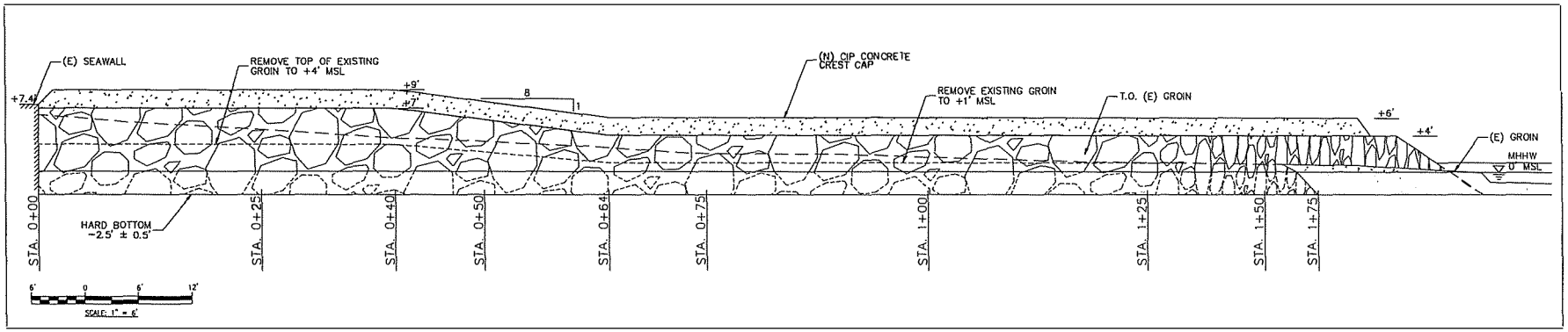
ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT

HONOLULU, OAHU, HAWAII

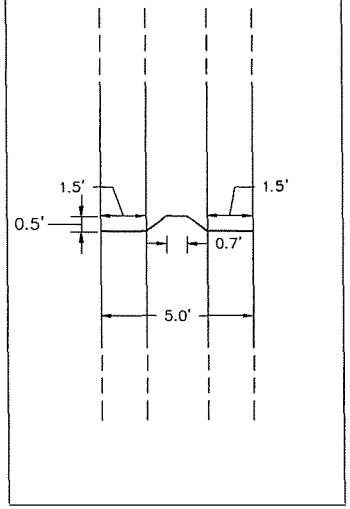
PROJECT NUMBER:	25516
CLIENT:	DLNR-OCCL
PROJECT ENGINEER:	DS
DRAWN BY:	DL
CHECKED BY:	SS
SCALE:	VARIES
SHEET SIZE:	ANSI D (22"X34")
DATE:	NOVEMBER 19, 2018

GROIN PLAN

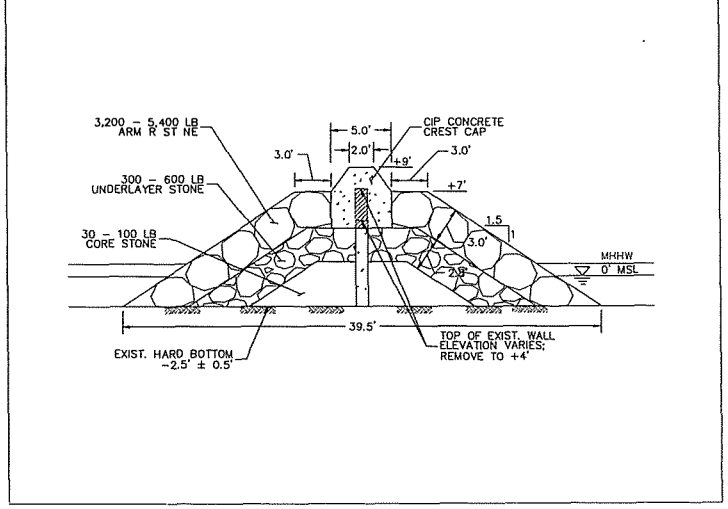
DRAWING NO.:	SHEET NO.:
C-101	4 of 7



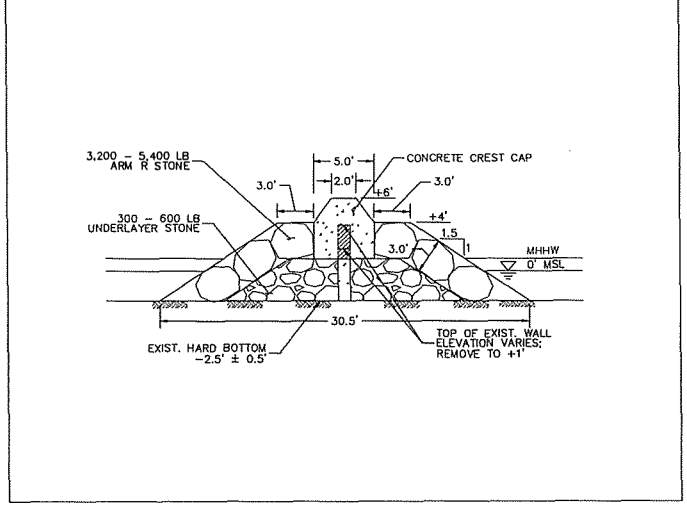
1 C-101 C-301 GROIN ELEVATION SCALE: 1" = 6'



2 C-101 C-301 CONCRETE CREST CAP JOINT DETAIL SCALE: 1" = 2"



3 C-101 C-301 TYPICAL SECTION – STA. 0+00 TO STA. 0+40 SCALE: 1" = 5'



4 C-101 C-301 TYPICAL SECTION – STA. 0+64 TO STA. 1+75 SCALE: 1" = 5'

30% DESIGN DRAWINGS NOT FOR CONSTRUCTION

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808.259.7966
WWW.SEAENGINEERINC.COM

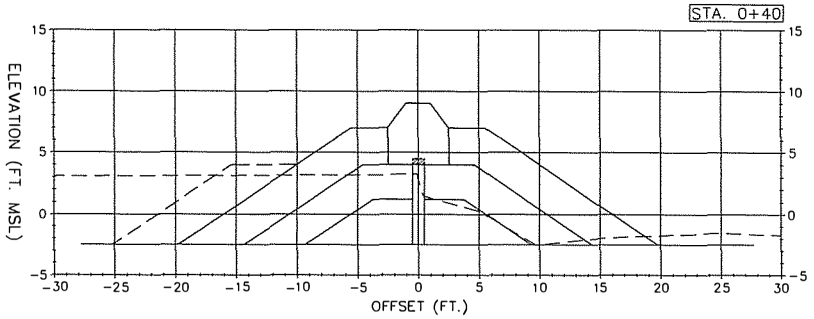
REVISION	DATE

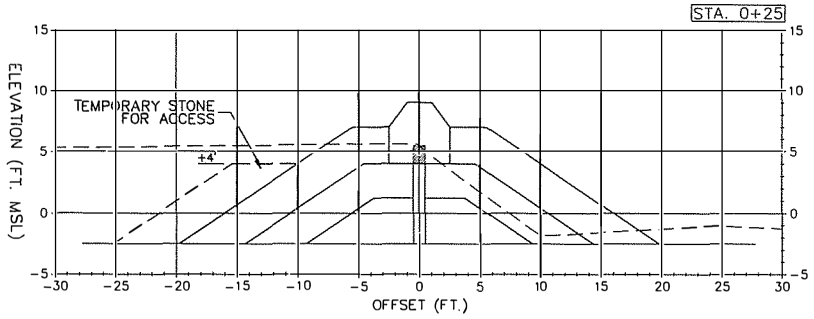
ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT
HONOLULU, OAHU, HAWAII

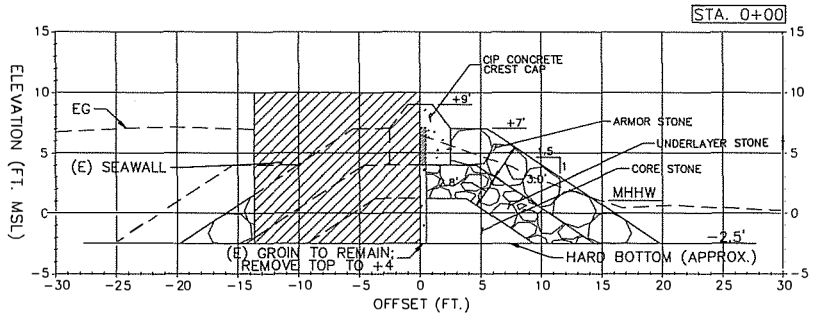
PROJECT NUMBER: 25516	
CLIENT: DLNR-OCCL	
PROJECT ENGINEER: DS	
DRAWN BY: OL	
CHECKED BY: SS	
SCALE: VARIES	
SHEET SIZE: ANSI D (22"X34")	
DATE: JANUARY 3, 2019	

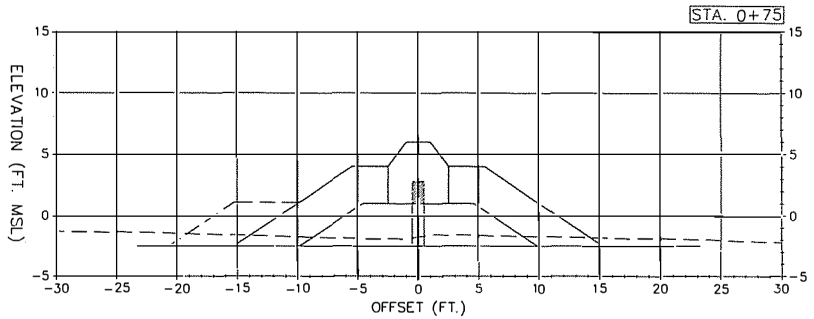
DETAILS AND TYPICAL SECTIONS

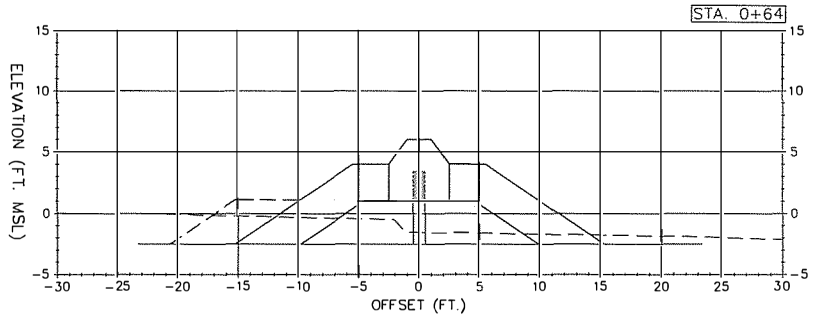
DRAWING NO.:	SHEET NO.:
C-301	5 of 7

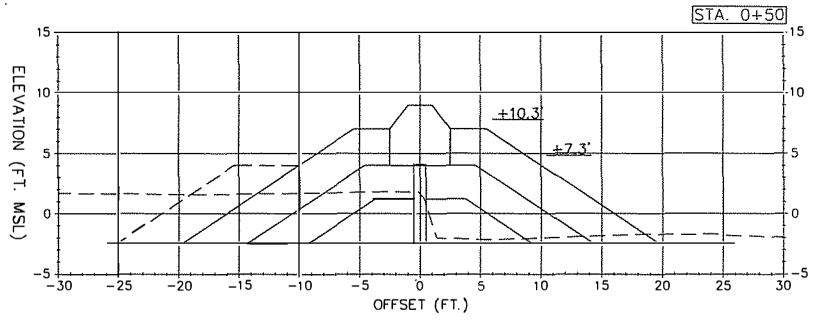












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808.259.7966
WWW.SEAENGINEERING.COM

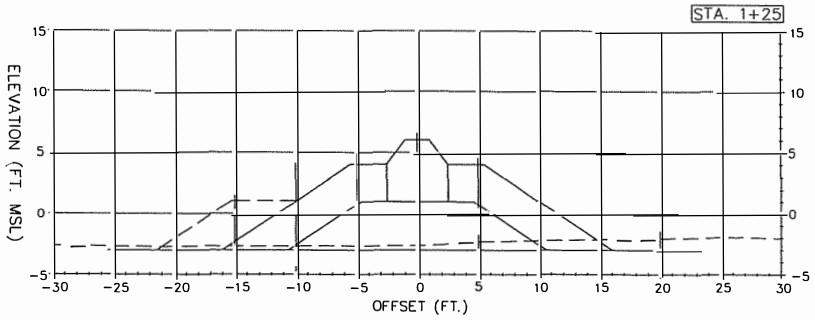
REVISION	DATE

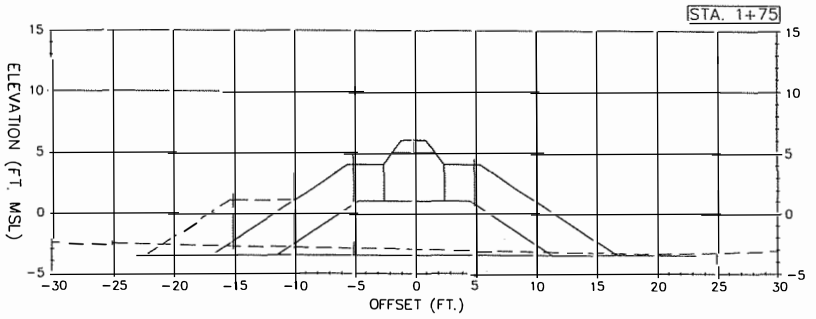
ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT
HONOLULU, OAHU, HAWAII

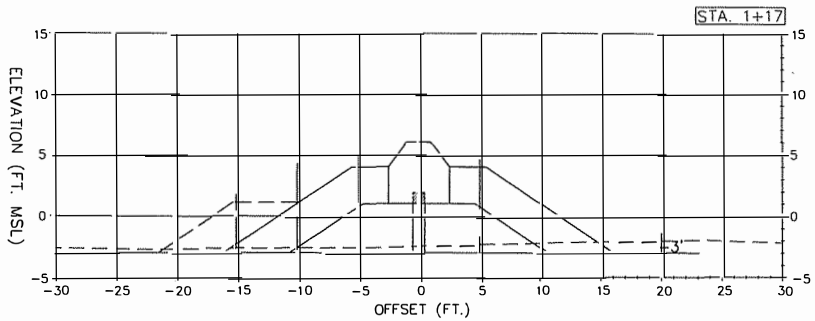
PROJECT NUMBER:	25516
CLIENT:	DLNR-OCCL
PROJECT ENGINEER:	DS
DRAWN BY:	DL
CHECKED BY:	SS
SCALE:	1" = 5'
SHEET SIZE:	ANSI D (22"X34")
DATE:	NOVEMBER 19, 2018

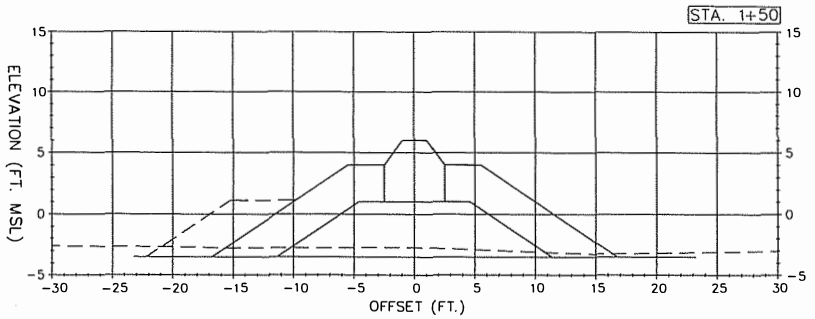
CROSS SECTIONS STA. 0+00 TO 0+75

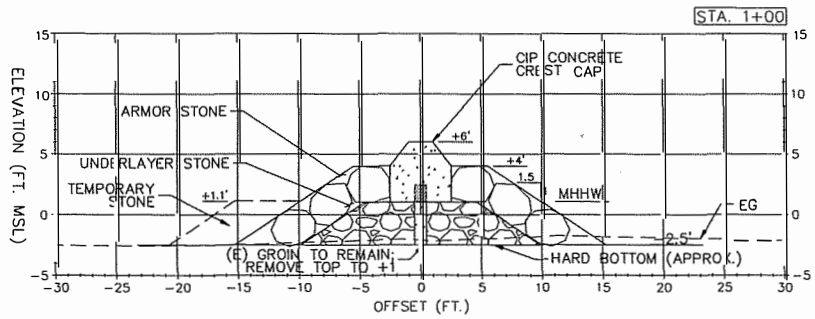
DRAWING NO.:	SHEET NO.:
C-501	6 of 7

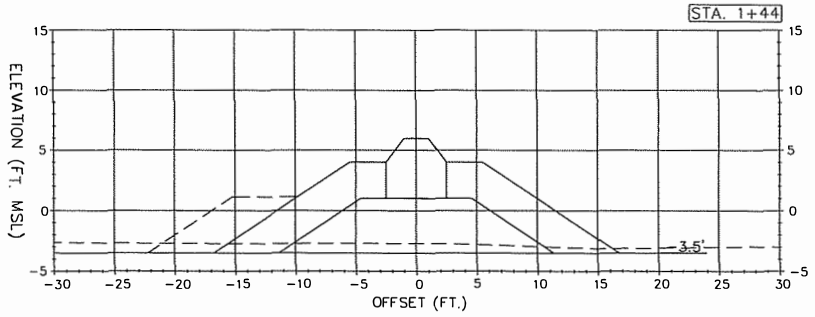












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808.259.7966
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REVISION	DATE

ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT

HONOLULU, OAHU, HAWAII

PROJECT NUMBER: 25516
CLIENT: DLNR-DOCL
PROJECT ENGINEER: DS
DRAWN BY: DL
CHECKED BY: SS
SCALE: 1" = 5'
SHEET SIZE: ANSI D (22"X34")
DATE: NOVEMBER 19, 2018

CROSS SECTIONS STA. 1+00 TO 1+75

DRAWING NO.:	SHEET NO.:
C-502	7 of 7

AMENDED AND RESTATED MEMORANDUM OF UNDERSTANDING (ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT)

This amended and restated memorandum of understanding ("MOU"), dated _____, outlines the agreement between the State of Hawaii, Department of Land and Natural Resources ("DLNR") and the Waikiki Beach Special Improvement District Association ("WBSIDA") regarding the Royal Hawaiian Groin Improvement Project at Waikiki, Oahu, Hawaii.

RECITALS

A. WBSIDA and DLNR enter into this MOU regarding the joint funding of the construction of the Royal Hawaiian Groin Improvement Project (the "Project").

B. The Project entails construction for the improvement of the Royal Hawaiian Groin, an engineered shoreline erosion control structure at the Ewa (West) end of Waikiki Beach which has been in place since 1927 and is at risk of failure.

C. The intent of the Project is to protect and preserve the beach resource at Waikiki for the benefit of the public at large, to alleviate hazards to upland development from long-term and seasonal beach erosion, and to plan for and design the optimal solution for beach stabilization in full compliance with environmentally sound planning and design principles as determined through the establishment of an acceptable design and environmental assessment ("EA"), to gain all permitting necessary to initiate the project, and to provide for construction.

D. DLNR engaged the services of a coastal engineering company, to produce the EA and a comprehensive conceptual design report. The final EA and Finding of No Significant Impact for the Project were published on the Office of Environmental Quality Control website on May 23, 2016. The Board of Land and Natural Resources approved the State Conservation District Use Application for the Project on June 9, 2017. DLNR has also engaged the services of a coastal engineering company to complete permitting and design for the Project.

E. DLNR will manage planning, permitting, and construction for the Project.

F. On February 23, 2017, DLNR entered into a Memorandum of Understanding with WBSIDA regarding a cost-share mechanism for the Project when the Project was estimated to cost $1,500,000 to complete, with WBSIDA to contribute $750,000 as its share. DLNR now estimates the cost of $2,500,000 for the Project, for which a 50% cost match is required from public and private partners. Thus, the purpose of the MOU is to provide the mechanism by which WBSIDA will deposit $1,250,000 with DLNR to cover the costs for construction of the Project. The source of public and private funds for the cost match is from WBSIDA through financing from the Waikiki Beach Special Improvement District No. 3.

EXHIBIT 5

G. The WBSIDA Board of Directors approved an increase of the WBSIDA contribution to $1,250,000 on February 28, 2018, in accordance with the terms of this MOU.

H. DLNR and WBSIDA desire to memorialize their understanding of the terms and conditions upon which DLNR and WBSIDA will fund the construction for the Project in this MOU.

Now, THEREFORE, the terms of the MOU are as follows:

1. Estimated Cost of Project: The current estimated cost for the construction for the Project ("MOU Work") is approximately TWO MILLION FIVE HUNDRED THOUSAND DOLLARS ($2,500,000.00).

2. Joint Funding of the Project: DLNR and WBSIDA agree to jointly fund the MOU Work, with WBSIDA and DLNR each, respectively, funding 50% of the total cost.

3. Contribution: WBSIDA agrees to contribute to DLNR ONE MILLION TWO HUNDRED AND FIFTY THOUSAND DOLLARS ($1,250,000.00) (the "WBSIDA Contribution"), upon and subject to the terms and conditions set forth in this MOU.

4. Use of WBSIDA Contribution: The WBSIDA Contribution shall be used solely as set forth in the MOU to fund the MOU Work.

5. Deposit of the WBSIDA Contribution: The WBSIDA Contribution shall be held in a separate account and shall not be commingled with other funds of the State. WBSIDA shall deposit the WBSIDA Contribution upon written request from DLNR to WBSIDA.

6. Payment of Money for MOU Work: DLNR shall make each progress payment for the MOU Work by making payments by or on behalf of DLNR and from the WBSIDA separate account in equal amounts.

7. Return of Funds: The WBSIDA Contribution or any portion thereof remaining, as the situation may be, shall be returned to WBSIDA as set forth herein below:

    a. If for any reason DLNR is unable to award a contract for the MOU Work by June 30, 2020, DLNR shall provide written notification to WBSIDA and shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA. If, however, DLNR is unable to award a contract because the bid opening reveals that the total cost of the MOU Work is expected to exceed $2,500,000.00, the parties shall, in good faith, discuss potential options for moving forward with the MOU Work prior to the return of any unused portion of the WBSIDA Contribution to WBSIDA.

b. If for any reason a contract for the MOU Work is awarded but there are circumstances that arise by June 30, 2020, that prevent or otherwise make impracticable the contract's completion, then upon termination or cancellation of the contract, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

c. If, after the DLNR's final acceptance of the MOU Work and DLNR's final payment is made, there is an unused portion of the WBSIDA Contribution, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

8. Miscellaneous Provisions:

a. Supersedes Previous Agreements. This MOU supersedes the Memorandum of Understanding, dated February 23, 2017, and all prior or contemporaneous negotiations, commitments, agreements (written or oral), or writings between DLNR and WBSIDA relating to the subject matter of this agreement.

b. Partial Invalidity: If any provision of the MOU or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remaining provisions of this MOU, or the application of such provision to person or circumstances other than those as to which it is invalid or unenforceable, shall not be affected.

c. Governing Law: This MOU shall be construed, interpreted and applied in accordance with the laws of the State of Hawaii.

d. No Warranty: Nothing in this MOU shall be construed as a warranty or guaranty of the successful or full completion of the Project or the MOU Work, or of the quality of the Project or the MOU Work.

e. No Third Party Beneficiaries: No term or provision of the MOU is intended to be, or shall it be, for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

f. No Partnership: Any intention to create a joint venture or partnership relation between the parties hereto is hereby expressly disclaimed.

g. Modifications: This MOU may not be modified except by a written agreement signed by both parties.

h. Binding on and Inuring to Benefit of Successors and Assigns: This MOU shall be binding upon, and shall insure to the benefit of the parties, and their respective successors and assigns.

i. Notices: All notices and other communications in connection with this MOU shall be in writing and shall be deemed to have been received by a party when actually received in the case of hand delivery, facsimile transmission, e-mail, or internationally recognized courier services, or three (3) days after being sent by United States mail, as the case may be, using the information of the DLNR and WBSIDA as shown below. Any refusal to accept delivery of a written notice delivered or mailed to the addresses set forth below resulting in non-operation of the receiving party's facsimile equipment, shall be deemed to be receipt of such notice for the purpose of this MOU.

DLNR: Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street
Honolulu, Hawaii 96822
Facsimile No.: (808) 587-0377

WBSIDA: Waikiki Beach Special Improvement District Association
2250 Kalakaua Avenue, Suite 315
Honolulu, Hawaii 96815
Facsimile No.: (808) 923-2622

i. Counterparts; Facsimile Execution: The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding upon all of the parties hereto, notwithstanding that all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. An executed counterpart of this instrument transmitted and received by facsimile or email shall be deemed for all purposes to be an original, executed counterpart thereof.

IN WITNESS WHEREOF, DLNR and WBSIDA have executed this Memorandum of Understanding as of the date stated above.

Waikiki Beach Special Improvement District Association

By:_____

Print name:_____

Title:_____

Approved as to form:

By:_____
David D. Day
Deputy Attorney General

State of Hawaii, Department of Land and Natural Resources

By:_____
Suzanne D. Case, Chairperson
Board of Land and Natural Resources

Approved by the Board of Land and Natural Resources at its meeting held on

AMENDED AND RESTATED MEMORANDUM OF UNDERSTANDING
(ROYAL HAWAIIAN GROIN IMPROVEMENT PROJECT)

This amended and restated memorandum of understanding ("MOU"), dated _____, outlines the agreement between the State of Hawaii, Department of Land and Natural Resources ("DLNR") and the Waikiki Beach Special Improvement District Association ("WBSIDA") regarding the Royal Hawaiian Groin Improvement Project at Waikiki, Oahu, Hawaii.

RECITALS

A. WBSIDA and DLNR enter into this MOU regarding the joint funding of the construction~~, construction monitoring, environmental monitoring, and after action report~~ of the Royal Hawaiian Groin Improvement Project (the "Project").

B. The Project ~~will~~ entails ~~planning, design, permitting,~~ construction~~, construction monitoring, environmental monitoring, and an after action report~~ for the improvement of the Royal Hawaiian Groin, an engineered shoreline erosion control structure at the Ewa (West) end of Waikiki Beach which has been in place since 1927 and is at risk of failure.

C. The intent of the Project is to protect and preserve the beach resource at Waikiki for the benefit of the public at large, to alleviate hazards to upland development from long-term and seasonal beach erosion, and to plan for and design the optimal solution for beach stabilization in full compliance with environmentally sound planning and design principles as determined through the establishment of an acceptable design and environmental assessment ("EA"), to gain all permitting necessary to initiate the project, and to provide for construction~~, construction monitoring, environmental monitoring, and an after action report~~.

D. DLNR engaged the services of a coastal engineering company, to produce the EA and a comprehensive conceptual design report. The final EA and Finding of No Significant Impact for the Project were published on the Office of Environmental Quality Control website on May 23, 2016. The Board of Land and Natural Resources approved the State Conservation District Use Application for the Project on June 9, 2017. DLNR has also engaged the services of a coastal engineering company to complete permitting and design for the Project. ~~The State of Hawaii has appropriated $1,500,000, total, for the Project, for which a 50% cost match is required from public and private partners. Thus, the purpose of the MOU is to provide the mechanism by which WBSIDA will deposit $750,000 with DLNR to cover the costs of construction, construction monitoring, environmental monitoring, and an after action report for the Project. The source of public and private funds for the cost match is from WBSIDA through financing from the Waikiki Beach Special Improvement District No. 3.~~

E. DLNR will manage planning, permitting, and construction for the Project.

EXHIBIT 5

F. On February 23, 2017, DLNR entered into a Memorandum of Understanding with WBSIDA regarding a cost-share mechanism for the Project when the Project was estimated to cost $1,500,000 to complete, with WBSIDA to contribute $750,000 as its share. DLNR now estimates the cost of $2,500,000 for the Project, for which a 50% cost match is required from public and private partners. Thus, the purpose of the MOU is to provide the mechanism by which WBSIDA will deposit $1,250,000 with DLNR to cover the costs for construction of the Project. The source of public and private funds for the cost match is from WBSIDA through financing from the Waikiki Beach Special Improvement District No. 3.

G. The WBSIDA Board of Directors approved an increase of the WBSIDA contribution to $1,250,000 on February 28, 2018, in accordance with the terms of this MOU.

H. DLNR and WBSIDA desire to memorialize their understanding of the terms and conditions upon which DLNR and WBSIDA will fund the construction~~, construction monitoring, environmental monitoring, and an after action report~~ for the Project in this MOU.

Now, THEREFORE, the terms of the MOU are as follows:

1. Estimated Cost of Project: The current estimated cost for the construction~~, construction monitoring, environmental monitoring, and an after action report~~ for the Project ("MOU Work") is approximately ~~ONE~~ TWO MILLION FIVE HUNDRED THOUSAND DOLLARS ($2~~1~~,500,000.00).

2. Joint Funding of the Project: DLNR and WBSIDA agree to jointly fund the MOU Work, with WBSIDA and DLNR each, respectively, funding 50% of the total cost.

3. Contribution: WBSIDA agrees to contribute to DLNR ~~SEVEN~~ ONE MILLION TWO HUNDRED AND FIFTY THOUSAND DOLLARS ($1,2~~7~~50,000.00) (the "WBSIDA Contribution"), upon and subject to the terms and conditions set forth in this MOU.

4. Use of WBSIDA Contribution: The WBSIDA Contribution shall be used solely as set forth in the MOU to fund the MOU Work.

5. Deposit of the WBSIDA Contribution: The WBSIDA Contribution shall be held in a separate account and shall not be commingled with other funds of the State. WBSIDA shall deposit the WBSIDA Contribution upon written request from DLNR to WBSIDA.

6. Payment of Money for MOU Work: DLNR shall make each progress payment for the MOU Work by making payments by or on behalf of DLNR and from the WBSIDA separate account in equal amounts.

7. Return of Funds: The WBSIDA Contribution or any portion thereof remaining, as the situation may be, shall be returned to WBSIDA as set forth herein below:

a. If for any reason DLNR is unable to award a contract for the MOU Work by June 30, 202018, DLNR shall provide written notification to WBSIDA and shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA. If, however, DLNR is unable to award a contract because the bid opening reveals that the total cost of the MOU Work is expected to exceed $21,500,000.00, the parties shall, in good faith, discuss potential options for moving forward with the MOU Work prior to the return of any unused portion of the WBSIDA Contribution to WBSIDA.

b. If for any reason a contract for the MOU Work is awarded but there are circumstances that arise by June 30, 20182020, that prevent or otherwise make impracticable the contract's completion, then upon termination or cancellation of the contract, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

c. If, after the DLNR's final acceptance of the MOU Work and DLNR's final payment is made, there is an unused portion of the WBSIDA Contribution, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

8. Miscellaneous Provisions:

a. Supersedes Previous Agreements. This MOU supersedes the Memorandum of Understanding, dated February 23, 2017, and all prior or contemporaneous negotiations, commitments, agreements (written or oral), or writings between DLNR and WBSIDA relating to the subject matter of this agreement.

b. Partial Invalidity: If any provision of the MOU or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remaining provisions of this MOU, or the application of such provision to person or circumstances other than those as to which it is invalid or unenforceable, shall not be affected.

c. Governing Law: This MOU shall be construed, interpreted and applied in accordance with the laws of the State of Hawaii.

d. No Warranty: Nothing in this MOU shall be construed as a warranty or guaranty of the successful or full completion of the Project or the MOU Work, or of the quality of the Project or the MOU Work.

e. No Third Party Beneficiaries: No term or provision of the MOU is intended to be, or shall it be, for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

f. No Partnership: Any intention to create a joint venture or partnership relation between the parties hereto is hereby expressly disclaimed.

g. Modifications: This MOU may not be modified except by a written agreement signed by both parties.

h. Binding on and Inuring to Benefit of Successors and Assigns: This MOU shall be binding upon, and shall insure to the benefit of the parties, and their respective successors and assigns.

i. Notices: All notices and other communications in connection with this MOU shall be in writing and shall be deemed to have been received by a party when actually received in the case of hand delivery, facsimile transmission, e-mail, or internationally recognized courier services, or three (3) days after being sent by United States mail, as the case may be, using the information of the DLNR and WBSIDA as shown below. Any refusal to accept delivery of a written notice delivered or mailed to the addresses set forth below resulting in non-operation of the receiving party's facsimile equipment, shall be deemed to be receipt of such notice for the purpose of this MOU.

DLNR: Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street
Honolulu, Hawaii 96822
Facsimile No.: (808) 587-0377

WBSIDA: Waikiki Beach Special Improvement District Association
2250 Kalakaua Avenue, Suite 315
Honolulu, Hawaii 96815
Facsimile No.: (808) 923-2622

i. Counterparts; Facsimile Execution: The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding upon all of the parties hereto, notwithstanding that all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. An executed counterpart of this instrument transmitted and received by facsimile or email shall be deemed for all purposes to be an original, executed counterpart thereof.

IN WITNESS WHEREOF, DLNR and WBSIDA have executed this Memorandum of Understanding as of the date stated above.

Waikiki Beach Special Improvement District Association

By:_____

Print name:_____

Title:_____

Approved as to form:

By:_____
David D. Day
Deputy Attorney General

State of Hawaii, Department of Land and Natural Resources

By:_____
Suzanne D. Case, Chairperson
Board of Land and Natural Resources

Approved by the Board of Land and Natural Resources at its meeting held on ~~February 12, 2016~~

MEMORANDUM OF UNDERSTANDING
(KUHIO STUB GROIN PROJECT)

This memorandum of understanding ("MOU"), dated _____, outlines the agreement between the State of Hawaii, Department of Land and Natural Resources ("DLNR") and the Waikiki Beach Special Improvement District Association ("WBSIDA") regarding the Kuhio Stub Groin and Sand Back Passing Project at Waikiki, Oahu, Hawaii.

RECITALS

A. WBSIDA and DLNR enter into this MOU regarding the joint funding of the construction, construction monitoring, environmental monitoring, and after action report of the Kuhio Stub Groin and Sand Back Passing Project (the "Project").

B. The Project will entail construction, construction monitoring, environmental monitoring, and an after action report for the construction of a 95-foot-long sandbag groin (Kuhio Stub Groin), and placement of beach fill utilizing sand borrowed from Kuhio Beach Park.

C. The intent of the Project is to protect and preserve the beach resource at Waikiki for the benefit of the public at large, to alleviate hazards to upland development from long-term and seasonal beach erosion, and to plan for and design the optimal solution for beach stabilization in full compliance with environmentally sound planning and design principles as determined through the establishment of an acceptable design, to gain all permitting necessary to initiate the project, and to provide for construction, construction monitoring, environmental monitoring, and an after action report.

   DLNR engaged the services of a coastal engineering company, to produce the comprehensive conceptual design report. DLNR has also engaged the services of a coastal engineering company to complete permitting and design for the Project. The State is paying for these services through an existing contract. The State estimates the cost of construction, construction monitoring, environmental monitoring, and after action report to cost a total of $670,000, for which a 50% cost match is required from public and private partners. Thus, the purpose of the MOU is to provide the mechanism by which WBSIDA will deposit $335,000 with DLNR to cover the costs of construction, construction monitoring, environmental monitoring, and an after action report for the Project.

D. DLNR will manage planning, permitting, and construction for the Project.

E. DLNR and WBSIDA desire to memorialize their understanding of the terms and conditions upon which DLNR and WBSIDA will fund the construction for the Project in this MOU.

EXHIBIT 6

Now, THEREFORE, the terms of the MOU are as follows:

1. Estimated Cost of Project: The current estimated cost for the construction for the Project ("MOU Work") is approximately SIX HUNDRED AND SEVENTY THOUSAND DOLLARS ($670,000.00).

2. Joint Funding of the Project: DLNR and WBSIDA agree to jointly fund the MOU Work, with WBSIDA and DLNR each, respectively, funding 50% of the total cost.

3. Contribution: WBSIDA agrees to contribute to DLNR THREE HUNDRED AND THIRTY FIVE THOUSAND DOLLARS ($335,000.00) (the "WBSIDA Contribution"), upon and subject to the terms and conditions set forth in this MOU.

4. Use of WBSIDA Contribution: The WBSIDA Contribution shall be used solely as set forth in the MOU to fund the MOU Work.

5. Deposit of the WBSIDA Contribution: The WBSIDA Contribution shall be held in a separate account and shall not be commingled with other funds of the State. WBSIDA shall deposit the WBSIDA Contribution upon written request from DLNR to WBSIDA.

6. Payment of Money for MOU Work: DLNR shall make each progress payment for the MOU Work by making payments by or on behalf of DLNR and from the WBSIDA separate account in equal amounts.

7. Return of Funds: The WBSIDA Contribution or any portion thereof remaining, as the situation may be, shall be returned to WBSIDA as set forth herein below:

    a. If for any reason DLNR is unable to award a contract for the MOU Work by June 30, 2020, DLNR shall provide written notification to WBSIDA and shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA. If, however, DLNR is unable to award a contract because the bid opening reveals that the total cost of the MOU Work is expected to exceed $670,000.00, the parties shall, in good faith, discuss potential options for moving forward with the MOU Work prior to the return of any unused portion of the WBSIDA Contribution to WBSIDA.

    b. If for any reason a contract for the MOU Work is awarded but there are circumstances that arise by June 30, 2020, that prevent or otherwise make impracticable the contract's completion, then upon termination or cancellation of the contract, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

    c. If, after the DLNR's final acceptance of the MOU Work and DLNR's final payment is made, there is an unused portion of the WBSIDA Contribution, DLNR shall promptly return any unused portion of the WBSIDA Contribution to WBSIDA.

8. Miscellaneous Provisions:

a. Partial Invalidity: If any provision of the MOU or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remaining provisions of this MOU, or the application of such provision to person or circumstances other than those as to which it is invalid or unenforceable, shall not be affected.

b. Governing Law: This MOU shall be construed, interpreted and applied in accordance with the laws of the State of Hawaii.

c. No Warranty: Nothing in this MOU shall be construed as a warranty or guaranty of the successful or full completion of the Project or the MOU Work, or of the quality of the Project or the MOU Work.

d. No Third Party Beneficiaries: No term or provision of the MOU is intended to be, or shall it be, for the benefit of any person, firm, organization, or corporation not a party hereto, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder.

e. No Partnership: Any intention to create a joint venture or partnership relation between the parties hereto is hereby expressly disclaimed.

f. Modifications: This MOU may not be modified except by a written agreement signed by both parties.

g. Binding on and Inuring to Benefit of Successors and Assigns: This MOU shall be binding upon, and shall insure to the benefit of the parties, and their respective successors and assigns.

h. Notices: All notices and other communications in connection with this MOU shall be in writing and shall be deemed to have been received by a party when actually received in the case of hand delivery, facsimile transmission, e-mail, or internationally recognized courier services, or three (3) days after being sent by United States mail, as the case may be, using the information of the DLNR and WBSIDA as shown below. Any refusal to accept delivery of a written notice delivered or mailed to the addresses set forth below resulting in non-operation of the receiving party's facsimile equipment, shall be deemed to be receipt of such notice for the purpose of this MOU.

DLNR: Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street

Honolulu, Hawaii 96822
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i. Counterparts; Facsimile Execution: The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding upon all of the parties hereto, notwithstanding that all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. An executed counterpart of this instrument transmitted and received by facsimile or email shall be deemed for all purposes to be an original, executed counterpart thereof.

IN WITNESS WHEREOF, DLNR and WBSIDA have executed this Memorandum of Understanding as of the date stated above.

Waikiki Beach Special Improvement District Association

By:_____

Print name:_____

Title:_____

Approved as to form:

By:_____
David D. Day
Deputy Attorney General

State of Hawaii, Department of Land and Natural Resources

By:_____
Suzanne D. Case, Chairperson
Board of Land and Natural Resources

Approved by the Board of Land and Natural Resources at its meeting held on

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

DEAN D. UYENO
ACTING DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DLNR:OCCL:SH

File: SSBN OA-19-04

MEMORANDUM:

TO: Samuel Lemmo, Administrator
Office of Conservation and Coastal Lands

FROM: Suzanne Case, Chairperson
Department of Land and Natural Resources

SUBJECT: **NOTICE OF APPROVAL OF CATEGORY II SMALL-SCALE BEACH NOURISHMENT (SSBN) CONSERVATION DISTRICT USE PERMIT (CDUP)**, Kuhio Beach Stub Groin and Sand Back Passing Small Scale Beach Nourishment Project, Waikiki, Oahu; TMK: (1) 2-6-001:003 and 008 (seaward)

This is to inform you that on April 8, 2019 the Chair of the Board of Land and Natural Resources (BLNR) approved Category II Small-Scale Beach Nourishment (SSBN) Conservation District Use Permit (CDUP) No. SSBN OA-19-04 for the Kuhio Beach Stub Groin and Sand Back Passing project, located in Waikiki, Oahu. A copy of the Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands' (OCCL) report and recommendation to the BLNR Chair is enclosed for your reference.

TERMS AND CONDITIONS

The project is subject to the following Terms and Conditions:

1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the Federal, State, and County governments, and applicable parts of Chapter 13- 5, HAR;

2. The applicant shall comply with all applicable Department of Health administrative rules;

3. Any work or construction to be done on the land shall be initiated within one (1) year of the approval of such use, in accordance with construction plans that have been signed by the Chairperson, and, unless otherwise authorized, shall be completed within three (3) years of the approval of such use;

EXHIBIT 7

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

5. Work shall be conducted at low tide during minimal rainfall and 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;

6. Authorization of the sand use and placement is contingent upon review and approval of the sand by the Department. The sand shall meet the following State quality standards:

    a. The proposed fill sand shall not contain more than six (6) percent fines, defined as the #200 sieve (0.074 mm);

    b. The proposed beach fill sand shall not contain more than ten (10) percent coarse sediment, defined as the #4 sieve (4.76 mm) and shall be screened to remove any non-beach compatible material and rubble;

    c. No more than 50 (fifty) percent of the fill sand shall have a grain diameter less than 0.125 mm as measured by #120 Standard Sieve Mesh;

    d. Beach fill shall be dominantly composed of naturally occurring carbonate beach or dune sand. Crushed limestone or other man-made or non-carbonate sands are unacceptable;

7. Sand used for beach maintenance shall be screened of course material (rocks) and any non-beach compatible material;

8. To avoid encroachments upon the area, the applicant shall not use artificially accreted areas due to nourishment as indicators of the shoreline;

9. The applicant shall implement Best Management Practices (BMPs) to minimize dirt and silt from entering the ocean and the ability to contain and clean up fuel, fluid, or oil spills immediately for projects authorized under this authorization and immediately report any spill(s) or other contamination(s) that occurs at the project site to the Department of Health and other appropriate agencies;

8. The applicant shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of the all appropriate agencies, through silt containment devices or barriers, high sand quality and selective sand placement;

9. Appropriate safety and notification procedures shall be carried out. 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;

10. 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;

11. A survey of the project area shall be conducted prior to commencement of the proposed activities to ensure no protected marine species are in the project area. If protected species are detected activities shall be postponed until the animal(s) voluntarily leave the area. All on-site personnel shall be apprised of the status of any protected species;

12. At the conclusion of work, the applicant shall clean and restore the site to a condition acceptable to the Chairperson;

13. 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;

14. The permittee, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;

15. The permittee shall obtain appropriate authorization from the department for the occupancy of state lands, if applicable;

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

17. 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;

18. 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;

19. 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;

20. For all landscaped areas, landscaping and irrigation shall be contained and maintained within the property, and shall under no circumstances extend seaward of the shoreline as defined in section 205A-1, HRS;

21. Artificial light from exterior lighting fixtures, including but not limited to floodlights, uplights, or spotlights used for decorative or aesthetic purposes, shall be prohibited if the light directly illuminates or is directed to project across property boundaries toward the shoreline and ocean waters, except as may be permitted pursuant to section 205A-71, HRS. All exterior lighting shall be shielded to protect the night sky;

22. 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;

23. 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 contractor shall immediately contact HPD (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;

24. Other terms and conditions as prescribed by the chairperson;

25. Failure to comply with any of these conditions shall render a permit void under the chapter, as determined by the chairperson or board.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. **Please sign two copies. Retain one and return the other within thirty (30) days.**

I concur with the conditions of this letter:

SAMUEL LEMMO
Applicant's Name (Print)

Samuel Lemmo
Applicant's Signature

Date 4.9.19

CC: *DAR/HPD/LAND*
DOH-CWB/ACOE/ OHA/CZM
DPP

Attachments: *OCCL Staff Report*

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
Honolulu, Hawai`i
March 20, 2018

FILE NO.: SSBN OA-19-04

Chairperson's Office
Department of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

REGARDING: Conservation District Use Application for Category II Small Scale Beach Nourishment (SSBN) OA-19-4 for the Kuhio Beach Stub Groin and Back Passing Small Scale Beach Nourishment Project, Located at Waikiki Beach, Honolulu, Oahu, TMKs: (1) 2-6-001:003 and 008

APPLICANT: DLNR Office of Conservation and Coastal Lands

LANDOWNER: State of Hawaii

LOCATION: Kuhio Beach, Waikiki, Oahu

TMK: Shoreline fronting TMK: (1) 2-6-001:003 and 008

AREA OF USE: 1.25 acres

SUBZONE: Resource Subzone

BACKGROUND

The Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) is proposing a Category II Small Scale Beach Restoration (SSBN) project to fix an erosion hot spot on a portion of Royal Hawaiian Beach in Waikiki, Oahu **(Exhibits 1 and 2)** through groin construction and placement of approximately 750 cubic yards of sand.

The project was developed in response to an erosion hot spot that developed on the east end of Royal Hawaiian Beach that developed following the 2012 Waikiki Beach Maintenance Project which involved the demolition of two derelict sand bag groins (DLNR Ref: CDUA OA-2011-3558). As part of that project, approximately 27,000 cy of sand was recovered from an offshore deposit and pumped ashore to nourish the beach. Additionally, two short, old, and deteriorated cement-filled stacked bag groins **(Exhibits 3 and 4)** were removed from the eastern end of Royal Hawaiian Beach near the beach concessions.

A beach monitoring study conducted as part of the 2012 Waikiki Beach Maintenance Project reported steady erosion and beach recession of the eastern and western ends of the Royal

Hawaiian Beach sector **(Exhibit 5)**, with beach recession of about 4.5 feet per year at the eastern end fronting the beach concessions. The erosion exposed the old concrete foundation of the Waikiki Tavern **(Exhibit 6)**, which resulted in damage and flanking of the terminal structure at the eastern end of Royal Hawaiian Beach **(Exhibit 7)**. The exposed concrete foundation features displaced concrete rubble and rusting reinforcing steel, which has created an unsightly condition. Although the area is currently filled with sand, seasonal shifts in sediment transport will revert the area to an erosional condition.

Installation of a sand bag groin and beach fill utilizing sand borrowed from Kuhio Beach Park is proposed, with the objective of stabilizing the east end of Royal Hawaiian Beach and maintaining sand cover over the concrete foundation. The sand intended for fill is compatible with the existing beach following OCCL *Guidelines for SSBN Cat II General Application*. The project is intended to enhance the beach for public use, improve access for beachgoers by restoring the deflated beach volume, and covering the exposed foundation located at the back of the beach.

DESCRIPTION OF AREA

The proposed project site is located on Waikiki Beach, along the shoreline of Malama Bay on the south shore of Oahu, fronting TMK: (1) 2-6-001:003 and 008. The project site is at the boundary of two discrete Waikiki beach sectors – Kuhio Beach Park and Royal Hawaiian Beach, and fronts an open area used by beach concessionaires and was the site of the old Waikiki Tavern (ca. 1930s). It is in the Resource Subzone of the State Land Use Conservation District.

Kuhio Beach sector extends 1,460 feet from the Kapahulu storm drain to the western edge of two enclosed basins composed of groin and breakwater systems known as the crib walls; the western basin is known as the Ewa crib wall basin, while the eastern basin is known as the Diamond Head crib wall basin. Construction of the crib walls began in 1938, when a 700-foot long shore parallel breakwater was constructed, with shore return structures at each end to help retain sand. In 1952 a 703-foot long extension was added to the southeast end of the crib wall breakwater. Between 1972 and 1975, improvements were made to the Ewa crib wall, including increasing the height. Approximately 20,000+ cy of sand was placed on the beach. In 2000, approximately 1,400 cy of sand was pumped from an offshore deposit onto the Ewa crib wall basin, and in 2006 an additional 8,200 cy was pumped from offshore into the two basins.

The crib walls provide beach areas that are protected from wave action. This lack of wave energy reaching the shore prevents typical beach slope formation. Therefore, over time the sand slumps and moves from the shore into the basins. Thus, the beach face slopes in the basins are relatively flat, typically 1V:12H (as opposed to 1V:7H on the adjacent unprotected Royal Hawaiian Beach).

The Royal Hawaiian Beach sector extends 1,730 feet to the southeast from the Royal Hawaiian groin to the western extent of the Ewa crib wall basin. The beach sector fronts the Moana Surfrider, Outrigger Waikiki, and Royal Hawaiian hotels. There are no stabilizing structures along this reach, and the concave beach is held in place by the Royal Hawaiian groin, initially constructed in 1927 and rebuilt and lengthened in 1930.

The Royal Hawaiian groin and the western extent of the Ewa crib wall basin effectively prevent longshore sediment transport into and out of this beach sector. There is, however, longshore transport within the sector itself. In the nearshore waters there are wave generated longshore currents that are the major drivers of sediment transport direction and magnitude.

Sand can also be transported offshore by rip currents generated by large swells. A rip current has been noted in the vicinity of a paleo-channel that was formed when the Apuakehau Stream had flowed into the sea in the Royal Hawaiian Beach sector. The paleo-channel constitutes a low-lying bathymetric feature that provides a conduit for offshore sand loss.

Beach surveys following the 2012 beach nourishment project showed that the beach width decreased an average of 2.9 feet over the year following completion of the 2012 Waikiki Beach Maintenance Project. The width change varied by location within the sector, ranging from +5.7 feet in the central segment to -9.4 feet at the west end near the Royal Hawaiian groin. Continued monitoring of the 2012 beach nourishment project shows that after six years roughly half of the original 2012 width has been lost. The greatest loss of beach width has occurred at the east and west ends, with beach recession of 3 to 5 feet per year recently being experienced at the proposed project site. The monitoring also confirmed predominant longshore transport to the west and onshore-offshore transport through the deeper paleo stream channel. Shoreline change adjacent to the Kuhio groin between 2012 and 2018 is shown in Exhibit 5.

DESCRIPTION OF PROPOSED ACTION

The objective of the proposed project is to re-stabilize the eastern end of Royal Hawaiian Beach and to maintain sand cover over the concrete foundation by sand placement and construction of a groin **(Exhibit 8)**. The proposed groin would consist of a 95-foot ElcoRock geotextile structure installed 140 feet west of the Ewa crib wall basin along the eastern end of Royal Hawaiian Beach in Waikiki, Oahu. The proposed beach fill would entail transport of 750 cubic yards of sand from the beach face of the Diamond Head crib wall basin to the area between the Ewa crib wall basin and the proposed structure.

The 95-foot groin length is the minimum length necessary to ensure adequate beach width to keep the concrete rubble covered. The structure would have a crest elevation of +3.5 feet msl and would have a toe elevation of -2.8 feet. The groin would require 68 2.5m^3 sand-filled geotextile containers to construct, and 225 cy of sand to fill the containers.

Approximately 750 cy of sand will be required to cover the concrete rubble and fill the cell between groins to its design shape. The sand would be removed from the beach face using an excavator, and temporarily stockpiled on the basin backshore until being trucked to the fill site. The excavator would not operate in the water. Fill sand would be pushed into place between the western extent of the Ewa crib wall basin and the new geotextile groin using a small bulldozer. Trucking activity would require the temporary closure of the makai lane of Kalakaua Ave.

To determine quality of the sand source, the sand bottom seaward of the beach toe was probed along three transects (North, Mid, South) in both the Ewa and Diamond Head basins **(Exhibit 9)**. The transect profiles and the sand surface and hard refusal probe depth are shown in Exhibits 10 and 11. Water depths in the basins were typically 1 to 3 feet, and the jet probe refusal depth

(which often indicates hard bottom) was at elevations of -5 to -9 msl. Sand layer thickness ranged from about 5 to 8 feet **(Exhibit 9)**. Note that at the northern end of the Ewa basin, seaward of which there is a gap in the crib wall and thus limited wave protection, there is virtually no sand overlaying the hard bottom and a steeper beach face of about 1V:8H. Hammer push core sand samples were taken in each basin at the locations shown in Exhibit 9, and illustrations of the core depths and in situ sand color are also shown. Significant variation in sand color was noted in the cores, ranging from light brown/tan to dark gray almost black. The sand color variation is shown in **Exhibit 12.**

The dark gray/black sample rapidly changed to light gray with exposure to air and sunlight. Grain size analysis of the core samples shows an average median grain size of 0.42, and percent fine material (<0.074mm) ranging from 1.2 to 3.2. The sand is moderately sorted.

Sand for the geotextile containers would be obtained from the Pacific Aggregate, Inc. inland sand quarry. Filling and placing the containers would involve a small excavator for placing sand in the hopper of the filling stand. A medium size excavator (40 ton) would be used to transport and place the containers. An estimated 3 containers can be filled and placed per hour. Construction would proceed from the shore seaward. The beach within the groin footprint would be excavated down to the -2.8-foot elevation for placement of the first layer of containers, with excavated sand being side cast to the east. The first and second course of containers would be placed all the way to the end and would provide a stable platform above the water line for the placement equipment (excavator) to traverse. Groin construction would then proceed from the seaward end and work landward placing the third layer to complete the groin. Turbidity containment devices (silt curtains) would be placed around the area of groin construction and sand placement.

The proposed project is anticipated to take an estimated 10 days from mobilization on-site. Construction would require the closure of a portion of the beach in the vicinity of the groin installation and a portion of the Diamond Head basin for approximately two weeks to ensure the safety of the public. While the project area portion of the beach is closed, the area would be cordoned off with informative signs posted to ensure that the public does not enter the work site. The makai lane of Kalakaua Avenue near the project site would also need to be closed for part of the project duration to allow for trucks to deliver groin materials and transport sand from the Kuhio Beach Diamond Head Basin to the fill area. Crossing guards would be placed at designated crossings along the shoreline to assist the public in transiting across the access route while trucks are operating. Construction activities would also disrupt the business activity of the beach concessionaire located in the vicinity of the construction activity. The State and City and County will work with the beach vendor to develop a temporary relocation or activity consolidation plan to minimize impacts. The work specifications would specify that the construction is to be completed in the most time effective manner as possible so as to minimize the inconvenience of beach closure.

The proposed project is not intended to be a permanent improvement, thus ElcoRock geotextile containers are proposed for the groin construction. The Department is currently preparing an environmental impact statement that will propose a permanent solution to stabilize beach in this sector. ElcoRock is a coastal construction system utilizing robust geotextile containers designed

to be filled with sand and then placed to form a stable and durable structure. Large 2.5m³ containers are proposed to be used, each weighing approximately 10,000 pounds, which will provide a stable structure for the project site wave conditions. The large bags are also efficient to install and remove. The non-woven geotextile fabric is UV and vandal resistant, has excellent abrasion resistance, and its soft finish is attractive and non-abrasive. The design beach position would maintain a two-foot (2') vertical buffer of sand over the makai edge of the foundation.

In accordance with Department of Health Clean Water Branch Section 401 Water Quality Certification requirements, water quality test methods promulgated in 40 CFR, Part 136 and the chemical methodology for sea water analyses in HAR, §11-54-10 would be employed. If enterococcus bacteria monitoring were to exceed the Statistical Threshold Value (STV) of 130 per one hundred milliliters, warning signs would be posted, and daily monitoring would be conducted until the receiving water enterococcus count reads below 130 /100 ml. The specific criteria for enterococcus shall be expressed in colony forming units (CFU) per one hundred milliliters or as a most probable number (MPN) per one hundred milliliters, as specified by the analytical method used.

SUMMARY OF COMMENTS

The application was referred to the following agencies for their review and comment:

- DLNR Historic Preservation
- Department of Health, Clean Water Branch
- DLNR Division of Boating and Ocean Recreation
- DLNR Division of Aquatic Resources
- Department of Health, Clean Water Branch
- US Army Corps of Engineers

Responses were received from the following agencies:

DLNR Aquatic Resources (DAR)

The Division is supportive of this project with no major objections as the construction plan submitted by the applicant clearly details efforts to minimize impacts on the aquatic environment. With the foundation of the old Waikiki Tavern being exposed there is a clear need for this project for the safety of the public. No long term impacts to the marine environment are anticipated.

The Division is in agreement with the Best Management Practices (BMPs) outlines in the Basis of Design and Project Assessment. The only suggestion we have in addition to the already outlined BMPs is to try to schedule site work during periods of low tides and minimal rainfall to the extent possible, in order to minimize and control material flowing in and out of the construction area.

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.

Applicant's Response
We greatly appreciate comments received from DAR regarding the Kuhio Beach Groin and Sand Nourishment Project. The main comment from DAR was the suggestion that site work to be scheduled during period of low tides and minimal rainfall to the extent possible, in order to minimize and control material flowing in and out of the construction area.

In response to this comment we have amended one of the existing terms and conditions as follows:
"Work shall be conducted at low tide during minimal rainfall and 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;"

Should there be any changes to the project plans, DAR will be informed of the changes and invited to review and comment on those changes.

A response was received from the DLNR Division of Boating and Ocean Recreation which stated that the agency had no comments regarding the project.

The application was also made available for 30-day public review and comment in the Office of Environmental Quality and Control (OEQC) Environmental Bulletin on February 23, 2019[1]. No comments have yet been received; however the comment period has passed.

All required permits are currently being processed, including Department of the Army (DA) Section 10 and Section 404 permits, the Department of Health (DOH) National Pollutant Discharge Elimination System (NPDES) permit, the State of Hawaii Coastal Zone Management (CZM) Federal Consistency Determination, the State of Hawaii Department of Health Section 401 Water Quality Certification (WQC), and the Conservation District Use Permit (CDUP).

We note that owing to the location of the project entirely seaward of the shoreline **(Exhibit 13)**, the project is not located with the County Special Management Area (SMA). Therefore, A Special Management Area Use Permit is not Required.

State Historic Preservation Division (SHPD)

Finally, on March 8, 2019, OCCL wrote to The State Historic Preservation Division and determined as follows:

> Identification and inventory of historic properties:
> The foundation of the old Waikiki Tavern is adjacent to the project site. The foundation was covered for many decades following successive beach restoration projects in Waikiki starting in the 1930s. In 2012 the State conducted a beach maintenance project in which two sand bag groins were removed. This resulted in erosion occurring and uncovering the foundation of the Waikiki Tavern. The foundation is currently covered with sand.

[1] Office of Environmental Quality Control (February 23, 2019). The Environmental Notice. http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2019-02-23-TEN.pdf

Evaluation of significance:
Placement of the new sand bag groin would occur to the west of the foundation of the Waikiki Tavern foundation and would not affect the structure. Sand would be borrowed from the Diamond Head Basin of Kuhio Beach and placed over the area where the foundation exists.

Determining effects to significant historic properties:
The OCCL has determined "no historic properties affected."

Mitigation:
As we have determined "no historic properties affected," no mitigation is warranted.

ANALYSIS

After reviewing the application, the Department finds that:

1. The proposed activities are identified land uses within the Resource subzone of the Conservation District, according to Hawaii Administrative Rules (HAR) §13-5-22 (P-16) *Beach Restoration*;

2. The project is consistent with the purpose of the Conservation District and consistent with the goals and objectives of the Hawaii Coastal Erosion Management Plan (COEMAP) adopted by the Board of Land and Natural Resources in 1999. It is a major goal of COEMAP to promote appropriate erosion control and beach restoration efforts such as this.

3. The beach restoration approach taken has been to develop an effective design with the smallest environmental and community "footprint" possible and follows the SSBN and COEMAP guidelines and policies.

4. The project is consistent with the Environmental Assessment and Statewide Conservation District Use Permit (CDUP ST-3000) for Small-Scale Beach Nourishment projects in Hawaii. A Finding of No Significant Impact (FONSI) for the Final Environmental Assessment supporting the Statewide CDUP and State Program General Permit for Small Scale Beach Nourishment Projects in the Hawaiian Islands was issued by DLNR in May, 2000.

DISCUSSION:

The proposed project is intended to re-stabilize the eastern end of Royal Hawaiian Beach and to maintain sand cover over a concrete foundation through a combination of sand back-passing and installation of a temporary groin structure. The project will utilize approximately 750 cubic yards of calcium carbonate sand currently present within the Diamond Head crib wall basin for the back-passing component of the project. The existing beach at the project site is a combination of native and place carbonate sand from previous beach activities. Sand samples from the borrow location indicate an acceptable match to the existing beach at the project site. Suitable carbonate sand sourced from a local off-site quarry will be used to fill geotextile sandbags that will comprise the groin structure.

The proposed project was developed in response to localized erosion that occurred following the 2012 Waikiki Beach Maintenance Project (DLNR Ref: CDUA OA-2011-3558), which included removal of two dilapidated groins that had served to decelerate seasonal sediment transport. According to a post-project monitoring study[2], two main erosional hotspots were observed near the eastern and western terminal structures of Royal Hawaiian Beach (Ewa crib wall basin and Royal Hawaiian Groin, respectively). The highest rates of erosion were measured adjacent to the eastern terminal structure, which resulted in exposure of an antecedent hard structure that had been previously buried beneath the beach face. As reported by the monitoring study, localized erosion adjacent to the eastern terminal structure was found to result from a combination of flanking and groin removal, which allowed the area to experience more rapid changes in beach width as part of and seasonal reversals in the direction of sand transport.

The nourishment project is intended to re-stabilize the eastern end of Royal Hawaiian Beach in a similar fashion as the preexisting groins, although erosion is expected to continue as sand is transported alongshore and offshore as it had in the past prior to groin removal.

It is understood that extensive care has been taken in designing the project and choosing the location of the sand placement and quality in order to minimize user conflicts and environmental impacts, including impacts on water quality and local flora and fauna including coral reefs.

As such, Staff recommends the following:

RECOMMENDATION

Based on the preceding analysis, Staff recommends that the Chair of the Board of Land and Natural Resources **Approve** Category II Small Scale Beach Nourishment (SSBN) application OA-19-04 for the Kuhio Beach Stub Groin and Sand Back Passing Project, at Waikiki, Oahu, Hawaii; fronting TMK: (1) 2-6-001:003 and 008.

TERMS AND CONDITIONS

If approved, the project will be subject to the following Terms and Conditions:

1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the Federal, State, and County governments, and applicable parts of Chapter 13- 5, HAR;

2. The applicant shall comply with all applicable Department of Health administrative rules;

3. Any work or construction to be done on the land shall be initiated within one (1) year of the approval of such use, in accordance with construction plans that have been signed by the Chairperson, and, unless otherwise authorized, shall be completed within three (3) years of the approval of such use;

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[2] Habel, S., Fletcher, C. H., Barbee, M., & Anderson, T. R. (2016). The influence of seasonal patterns on a beach nourishment project in a complex reef environment. *Coastal Engineering*, *116*, 67-76.

4. The applicant understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;
5. Work shall be conducted at low tide during minimal rainfall and 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;
6. Authorization of the sand use and placement is contingent upon review and approval of the sand by the Department. The sand shall meet the following State quality standards:
    a. The proposed fill sand shall not contain more than six (6) percent fines, defined as the #200 sieve (0.074 mm);
    b. The proposed beach fill sand shall not contain more than ten (10) percent coarse sediment, defined as the #4 sieve (4.76 mm) and shall be screened to remove any non-beach compatible material and rubble;
    c. No more than 50 (fifty) percent of the fill sand shall have a grain diameter less than 0.125 mm as measured by #120 Standard Sieve Mesh;
    d. Beach fill shall be dominantly composed of naturally occurring carbonate beach or dune sand. Crushed limestone or other man-made or non-carbonate sands are unacceptable;
7. Sand used for beach maintenance shall be screened of course material (rocks) and any non-beach compatible material;
8. To avoid encroachments upon the area, the applicant shall not use artificially accreted areas due to nourishment as indicators of the shoreline;
9. The applicant shall implement Best Management Practices (BMPs) to minimize dirt and silt from entering the ocean and the ability to contain and clean up fuel, fluid, or oil spills immediately for projects authorized under this authorization and immediately report any spill(s) or other contamination(s) that occurs at the project site to the Department of Health and other appropriate agencies;
8. The applicant shall ensure that excessive siltation and turbidity is contained or otherwise minimized to the satisfaction of the all appropriate agencies, through silt containment devices or barriers, high sand quality and selective sand placement;
9. Appropriate safety and notification procedures shall be carried out. 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;
10. 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;

11. A survey of the project area shall be conducted prior to commencement of the proposed activities to ensure no protected marine species are in the project area. If protected species are detected activities shall be postponed until the animal(s) voluntarily leave the area. All on-site personnel shall be apprised of the status of any protected species;

12. At the conclusion of work, the applicant shall clean and restore the site to a condition acceptable to the Chairperson;

13. 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;

14. The permittee, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;

15. The permittee shall obtain appropriate authorization from the department for the occupancy of state lands, if applicable;

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

17. 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;

18. 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;

19. 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;

20. For all landscaped areas, landscaping and irrigation shall be contained and maintained within the property, and shall under no circumstances extend seaward of the shoreline as defined in section 205A-1, HRS;

21. Artificial light from exterior lighting fixtures, including but not limited to floodlights, uplights, or spotlights used for decorative or aesthetic purposes, shall be prohibited if the light directly illuminates or is directed to project across property boundaries toward the shoreline and ocean waters, except as may be permitted pursuant to section 205A-71, HRS. All exterior lighting shall be shielded to protect the night sky;

22. 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;

23. 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 contractor shall immediately contact HPD, (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;

24. Other terms and conditions as prescribed by the chairperson;

25. Failure to comply with any of these conditions shall render a permit void under the chapter, as determined by the chairperson or board.

Respectfully submitted,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands (OCCL).

Under the authority of §13-5-22 (P-16), Hawai`i Administrative Rules, this request for a Departmental Permit for SSBN MA-15-2 is hereby:

☒ Approved

☐ Disapproved

Dated at Honolulu, Hawai`i 4/8/2019

SUZANNE D. CASE, Chairperson
Board of Land and Natural Resources

Respectfully submitted,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands (OCCL).

Under the authority of §13-5-22 (P-16), Hawai`i Administrative Rules, this request for a Departmental Permit for SSBN MA-15-2 is hereby:

☐ Approved

☐ Disapproved

Dated at Honolulu, Hawai`i_____

SUZANNE D. CASE, Chairperson
Board of Land and Natural Resources

EXHIBIT 1: Project Location

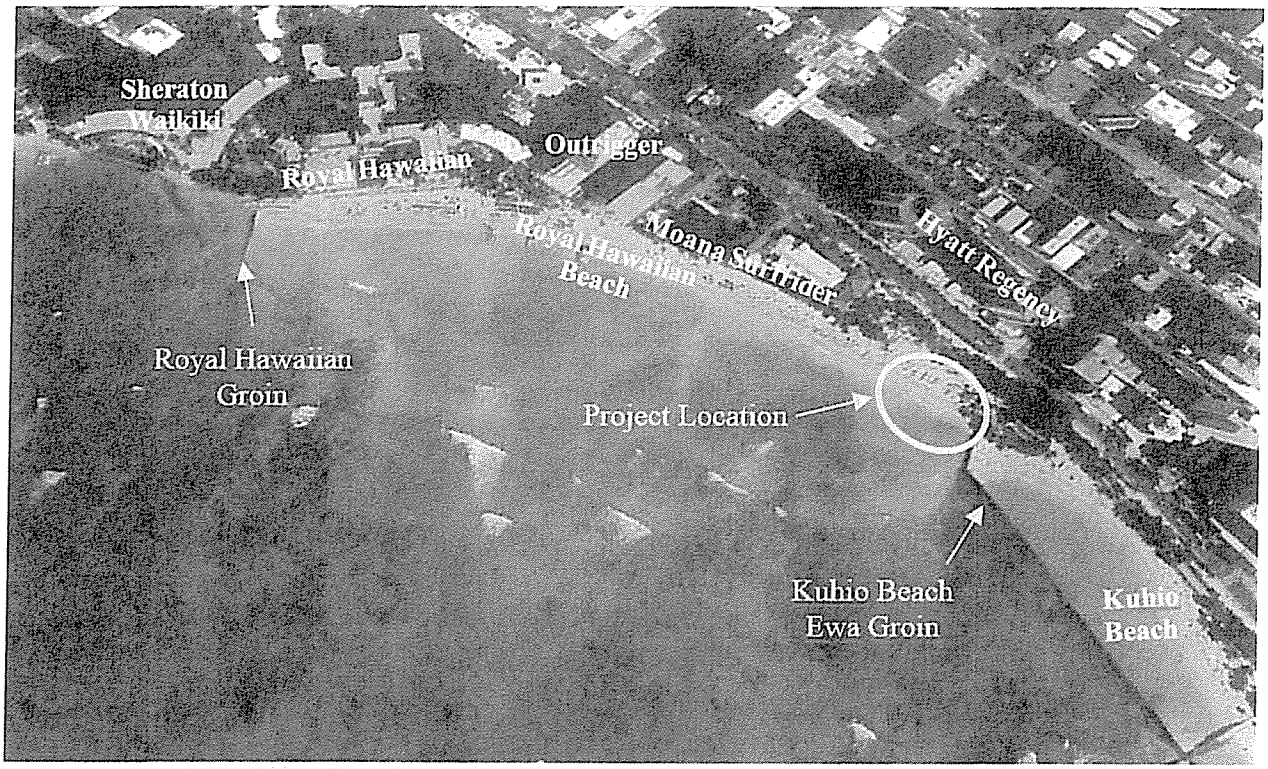


EXHIBIT 2: Overview of Project Site

EXHIBIT 3: 2008 aerial photo showing two groins that were removed in 2012

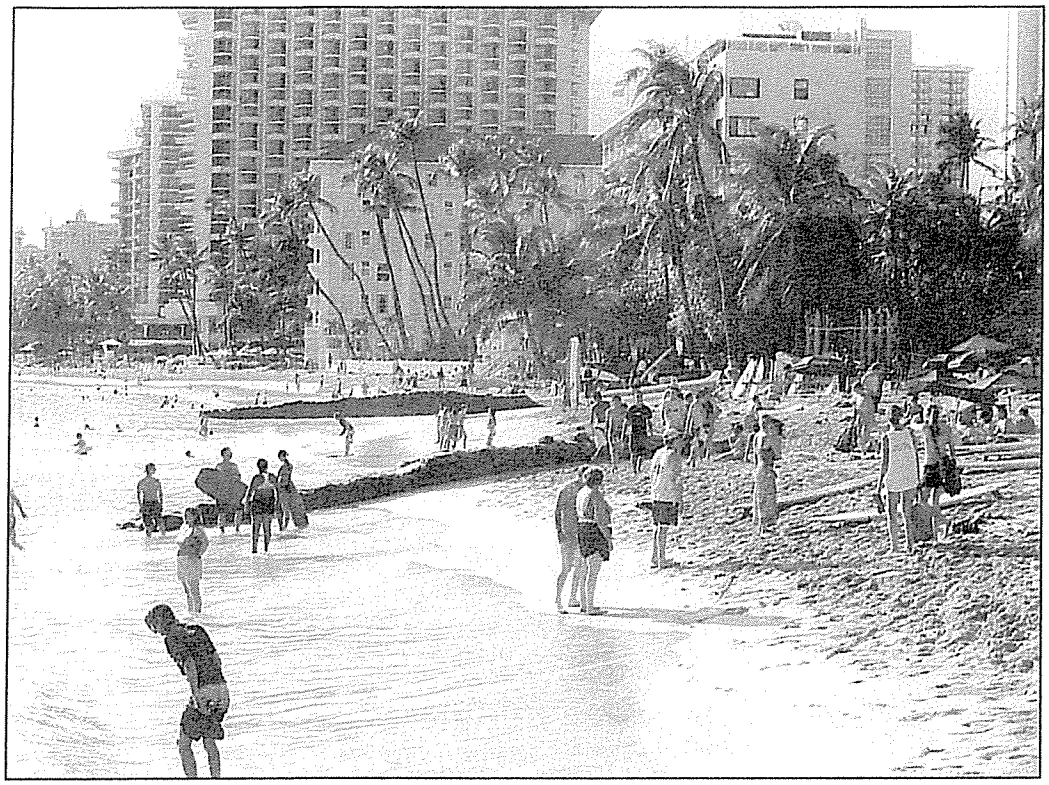


EXHIBIT 4: Groins that were removed in 2012 (2005 photo courtesy Dolan Eversole)

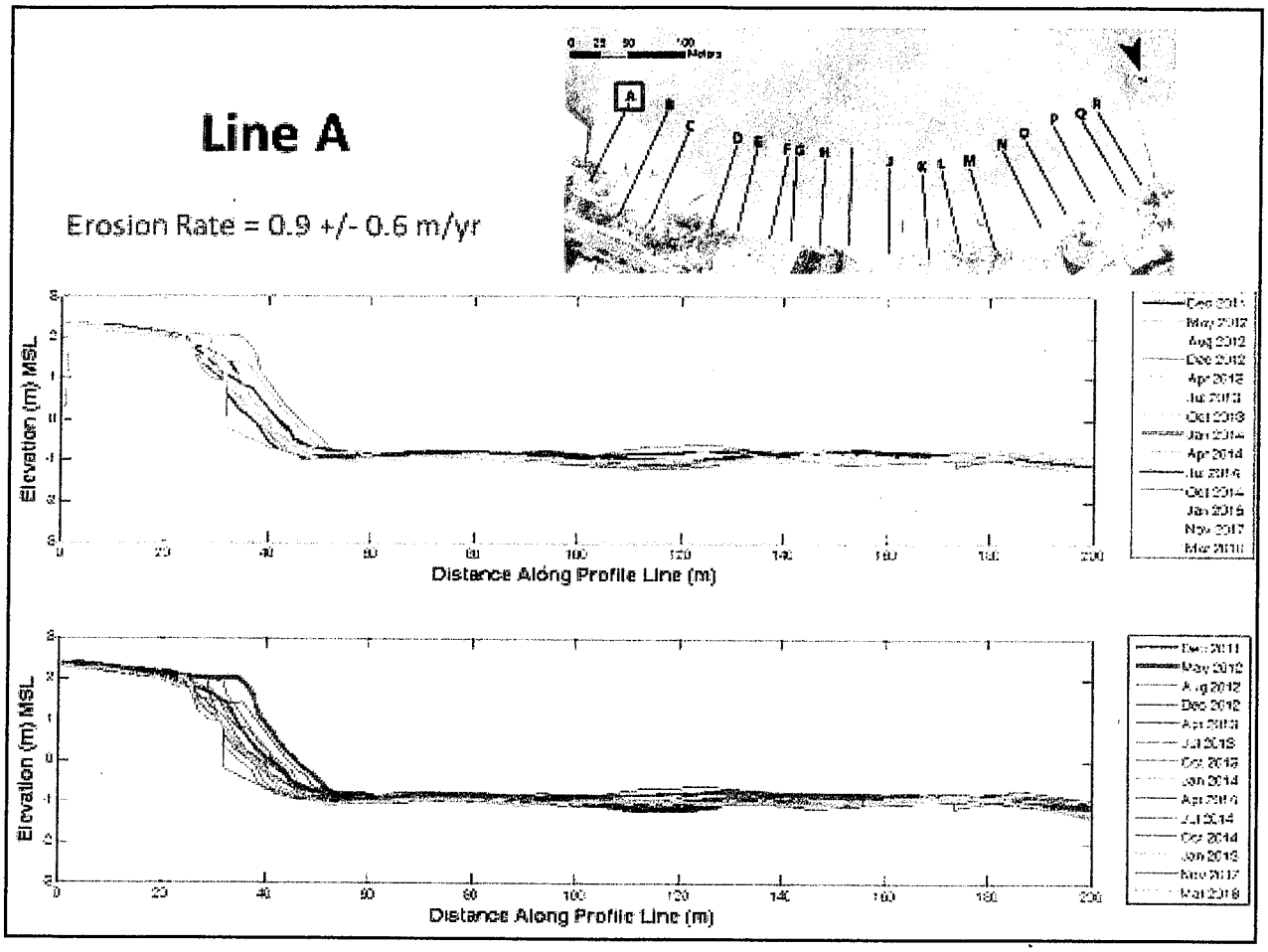


EXHIBIT 5: Shoreline change adjacent to the western extent of the Ewa crib wall basin between 2012 and 2018

EXHIBIT 6: Exposed Waikiki Tavern concrete foundation (August 21, 2017 photo)

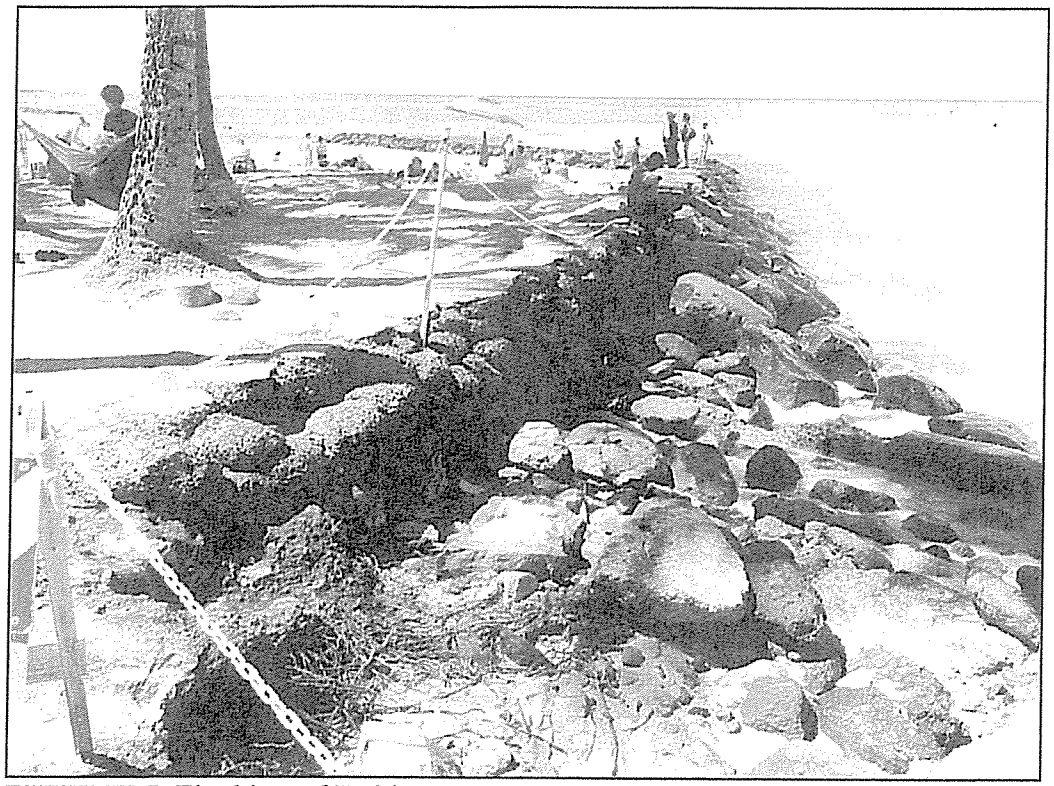
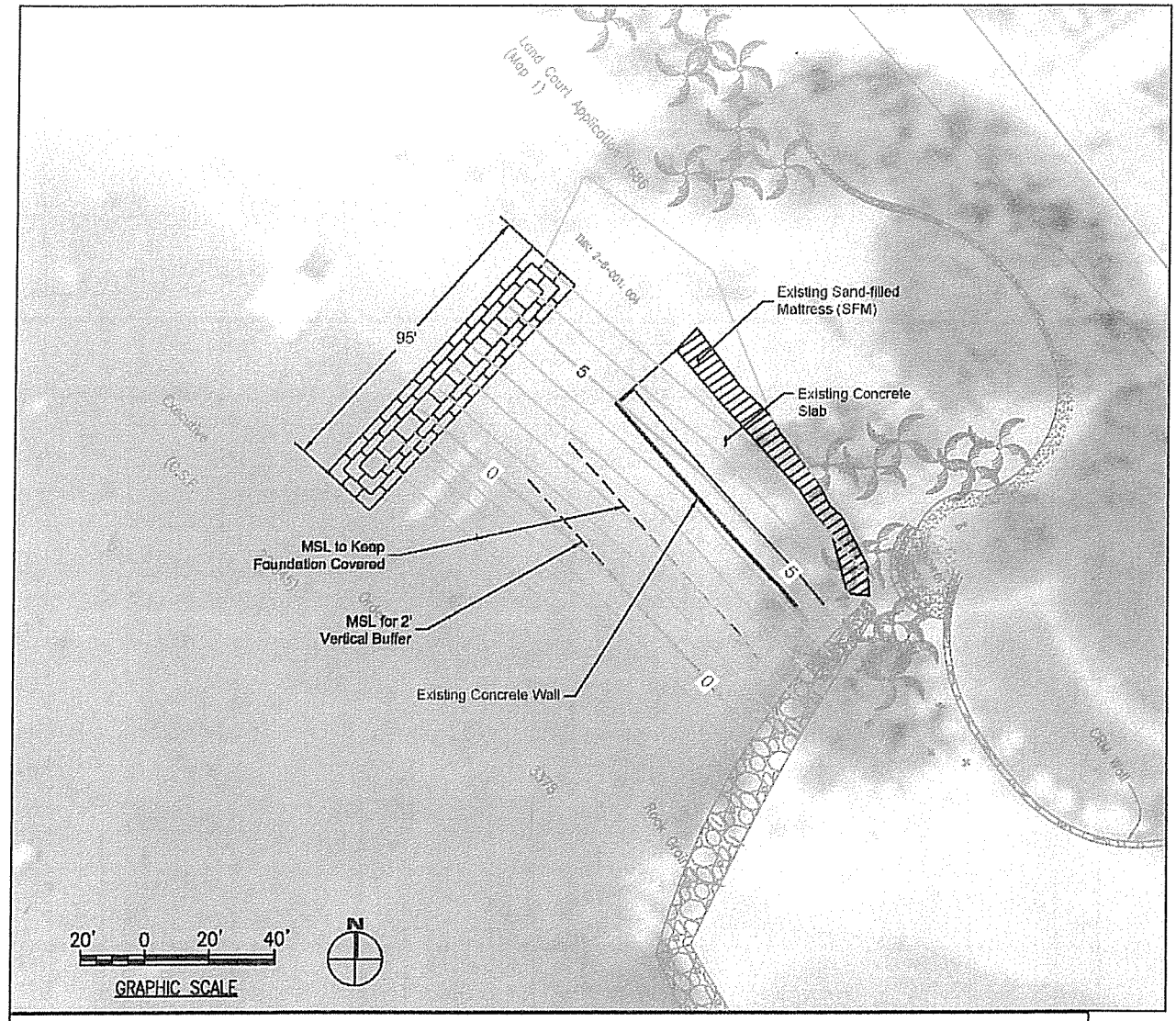


EXHIBIT 7: Flanking of Kuhio Beach Ewa groin (May 2017 photo)



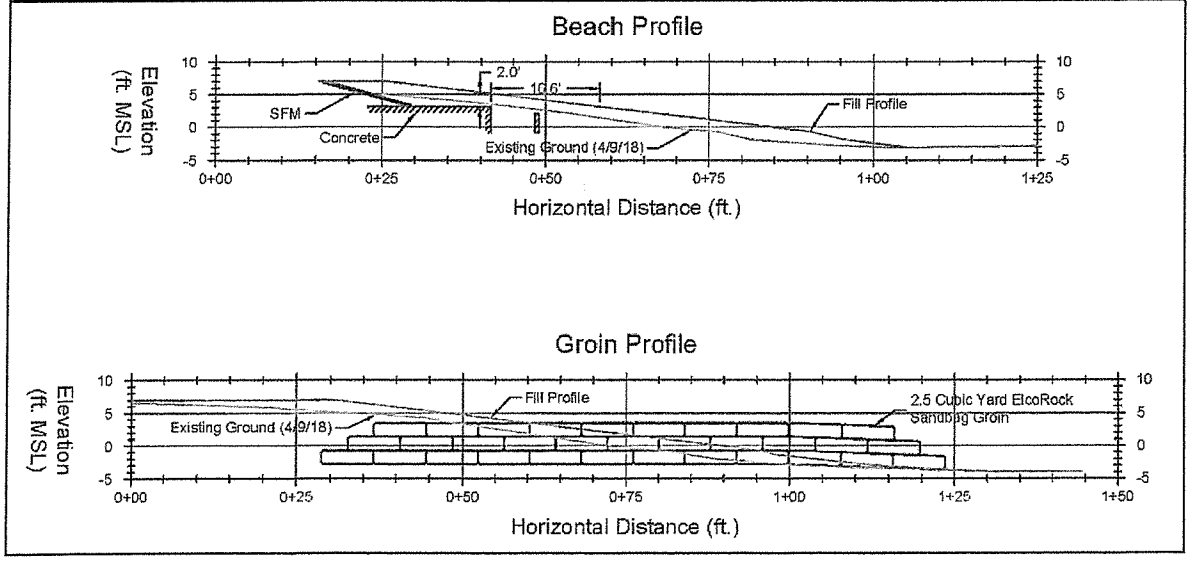


EXHIBIT 8: Project design including groin placement and fill profile

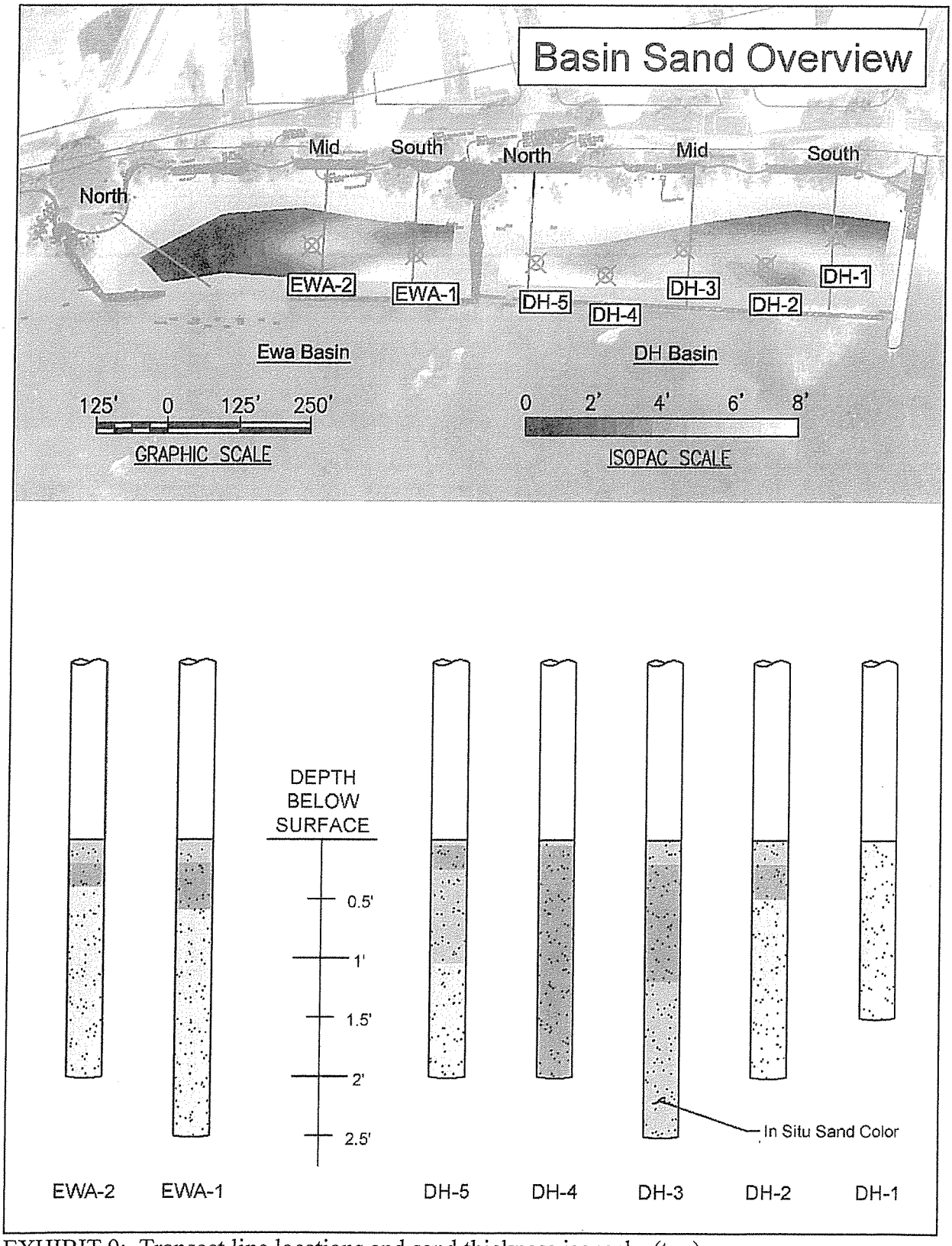


EXHIBIT 9: Transect line locations and sand thickness isopachs (top); sand core illustrations (bottom)

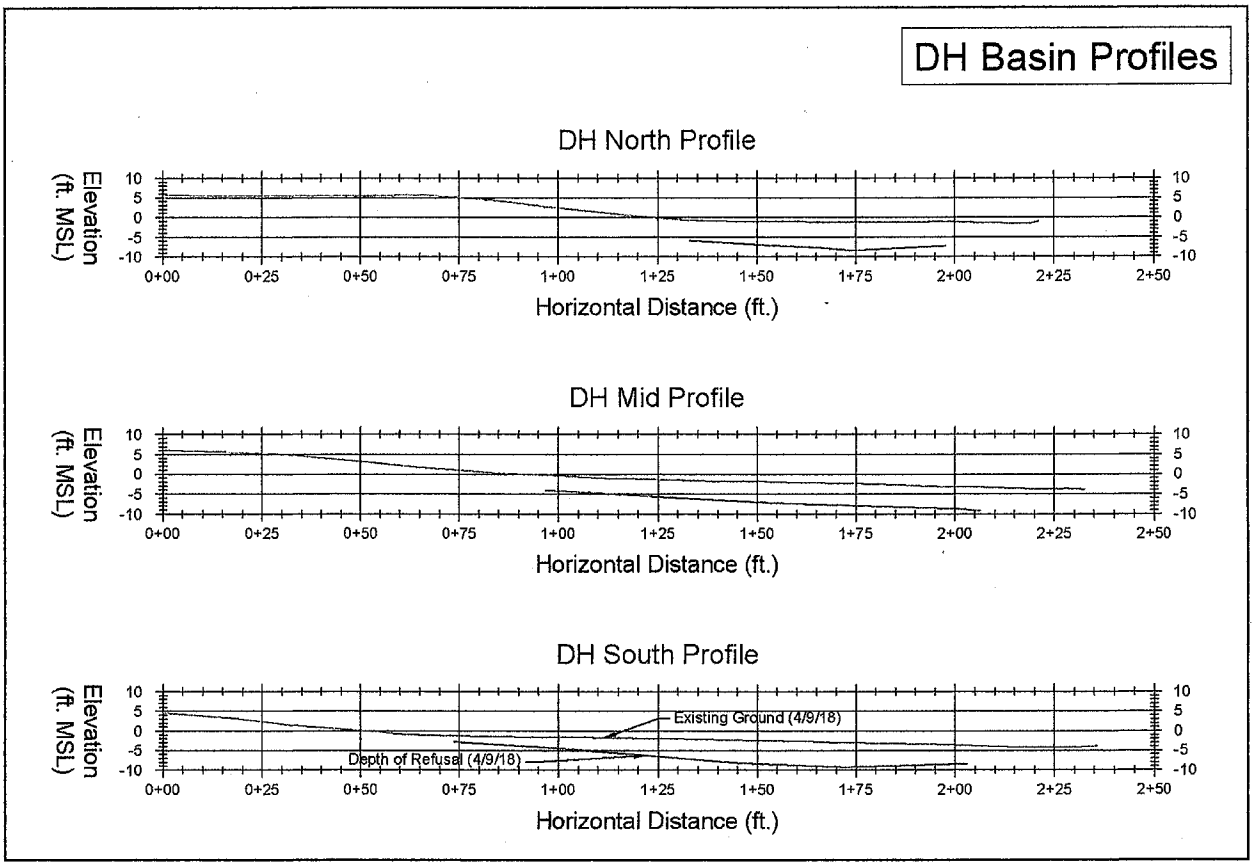


EXHIBIT 10: Diamond Head crib wall basin transect profiles

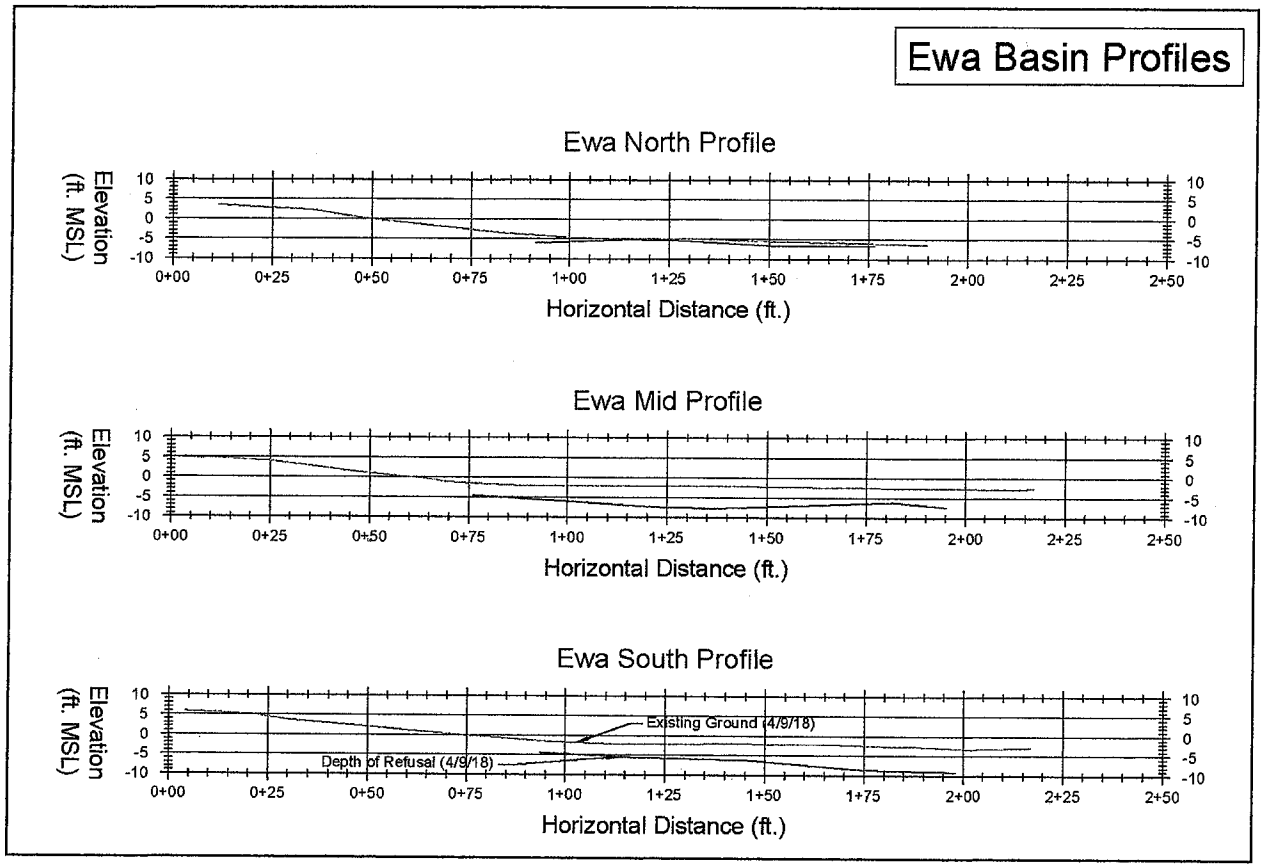
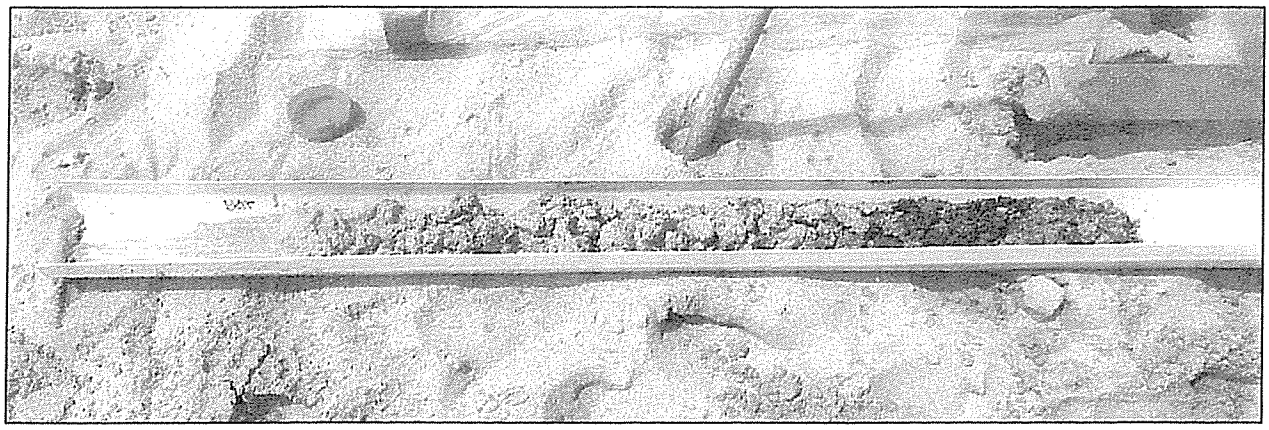
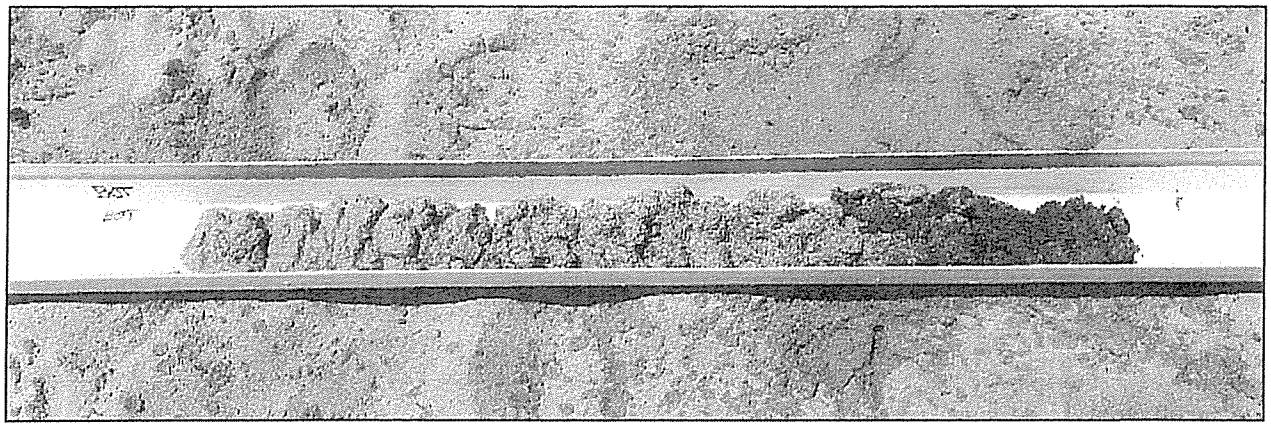


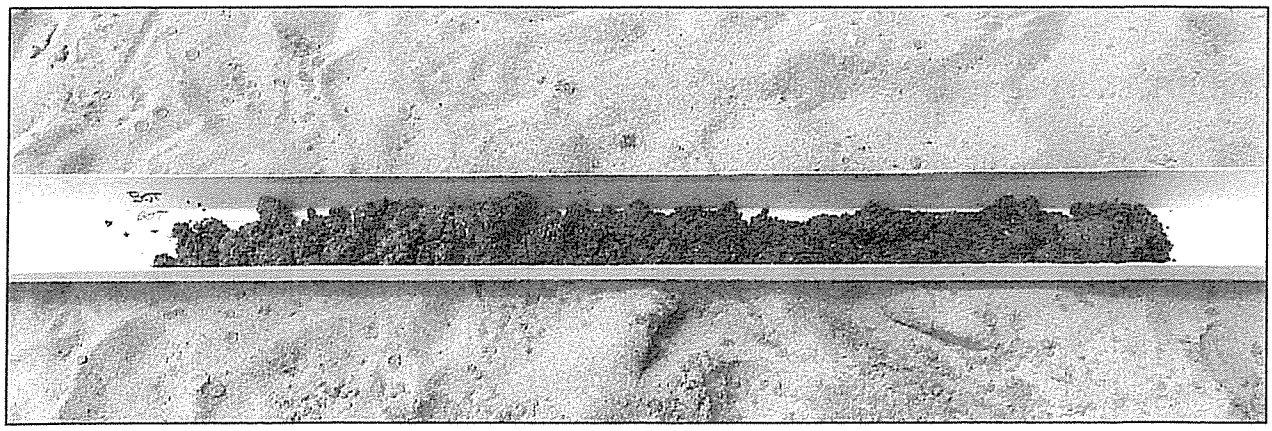
EXHIBIT 11: Ewa crib wall basin transect profiles



Ewa - 1



DH - 5



DH - 4

EXHIBIT 12: Sand core samples

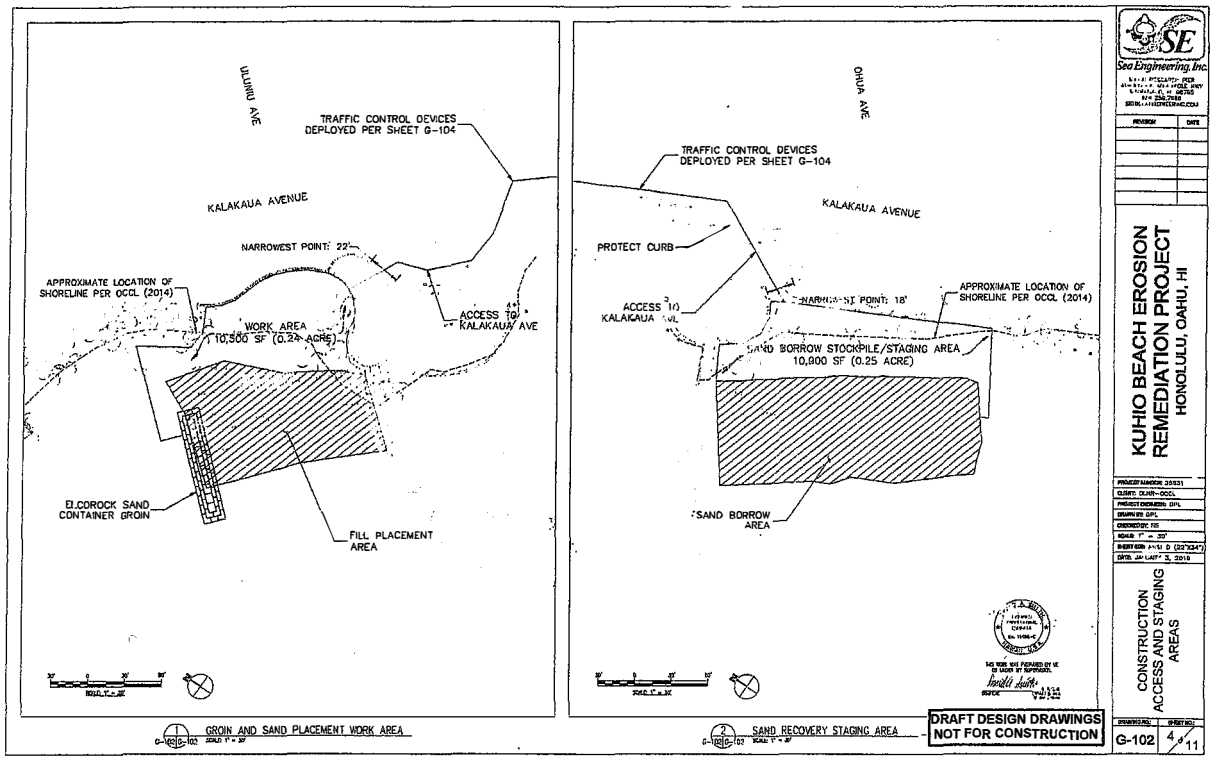


EXHIBIT 13: Location of the project entirely seaward of the shoreline

DAVID Y. IGE
GOVERNOR

CLARE E. CONNORS
ATTORNEY GENERAL

DANA O. VIOLA
FIRST DEPUTY ATTORNEY GENERAL

2019 MAR 29 P 2:04

STATE OF HAWAII
DEPARTMENT OF THE ATTORNEY GENERAL
LAND/TRANSPORTATION DIVISION
ROOM 300, KEKUANAO'A BUILDING
465 SOUTH KING STREET
HONOLULU, HAWAII 96813
TELEPHONE No. (808) 587-2992
FAX No. (808) 587-2999

Deputy Attorney General
David D. Day
david.d.day@hawaii.gov

March 28, 2019

To: Sam Lemmo, Administrator
OCCL

From: Dave Day, Deputy Attorney General (x7-2990)
Land/Transportation Division

Re: Request for Approval as to Form Memorandum of Understanding between DLNR and WBSIDA Regarding Improvements at Kuhio Beach, Waikiki, Oahu, Hawai'i

As we discussed on the phone yesterday, I reviewed the MOU attached to your March 18, 2019 above-entitled request regarding the Kuhio Stub Groin Project. The MOU is virtually identical to the executed MOU between DLNR and WBSIDA, dated February 23, 2017.

My review did not consist of anything other than the document itself. Based upon my review of the four corners of the document, I state my preliminary approval as to form of the document, subject to further review after the final approval of the Board.

EXHIBIT 8

DAVID Y. IGE
GOVERNOR

CLARE E. CONNORS
ATTORNEY GENERAL

DANA O. VIOLA
FIRST DEPUTY ATTORNEY GENERAL

STATE OF HAWAII
DEPARTMENT OF THE ATTORNEY GENERAL
LAND/TRANSPORTATION DIVISION
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TELEPHONE No. (808) 587-2992
FAX No. (808) 587-2999

2019 MAR 11 P 4:34

Deputy Attorney General
David D. Day
david.d.day@hawaii.gov

March 8, 2019

To: Sam Lemmo, Administrator
OCCL

From: Dave Day, Deputy Attorney General (x7-2990)
Land/Transportation Division

Re: Review and Approval as to Form Memorandum of Understanding Between the Department of Land and Natural Resources and the Waikiki Beach Special Improvement District Association, Regarding Improvements to the Royal Hawaiian Groin, at Waikiki, Oahu, Hawaii

With respect to your request, dated December 4, 2018, we have worked through several iterations of an amended and restated MOU to take the place of the MOU previously dated February 23, 2017. The document you sent with the request was a version already modified by WBSIDA that made previously unapproved changes to the MOU. We previously exchanged emails with redlined Word documents modifying that document.

Ultimately, what the Board will want to see is how the agreement they previously changed has been modified. I am attaching here a redline showing how the Amended and Restated MOU amends the previous version and a clean copy. Let me know if there is any issue with the versions I am providing. I also emailed you electronic copies of these word documents today.

Please let me know if you have any questions.

WBSIDA
Waikīkī Beach
SPECIAL IMPROVEMENT
DISTRICT ASSOCIATION

April 1, 2019

Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street
Honolulu, Hawaii 96822

SUBJECT: Waikīkī Beach Structural Improvements Cost Sharing

This letter serves to confirm a commitment from the Waikīkī Beach Special Improvement District Association (WBSIDA) to partner with the State of Hawaii, Department of Land and Natural Resources (DLNR) on joint funding up to 50% of the project costs for the construction of two separate beach improvement projects in Waikīkī including:

- $1.25 million from the WBSIDA for the Royal Hawaiian Groin Improvement project,
- $335,000 from the WBSIDA for the Kuhio Beach Sandbag groin project[1].

The intent of these projects are to protect and preserve the beach resources at Waikiki for the benefit of the public at large, to alleviate hazards to upland development from long-term and seasonal beach erosion, and to plan for and design the optimal solution for beach stabilization. The DLNR estimated the costs of $2,500,000, for the Royal Hawaiian Groin, and $670,000 for the Kuhio Beach Sandbag Groin of which the WBSIDA is committing a 50% cost match. The WBSIDA is prepared to enter into a Memorandum of Agreement with the DLNR for these projects as needed.

If you require further details please contact Dolan Eversole, Waikīkī Beach Management Coordinator, at eversole@hawaii.edu or (808) 956-9780.

Sincerely,

Rick Egged, President
Waikīkī Beach Special Improvement District Association

[1] In April, 2018 the WBSIDA Board of Directors approved $250,000 as a 50% cost share for the Kuhio Sand Bag groin project in the 2019 operating budget. The WBSIDA will request the remaining $85,000 for the FY 2019-20 WBSIDA operating budget, therefore is contingent to final budget approval in May, 2019.

2250 KALAKAUA AVE. SUITE 315 HONOLULU HAWAII 96815
808.923.1094 WWW.WBSIDA.ORG

EXHIBIT