CONSERVATION DISTRICT USE APPLICATION (CDUA)

All permit applications shall be prepared pursuant to HAR 13-5-31

File No.:	
Acceptance Date:	180-Day Expiration Date:
Assigned Planner:	

for DLNR Use

PROJECT NAME Diamond Head Breakwater Safety Project

Conservation District Subzone: Protective

Identified Land Use: P-6 Public Purpose Use and P-8 Structures and Land Uses, Existing
(Identified Land Uses are found in Hawai'i Administrative Rules (HAR) §13-5-22 through §13-5-25)

Project Address: Submerged lands makai of 4055 Papu Circle, Honolulu, HI 96816

Tax Map Key(s): Makai of TMK (1) 3-1-041:005

Ahupua'a: Waikiki

District: Kona

County: City & County of Honolulu

Island: Oahu

Proposed Commencement Date: 2024

Proposed Completion Date: 2026

Estimated Project Cost: $2.5 million

TYPE OF PERMIT SOUGHT ☒ **Board Permit** ☐ **Departmental Permit**

ATTACHMENTS

$ _____ Application Fee. 2.5% of project cost for Board Permits, but no less than $250, up to a maximum of $2500; $250 for Departmental Permits (*ref §13-5-32 through 34)*.

$ _____ Public Hearing Fee *($250 plus publication costs; ref §13-5-40)*

☒ 20 copies of CDUA (*5 hard + 15 hard or digital copies)*

☒ Draft / Final Environmental Assessment (EA) *or* Draft / Final Environmental Impact Statement (EIS) *or* Statement of Exemption

☐ State Historic Preservation Division HRS 6E Submittal Form (dlnr.hawaii.gov/shpd/review-compliance/forms)

☐ Management Plan *or* Comprehensive Management Plan (*ref §13-5-39)* if required

☐ Special Management Area Determination *(ref Hawai'i Revised Statutes 205A)*

☐ Shoreline Certification (*ref §13-5-31(a)(8))* if land use is subject to coastal hazards.

☐ Kuleana documentation (*ref §13-5-31(f))* if applying for a non-conforming kuleana use.

☐ Boundary Determination *(ref §13-5-17)* if land use lies within 50 feet of a subzone boundary.

REQUIRED SIGNATURES

Applicant

Name: State of Hawai`i
Title; Agency: Department of Land and Natural Resources, Land Division
Mailing Address: 1154 Punchbowl Street, Room 220
Honolulu, HI 96813
Contact Person & Title: Mr. Ian Hirokawa, Special Projects Coordinator
Phone: 808-587-0419
Email: ian.c.hirokawa@hawaii.gov
Interest in Property:

Signature: *Russell Tsuji* Russell Tsuji, Administrator **Date:** 2- 19-2021

Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

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Landowner (if different than the applicant)

Name: Edward Henry*
Title; Agency: President, Doris Duke Foundation for Islamic Art (DDFIA)
Mailing Address: 650 Fifth Avenue, 19th Floor, New York, NY 10019

Phone: (212) 974-7000
Email: kjacobsen@ddcf.org

*Point of contact in Hawaii:
Konrad Ng, Executive Director
Shangri La Museum of Islamic Art, Culture & Design
(808) 734-1941
ccarter@ddcf.org

Signature: Edward P. Henry **Date:** 2-16-2021

For State and public lands, the State of Hawai`i or government entity with management control over the parcel shall sign as landowner.

Agent or Consultant

Agency:
Contact Person & Title:
Mailing Address:

Phone:
Email:

Signature: _____ **Date:** _____

For DLNR Managed Lands

State of Hawai`i
Chairperson, Board of Land and Natural Resources
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809-0621

Signature: Sam O. Cox **Date:** 2-22-2021

PROPOSED USE

Total size/area of proposed use (indicate in acres or sq. ft.): **0.77 acres**

Please provide a detailed description of the proposed land use(s) in its entirety. Information should describe what the proposed use is; the need and purpose for the proposed use; the size of the proposed use (provide dimensions and quantities of materials); and how the work for the proposed use will be done (methodology). If there are multiple components to a project, please answer the above for each component. Also include information regarding secondary improvements include, but not limited to, grading and grubbing, placement of accessory equipment, installation of utilities, roads, driveways, fences, landscaping, etc.

Attach any and all associated plans such as a location map, site plan, floor plan, elevations, and landscaping plans drawn to scale (ref §13-5-31).

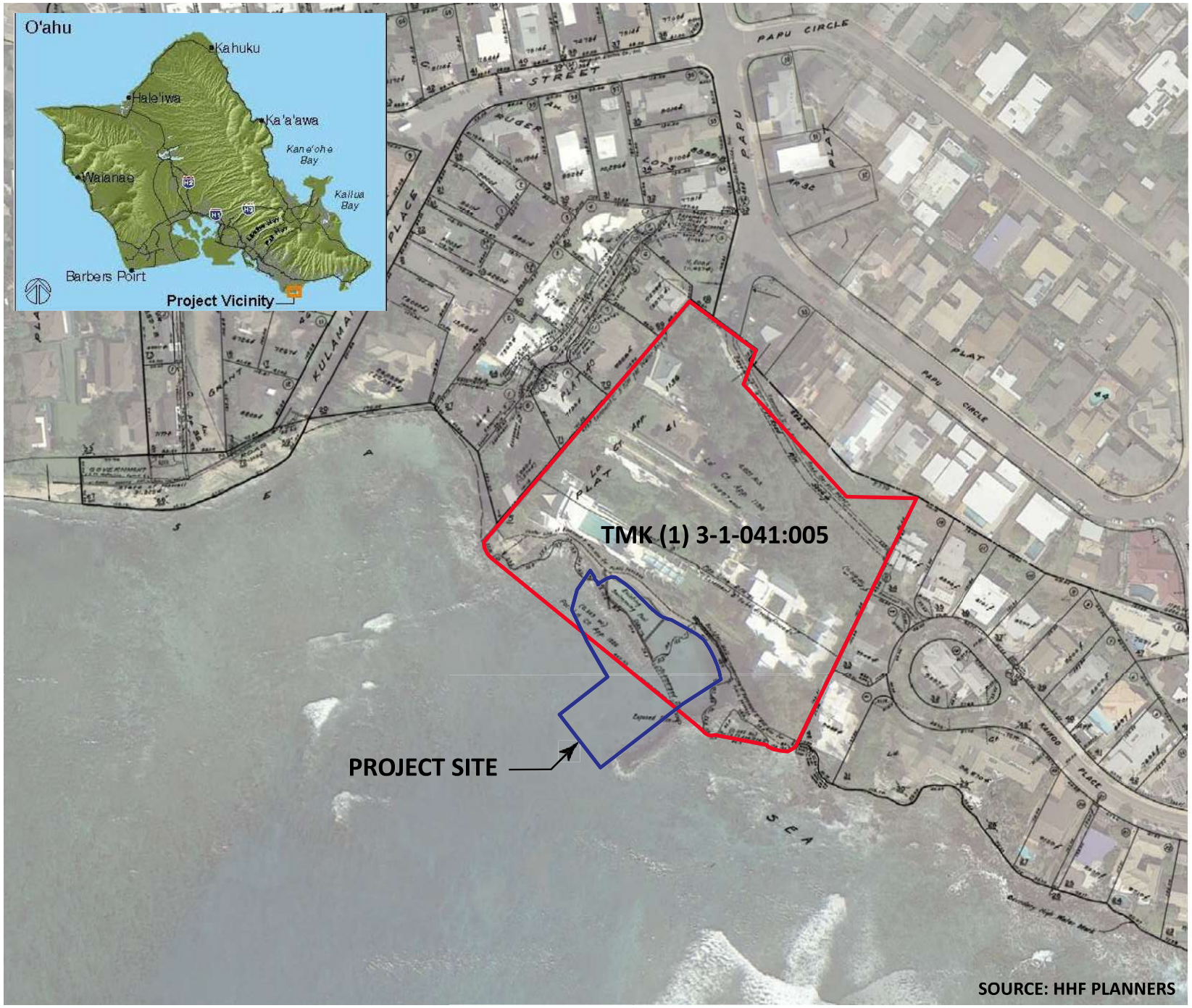
The project site for this application totals 0.77 acres and consists of submerged lands situated makai of Tax Map Key (TMK) (1) 3-1-041:005 also known as the Shangri La property located in Kaʻalāwai, Honolulu, island of Oʻahu. (see Exhibit 1). Further, the project site is located within the Protective subzone of the State Land Use Conservation District (see Exhibit 2).

Please note that all project components discussed herein are located makai of the shoreline (identified at the face of the Shangri La seawall) as determined by a December 23, 2103 certified shoreline that was previously prepared for DDFIA (see Exhibt 3).

In addition, a Final Environmental Assessment/Finding of No Significant Impact (FEA/FONSI) for the DDFIA version of the project was issued by the Office of Conservation and Coastal Lands (OCCL) and was published in the Office Of Environmental Quality Control's June 23, 2017 edition of *The Environmental Notice.* A copy of the FEA/FONSI can be found on OEQC's website at: http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2017-06-23-OA-FEA-Shangri-La-Breakwater-Safety-and-Shoreline-Stabilization.pdf. A digital copy of the document has also been provided. The Department of Land and Natural Resources (also referred here in as the State) is requesting that they be allowed to use the same the FEA/FONSI as the project and its impacts are relatively the same.

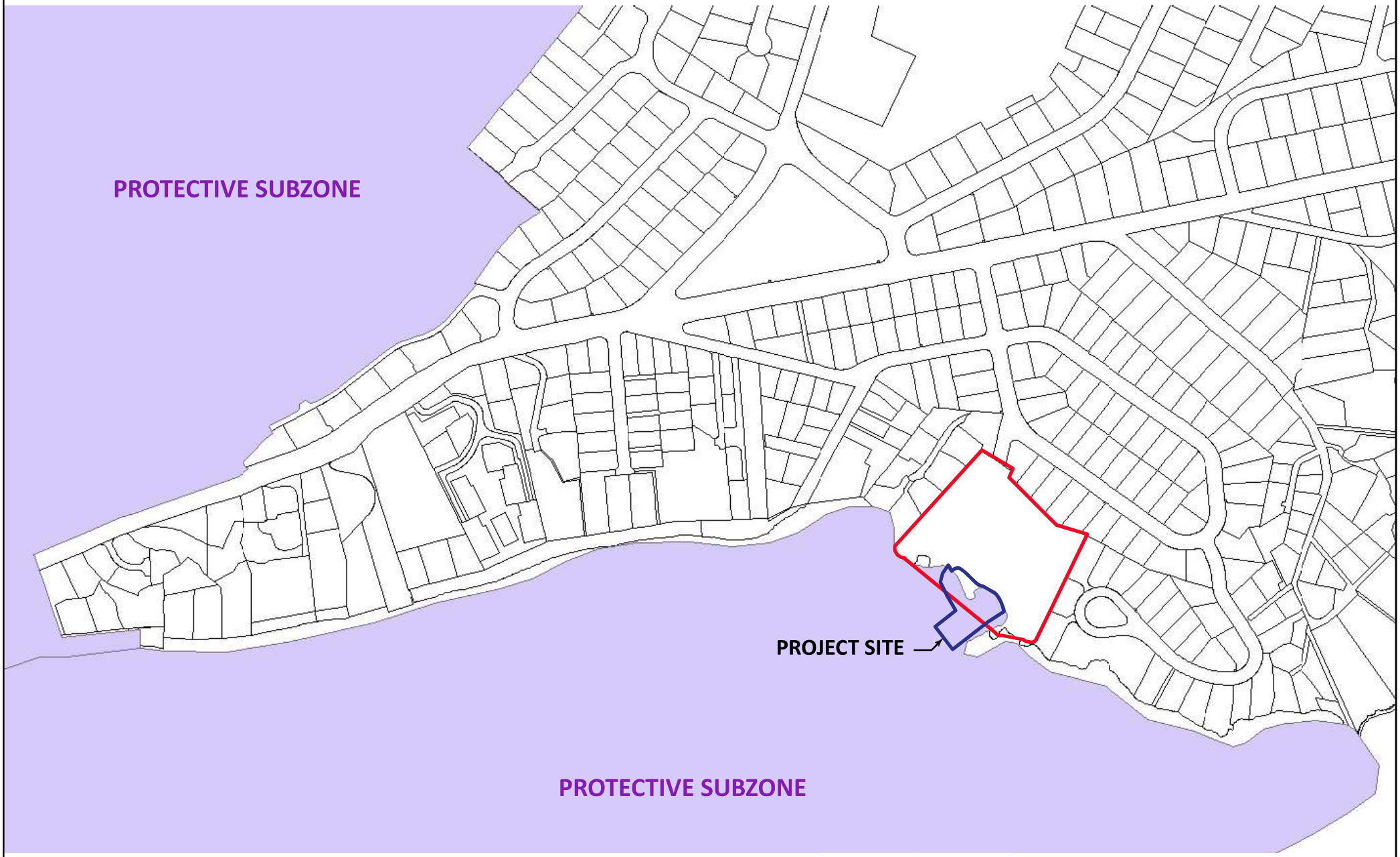
BACKGROUND INFORMATION:

At its meeting in April 27, 2018, under agenda item K-4, the Board of Land and Natural Resources (Board) considered Conservation District Use Application (CDUA) OA-3809 from the Doris Duke Foundation for Islamic Arts (DDFIA). DDFIA proposed to modify a private boat basin located on privately owned submerged lands, being part of its property known as Shangri La. DDFIA sought to dismantle an artificial breakwater (referred to as the Diamond Head Breakwater, herein) that served as the seaward boundary of the boat basin and use the boulders from the dismantled breakwater to reinforce a pre-existing seawall running along the interior of the boat basin. After introducing safety measures in the area, such as signage and a fence, DDFIA stated that the project was in the public's interest as the breakwater remained a public safety hazard and members of the public had suffered serious injuries from high risk behavior occurring at the project site.



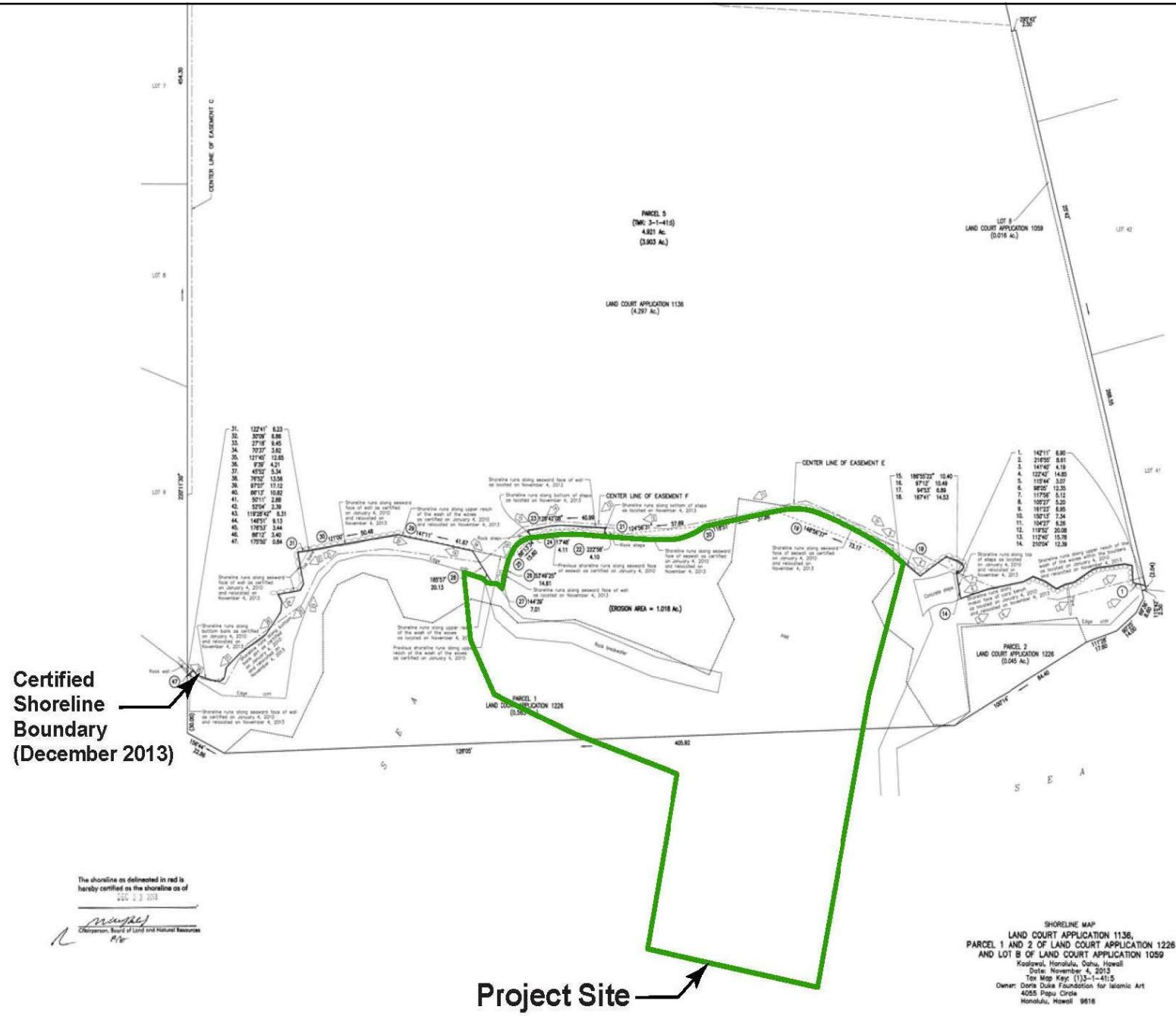
LOCATION/TAX MAP KEY MAP

EXHIBIT 1



CONSERVATION DISTRICT SUBZONE MAP

EXHIBIT 2



The shoreline as delineated in red is hereby certified as the shoreline as of

DEC 23 2013

Chairperson, Board of Land and Natural Resources

Notes:
1. All easements may not be shown.
2. ⇨ denotes position and direction of photograph

SHORELINE MAP
LAND COURT APPLICATION 1136,
PARCEL 1 AND 2 OF LAND COURT APPLICATION 1226
AND LOT B OF LAND COURT APPLICATION 1059
Kaalawai, Honolulu, Oahu, Hawaii
Date: November 4, 2013
Tax Map Key: (1)3-1-41:5
Owner: Doris Duke Foundation for Islamic Art
4055 Papu Circle
Honolulu, Hawaii 96816

WESLEY T. TENGAN
LICENSED PROFESSIONAL LAND SURVEYOR
No. 6958
HAWAII, U.S.A.

This work was prepared by me or under my supervision

EXP. 4/14
WESLEY T. TENGAN
LICENSED PROFESSIONAL LAND SURVEYOR
Certificate Number 6958

2013 SHORELINE SURVEY MAP

EXHIBIT 3

After testimony in opposition from members of the public, the Board denied DDFIA's application. DDFIA then requested a contested case. As a result of confusion regarding the Board's vote on the prior item, at the Board meeting on May 25, 2018, under agenda item K-1, the Board was asked to rescind its prior denial of CDUA OA-3809. Rather, the Board affirmed its denial of the application. At its meeting on June 22, 2018, under agenda item K-3, the Board approved the appointment and selection of a hearing officer for the contested case hearing.

On June 14 ,2018, DDFIA submitted to the Department, an offer to convey to the state, by quitclaim deed, the submerged lands and improvements thereon that were the subject of the CDUA. DDFIA also withdrew its request for a contested case hearing.

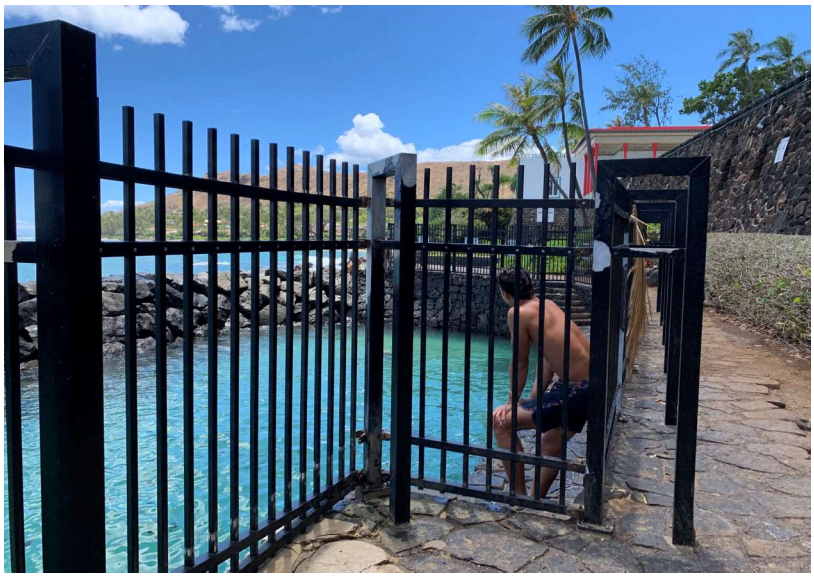
The Board considered DDFIA's offer at its September 28, 2018 meeting. Staff expressed grave concerns about the acquisition and recommended that the Board reject the offer. Nevertheless, the Board disagreed and accepted the offer.

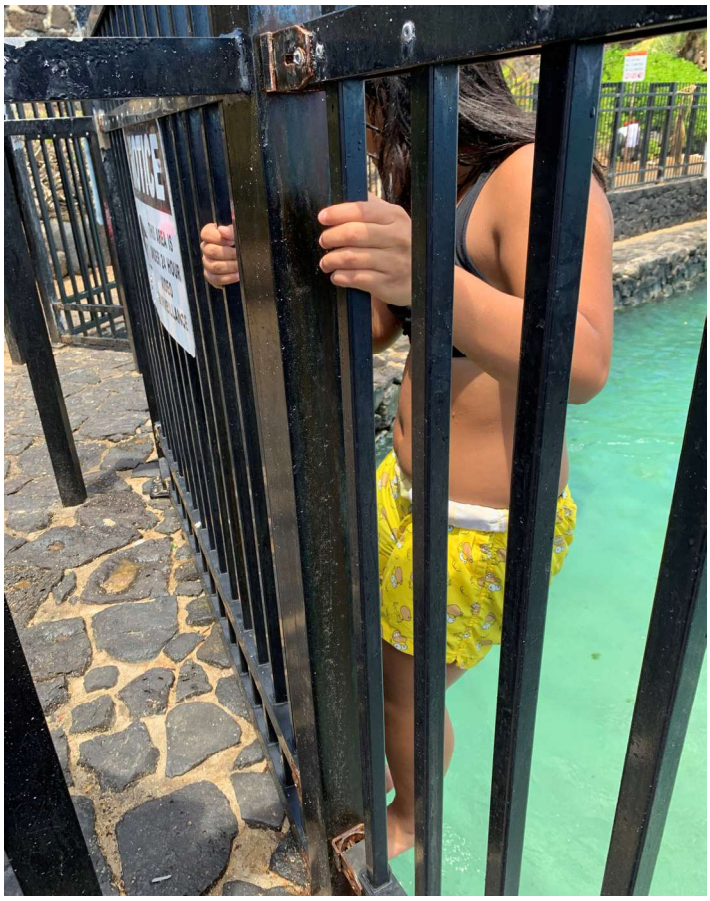
The transfer of property was finalized as of September 23, 2020. In addition, the State has entered into an MOA with DDFIA in which DDFIA has offered to pay up to 1 million dollars towards the cost of construction, should the State decided to proceed with the dismantling of the artificial breakwater and re-naturalization of the shoreline fronting the Shangri La seawall.

PROJECT PURPOSE & NEED:

As mentioned in the previous section, the State now owns the submerged waters and improvements makai of the Shangri La seawall. Injuries from unsafe recreational activities, continues to occur in the former boat basin area which in turn creates a large liability for the State. Example of unsafe activities include diving and/or jumping from the top of the shoreline walkway (owned by Shangri La) and the Diamond Head Breakwater into the shallow basin. Of particular concern is a popular section of the public walkway referred to as "the landing" which is located between the breakwater and former boat mooring area, where steps to a lower section of the seawall are present. This section can be particularly shallow during low tide with only waist-deep water present (-2.5' to -5.0') increasing the chance for injury. Injuries, including incidents of permanent quadriplegia and paraplegia have resulted from these activities. In addition, people swim through a 48-inch drainage pipe within the breakwater thus creating the risk of someone eventually getting stuck within the pipe. Also, the abundance of social media posts glamorizing these unsafe activities which increases the number of users and "organized" gatherings at the basin, further contributes to potential injury of the above-mentioned activities. DLNR notes that during a more recent site visit conducted by the State on July 2, 2020, a number of people were observed to still be participating in risky behavior at the project site (see Exhibit 4).

Prior to the State owning the breakwaters, DDFIA had already attempted a number of actions to deter people from conducting unsafe activities. Unfortunately, none of those actions have had any real impact in deterring risky behavior at the site. In addition, while DDFIA has already unsuccessfully attempted to request approval to demolish the breakwater from the Board, nevertheless, given the liability to the State, DLNR has determined that it is in the State's best interest, from a public safety perspective, that we bring this before the Board for reconsideration.





PHOTOGRAPHS FROM JULY 2, 2020 SITE VISIT

EXHIBIT 4

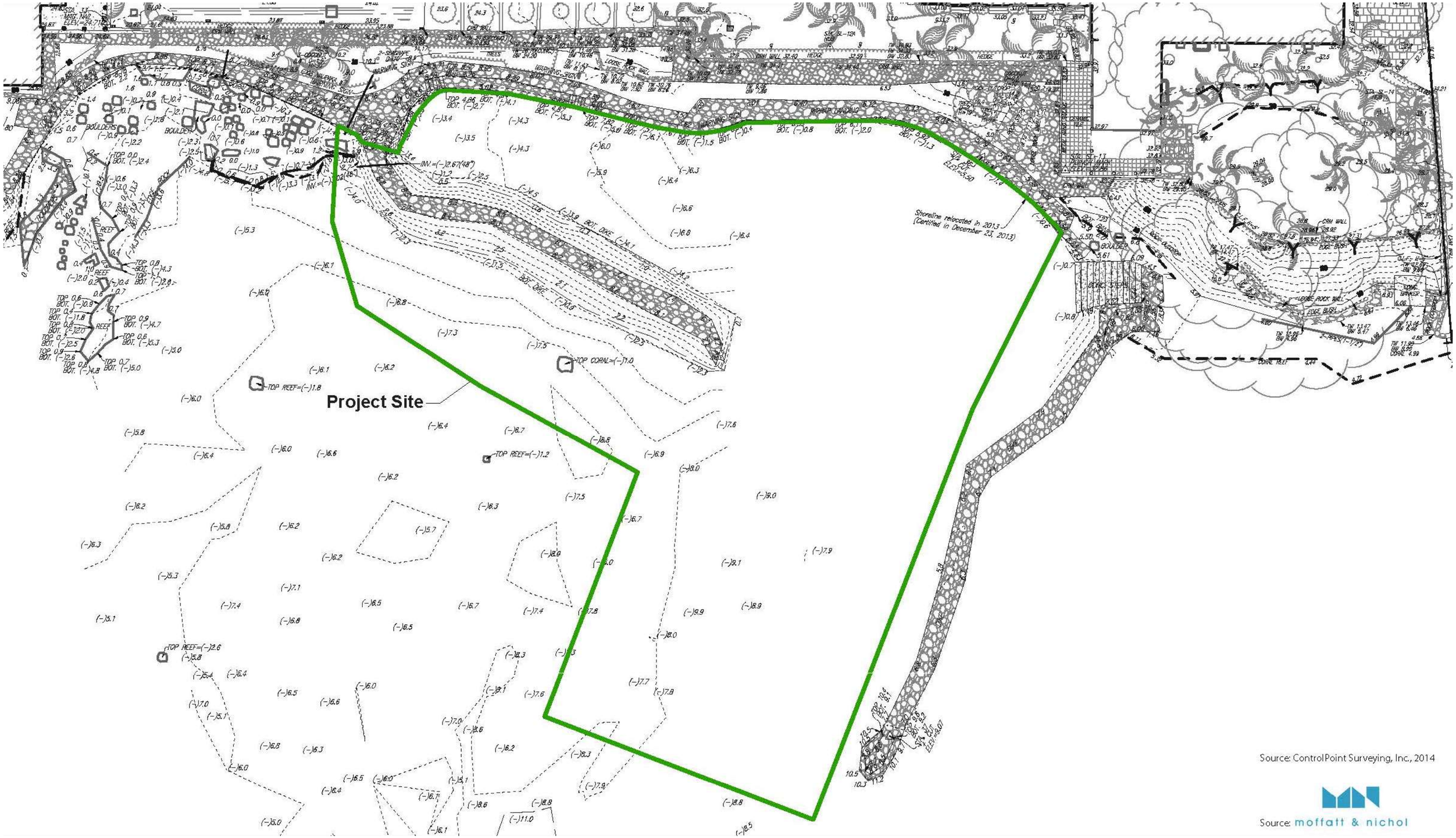
PROJECT DESCRIPTION:

The Diamond Head Breakwater was constructed in 1938 and extends seaward from the western end of the Shangri La property in a southeast direction and was originally meant to provide protection from Kona storm waves (see Photo 1). The breakwater generally has a pyramid-shaped profile comprised of large boulders. The crest of this rubble mound breakwater is somewhat level, allowing persons to walk on it. The breakwater is about 140 feet long and its height varies from approximately 7.5 to 8.7 feet above MSL. The width of the breakwater situated above sea level varies from about 6 to 8 feet; however, submerged rocks extend out about another 6 to 8 feet within the former boat basin and 8 to 10 feet outside the basin.

PHOTO 1: DIAMOND HEAD BREAKWATER

The topographic survey map included as Exhibit 5 shows the total width of the breakwater (including submerged portion) ranging from about 20 to 28 feet wide. During certain periods of high surf, waves splash or break over this breakwater. However, typical surf conditions occurring throughout the majority of the year are not high enough to overtop this breakwater. The Diamond Head Breakwater also contains a submerged pipe that hydraulically connects the interior of the basin to the adjacent cove allowing improved flushing or circulation of basin water. The diameter of the submerged pipe is approximately 48 inches and is large enough for someone to pass through it (see Photo 2).

Prior to the construction of the breakwaters and creation of the basin in 1938, the project area included a natural volcanic dike that ran along the route of the Diamond Head Breakwater and across the basin channel (see Photo 3). A portion of this dike created an area that could be used as a salt-water swimming pool on top of a coral shelf. While the condition of the dike within the Diamond Head Breakwater is not known, it is suspected to be somewhat deteriorated. The initial plan in 1937 was to use the dike and build on it to create the breakwater. However, historic documents on the construction work state that blasting and drilling activities in the basin weakened the dike, and parts of it fell apart from wave action. Therefore, a rubble mound breakwater was constructed over what remained of the dike using large rocks planned to have a 1.5 to 1.0 slope. Based upon topographic survey data, it appears the breakwater was constructed at a 1.0 to 1.0 slope (45%) (see Photos 4 and 5)

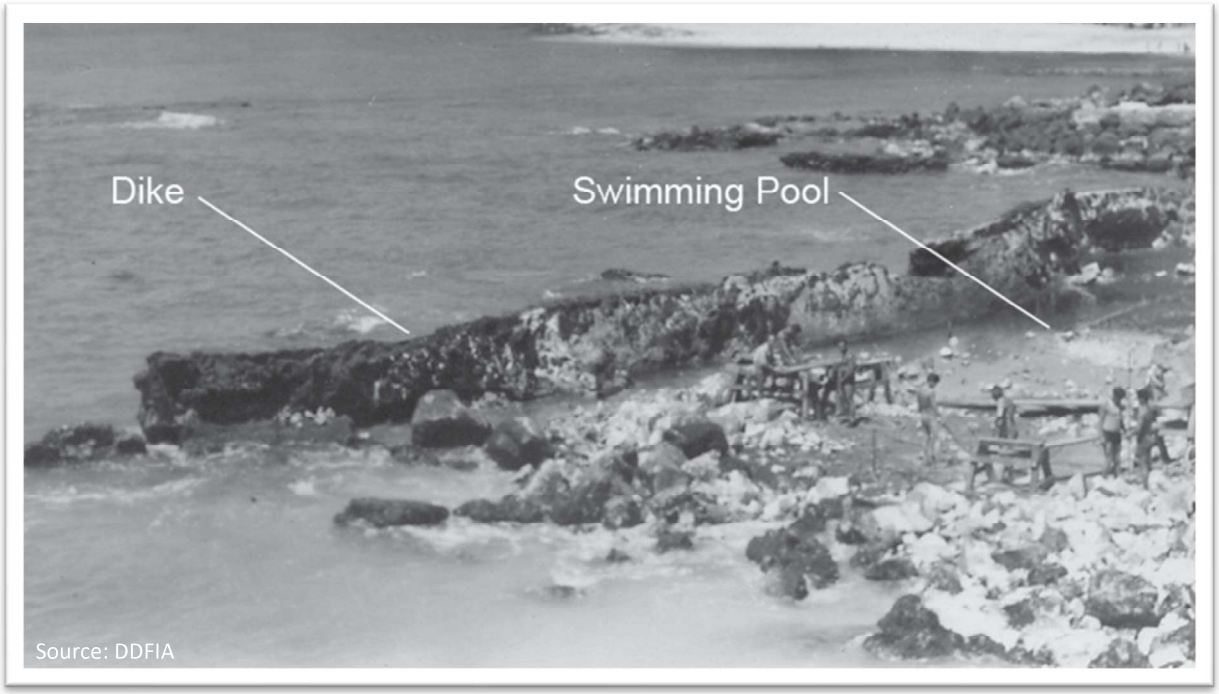


TOPOGRAPHIC MAP

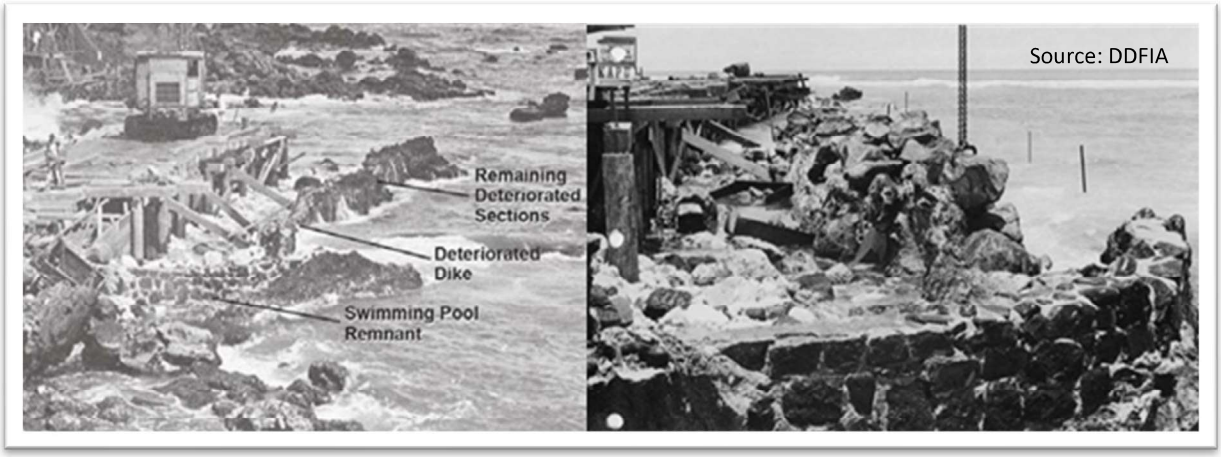
EXHIBIT 5

PHOTO 2: SUBMERGED PIPE IN DIAMOND HEAD BREAKWATER

PHOTO 3: EXISTING DIKE DURING BREAKWATER CONSTRUCTION



PHOTOS 4 & 5:

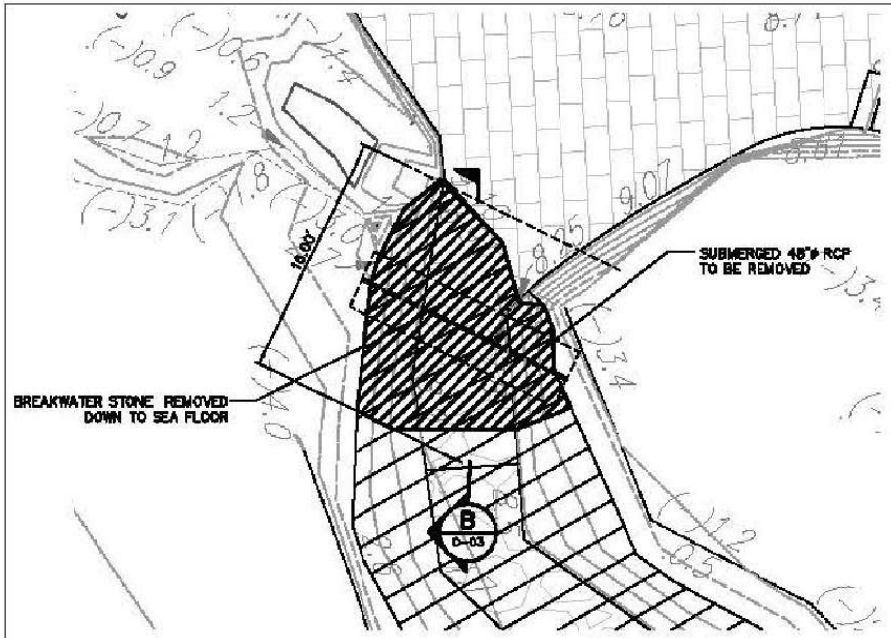


1937 DETERIORATE CONDITION OF DIKE DURING BREAKWATER CONSTRUCTION **BREAKWATER CONSTRUCTION OVER DIKE**

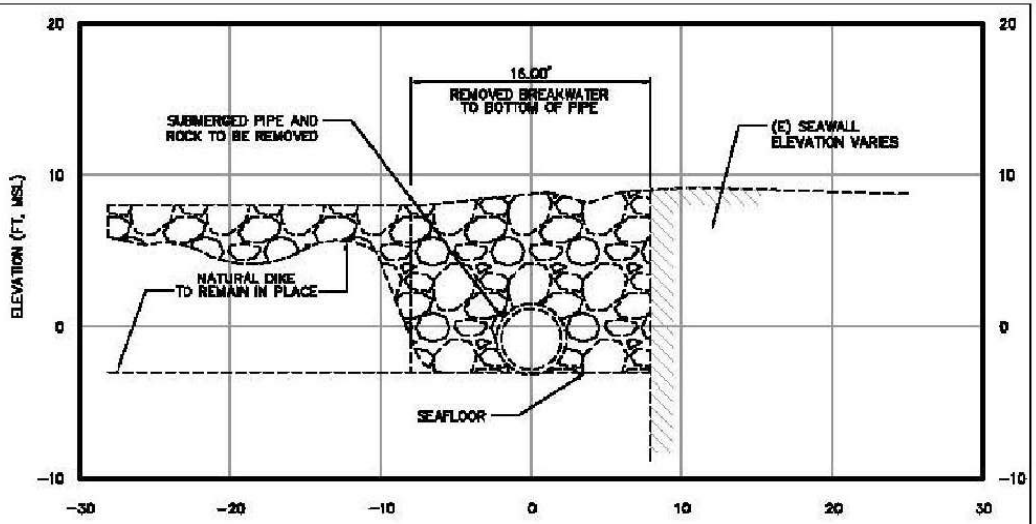
DLNR is now proposing to dismantle the Diamond Head Breakwater and re-use the boulders to re-create a natural rocky shoreline fronting the Shangri La seawall to address public safety issues by deterring risky behaviors in the area (see Exhibit 6).

Dismantling the Diamond Head Breakwater:

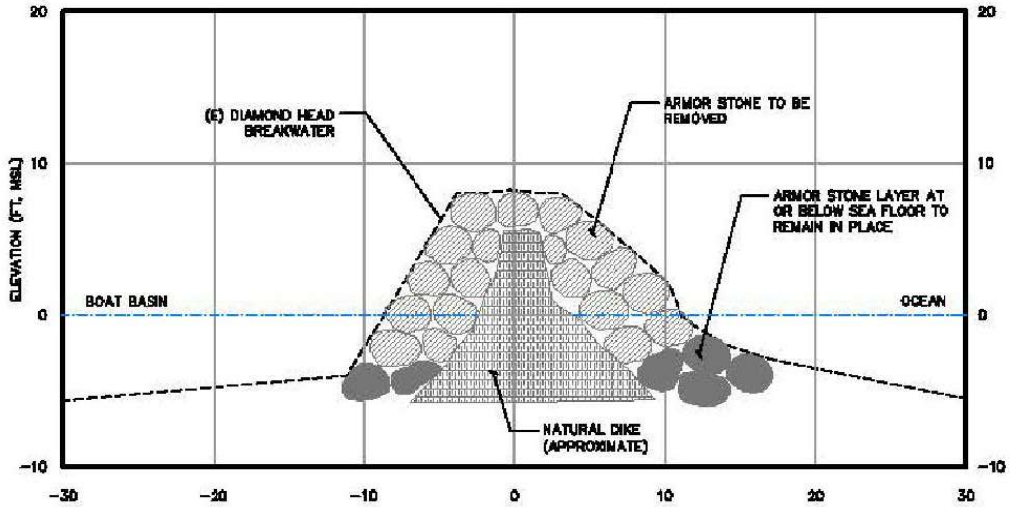
The Diamond Head Breakwater is proposed to be dismantled by removing all of the boulders except for the last row of boulders which are situated on the ocean floor. The row of boulders on the ocean floor would remain because they are partially buried by sand accumulation; and this would reduce turbidity effects from dismantling activities. It is estimated that approximately 500 cubic yards of boulders would be removed from the breakwater. The structurally sound portions of what remains of the natural volcanic dike underneath the breakwater would be untouched. Broken or loose pieces from remaining sections of the dike would be removed to prevent further deterioration from wave activity that may create potential hazards from dislodged pieces. No blasting and/or excavation of the natural dike is proposed. While the dike's condition is unknown, what remains is anticipated to be deteriorated and lower in height compared to the existing breakwater. It is anticipated that remnants of the dike likely vary in height from mean sea level (MSL) to approximately 3 feet above MSL. By removing the breakwater, the direct connection between the public access path to the dike would no longer exist upon completion of the project thus reducing the convenience, attraction, thrill of jumping, and the potential for injuries. In addition, the existing drainage pipe situated within the breakwater would also be removed and disposed of, thus eliminating the hazard of persons trying to swim through it. Exhibit 7 includes a typical section view of the boulder removal around the dike, and the removal of the drainage pipe section of the breakwater while Exhibit 8 shows visual simulations of before and after dismantling the Diamond Head Breakwater and re-naturalizing the shoreline.



1 C-02 **DETAIL: PIPE REMOVAL**
SCALE: 1"=5'



B C-02 **SECTION: PIPE REMOVAL**
SCALE: 1"=5'



A C-03 **TYPICAL SECTION: DIAMOND HEAD BREAKWATER ARMOR STONE REMOVAL**
SCALE: 1"=5'

NOTES

1. ELEVATIONS BASED ON MSL DATUM.
2. CONDITIONS AND DIMENSIONS OF NATURAL DIKE ARE UNKNOWN. WIDTH AND HEIGHT WILL VARY ALONG THE BREAKWATER LENGTH.

0' 5' 5' 10'
SCALE: 1"=5'

Source: moffatt & nichol

SECTION VIEW - DRAINAGE PIPE SECTION AND BREAKWATER

EXHIBIT 7

Current View of Diamond Head Breakwater from Balcony

Simulated View After Breakwater Dismantling

Current View of Breakwater and Basin

Simulated View After Breakwater Dismantling

Source: HHF Planners

VISUAL SIMULATIONS OF PROJECT IMPROVEMENTS

EXHIBIT 8

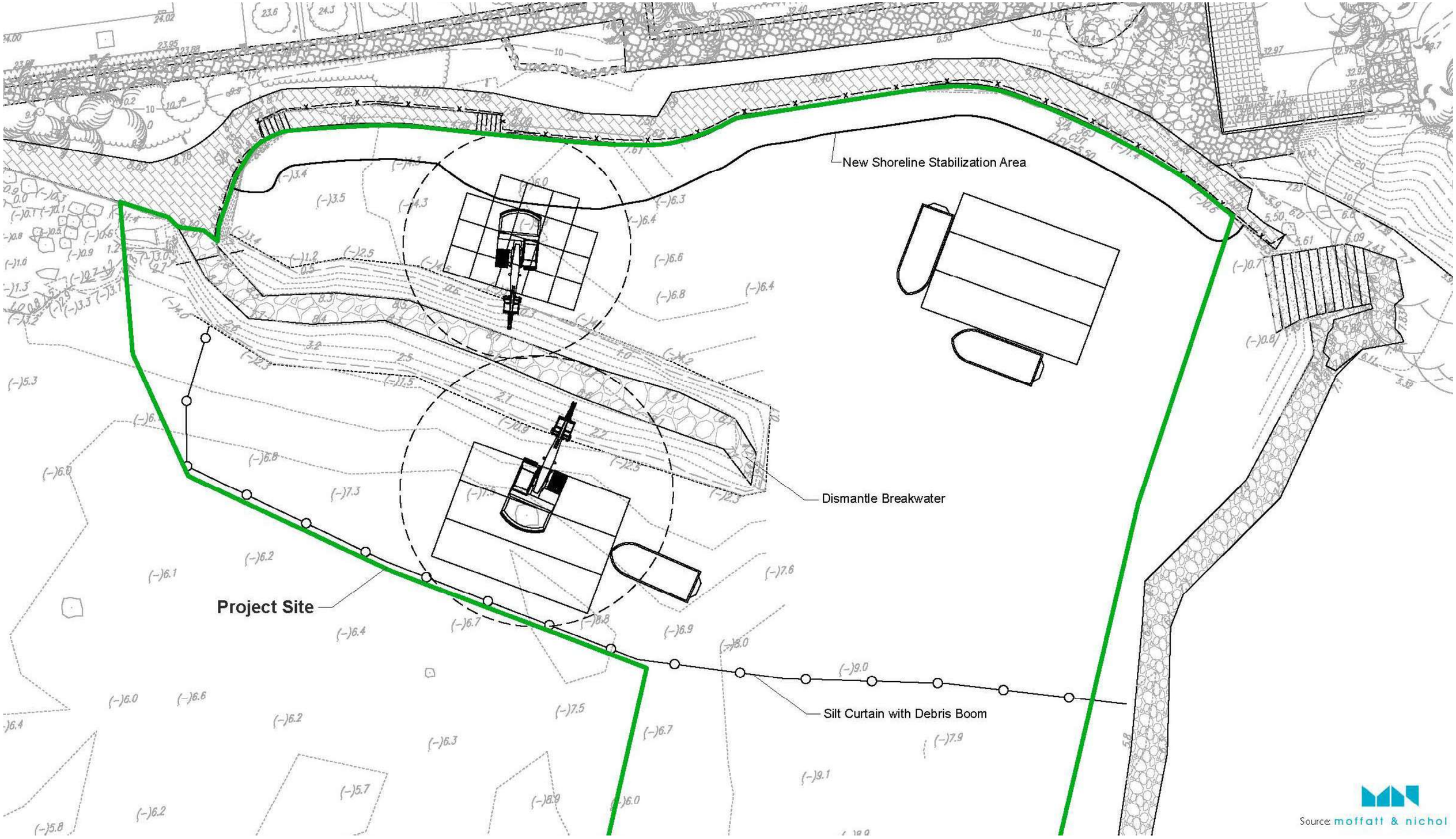
While detailed construction plans for the dismantling would be developed during the project's design phase, some preliminary construction methods have been identified. Most of the work is planned to be done using waterborne equipment as there is limited landside access to the basin site. Rock removal and placement activities would be performed by crane and/or excavator fitted with a clamshell bucket and thumb. The crane/excavator would be positioned on a barge or other suitable working platform positioned with the work areas. These platforms typically consist of modular units that can be customized for site-specific working conditions. Multiple barges or platforms may be used for temporary staging and storage of materials and equipment. The barges and platforms would be held in their working positions using some combination of spuds, anchors and working vessels. Small working vessels would accompany these barges to transport crew members and position the platforms during work. Exhibit 9 is a conceptual diagram showing how construction activities with barges and cranes could occur.

While the primary construction method is to have barges work from within the basin or just near the entrance at the eastern end of the breakwater, a larger excavator may be required to reach over the dike from within the basin to remove boulders on the makai end of the breakwater. To support a larger excavator, boulders from the breakwater or additional imported rock may be required to bolster the inside of the breakwater to create a safe surface. This would create the need to temporary construction "fill," but would be ultimately removed and used to create the re-naturalized shoreline along the face of the Shangri-La seawall.

As an alternative, barges may need to be situated outside (makai of) the breakwater to allow the crane and/or excavator to efficiently remove boulders on the makai end of the breakwater. It is anticipated that an operational area of approximately 40 to 50 feet would be required seaward of the breakwater as shown in Exhibit 9. Barges and platforms would be positioned such that anchors and spuds would be located within an established operation zone to minimize impact to marine areas further outside of the breakwater. It is anticipated that two spuds would be used for each barge, and spuds would be no larger than 18 inches in diameter and would extend about 3 feet deep into the reef outside of the breakwater. If this alternative is pursued, the contractor will be required to prepare a Barge Spudding Plan prior to construction which would document the existing marine conditions relative to proposed anchor locations. The Barge Spudding Plan will be submitted to Department of Aquatic Resources (DAR) for review prior to implementation and will identify proposed anchoring locations as well as identification on how the outside barge will be secured in such a way to minimize impacts to coral and live rock.

Additionally, DAR will be consulted to develop an action plan with monitoring activities to address potential invasive species that may become colonized on the remaining dike and new shoreline structure. All barges an in-water equipment used for construction activities will be inspected for the presence, and removal if necessary, of invasive species prior to use in the vicinity of the project area. Also, DAR will be granted, within a reasonable time frame, time to conduct a final survey to identify and remove and endemic coral within the area of impact.

In addition, some minor work from the landside of the Shangri La property would be performed using light-duty equipment and hand tools. This would consist of establishing a small, temporary staging area (most likely to be less than 250 square feet in size) for equipment, which would in turn provide the contractor with additional room on the barge(s). In addition, the contractor may use smaller equipment on the landside for final rock placement to re-naturalize the shoreline area.



PRELIMINARY CONSTRUCTION METHODS

EXHIBIT 9

Please note the need for a staging area on DDFIA property has not yet been determined. As the project progresses, DLNR will work with DDFIA to identify possible locations should a staging area and access on DDFIA's property be needed for the proposed project. DDFIA will approve such access and staging area prior to construction.

Naturalization of the Rocky Shoreline:

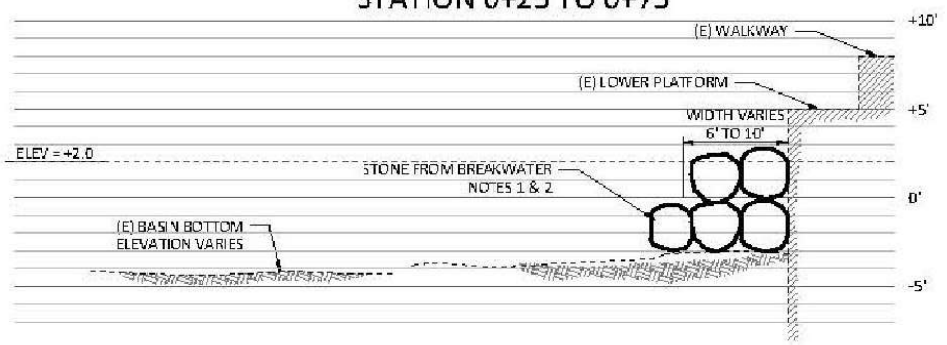
After dismantling the breakwater, the boulders would be placed along the face of, and makai of, the existing DDFIA seawall for the length of the entire basin in order to mimic the natural shoreline conditions as observed northwest of the existing breakwater (Photo 6). By doing so, the State hopes to create a condition that would deter the risky behavior of people jumping from the seawall into the basin.

The design presented in this application is the same design as what was presented in CDUA OA-3809. This would be the most extensive design that would be constructed and was designed for the purpose of protecting the public access walkway as the Shangri La seawall may be exposed to increased wave exposure once the Diamond Head Breakwater is dismantled. In addition, the design is expected to minimize overtopping of the seawall from waves during large wave events. As the design would create an area consistent with surrounding shoreline conditions, it may also enhance marine and aquatic habitat in the area in the long run.

PHOTO 6: Shoreline Conditions Northwest of Breakwater

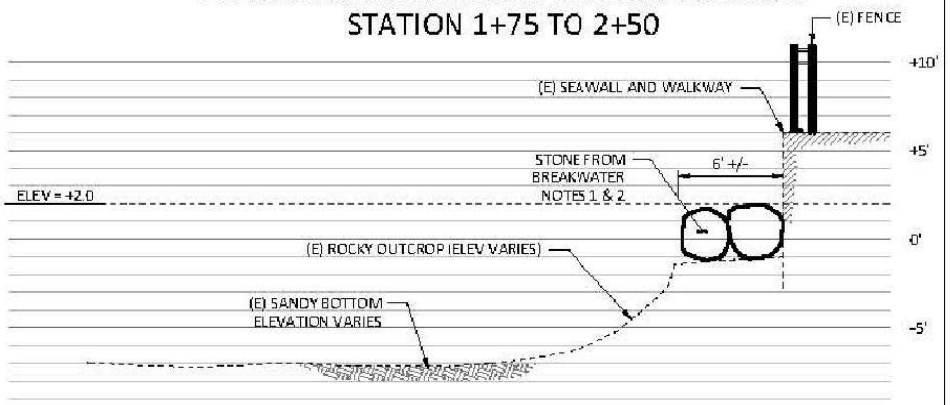
The placement of the removed boulders and imported large rock (as needed) would be a combination of an engineered revetment with clear, defined geometry and a more natural placement of boulders and rock to match adjacent shorelines in the immediate vicinity. Exhibit 10 includes preliminary typical sectional views showing the conceptual design. It would involve using boulders from the breakwater to create a base, addition additional layers along with imported rock, and eventually exposing them above the water.

TYPICAL ROCK PLACEMENT AT LOWER PLATFORM STATION 0+25 TO 0+75



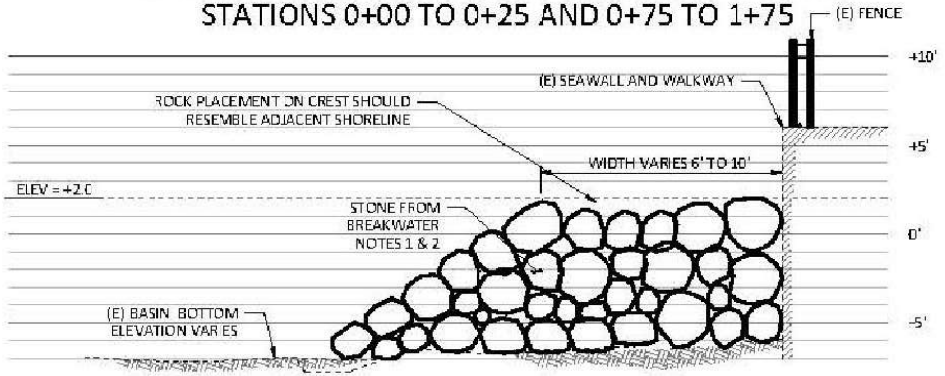
A SECTION
C-05 SCALE: 1"=5'

TYPICAL ROCK PLACEMENT ALONG OUTCROP STATION 1+75 TO 2+50



C SECTION
C-05 SCALE: 1"=5'

TYPICAL ROCK PLACEMENT ALONG SEAWALL SECTION STATIONS 0+00 TO 0+25 AND 0+75 TO 1+75



B SECTION
C-05 SCALE: 1"=5'

5' 0' 5' 10'
SCALE: 1"=5'

CONCEPTUAL DRAWINGS
ISSUED: 2015-03-20
NOT TO BE USED FOR CONSTRUCTION

Prepared by: moffatt & nichol

TYPICAL SECTIONAL VIEWS OF PROPOSED SHORELINE STRUCTURE

EXHIBIT 10

Large rocks would be exposed approximately 1 to 2 feet above sea level to create inter-tidal conditions similar to the adjacent cove to the west and would also extend seaward from the seawall approximately 10 to 15 feet in width (exposed and submerged). The actual construction would be field engineered and directed and is intended to be done by placing the boulders such that their final elevations range from mean lower low water to mean higher high water. Boulders will be placed to create continuous areas at mean lower low water, surrounded by boulders at mean higher high water to match adjacent shoreline conditions.

Similar to the breakwater dismantling, the placement of boulders and rock would be done using a crane and/or excavator fitted with a clamshell bucket and thumb. As the breakwater is deconstructed, it may be necessary to stockpile and sort material in order to place smaller pieces and under layer material along the Shangri La seawall. Temporary stockpiles would be placed on a separate materials barge until needed for placement along the seawall for protection.

Some import of large import rock would also be required to construct the improvements along the seawall face depending on the available volume and size of boulders obtained from the breakwater. Clean rock material that meet project specifications would be delivered by barge. It is estimated that approximately 850 cubic yards of material would be required to create the revetment. Given that an estimated 500 cubic yards of boulder would be available from the dismantled breakwater, approximately 350 cubic yards of new rock would need to be imported. The footprint of material placement along the seawall in the basin water would be approximately 2,850 square feet (0.07 acres). Construction plans developed during the project design phase would include more details and information on construction methods that could be used for the placement of the boulders and large rocks.

Dismantling of the breakwater could be implemented once the CDUA process is completed and applicable land use entitlements are obtained, which includes a Department of Army Permit from the U.S. Department of Army Corps of Engineers. Necessary ministerial permits would similarly be obtained as part of the design implementation phase. The entitlement process is planned to be completed by the end of 2022. Improvements are anticipated to begin in early 2024 and be completed within 9 to 12 months. Project implementation may be postponed until winter months because of the likelihood of increased wave activity along O‘ahu’s south shore during summer months.

The preliminary estimated cost budget for the dismantling of the Diamond Head Breakwater and creating the new shoreline structure would be in the range of approximately $2,500,000 (in 2016 dollars), and dependent upon the type of equipment and methods implemented by the contractor.

EXISTING CONDITIONS

Please describe the following, and attach maps, site plans, topographical maps, colored photos, and biological and/or archaeological surveys as appropriate.

Existing access to site:

Access to the site is provided via an unimproved path accessible from Kaʻalāwai Beach which travels east toward the project site, ending in a coral shelf terminating at the start of the boat basin seawall. The basin seawall includes a shoreline walkway providing the public with lateral access along the shoreline fronting the Shangri La property. This walkway is visible in Photo 7. Concrete steps are present at the mauka end of the Koko Head Breakwater, allowing public access to basin waters from the shoreline walkway. Photo 8 shows the location of these steps. East of the Koko Head breakwater is a rocky shoreline fronting several residential estates. The shoreline in this area is accessible, but unimproved and extends further east for a short distance. There is no convenient shoreline access further east.

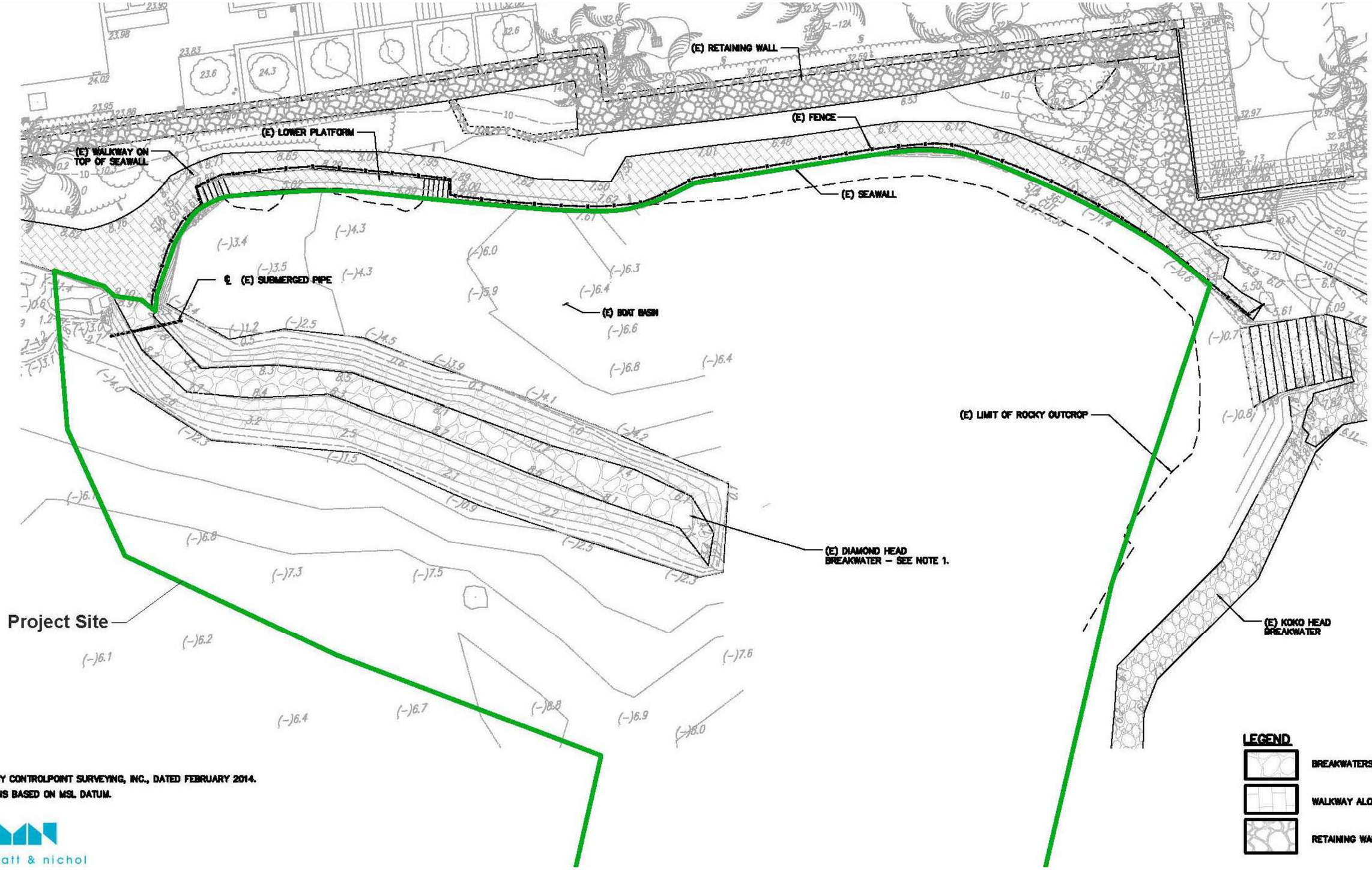
PHOTOS 7 & 8:

PUBLIC WALKWAY PROVIDING LATERAL ACCESS

CONCRETE STEPS AT KOKOHEAD BREAKWATER PROVIDES ACCESS TO FORMER BOAT BASIN

Existing buildings/structures:

Existing structures in the project site and its vicinity include the Diamond Head Breakwater, Koko Head Breakwater, the natural volcanic dike within the Diamond Head Breakwater, the former boat basin, and the Shangri La seawall. The location of these structures is shown in Exhibit 11.



NOTES

1. SURVEY BY CONTROLPOINT SURVEYING, INC., DATED FEBRUARY 2014.
2. ELEVATIONS BASED ON MSL DATUM.

Source: moffatt & nichol

EXISTING SITE PLAN

EXHIBIT 11

Diamond Head Breakwater: The Diamond Head Breakwater was constructed in 1938 and extends seaward from the western end of the property in a southeast direction to provide protection from Kona storm waves. This breakwater generally has a pyramid-shaped profile and is comprised of large boulders. The crest of this rubble mound breakwater is somewhat level, allowing persons to walk on it. The breakwater is about 140 feet long and its height varies from approximately 7.5 to 8.7 feet above MSL.

The width of the breakwater situated above sea level varies from about 6 to 8 feet; however, submerged rocks extend out about another 6 to 8 feet within the basin and 8 to 10 feet outside the basin. The topographic survey map included earlier as Figure 4 shows the total width of the breakwater (including submerged portion) ranging from about 20 to 28 feet wide. During certain periods of high surf, waves splash or break over this breakwater. However, typical surf conditions occurring throughout the majority of the year are not high enough to overtop this breakwater. The Diamond Head Breakwater also contains a submerged pipe that hydraulically connects the interior of the basin to the adjacent cove allowing improved flushing or circulation of basin water. The diameter of the submerged pipe is approximately 48 inches and is large enough for someone to pass through it.

Koko Head Breakwater: The Koko Head Breakwater was also constructed in 1938 and extends seaward in a southwest direction from the eastern end of the property (see Photo 9). This breakwater provides protection from southern swells and is oriented generally north to south. The breakwater is approximately 175 feet long and constructed similar to the Diamond Head Breakwater using boulders stacked in a pyramidal orientation without concrete or mortar. Boulders comprising the breakwater average about 55 inches in diameter and are stacked four courses high on the mauka end and seven to eight courses high on the makai end. The breakwater terminates on the makai end with a raised platform and low rock wall.

PHOTO 9: KOKOHEAD BREAKWATER

Natural Volcanic Dike: Prior to the construction of the breakwaters and creation of the basin in 1938, the project area included a natural volcanic dike that ran along the route of the Diamond Head Breakwater and across the basin channel. A portion of this dike created an area that could be used as a salt-water

swimming pool on top of a coral shelf. A 1936 Territory of Hawai'i letter from the surveyor (L. Whitehouse, personal communication, September 8, 1936) as part of Land Court Application 1136 for the property described this dike. There was no sand beach present along the frontage of the Shangri La site, or along the shoreline sections to the east and west.

A summary of this dike is described from the west end to the east, and Exhibit 12 includes a portion of the Tax Map for this site graphically showing the general route of the dike. Based upon historic photos, it appears the dike was about 5 to 6 feet in height above the water surface.

1. A portion of the dike was utilized to form the sea front of a swimming pool with the pool floor made up of a coral shelf.

2. The side walls of the pool were constructed on the coral shelf by adding some rocks and plastering it with cement.

3. Continuing past the swimming pool area, the dike was in good condition and remained above the water surface.

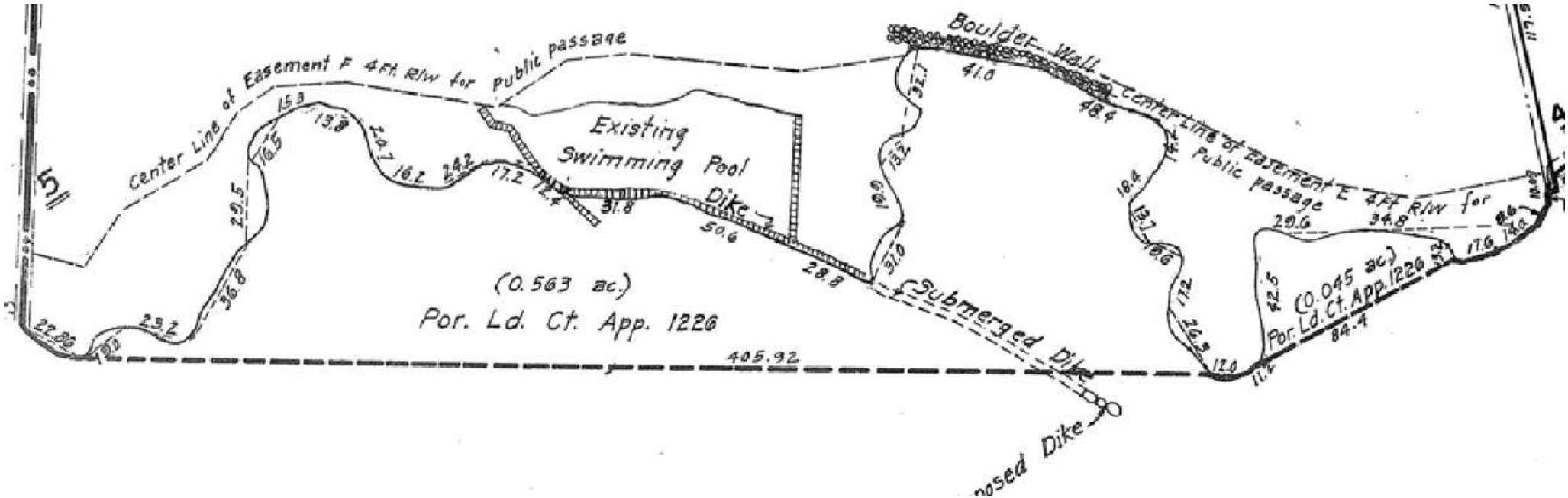
4. The section across the basin entrance was broken down by wave action such that it was submerged even at low tide.

5. A final short section of the dike then protrudes above the water surface on the western end (near the current Koko Head Breakwater).

As stated earlier, the condition of the dike within the Diamond Head Breakwater is not known, but it is suspected to be somewhat deteriorated. The initial plan in 1937 was to use the dike and build on it to create the breakwater. However, historic documents on the construction work state that blasting and drilling activities in the basin weakened the dike, and parts of it fell apart from wave action. Therefore, a rubble mound breakwater was constructed over what remained of the dike using large rocks planned to have a 1.5 to 1.0 slope. Based upon topographic survey data, it appears the breakwater was constructed at a 1.0 to 1.0 slope (45%).

Former Boat Basin: The former boat basin was created by dredging the nearshore area of the former swimming pool for use and vessel berthing. The channel leading into the basin, situated along (west of) the Koko Head Breakwater, was planned to be dredged to a depth of 8 feet. However, historic documents indicate the dredging of the channel was not performed, and the breakwaters were completed in December 1938. The far eastern (Koko Head) portion of the dike exposed above the water surface either was removed or is now encased within the Koko Head Breakwater.

Although the boat basin is no longer used for boats, it has been a popular sand bottomed recreation area. This basin area is approximately 0.32 acres in size, and generally includes the waters inland of the Diamond Head Breakwater and up to the channel entrance bounded by the Koko Head Breakwater where the submerged dike once extended. The depth of the inland area (west end) of the basin varies from about 3.5 to 4.5 feet below MSL. Towards the channel entrance, the water depth increases to about 6.0 to 6.5 feet below MSL. The channel leading into the basin has a water depth of about 8.0 to 9.0 feet below MSL.



Source: DDFIA

FORMER DIKE BASED UPON TAX MAP (3-1-041:005), AUGUST 1932

EXHIBIT 12

Steps allowing exit from the boat basin are attached to the Koko Head Breakwater. These steps have a submerged concrete foundation in front along with a small coral shelf. Photos 10 and 11 depicts shows these conditions.

PHOTOS 10 & 11: FORMER BOAT BASIN EXISTING CONDITIONS

Shangri La Seawall: Along the Shangri La shoreline, the boat basin has a stone seawall with a stone walkway surface (public shoreline walkway) that provides public lateral access along the shoreline. In 2014, a 6-foot high aluminum fence was installed along the public shoreline walkway at the edge of the seawall (see Photo 12). Two sets of concrete steps are present at the Diamond Head end leading to a lower section of the seawall where access to a vessel berth was formerly located (refer back to Figure 10 – Existing Site Plan). A tall reinforced concrete retaining wall with lava rock veneer separates the residential portion of the property from the public lateral access along the seawall. This retaining wall increases in height as it nears Shangri La's main house, and ranges from approximately 13 feet to 40 feet tall.

Along the shoreline, the seawall with stone walkway forms the inland (mauka) edge of the basin and is approximately 260 feet in length measured from the Diamond Head Breakwater (southbound) to the concrete stairs at the Koko Head Breakwater. The seawall varies in height from about 9 feet above MSL at the Diamond Head Breakwater, to 7.5 feet above MSL east of the stairs serving the vessel berthing area, and then gradually decreasing to 5.5 feet above MSL at the steps at the Koko Head Breakwater. The lower section of the seawall formerly used for access to the vessel berthing area is about 5 feet above MSL. Note that a 6-foot high aluminum fence was installed in May 2014 along the public shoreline walkway at the edge of seawall as an initative to increase public safety and maintain public access.

Existing Recreational Activities:

Ka'alāwai Beach is a narrow strip of beach situated west of the project site. This sandy beach starts near the end of Kulamanu Place and stretches along the shoreline toward the Diamond Head Road lookout. This beach is protected by a fringing reef and has several small sandy pockets for swimming and

snorkeling. Other activities occurring include shoreline fishing, bodysurfing, diving, throw-netting, and surfing at the "Brown's" surf site located off of this beach.

Kāhala Beach is a narrow strip of beach situated east of the project site. This sandy beach starts from the eastern end of Black Point and stretches over 1.0 miles along the shoreline up to Waiʻalae Beach Park. This beach has a shallow offshore fringing reef, rendering it generally unattractive for swimming. It does have a few small sand pockets for swimming and snorkeling. The western end of this beach is narrow and underwater during high tide. Other activities occurring include shoreline fishing, diving, throw-netting, and a few potential surfing spots which are not as popular as others.

PHOTO 12: EXISTING SEAWALL AND PUBLIC SHORELINE WALKWAY

Within the former boat basin and immediate project area, existing recreational activities occurring at different frequencies include swimming, snorkeling, free diving (fishing), shoreline fishing, accessing outside surf areas such as the "Cromwell's" surf site, and "hanging out" within the basin waters. Shoreline fishing usually occurs at the landing at the seaward end of the Koko Head Breakwater, and occasionally from walking along the seawall. The Koko Head Breakwater landing is more popular because it extends the farthest seaward providing persons with a wider area and deeper ocean conditions to cast their lines. Shoreline fishing does not occur within the basin due to the absence of fish, but people do occasionally walk along seawall sections outside the basin and cast their lines seaward.

Snorkeling occasionally occurs in the surrounding area, however, it is not common within the basin because the area is small and doesn't provide the underwater experience typically desired (i.e. viewing abundant corals and unique habitat or being able to swim with fishes). Areas seaward of the Diamond Head Breakwater have more interesting underwater features for snorkeling, but the rougher open ocean conditions (e.g. wave surge) make this activity more difficult. Similarly, free diving for fish does not occur within the basin, but can occasionally occur outside the Diamond Head Breakwater, provided one is experienced in navigating the wave surge and open water conditions.
Some recreational swimming does occur within the basin. People use the concrete stairs at the Koko Head Breakwater to access and swim within the basin. However, the primary activity occurring within the basin

is general relaxing and hanging out in the water. Also, this would be where the unsafe activity of jumping into the basin from the seawall and Diamond Head Breakwater occurs as well as swimming through the 48-inch drainage pipe located within the Diamond Head breakwater.

The majority of people using the basin consist of teenagers and young adults. Children occasionally use the inner basin accompanied by adults. However, the basin is not as conducive for usage by children given difficulties accessing the inner basin. Without any stairs on this end, people need to jump into the water and climb the breakwater boulders or seawall to get out.

Dismantling of the Diamond Head Breakwater is not anticipated to affect Kaʻalāwai Beach to the west or Kāhala Beach to the east. The removal of the breakwater should have minimal change to nearshore circulation patterns or wave environment that would affect these nearby beaches. Projected nearshore circulation patterns would also have no significant impact on the sand present along these beaches. No changes are anticipated to occur to the sand distribution present at Kaʻalāwai Beach as this beach is located in a littoral cell that is isolated from the boat basin by rocky headland and shallow water. Therefore, swimming, public access and other ocean-based recreational activities occurring at Kaʻalāwai Beach and Kāhala Beach should continue with minimal or no change to conditions due to the project.

Coastal modeling conducted determined that this project would have minimal, if any, change on wave height conditions at the two nearby local surf spots known as “Brown’s” and “Cromwell’s” (both located outside the project area). The wave height modeling exercise evaluated potential changes in surf breaks from different approaching wave directions. Modeling different wave scenarios resulted in no change to wave heights at these surfing locations for three of the four scenarios. The only change for waves was from the southeast direction and varied only ±0.01 feet.

Within the former boat basin, the coastal modeling conducted indicated that there would be minimal change to wave heights along the Shangri La seawall with the project area. The dike remaining underneath the breakwater could have a height of about 3 feet above mean high water mark depending upon its condition and is predicted to provide similar protection to the basin as compared to the breakwater. A conservatively high surf condition of 12.5-foot waves is predicted to only generate wave heights of about 2.7 feet within the basin and lower heights within the protected section of the basin. This is due to wave dissipation as it approaches the shoreline and encounters the coral reef formation outside of the Diamond Head Breakwater. Therefore, future wave heights occurring within the basin resulting from the project should not significantly prevent the public from participating in recreational swimming, snorkeling or other activities.

Recreational activities occurring in the basin area would continue with project improvements. The concrete stairs would continue to provide safe access into the ocean. Participation in recreational activities would continue to be available, but the character of the existing basin will be changed due to the dismantling of the man-made breakwater and construction of a naturalized rocky shoreline along the Shangri La seawall. This change in the character of the existing basin by naturalizing the shoreline area fronting the Shangri La seawall would hopefully deter risky activities such as jumping into the basin from the seawall.

The new shoreline structure would include rocks exposed above the water’s surface and would decrease available open water along the Shangri La seawall by about 6 to 10 feet within the inner basin. However, uncovering the volcanic dike will increase available recreational space within the basin by the former

breakwater by about 6 to 8 feet. Therefore, the overall net loss in available space to swim, hang out, or conduct other activities within the basin should be minor (±2 horizontal feet). The width at the inner end (western) of the basin is about 35 feet wide and increases to about 60 feet wide toward the eastern end of the Diamond Head Breakwater. There would continue to be sufficient space within the basin to participate in recreational activities, but discourage any risky activities such as jumping.

Participation in recreational activities would continue to be available since the volcanic dike would provide some protection from wave energy within the basin, particularly during periods of smaller surf conditions. There would be a small increase in the flow pattern within the inner basin from a strong southeast swell (6.9 feet height). Much of the time, there would not be a strong swell, and flow patterns within the inner basin should be similar to present conditions having minimal effect on recreational activities. With the project, there will likely be some movement of sand within the basin. The majority of people using the basin consists of teenagers and young adults, and this demographic of users of the site is expected to continue with the project. The concrete stairs at the base of the Koko Head Breakwater will not be affected and would continue to provide safe and convenient access into the basin and outlying ocean areas for the public.

The project should not impact shoreline fishing in the area because it mainly occurs from the raised platform at the end of the Koko Head Breakwater. Shoreline fishing would continue from the seawall and would not be adversely impacted by the project.

Coastal modeling was also used to estimate the potential for wave run-up and overtopping of the seawall with the project as this could impact pedestrians walking along the public pathway fronting the Shangri La property. Under the current breakwater and seawall conditions, a scenario based upon significant waves (12.5 feet) is projected to result in an overtopping rate of 15 gal/min/ft. This rate of overtopping would pose a current hazard for pedestrians being hit by the water while walking along the seawall. A 1-foot rise in sea level would almost double the rate of overtopping during such a large swell event to 29 gal/min/ft. With the project, this walkway area would have a considerably lower wave overtopping rate due to energy dissipation provided by the armor stones from the breakwater (shoreline structure) placed along the seawall. An overtopping rate of only 1 gal/min/ft is projected that would be more tolerable for the public walking along the walkway during a strong swell event. With sea level rise, the overtopping rate would still remain within tolerable levels of only 4 gal/min/ft. Therefore, the project would have a beneficial impact on pedestrian safety along the walkway used for recreational activities.

Deconstruction of the breakwater and construction of the shoreline structure would improve public safety in the basin by greatly discouraging and reducing unsafe activities. The remaining dike is likely to be considerably lower in height than the breakwater (possibly 3 feet tall) and should not be in a condition that would allow a person easy access to walk on, and would have no direct connection from the Shangri La seawall which should discourage jumping from the dike. The natural placement of rocks along the seawall should also discourage jumping from the seawall and fence. These conditions created by the project are meant to discourage dangerous activities, and thereby improve public safety within the basin creating a positive effect on recreational activities.

Existing utilities (electrical, communication, gas, drainage, water, & wastewater):
Utility infrastructure is not present in the project site as it involves submerged lands. The project will not result in adverse impacts to adjacent utilities nor will improvements require installation of new utility infrastructure.

Physiography (geology, topography, & soils):
General project area geology and project site oceanographic conditions are discussed in this section. Soil and topographic conditions are not discussed since the project site consists of submerged lands. As a result, these physiographic topics are not applicable to this project.
General Geomorphology: The promontory of Black Point, also known as Kūpikipikiʻō was created by a thin black lava flow from the southeast side of Diamond Head Crater. Lava rock displaced by volcanic eruptions and outcroppings of the exposed limestone reef are both visibly intermixed along this stretch of shoreline adjacent to the boat basin. Exhibit 20 shows photos of this shoreline prior to construction of the boat basin circa 1936, demonstrating the pre-construction site geomorphology.

It is anticipated that the project will not adversely impact the geomorphology of the project site as the Koko Head Breakwater will continue to provide protection from waves emanating from the southeast. Remnants of the volcanic dike uncovered by the dismantling of the Diamond Head Breakwater would also continue to provide some wave protection. The new shoreline structure is anticipated to provide increased protection of the seawall and shoreline walkway by dissipating wave energy.

Buried within the Diamond Head Breakwater are the remnants of a volcanic dike that extended from the shoreline into the ocean along the current breakwater alignment. As discussed earlier, this natural volcanic dike runs along the route of the Diamond Head Breakwater. A letter discussing construction for the Diamond Head Breakwater stated that blasting and drilling activities in the basin weakened the dike, and parts of it had fallen apart from wave action. Therefore, the present condition of the dike within the Diamond Head Breakwater is unknown but is suspected to be somewhat deteriorated.

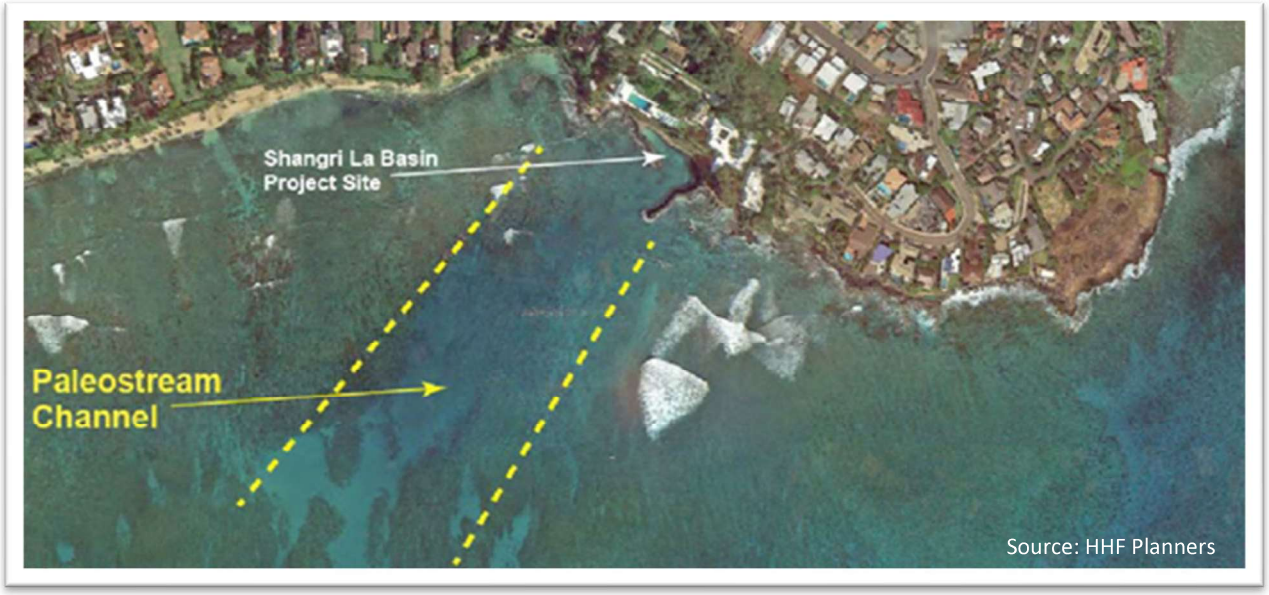
The project would remove loose portions of the dike where practicable leaving intact sections. Removal of loose portions would minimize impacts to the surrounding environment by pieces that may fall into the ocean or be transported by wave surge. The project should not have an adverse effect on the present condition of the dike since removal of the breakwater boulders would allow for generally restoring conditions to what existed prior to the breakwater's construction in 1937.

General Oceanographic Conditions: Fringing reefs are evident on both sides of the boat basin. This reef typology forms on the fringing slopes of shield volcanoes after volcanic activity has ceased. A paleostream channel is also present that intersects these reefs providing a natural navigation channel to the site from deeper waters offshore. Due to the presence of this channel, waves break within the nearshore area along both sides of the boat basin, while the relatively deeper waters of the channel remain calm. Photo 13 is an aerial photograph showing the general extent of this channel between the two fringing reefs.

Rock removal for the deconstruction of the Diamond Head Breakwater should not adversely impact reefs near the basin nor the paleostream channel as best management practices (BMPs) will be implemented. These BMPs would be developed in further detail during the project's design phase for incorporation into deconstruction plans to minimize effects within the project area.

Coastal Processes: Tidal variation in the Hawai'i rarely exceeds two feet and comparably less tidal variation than patterns observed on the west coast of the continental United States is observed. However, significant non- astronomical factors impact normal tidal function and water levels in the Hawaiian Islands. Extreme tides can occur due to large scale oceanic eddies propagating through the islands. Additional increases in tide level can result from storm surges, reduced atmospheric pressure, wave setup, and large-scale climate patterns (i.e. oscillation of the North Pacific Gyre).

PHOTO 13: AERIAL PHOTO GENERALLY SHOWING PALEOSTREAM CHANNEL



A coastal modeling and engineering analysis was conducted for this project and is discussed in greater detail in the Final EA/FONSI (a digital copy has been provided along with this application). This analysis was conducted to evaluate how the project may affect waves and currents in the nearshore zone. Scenarios modeled included a reduction of the Diamond Head Breakwater to the height of the anticipated 3-foot natural dike to total removal of the volcanic dike. Results of this analysis are summarized below.

Currents: Nearshore flow modeling was conducted to assess the potential for changes to currents that could impact sediment transport processes and swimming conditions along the shoreline near the project area. Modeling for this scenario incorporated nearshore circulation patterns during a southeast swell event with wave heights of 6.9 feet. Results indicated that nearshore circulation patterns with the project would be similar to existing conditions. Significant changes to swimming conditions and sediment transport process would not be expected. Nearshore circulation patterns with the project would also remain similar to existing conditions. The only noticeable change estimated involves a slight increase in flow magnitude in the western section of the boat basin.

Sea Level Rise: Sea levels are rising in Hawai'i and across the globe due to ocean thermal expansion and the melting of ice sheets and glaciers. These underlying causes of sea level rise are driven by climate change, and as the climate and the oceans continue to warm, it is projected that global mean sea levels

will rise at an increasing rate. Based on measurements at Honolulu Harbor, the mean sea level in the study area has increased at an average rate of 1.41 ± 0.22 millimeters (mm) per year (5.52 inches per century) between 1905 and 2014. This rate is less than the eustatic (global average) rate of sea level rise over the 20th century of about 2 mm per year, possibly a result of ongoing land uplift experienced on Oʻahu.

The coastal modeling and engineering analysis conducted for the project incorporated a 1-foot rise in sea levels. The model estimated changes to wave overtopping heights at the seawall resulting from the project. A conservatively high surf scenario modeled using 12.5-foot waves from the southwest indicated the project would have a beneficial impact on overtopping rates, even with the effect of sea level rise. The seawall revetment is anticipated to dissipate wave energy resulting in a comparatively lower estimated overtopping rate of 1 gal/min/ft relative to the present estimated overtopping rate of 15 gal/min/ft. When sea level rise is considered, the overtopping rate with the revetment improvement is projected to rise to 4 gal/min/ft, which is significantly lower than the 29 gal/min/ft estimated without project implementation. Additionally, GIS data from NOAA shows a 1-foot projected sea level rise would have minimal change to the boat basin project area.

Waves: Four wave types characterize Hawaii's wave climate: 1) northeast trade wind waves; 2) North Pacific swell; 3) south swell; and 4) Kona storm waves. The south shore of Oʻahu is generally sheltered from winter North Pacific swells and from predominant north east trade wind-generated waves. However, the project site is subject to some refracted easterly trade swell wrapping around the Black Point promontory and is primarily exposed to waves from south swells and Kona storms.

Wave height modeling along the shoreline area analyzed impacts from 12.5-foot-tall waves emanating from the southwest. The model also assumed the volcanic dike under the Diamond Head Breakwater would remain after deconstruction, standing 3 feet above the mean high water mark. Modeling results indicate wave heights of about 2.7 feet could be expected along the Shangri La seawall section not protected by the breakwater and dike with and without the project. Similarly, the interior of the basin under both scenarios would be exposed to waves about 2 feet or less. Outside the breakwater and dike, wave heights of about 5 feet would be concentrated primarily in the center of the breakwater under both scenarios. Model results indicate that wave heights are anticipated to remain similar along the seawall with and without the project. Therefore, the project should not result in significant changes to wave heights near the project area or have adverse wave impacts to the seawall.

Impacts to wave conditions at the nearby Brown's (generally located off Kaʻalāwai Beach) and Cromwell's (located offshore of the project site) surf breaks resulting from the project were also modeled. Modeling analysis assumed a south swell event as it represents a favorable wave height and direction for these surf breaks. Significant changes in wave heights are not anticipated based on model results. The maximum change across all scenarios modeled varied minimally between ±0.01 feet.

Hydrology (surface water, ground water, coastal waters, & wetlands):

The project site is located within the larger Waiʻalae Nui watershed area that generally extends from the Koʻolau Mountain Range to the shoreline. Watershed stormwater runoff generally discharges into Waiʻalae Stream, which eventually discharges at Kāhala Beach. Runoff from other developed areas is collected by the City's storm drainage system, eventually discharging at various areas along the shoreline.

There are no perennial or intermittent streams in the immediate vicinity of the project site. Within the immediate project area, runoff is discharged at the end of nearby roads leading to the shoreline, such as Kuine Place and Kulamanu Place. Within the Shangri La site, runoff generally sheet flows across the property and is collected in a drainage system that eventually discharges runoff through five outlets situated along the shoreline fronting the property.

Water Quality: A water quality survey was conducted in 2014 in the former boat basin, the entrance channel, and nearby offshore area to assess the impact of the project on project site water quality. Water samples were collected at 15 locations along a sampling transect starting at the point of discharge at the drainage pipe within the Diamond Head Breakwater, then extending approximately 500 feet offshore in an area deemed to be beyond the influence of land activities (see Photo 14). Water quality parameters evaluated included the 10 specific water quality criteria designated for open coastal waters under the State Department of Health's (DOH) Water Quality Standards (Chapter 11-54, HAR). In addition, orthophosphate phosphorus (PO43-) and silica (Si) were reported because these parameters are indicators of biological activity and the degree of groundwater mixing. This survey is discussed in detail in the Final EA.

PHOTO 14: WATER QUALITY SAMPLING TRANSECT SURVEY LOCATIONS

Survey results indicate that the detectable groundwater input at the shoreline results in nutrient and salinity gradients in the semi-enclosed boat basin. As a result, nutrient concentrations in the basin exceed State DOH water quality standards. The main factor promoting nutrient concentrations observed is the presence of the Diamond Head Breakwater that shelters the basin from wave mixing. Breakwater dismantling is anticipated to result in increased nearshore mixing because the comparatively lower height of the volcanic dike will allow more overwash and increased water mixing. As a result, the magnitude of detectable nutrients should dissipate. Basin water quality would be beneficially impacted because the elevation of nutrients would be reduced and no longer exceed State DOH water quality standards.

Sedimentation and turbidity from short-term construction activities is expected to be low because the last layer of boulders on the ocean floor will remain intact, eliminating opportunities for increased turbidity from their removal. There is also virtually no sediment on the reef floor. Construction activities do not include dredging or other activities that would create large amounts of sedimentation. Based on expected conditions, the project should not change the water quality of offshore marine areas to any discernible extent and has potential to improve water quality in the boat basin.

The project's water quality impacts are primarily associated with short-term construction related activities. Once the construction phase is completed, there would be no project-related daily activities (e.g. discharge of surface runoff) occurring in the project site that would impact long-term water quality conditions. BMPs will be incorporated in the project's design along with other applicable agency permit conditions and requirements to address these short-term construction effects. The project will also be compliant with the State DOH's anti-degradation policy (Section 11-54-1.1 HAR), designated uses based upon receiving waters classification, and water quality criteria. If applicable, a National Pollutant Discharge Elimination System (NPDES) Individual Permit would be obtained for the project that will include agency conditions and BMPs to address effects from construction activities.

Flora & Fauna (indicate is rare or endangered plans and/or animals are present):
Botanical resources are not discussed herein as the project site includes submerged lands and the Diamond Head Breakwater which do not have typical terrestrial botanical resources.

Avifauna and Mammals: The four endangered species of native Hawaiian waterbirds, consisting of the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian moorhen (*Gallinule chloropus sandvicensis*), and Hawaiian duck (*Anas wyviliana*), are not present within the basin and breakwater project site as these are salt water habitats and there is no vegetation present on the breakwater.

The threatened Newell's shearwater may traverse the project area as this part of the island is generally identified as an overflight area based on U.S. Fish and Wildlife Service (USFWS) geographic information system (GIS) data. Shearwaters may traverse such areas at night during the breeding season (February 1 through December 15). The project site does not include any FWS designated critical habitat area. The White (Fairy) Tern (*Gygis alba*), or Manu-o-Kū, is reported by DDFIA to nest on the Shangri La residential site. This seabird is State-listed as threatened and indigenous. There would not be any night activities occurring that could affect potential Newell's shearwater that may traverse the project area. With completion of the project, there would not be any negative impact on the threatened shearwaters or Manu-o-Kū.

The native federally listed endangered Hawaiian hoary bat (Lasiurus cinerius semotus) is not present within the project site as there is no suitable habitat, such as exotic and native woody vegetation.

Marine Biotic Community: Three biotic surveys were conducted in 2014, 2015, and 2016 to assess the biotic composition of the project site. The survey area included the former boat basin and reef areas seaward of the Diamond Head breakwater. The physical composition of this marine environment consists of four basic structures:

1. The two breakwaters are constructed of large basaltic boulders placed on the naturally occurring basaltic substratum in the 1930s to form a semi-enclosed embayment for sheltering small boats. The submerged portions of these boulders form a major substratum. Exhibit 13 includes photos of this first substratum.

2. The boat basin interior is covered with a layer of coarse carbonate sand. While there appears to be a continual flushing of the boat basin by currents, the sand bottom mostly remains in place. At the immediate opening of the boat basin at the channel entrance, the bottom composition changes from sand to a layer of carbonate rubble and small rocks (see Exhibit 13).

3. Moving seaward outside the channel, the rubble bed grades to a pitted fossil limestone reef surface (see Exhibit 14).

4. With increasing distance from the shoreline out to the limit of the survey area, the relief of the pitted surface increases to form large eroded limestone spires and ledges (see Exhibit 14).

Biotic Composition of Marine Environment: A consistent characteristic of the entire survey area is the relative scarcity of a well-developed living reef structure. There is a near total lack of coral (or other macroinvertebrate) colonization of the boulder surfaces on the inner side of the Diamond Head Breakwater and along the Shangri La seawall. The boulder surfaces within the inner basin would typically be expected to provide ideal settling sites for corals because they are protected from major wave impacts by the breakwater. However, this is not the case, and is possibly due to infrequent high wave energy events preventing coral settlement and growth.

Only two corals of the species *Porites lutea* were observed growing within the inner boat basin during the April 2014 survey. In August 2015, DAR conducted a coral removal program within the boat basin and entrance channel. Of the 11 corals removed from the site by DAR, five were of the species *P. lutea*.

In addition, during the April 2014 survey, much of the surfaces of the boulders on the inner side of the breakwater were covered with a dense growth of green alga (*Cladophora sp*.). No dense growth of the alga was observed during the second survey conducted in November 2015 (refer back to Figure 12). It is possible that episodic or seasonal settlement of the alga prevents significant coral settlement in the inner basin area.

The only invertebrates observed within the boat basin were the black sea cucumber *Holothuria atra*. With the exception of the green algae seen in April 2014, no other macroalgae were evident on the boulders.

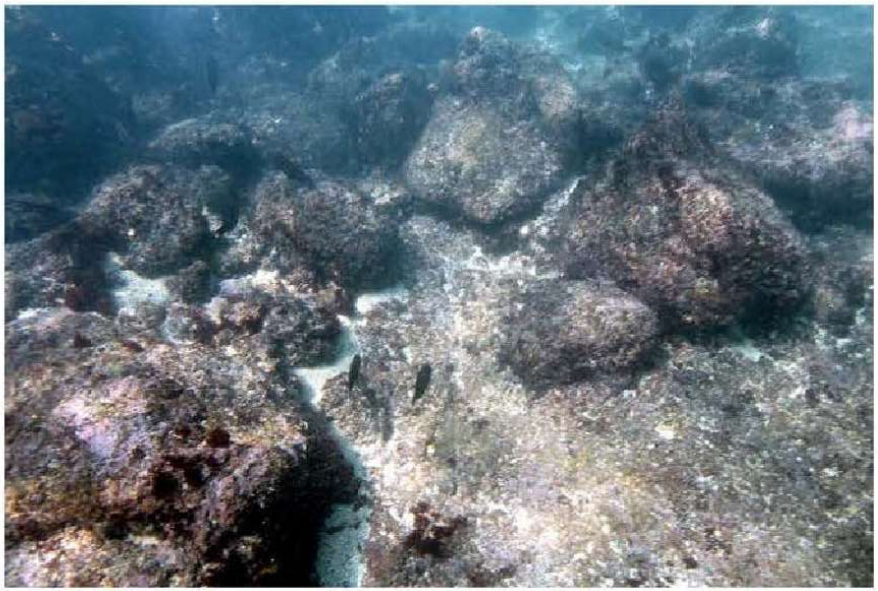
Within the inner entrance channel, corals were sporadic, occurring primarily as lobate forms of Porites growing on the reef platform (see Exhibit 15). No living corals were observed during the multiple surveys of the outer face of the boulders forming the Diamond Head Breakwater. Therefore, there are presently no living corals on the boulders comprising the breakwater that are planned to be dismantled.

The outer reef seaward of the breakwaters consists of an eroded fossil reef platform. Biotic colonization of the platform was limited, and likely the result of annual events of large waves that exceed the physiological and structural tolerance of most corals. Extending approximately 20 feet seaward from the breakwater boulders, this area of the reef was essentially devoid of living corals.

Typical view of Diamond Head Breakwater boulders inside of boat basin (November 2015).

Boulders and coarse white sand covering the basin floor (November 2015).

Boulders on the seaward outer face of the Diamond Head Breakwater (November 2015).



Boulders on the seaward outer face of the Diamond Head Breakwater (November 2015).

Source: HHF Planners

PHOTOGRAPHS OF SUBSTRATUM WITHIN & OUTSIDE OF BASIN

EXHIBIT 13

View of outer reef structure seaward of Diamond Head Breakwater (highly eroded fossil reef structures present).

View of outer reef structure seaward of Diamond Head Breakwater (highly eroded fossil reef structures present).

View of farthest outer reef structure seaward of Diamond Head Breakwater showing highly eroded fossil reef structures with scattered colonies of the hemispherical branching coral *Pocilopora meandrina*.

View of farthest outer reef structure seaward of Diamond Head Breakwater showing highly eroded fossil reef structures with scattered colonies of the hemispherical branching coral *Pocilopora meandrina*.

Source: HHF Planners

PHOTOGRAPHS OF SUBSTRATUM OUTSIDE OF BREAKWATER

EXHIBIT 14

Hemispherical colony of *Porites lutea* located at inner channel of basin near breakwater.

Encrusting colony of *Montipora flabellata* located at inner channel of basin near breakwater.

Fragmented colonies of *Porites lutea* located on outer channel floor seaward of breakwater.

Encrusting colony of *Porites lobata* on eroded limestone on reef surface seaward of breakwater.

Colony of bleached *Pocillopora meandrina* growing on outer reef surface.

Colony of *Pocillopora meandrina* growing on outer reef surface.

Source: HHF Planners

PHOTOGRAPHS OF CORAL OUTSIDE OF BASIN

EXHIBIT 15

Beyond this distance, sporadic living colonies occur, primarily consisting of the genera *Porites* and *Pocillopora* (refer to Figure 15). Most of the colonies of *Porites* were flat encrustations or patches of living tissue interspersed between areas of dead limestone.

The hemispherical branching coral, *Pocillopora meandrina,* was present in the channel entrance and seaward of the breakwater (see Figure 14). This coral has been termed a "pioneering" species in that it is generally the first to settle on newly bared substratum, and is often the only coral that has the ability to withstand the physical rigor of water movement within the nearshore zone. It is also of note that unlike many other species of reef building coral, *P. meandrina* has a "determinate" life history in that it only grows to maximum size or age before colonies die. Hence, natural communities of this species are often composed of a mixture of live colonies and dead skeletal remains. It is also important to note that a global episode of coral bleaching that occurred in the summer of 2015 did not appear to affect to a large extent the coral communities off the Shangri La site.

Common macroinvertebrates observed occupying the nearshore zone was the boring sea urchins *Echinometra matheai* and *Echinostrephus aciculatus*. These urchins were major bioeroders on the rock surfaces and were found in pits that are ground out of the limestone reef surface.
Exhibit 15 corals outside basin

Quantitative Evaluation of Coral Occurrence within the Project Site: A quantitative assessment of area corals was performed during an April 2016 survey. The assessment documented the number and size of coral colonies and constructed a map showing precise locations of these colonies. Figure 16 shows the 34 Global Positioning System (GPS) waypoints identifying corals within the survey area extending approximately 200 feet seaward of the breakwater. This figure also shows a line delineating a zone extending about 60 feet from the outer edge of the breakwater. This distance represents the general limits where moored barges may operate (pending construction method determinations), thereby identifying coral locations that could be directly impacted. Additional details regarding this marine assessment study are discussed in the Final EA.

There are a total of 119 corals within the 60-foot barge mooring zone, of which 110 (92%) were *P. lobata*. Table 1 summarizes survey data by the total number of corals of each species per size class. *P. lutea* was less abundant in the inner 60-foot zone, accounting for only five colonies. Only three colonies of *P. meandrina* and a single colony of *M. capitate* are present within the 60-foot zone. The majority (85%) of corals in the 60-foot zone were in the two size classes ranging from ≥5 to<20 cm.

The reef area seaward of the Diamond Head breakwater is comprised of a shallow (less than 8 foot) limestone platform subjected to direct impact from breaking surf. The coral census of this area reflects these severe and limiting conditions, with a count of 119 colonies, predominantly of a single species. If all colonies were distributed equally throughout the 60-foot zone, there would be about one colony per 10 square meters of bottom (107 square feet).

Many of these colonies are encrusting patches of living tissue appearing to be the remnants of larger colonies that experienced partial colony mortality. While there are living corals in the area, these corals can be considered on the margin of survivability, and do not represent a unique or diverse community in the context of other Hawai'i reefs.

TABLE 1: Coral Colony Size-Class Abundance by Species

Size-Class (cm)	Coral Species				Total Coral	Percentage of Total
	Porites Lobata	***Porites Lutea***	***Pocillopora Meandrina***	***Montipora Capitata***		
<2	2	0	0	0	2	1.7%
≥2<5	6	0	1	0	7	5.9%
≥5<10	39	0	1	1	41	34.5%
≥10<20	56	2	1	0	59	49.6%
≥20<40	7	3	0	0	10	8.4%
≥40<80	0	0	0	0	0	0.0%
≥80<160	0	0	0	0	0	0.0%
≥160	0	0	0	0	0	0.0%
Total	**110**	**5**	**3**	**1**	**119**	**100.0%**
Percentage of Total	**92.4%**	**4.2%**	**2.5%**	**0.8%**	**100.0%**	

Corals identified in the assessment beyond the 60-foot barge mooring zone had a similar community structure as those located within the project site. Thus, if transplanting corals from within the 60-foot zone becomes an option, the offshore areas would provide a suitable relocation site.

It should be noted that a column of remnant coral extends from the bottom to within less than one meter from the surface (Waypoint 726 on Exhibit 16) as shown in Photo 15. Mooring of a barge in this area has the potential to destroy the limestone column. However, the only living coral on the column was a single colony of *P. meandrina* near the base of the structure.

Reef Community Structure: Traditional fish transect surveys were not possible due to the shallow water depth and continual wave surges outside the breakwater. Therefore, stationary point counts were made at two locations within the 60-foot zone (Waypoints 718 and 722; refer to Exhibit 16).

Overall, project site fish abundance observed was low, and may result from the high level of water movement from breaking waves. Of fish observed, all were common Hawaiian reef fish of small size. Two fish species, *Mulloidichthys flavolineatus* (Weke) and *Acanthurus triostegus* (Manini) are listed by the State DLNR DAR as regulated species. However, the observations of these individuals did not indicate an especially rich resource.

Significant changes to the marine habitat outside the breakwater are not anticipated from project implementation. Therefore, the project should not have a significant impact on project site reef fishes which do not represent a unique or abundant resource.

Endangered and Protected Species: During the course of fieldwork, no marine mammals (e.g. whales and monk seals) or turtles were observed. The shallow water depth makes the site unapproachable for whales. Although monk seals may be found in the area, the lack of beaches suggests the project site is not an ideal haul out area. The project site area does not appear to be a preferred habitat for these species. As a result, the project is not anticipated to negatively impact endangered or protected species.

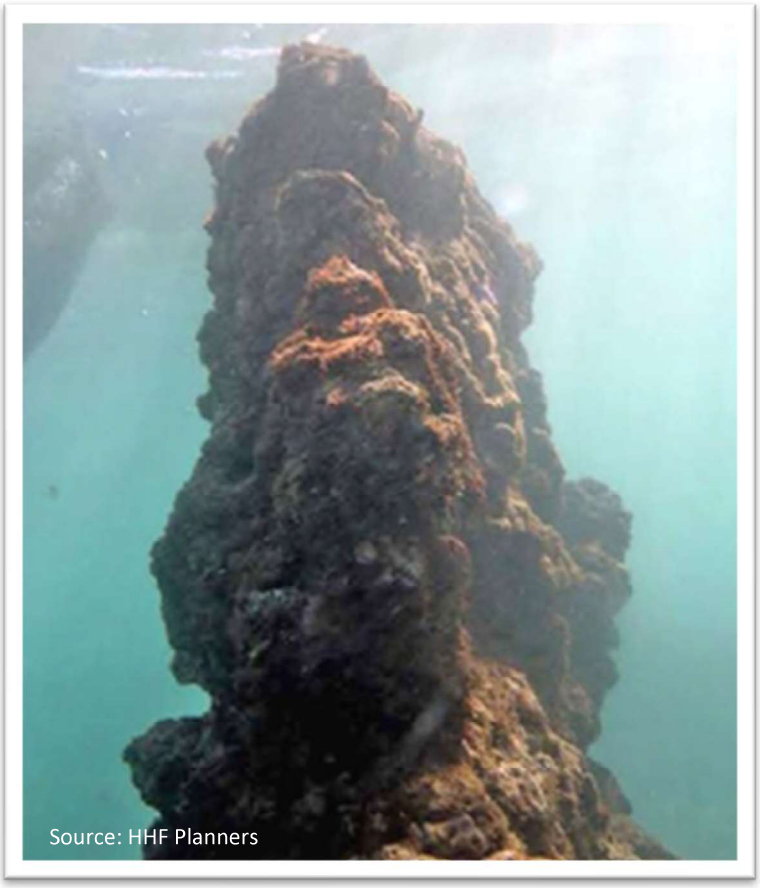
Aerial photo of area showing waypoint locations of living coral identified during survey. Red line indicates 60-foot boundary around breakwater.

Source: HHF Planners

WAYPOINT LOCATIONS OF CORAL

EXHIBIT 16

PHOTO 15: PHOTO OF COLUMN REMNANT CORAL (WAYPOINT 726)



Potential impacts to marine biotic life may occur only for existing coral colonies identified outside (seaward) of the Diamond Head Breakwater. Impacts are anticipated only in the short-term from project construction activities. Once completed, the project will not include activities that could affect the long-term condition of the marine environment.

Short-term construction impacts could result from installation of spud moors on the seafloor within the basin and outside the Diamond Head Breakwater. Spud moors would allow docking of barges for boulder removal and construction of the revetment along the seawall. Planning work for breakwater dismantling is intended to use to the extent possible construction approaches developed to minimize physical alteration of coral. Actual project construction methods would be determined during the project's design phase and plans likely developed in coordination with the selected contractor.

As these corals are sparsely distributed, it is possible to implement measures to avoid damage during the barge mooring process. The contractor will prepare a Barge Spudding Plan prior to construction documenting existing reef conditions relative to proposed anchoring locations to minimize impacts. Sufficient BMPs can be implemented through the barge spudding plan to minimize damage to the existing biotic community structure.

It is planned that divers would first inspect the mooring area to identify suitable locations for barges to ensure that spuds dropped do not seat on living corals. During the actual spudding of barge(s), divers would be present to monitor the location and activities. Other measures include working with DAR to remove coral that may be affected so that they can be transplanted in the surrounding vicinity or moved to their Anuenue Fisheries Research Station for research or educational use.

Proposed BMPs would include setting up a turbidity curtain with debris boom along the basin channel entrance and across the area where the barge(s) would be operating outside the breakwater. The turbidity curtain should not impact coral as it would not extend or need to be anchored to the ocean floor. This curtain will also allow water circulation within the basin, and thus not diminish water flow or create anoxic conditions. All efforts will be made to avoid impacting present coral, but if impact occurs from necessary anchoring locations, additional mitigating measures will be implemented.

Another method being evaluated to avoid impacting coral present outside the breakwater is to conduct dismantling activities using barges that are located entirely within the basin where no coral are present. However, using this approach may be more difficult and require modifications to construction methods to accommodate the crane or excavator's reach over the dike and operator's line of sight to remove boulders on the seaward end of the breakwater. The following changes would need to be incorporated:

1. Additional rock would need to be imported, or boulders dismantled may be used if feasible, to bolster the inside of the breakwater to create a safe surface to operate a larger excavator. This would involve using temporary construction "fill" from the boulders to create the necessary space. A barge with this temporary supported platform within the boat basin would then remove the exterior boulders over the natural dike.

2. When completed, the temporary rocks filled would be removed and used for constructing the new shoreline structure. If necessary, any remaining rocks would need to be disposed at an appropriate landfill.

3. Costs utilizing this method would increase based on the importing/disposal of temporary rock.

Additionally, DAR will be consulted to develop an action plan with monitoring activities to address potential invasive species that may become colonized on the remaining dike and new shoreline structure. All barges an in-water equipment used for construction activities will be inspected for the presence, and removal if necessary, of invasive species prior to use in the vicinity of the project area. Also, DAR will be granted, within a reasonable time frame, time to conduct a final survey to identify and remove any additional endemic coral within the area of impact.

Natural hazards (erosion, flooding, tsunami, seismic, etc.):
Hazard risks for specific natural hazards are summarized below and discussed in greater detail in the Final EA.

Earthquake Hazards: The project area is situated within the southern half of Oʻahu, which received a volcanic/seismic risk rating of "4" by the U.S. Geological Survey's Atlas of Natural Hazards in the Hawaiian Coastal Zone. This is a moderately high risk rating. An earthquake of significant magnitude could result in damages to the project area. However, most earthquakes that have occurred in the state have been

volcanic earthquakes causing little or no damage to the Island of Oʻahu. Therefore, deterioration of the remaining dike from future earthquakes or damages to the shoreline structure are not expected to have a significant impact on the surrounding marine environment.

Hurricane Hazards: Hurricanes have affected every island in the State and can cause major damage and injury from high winds, marine over-wash, and heavy rains. Impacts from hurricanes can thus be severe and lead to destructive impacts despite the fact that the hurricane may not directly hit a particular island. Hurricane impact risk is not greater for the project site relative to other Oʻahu areas.

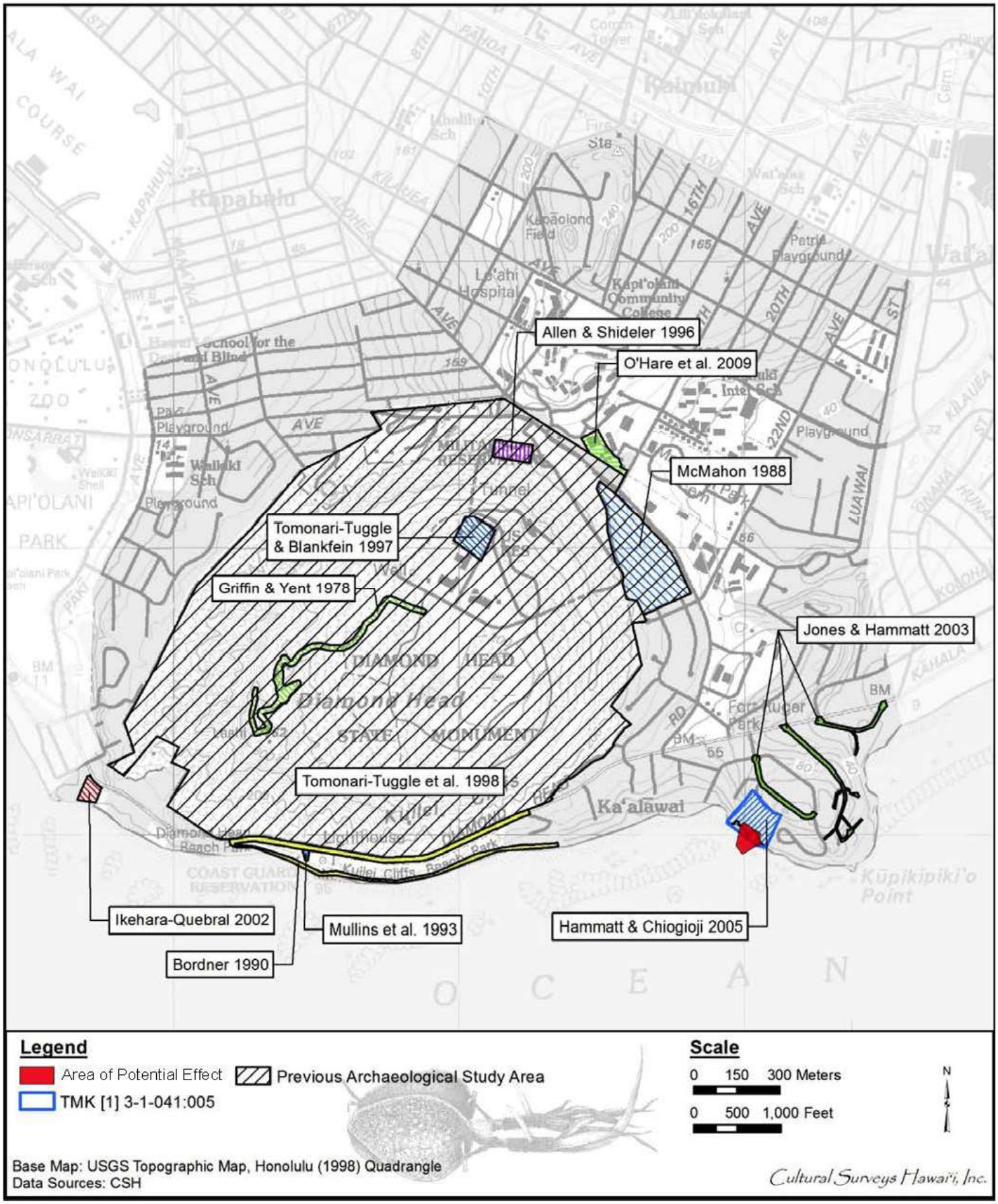
Tsunami and Flood Hazards: The project area's shoreline is within the designated tsunami evacuation area. However, the existing Diamond Head Breakwater and seawall structures are unlikely to experience significant tsunami damage. Since completion of site improvements in 1938, the area has experienced the effects of large waves from high surf and storm conditions, hurricanes, and smaller tsunami events without receiving significant damage. The project site and areas seaward are located within the Zone VE, coastal flood zone with velocity hazard (wave action) based upon the Flood Insurance Rate Map for the area. The area has a base flood elevation of 17 feet.

Although adverse impacts from many of the natural hazards discussed are not anticipated, appropriate efforts will be taken to minimize natural hazard impacts to proposed project improvements should these hazards occur. Remaining portions of the underlying dike could be damaged by significant natural disasters. To mitigate these impacts, the condition of the dike would be inspected during breakwater deconstruction and those portions determined to be structurally unsound would be removed. These efforts would minimize impacts to the surrounding environment by pieces that may break off and fall into the ocean.
Significant disaster events should not damage the new shoreline structure because the improvement will be designed appropriately. The placement of large rocks from the breakwater along the seawall should withstand large waves from a tsunami based upon the wave modeling analysis. The design will also be reviewed as part of permit approvals.

Historic & Cultural Resources:
An archaeological inventory survey for this project was conducted by Cultural Surveys Hawaiʻi, Inc. (CSH) in compliance with State Historic Preservation Division (SHPD) rules governing standards for archaeological reports (HAR 13-13-276). A copy of the report is included with the project FEA. The survey consisted of both a reconnaissance survey and an underwater survey with photo documentation. No traditional or historic artifacts were recovered from the project area.

Existing Historic Properties Previously Identified: Previous archaeological work and studies conducted around the project area included archaeological monitoring, archaeological inventory surveys, reconnaissance surveys, and archaeological assessments. The locations of these archaeological studies are shown in Exhibit 17. The majority of these studies are associated with the Diamond Head State Monument, but the two discussed below are applicable to the project site.

Archaeological Monitoring for Water System Project (2003): In 2003, CSH conducted archaeological monitoring for the Black Point water systems improvement project along Pāpū Circle, Black Point Road, Black Point Place, Puʻu ʻEleʻele Place, Ākulikuli Terrace, Royal Place, and Royal Circle. No significant cultural materials were found, and Jaucus sand appeared in areas along the excavation of Royal Circle.



Source: HHF Planners

PREVIOUS ARCHAEOLOGICAL STUDIES OF PROJECT AREA

EXHIBIT 17

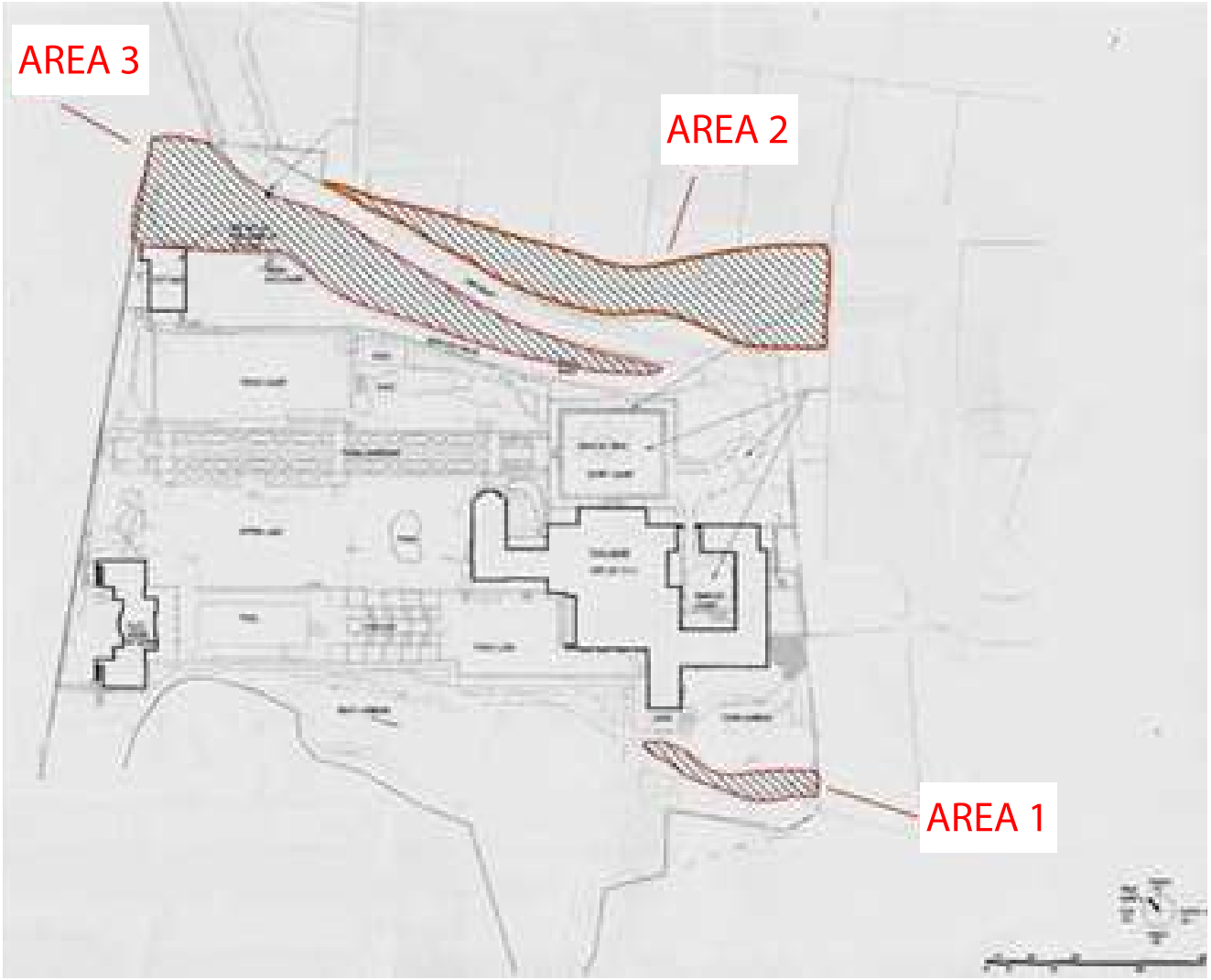
Shangri La Field Inspection (2005): In 2005, CSH conducted a field inspection of the Shangri La property. Based on historical documentation and in-field observation, the Shangri La property was modified for landscaping and residential construction before Doris Duke purchased the parcel in 1936. Three areas of the property were identified as having ground surfaces not substantially modified by landscaping and residential construction activities. These areas are shown on Exhibit 18.

Archaeological features are evident in Area 3 as petroglyphs appearing to be traditional Hawaiian petroglyphs are present on a series of vertical bedrock faces located on a cliff in the northern portion of Area 3. The petroglyphs are lightly pecked and inscribed in the solid rock faces, portraying human and animal figures. All are pre-historic or immediately post-Contact in age, based on the style and subject matter.

Results of Field Inspection: Fieldwork included photographic documentation and an underwater survey of the former boat basin area surrounding the Diamond Head Breakwater. Survey findings indicate that the boat basin floor largely consisted of fine to medium grain sand with large basalt cobbles and boulders scattered throughout. A modern "fish house," used to contain fish possibly for use as bait, was identified in the center of the boat basin (see Photo 16). This feature measured 7.2 feet in diameter and was approximately 2.9 feet off the basin floor. Using Google Earth historic maps, it appears the house was built between August and December 2004. There were no artifacts found; however, numerous modern-day bottles were recovered from the basin floor. A field inspection of the bottles determined they were less than 50 years old.

One historic property, the Shangri La boat harbor (former boat basin), was recorded during the course of the survey. Associated features were photographically documented, and associated areas were subjected to an underwater survey.

PHOTO 16: MODERN "FISH HOUSE" IN BOAT BASIN



Source: CSH/HHFPLANNERS

THREE AREAS OF SHANGRI LA PROPERTY SUBJECT TO FIELD INSPECTION

EXHIBIT 18

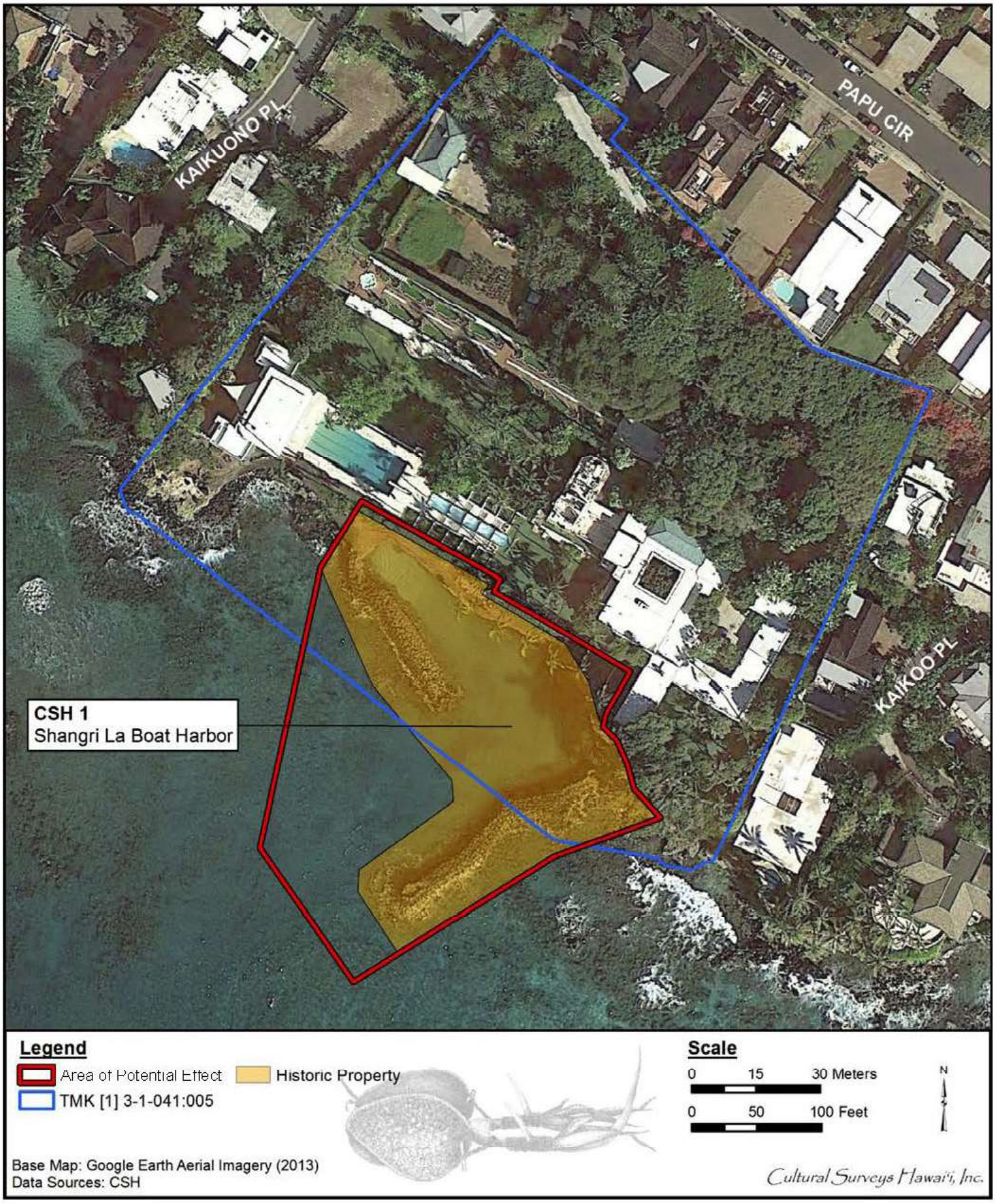
Description of Affected Properties: The only historic property identified within the project's area of potential effect (APE) is the Shangri La Boat Harbor (former boat basin). The project APE and the location of the historic property is shown in Exhibit 19. The APE was established for the project's Archaeological Inventory Survey (AIS) and includes a number of features located outside the project site that would not be impacted by the project.

This historic property has been given the State Inventory of Historic Places (SIHP) number 50-80-14-7839 (SIHP No. -7839). The historic site consists of 11 features which are shown in Exhibit 20. Of these features, four are within the project site and are impacted by the project. These features are discussed in greater detail below.

Feature 1 (Diamond Head Breakwater). This breakwater is approximately 125 feet long, and constructed of large boulders stacked over and along a natural basalt dike that once formed the wall for a natural ocean swimming pool on the Wodehouse property (prior to Duke's purchase). The boulders constructing the breakwater have no concrete or mortar holding them together. The breakwater has a pyramidal orientation with a relatively flat top extending into the central portion of the harbor entrance. The boulders average 43 to 59 inches in diameter, and are stacked five courses high on the mauka side and seven to eight courses high on the makai side.

Feature 7 (Strainer Pit and Pipe). This is a pipe located in the northwest (Diamond Head) wall of the boat basin. The pipe is buried beneath the floor of the boat basin and extends to a sunken strainer pit that used to take in saltwater to supply the swimming pool on the residential side of the Shangri La property. This saltwater pool has been converted to a freshwater swimming pool, and the strainer pit is no longer being used. The pipe is approximately 15 inches in diameter (see Photo 17).
Figure 18 - APE

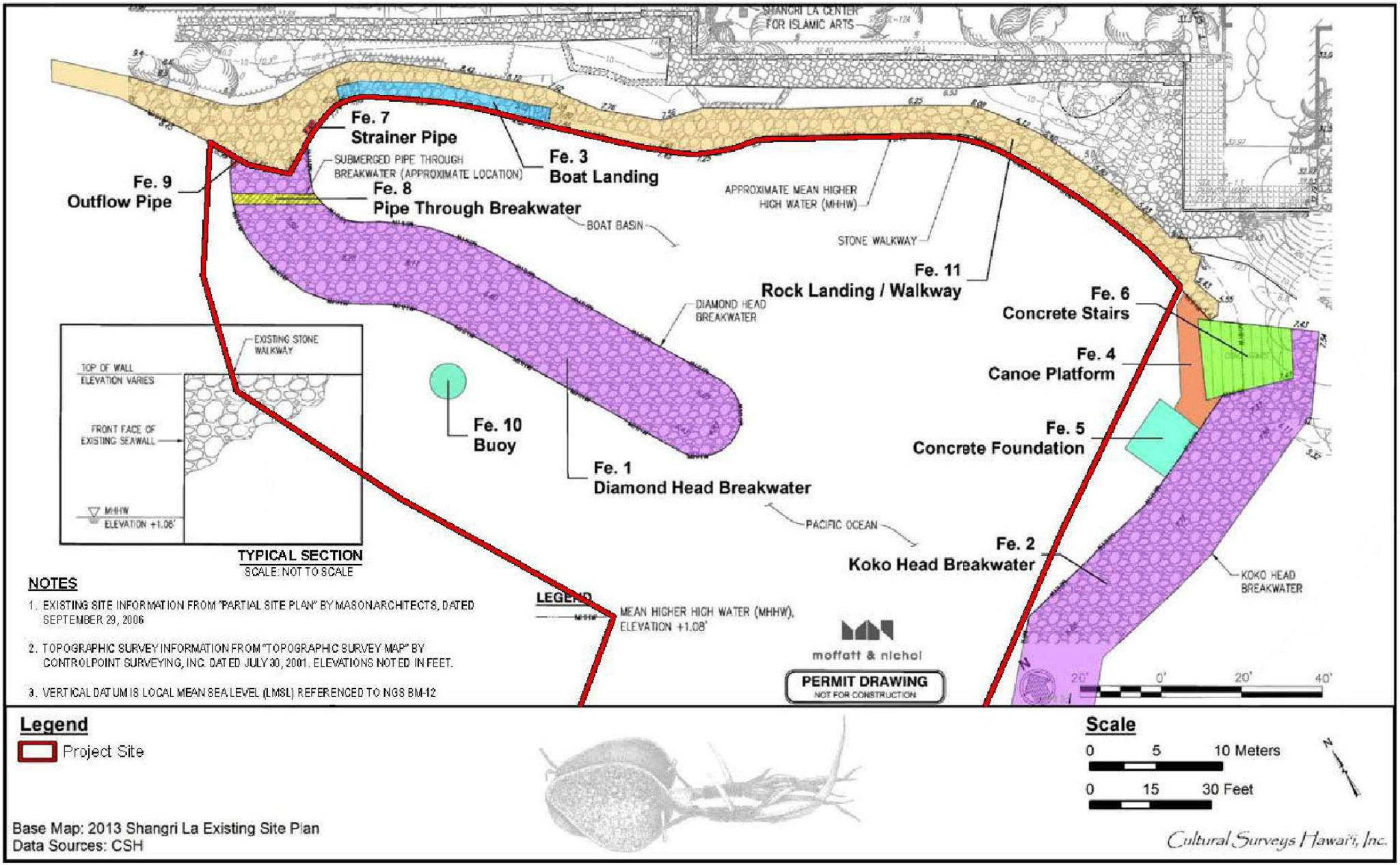
PHOTO 17: FEATURE 7 (STRAINER PIT & PIPE)



Source: HHF Planners

LOCATION OF HISTORIC HARBOR SITE (SIHP #-7839)

FIGURE 19



Source: HHF Planners

DESIGNATION OF FEATURES OF SIHP #-7839

FIGURE 20

Feature 8 (Drainage Culvert). Directly adjacent to Feature 7 is an exposed concrete culvert pipe (see Photo 18). The concrete pipe is approximately 48 inches in diameter and runs entirely through the Diamond Head Breakwater.

Feature 10 (Buoy). A sunken buoy is located on the exterior makai side of the Diamond Head Breakwater (see Photo 19). The buoy measures 2.6 feet in diameter and is situated approximately 6.2 feet below the water surface. It has a hole on the top (9.8 inches in diameter) and a large section on the side has collapsed.

In accordance with SHPD review requirements for private projects (§13-13-284-8, HAR), the project effect recommendation is "effect with agreed upon mitigation commitments." The Shangri La breakwaters and harbor historic site, (SIHP No. -7839) are considered eligible for the National and/or Hawai'i Register of Historic Places under eligibility criterion established in HAR §13-13-284-6. The boat basin and both breakwaters were constructed during the initial 1936 to 1938 development period of the Shangri La property. They retain their historic integrity despite having had minor repairs and alterations. The buoy (Feature 10) located outside the Diamond Head Breakwater may also be damaged from the anchoring of the barge during activities. Although the various features associated with this basin are contributing elements of the property as a whole, they are of secondary significance. The alteration of the Diamond Head Breakwater would result in a minor loss of historic character associated with the entire Shangri La Boat Harbor.

PHOTOS 18 & 19:

FEATURE 8
DRAINAGE CULVERT

FEATURE 10
BUOY

Based on assessment results, CSH recommends architectural recordation for the boat basin and both breakwaters per §13-13-284-8, HAR. As part of the effort to document historic resources, Mason Architects, Inc. (MAI) conducted an Intensive Level Historic Resource Inventory Survey of the boat basin and both breakwaters, which is included in the Final EA. MAI's survey should be considered sufficient

documentation for the historic harbor and breakwaters site (SIHP No. -7839) to serve as mitigation for the project, subject to SHPD review and concurrence.

Assessment of Cultural Resources: The former boat basin is not known to be used for traditional native Hawaiian cultural practices or gathering activities (e.g. sustenance fishing). Dismantling of the Diamond Head Breakwater and construction of the new shoreline structure would not restrict access to surrounding areas outside the project site that may be used for traditional native Hawaiian cultural practices or gathering activities. Therefore, the project is not anticipated to have significant impact on traditional native Hawaiian cultural resources or practices.

Feature 8 (Drainage Culvert). Directly adjacent to Feature 7 is an exposed concrete culvert pipe (see Photo 18). The concrete pipe is approximately 48 inches in diameter and runs entirely through the Diamond Head Breakwater.

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EVALUATION CRITERA

The Department of Board will evaluate the merit of a proposed land use based upon the following eight criteria (ref §13-5-30(c))

1. *The purpose of the Conservation District is to conserve, protect, and preserve the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. (ref §13-5-1) How is the proposed land use consistent with the purpose of the conservation district?*

   DLNR is proposing to dismantle the Diamond Head Breakwater as a public health and safety project. The project is to prevent people from pursuing unsafe recreation activities with the former boat basin waters. This project is consistent with the purpose of the Conservation District as it promotes public health, safety, and welfare for the people who use the project site for recreational purposes.

   As discussed throughout this application, there has been a history of dangerous activities occurring in the basin area consisting of diving and jumping from the top of the shoreline walkway and the Diamond Head Breakwater into shallow water, particularly during low tide. These behaviors have resulted in injuries, including incidents of permanent quadriplegia and paraplegia. There are likely many more injuries that have occurred for which DDFIA was not asked for emergency assistance and is therefore unaware of. The project will improve public safety in the basin by dismantling the Diamond Head Breakwater and installing a new shoreline structure on the makai face of the Shangri La seawall, thereby reducing opportunities to engage in dangerous activities. The new shoreline structure created with boulders from the dismantled breakwater will also protect pedestrians using the seawall for lateral shoreline access by decreasing the potential for overtopping onto the pathway.

   The project is not anticipated to result in adverse impacts to coastal processes of nearby waters. These coastal processes include currents, waves, and anticipated conditions with sea level rise. Modeling results suggest the new shoreline structure will mitigate seawall overtopping by dissipating wave energy. Water quality is anticipated to improve in the project site due to reemergence of the natural dike. Water quality analysis suggests the comparatively lower height of the natural dike will allow more overwash into the basin, leading to increased water mixing. Greater water mixing in the basin will dissipate existing nutrient concentrations, lowering the presence of these nutrients to levels that do not exceed State DOH water quality standards.

   Appropriate measures will be taken to mitigate adverse impacts to coral colonies from short-term construction related activities, and this application identified several measures that are discussed in more detail in the Final EA. These impacts could result from installation of spud moors to dock barges for breakwater removal. Development of a Barge Spudding Plan prior to construction that documents existing reef conditions relative to anchoring locations is one measure identified that will minimize these impacts. BMPs would also be implemented to minimize construction related impacts to project area corals. Actual project construction methods would be determined during the project's design phase and developed in coordination with the selected contractor. Implementation of these measures will mitigate adverse impact to project site coral colonies, which are an important natural resource of the State.

The Shangri La Boat Harbor is a designated historic property (SIHP No. -7839) and an important resource of the state. The Diamond Head Breakwater and boat basin are features that comprise this historic property and will be removed or altered as a result of this project. Although these features contribute to the property's historic nature, these structures are not essential components of the property. As a result, alteration of these resources would result in a minor loss of character relative to the entire property. Architectural recordation of the boat basin and both breakwaters was recommended by the AIS conducted for the project Final EA. An Intensive Level Historic Resource Inventory Survey of the boat basin and both breakwaters was conducted in fulfilment of this recommendation. It is anticipated that this survey should be considered sufficient documentation and mitigation for project impacts to the Diamond Head Breakwater and Shangri La seawall, subject to SHPD review and approval.

2. *How is the proposed use consistent with the objectives of the subzone of the land on which the land use will occur on? (ref §13-5-11 through §13-5-15).*

The project site is located in the Protective Subzone. The objective of this subzone is to protect valuable resources in designated areas such as restricted watersheds; marine, plant and wildlife sanctuaries; significant historic, archaeological, geological, and volcanological features and sites; and other designated unique areas.

Dismantling of the Diamond Head Breakwater will restore the shoreline to an appearance similar to its prior natural condition, enhancing and protecting this valuable resource. Breakwater dismantling also allows the reemergence of the natural volcanic dike, supporting subzone objectives related to significant geological features and sites. BMPs would be implemented during construction activities to minimize short-term effects to the marine environment and water quality near this basin, protecting these valuable natural resources.

Project site marine resources are valuable resources the project may impact. The water quality analysis conducted for the Final EA suggests the project may enhance site water quality. This analysis indicates basin nutrient concentrations currently exceed State DOH water quality standards. These standards are exceeded due to the Diamond Head Breakwater's sheltering effect, which limits nearshore water mixing. Breakwater dismantling is anticipated to increase nearshore mixing because the lower height of the volcanic dike will allow more water mixing from overwash. As a result, the presence of measurable nutrient concentrations should dissipate, lowering nutrient concentrations below State DOH water quality standards. Construction related BMPs would also be implemented to minimize short-term impacts to water quality. The project will not result in adverse impacts to coastal processes of site marine resources. Coastal processes include currents, waves, and anticipated conditions relative to sea level rise. Modeling conducted for the project Final EA suggest the proposed seawall revetment will mitigate wave overtopping by dissipating wave energy

Coral colonies within the project site are valuable resources that may be impacted by the project. These colonies may be impacted by short-term construction related activities which include the installation of spud mooring to dock barges. Appropriate measures will be taken to mitigate adverse impacts resulting from these activities. Development of a Barge Spudding Plan prior to construction documenting existing reef conditions relative to anchoring locations will minimize these impacts. BMPs would also be implemented to minimize construction related impacts. Actual construction methods would be determined during the project's design phase and developed in coordination with

the selected contractor. Implementation of these measures will mitigate adverse impacts to project site coral colonies.

Although the breakwater and boat basin are features contributing to the Shangri La Harbor historic property, these structures are not essential components. As a result, alteration of these resources would result in a minor loss of character relative to the entire property. However, architectural recordation of the boat basin and both breakwaters was recommended by the AIS conducted for the project. An Intensive Level Historic Resource Inventory Survey of the boat basin and both breakwaters was conducted in fulfilment of this recommendation. This survey is anticipated to be considered sufficient documentation to serve as mitigation for project impacts to the Diamond Head Breakwater and Shangri La seawall, subject to SHPD review and approval.

Land uses permitted within this subzone include: 1) public purpose uses; and 2) existing structures and land uses. The proposed project will support a public purpose by making recreational use of the basin safer and better protecting the public shoreline walkway. This project is intended to benefit the public in accordance with public policy and the purpose of the Conservation District. The demolition or removal of existing structures is another permitted use within this subzone and dismantling the Diamond Head Breakwater falls under this category of use.

3. *Describe how the proposed land use complies with the provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management" (see 205A objectives on p. 9).*

   The project is consistent with pertinent policies and objectives of the State's Coastal Zone Management requirements under Chapter 205A, (HRS) as follows:

   - *Recreational resources: Provides coastal recreational opportunities accessible to the public.*

     The project will not curtail or prevent participation in existing public coastal recreational opportunities at the project site. These recreational opportunities include shoreline fishing, swimming, and access to surf sites in nearby waters. Project improvements will not adversely impact public shoreline access to the project site or areas surrounding the site. Improvements would greatly improve public safety in the area by preventing dangerous recreational activities (e.g. jumping from the breakwater or seawall) from occurring in the project site as well as the new shoreline structure would help to protect pedestrians using the seawall for lateral shoreline access by decreasing the potential for overtopping onto the pathway.

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

     The Shangri La Boat Harbor is a designated historic property and a significant historic resource. This historic property includes the Diamond Head Breakwater and former boat basin which are proposed for removal in this project. Although these features contribute to the property's historic nature, the features are not essential components of the property and their removal should result in a minor loss of character relative to the entire property. Although the Diamond Head Breakwater and boat basin are considered non-essential components of the historic property, an Intensive Level Historic Resource Inventory Survey of the basin and both breakwaters was

conducted as mitigation for project impacts, subject to SHPD review and approval. Removal of the Diamond Head Breakwater and installation of the new shoreline structure will return the condition of the shoreline area to a character closer to the natural state of the surrounding area

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

  The project will not result in significant visual impacts to public scenic viewing locations or coastal views. Some may view that the removal of the Diamond Head Breakwater may have a positive impact on site scenic resources as it can impact views of the ocean given its size and height. The natural volcanic dike that will remain after the breakwater is dismantled will be lower in height and it is anticipated that its profile will be smaller than the existing breakwater even though its current condition is unknown. Therefore, dismantling of the breakwater could have a positive impact on coastal scenic resources by reducing obstruction of ocean views. In addition, the dike is a unique feature, and would return site visual conditions of the nearshore area closer to a "natural" state.

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

  The project is not anticipated to adversely impact valuable coastal ecosystems including reefs. As discussed in the Final EA, project improvements will not significantly alter wave conditions, circulation patterns, or water quality in the project site. Construction methods developed during the project design phase will increase measures to minimize damage to coral colonies outside the breakwater due to barge anchoring needed for breakwater dismantling. Construction related BMPs would also be determined during the project design phase and implemented during construction to minimize impacts to water quality and the surrounding marine environment.

- *Economic uses: Provide public or private facilities and improvements important to the State's economy in suitable locations.*

  While this is a State proposed project, the project is meant as a public health, safety, and welfare project to reduce the State's liability from having people participate in risky behavior at the project site. It is not anticipated that any of the proposed improvements would be considered important to the State's economy.

- *Coastal hazards: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

  The proposed shoreline structure is anticipated to reduce potential for wave overtopping at the Shangri La seawall caused by dissipating wave energy. This will reduce hazard risk for pedestrians using the seawall to access shoreline areas within or surrounding the project site. The project does not involve new development (e.g. residences) within areas subject to coastal hazards.

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

  The project is unrelated to the development review process for coastal resources and hazard

management. However, public awareness and education on this project will improve through a public hearing conducted as part of the CDUP application process.

- *Public participate: Stimulate public awareness, education, and participation in coastal management.*
  A public hearing supporting public awareness and education on this project will occur as part of submission of this CDUP application. The Final EA developed previously also provided a means of generating public awareness of the project and creating avenues for public participation. Several public presentations were also conducted by DDFIA in the project environmental review process as a means of generating greater awareness and public involvement.

- *Beach protection: Protect beaches for public use and recreation.*

  Beach areas are not present at the project site. The site is comprised of man-made features which include the Diamond Head Breakwater and former boat basin. The project will not adversely impact public use and access to nearby beaches.

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

  The marine survey and wave modeling study conducted as part of the Final EA concluded that the project will not adversely impact marine and coastal resources. The project will not adversely impact coastal process that include wave patterns and currents. Construction methods developed during the project design phase will be designed to mitigate impacts to coral colonies located outside the Diamond Head Breakwater. BMPs would also be determined in the project design to minimize construction related impacts to marine resources. These efforts will ensure that marine resources are protected when this project is implemented.

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

   The project's Final EA determined that proposed improvements are not expected to significantly impact the environment, and a Finding of No Significant Impact (FONSI) was subsequently issued by the OCCL for this project. Project impacts to existing natural resources surrounding the project site are mainly associated with short-term construction activities. Once project construction is completed, there would be no project-related daily activities (e.g. discharge of runoff) occurring in the project site that would impact long-term water quality conditions on site or in the surrounding area. Construction activity impacts are related to water quality (turbidity) and possible effects on coral colonies associated with spud anchoring of barges in the project site.

   Water quality impacts will be minimized through incorporation of BMPs that will be determined during the project's design phase. Project design will also incorporate agency permit conditions and requirements which will mitigate these impacts. If applicable, a NPDES permit would be obtained for the project that will include agency conditions and BMPs to address construction related impacts. The project will also be compliant with the State DOH's anti-degradation policy (Section 11-54-1.1 HAR), designated uses based upon receiving waters classification, and water quality criteria.

Impacts to project site coral colonies from the installation of spud mooring will be mitigated through development of construction approaches minimizing physical alteration of the ocean in the project area. The contractor will prepare a Barge Spudding Plan prior to construction that will document existing reef conditions relative to proposed anchoring locations to minimize impacts. BMPs determined in the project design phase would also be implemented to minimize construction related impacts to coral colonies. Actual construction methods would be determined during the project's design phase with plans developed in coordination with the selected contractor.

Once the project has been completed, water quality analysis conducted for the project Final EA suggests the project may enhance site water quality. Basin nutrient concentrations currently exceed State DOH water quality standards. Basin nutrient concentrations are likely elevated due to the Diamond Head Breakwater's sheltering effect, which limits nearshore water mixing. Breakwater dismantling is anticipated to increase nearshore mixing because the lower height of the volcanic dike will allow more overwash and greater water mixing. As a result, the presence of measurable nutrient concentrations should dissipate, lowering nutrient concentrations within the basin to levels within DOH standards. The project will not result in adverse impacts to coastal processes of site marine resources. These processes include currents, waves, and anticipated conditions relative to sea level rise. Modeling conducted for the project FEA suggest the proposed seawall revetment will mitigate wave overtopping by dissipating wave energy in comparison to model scenarios without the project.

5. *Describe how the proposed land use, including buildings, structures, and facilities, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

   The project does not propose construction of new buildings or facilities or intensifying an existing land use. It involves dismantling an existing breakwater and constructing a new shoreline structure along the makai face of the Shangri La seawall, creating a naturalized shoreline similar to that of the adjacent rocky shorelines in the area. Further, the project is intended as a safety initiative to address unsafe and dangerous activities occurring within the basin. The project is compatible with the surrounding basin area and will approximate restoration of the area's original condition by leaving the volcanic dike underneath the breakwater. The new shoreline structure design is intended to create a shallow tidal habitat similar to surrounding conditions which may improve habitat for marine resources.

6. *Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will preserved or improved on.*

   The existing physical and environmental aspects of the project site and surrounding area will not be adversely impacted by the project. The Final EA discusses these aspects in greater detail and addresses how the project would not have a significant adverse effect on the surrounding environment which includes marine resources.

   In particular, the project is anticipated to have a positive impact on site visual characteristics. Breakwaters typically have an adverse visual impact by altering aesthetic views of the ocean. Rubble mound breakwaters have a more significant adverse visual impact due to their size. The existing Diamond Head Breakwater impacts views of the ocean due to its size and height. After breakwater dismantling, the remaining natural volcanic dike will emerge and be lower in height than the current breakwater. While the dike may be deteriorated from its pre-construction condition, the profile of the

remaining dike will be smaller than the existing breakwater. Therefore, dismantling of the breakwater should have a positive visual impact by reducing the obstruction of ocean views. The dike is a unique feature and would return the condition of the nearshore area closer to that resembling a "natural" state.

7. *If applicable, describe how subdivision of land will not be utilized to increase the intensity of land use in the Conservation District.*

   The proposed project does not involve the subdivision of lands within the Conservation District.

8. *Describe how the proposed land use will not be materially detrimental to the public health, safety, and welfare.*

   The project is a public safety initiative intended to improve long-term public health, safety, and welfare by modifying behaviors associated with dangerous recreational activities in the project site boat basin. These dangerous activities consist of diving and jumping from the top of the shoreline walkway and the Diamond Head Breakwater into the shallow basin water. Dangerous behaviors have resulted in several injuries, including incidents of permanent quadriplegia and paraplegia. By dismantling the Diamond Head Breakwater, the connection between the public walkway and the dike will be cut off thus discouraging jumping from the area. Further the installation of a new shoreline structure along the makai face of the Shangri La seawall to mimic the natural rocky shoreline as found along the adjacent shoreline is anticipated to discourage jumping from the public walkway and fence. Therefore, the project is anticipated to improve public health, safety, and welfare by reducing opportunities to engage in dangerous activities.

CULTURAL IMPACTS

Articles IX and XII of the State Constitution, other state laws, and the courts of the State, require government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups.

Please provide the identity and scop of cultural, historical, and natural resources in which traditional and customary native Hawaiian rights are exercised in the area.

There are no known native Hawaiian traditional or cultural practices occurring within the project site or the immediate surrounding area. Dismantling of the Diamond Head Breakwater and construction of the new shoreline structure would not restrict access to areas outside the project site that may potentially be used for traditional native Hawaiian cultural practices and gathering activities. Lateral shoreline access to these areas will continue to be available via the shoreline walkway associated with the Shangri La seawall.

Identify the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impacted by the proposed action.

As there are no known traditional and customary practices occurring within the project site or the immediate surrounding area, it is anticipated that the project would not affect or impair native Hawaiian traditional or cultural practices.

What feasible action, if any, could be taken by the Board of Land and Natural resources in regards to your application to reasonable protect Native Hawaiian rights?

The project is not expected to adversely impact traditional or customary native Hawaiian rights. Therefore, no additional action by the Board is needed to protect native Hawaiian rights

SINGLE FAMILY RESIDENTIAL STANDARDS

Single Family Residences must comply with the standards outlined in HAR Chapter 13-5, Exhibit 4. Please provide preliminary architectural renderings (e.g. building foot print, exterior plan view, elevation drawings; floor plan, etc.) drawn to scale.

SIZE OF LOT

	Existing	Proposed	Total
Proposed building footprint			
Paved areas/ impermeable surfaces			
Landscaped areas			
Unimproved areas			

SETBACKS Front: Side: Back:

SHORELINE PROPERTIES

Average Lot Depth (ALD): Average annual coastal erosion rate:

Minimum shoreline setback based on Exhibit 4:

Actual shoreline setback or proposed structure:

MAXIMUM DEVELOPABLE AREA

The Maximum Developable Area includes all floor areas under roof, including first, second, and third stories, decks, pools, saunas, garage or carport, and other above ground structures.

Maximum Developable Area based on Exhibit 4:

Actual Developable Area of proposed residence:

Actual height of the proposed building envelope as defined in Exhibit 4:

COMPATIBILITY

Provide justification for any propose deviation from the established residential standards.

How is the design of the residence compatible with the surrounding area?

If grading is proposed, include a grading plan which provides the amount of cut and fill. Has grading or contouring been kept to a minimum?

CHAPTER 205A – COASTAL ZONE MANAGEMENT

Land uses are required to comply with the provisions and guidelines contained in Chapter 205A, Hawai'i Revised Statutes (HRS), entitled "Coastal Zone Management," as described below:

- **Recreational resources:** Provide coastal recreational opportunities accessible to the public.
- **Historic resources:** Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- **Scenic and open space resources:** Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
- **Coastal ecosystems:** Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
- **Economic uses:** Provide public or private facilities and improvements important to the State's economy in suitable locations.
- **Coastal hazards:** Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
- **Managing development:** Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- **Public participation:** Stimulate public awareness, education, and participation in coastal management.
- **Beach protection:** Protect beaches for public use and recreation.
- **Marine resources:** Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

Russell Tsuji

_____

Signature of authorized agent(s) or if no agent, signature of applicant

AUTHORIZATION OF AGENT

I hereby authorize_____to act as my representative and to bind me in all matters concerning this application.

_____

_____

Signature of applicant(s)