



CONSERVATION DISTRICT USE APPLICATION (CDUA)

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

File No.:

Acceptance Date:

Assigned Planner:

180-Day Expiration Date: 2026 MAY 28 12:09

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII
for DLNR Use

PROJECT NAME: REEFrame: Restoration of Severely Degraded Coral Reefs in Hawai'i via Permanent Coral Nurseries on 3D Printed Concrete Reef Frameworks

Conservation District Subzone: Resource Subzone

Identified Land Use: R-2 Artificial Reefs and R-5 Marine Construction

(See Hawai'i Administrative Rules (HAR) §13-5-22 through §13-5-25)

Project Address: At the mouth of the 'Āpuakēhau Channel, 0.52 to 0.75 miles off Waikīkī Beach, in water depths between 40 and 60 feet

Ahupua'a, District, Island: Waikīkī, Honolulu, O'ahu

Tax Map Key(s): The nearest landside TMKs are the strip of shoreline properties along Kālia Road in Waikīkī, including: (1) 2-6-005:001, (1) 2-6-004:012, (1) 2-6-004:010, (1) 2-6-004:009, (1) 2-6-004:008, (1) 2-6-004:007, (1) 2-6-004:006, (1) 2-6-004:005, (1) 2-6-002:026 and (1) 2-6-002:006

Proposed Commencement Date: Late 2026

Proposed Completion Date: Early 2027

Estimated Project Cost: \$9,027,618

Type of permit sought Board or Departmental

ATTACHMENTS

\$ 2,500 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).

\$ N/A Public hearing fee if required (\$250 plus publication costs; ref §13-5-40)

- 6 copies of CDUA (5 hard + 1 digital copy) (disc or cloud share; no flash drives)
- Draft / Final Environmental Assessment (EA) or Final Environmental Impact Statement (EIS) or Statement of Exemption
- State Historic Preservation Division (SHPD) HRS 6E submittal form or Determination letter (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: Conservation International Foundation

Title; Agency: Ashleigh McGovern, Senior Vice President, Center for Oceans

Mailing Address: 2011 Crystal Drive #600, Arlington, VA 22202

Contact Person & Title: Claire Elverum, Nature-Based Solutions Project Manager
(757) 268-7124, celverum@conservation.org

Interest in Property: Project management and administration

Signature: Ashleigh McGovern Date: May 12, 2026

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

Landowner (if different than the applicant)

Name: State of Hawai'i

Title; Agency: Managed by the Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL)

Mailing Address: Kalanimoku Building
1151 Punchbowl Street, Room 131
Honolulu, HI 96813

Phone: (808) 587-0377

Email: dlnc@hawaii.gov

Signature: _____ Date: _____

For public lands, the government entity with management control shall sign as landowner.

Agent or Consultant

Agency: Oceanit

Contact Person & Title: Berna Senelly, Senior Regulatory & Community Lead

Mailing Address: 828 Fort Street Mall, Suite 600
Honolulu, HI 96813

Phone: (808) 531-3017 office
(817) 422-1372 mobile

Email: bsenelly@oceanit.com


Signature: Berna Senelly Date: May 7, 2026

For DLNR Managed Lands

Chairperson, Board of Land and Natural Resources

P.O. Box 621

Honolulu, Hawai'i 96809-0621

Signature:  Date: 05/24/2026

for

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PROPOSED USE

Total area of proposed use (indicate in acres or sq. ft.): The Area of Potential Effects (APE) encompasses approximately 11.4 acres. Current funding supports the development of an initial 150 reef modules, representing a meaningful scale of restoration. These modules would occupy approximately 5,400 square feet or about 1.1% of the APE seafloor. In addition to the area of installation of the 150 modules, the APE also covers the temporary anchoring of barges and support vessels at the project site during construction as well as any future expansion and accommodation of additional modules subject to separate funding (and separate permitting).

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 including, but not limited to, grading and grubbing, placement of accessory equipment, installation of utilities, roads, driveways, fences, landscaping, etc.

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

Summary of Proposed Use

REEFrame is a habitat restoration project intended to restore Waikīkī's coral reefs by creating and installing permanent naturally shaped concrete modules designed to enhance coral habitat. The REEFrame project proposes to construct permanent, structurally resilient, 3D printed, concrete reef frameworks that will serve as both coral nurseries and foundations for structurally complex natural coral reefs. This \$9 million project is funded by the National Oceanic and Atmospheric Administration (NOAA) Office of Habitat Conservation (OHC).

Purpose and Need

Urbanization, pollution, unsustainable fishing impacts, and climate change have accelerated the decline of Waikīkī's coral reef ecosystem. These combined pressures all significantly degrade coral resilience, leaving corals susceptible to bleaching events and coral death. Coral mortality exposes the reef to erosion, reducing habitat availability in the natural reef system and resulting in lower numbers and biodiversity of reef species such as fishes. Coral decline also reduces coastal protection and can lead to the limitation of cultural practices such as fishing, loss of tourism-related income, and general negative impacts on recreational ocean use. Today, this ecosystem is among the most degraded in Hawai'i with the lowest herbivorous fish density in Hawai'i.

Project Description

REEFrame is a restoration project serving to promote coral reef resilience (resistance and recovery) and revitalize Waikīkī's degraded reef ecosystem. The REEFrame project is intended to establish a permanent coral nursery off Waikiki Beach comprising naturally shaped concrete modules. The REEFrame module design supports many species of marine herbivores that each differ in feeding preferences, life histories, and habitat preferences. Structural complexity within a reef system provides important refuge for juvenile and adult herbivores and is necessary to

support biodiversity. REEFrame modules will contain holes, crevices, ledges and other intentional design elements to help mimic a natural reef structure while providing shelter space for colonizing fishes and marine invertebrates. The modules also have attachment points for Corals of Opportunity (CoOs), which are healthy coral fragments that have been dislodged by storms or human activity and are a cost-effective option for reef restoration.

In this project, restoration applies to both the marine ecosystem and the uniquely diverse culture of Waikīkī. In addition to coral reef and habitat restoration, REEFrame also seeks to revitalize the historic significance and cultural practices that are inhibited due to continuing ecosystem degradation. Restoring coral reefs is the first step in supporting the greater marine environment, which extends to the social and cultural environments that make Hawai'i unique. Beyond Waikīkī, this project serves as a template for future reef restoration efforts throughout Hawai'i.

Proposed Size and Dimensions

The project area is located at the mouth of the 'Āpuakēhau Channel along the coast of Waikīkī, 0.52 to 0.75 miles offshore in water depths between 40 and 60 feet. At these depths, REEFrame will avoid high wave energy, avoid potential effects on surf sites, and enable feasible underwater restoration activities. The APE encompasses approximately 11.4 acres, but the footprint of the 150 modules to be deployed covers approximately 5,400 square feet (1.1% of the APE seafloor). The modules are manufactured using Natrx's (manufacturer's) DryForming™ process, which enables the creation of naturalistic features to foster coral growth. The modules have holes of varying sizes, crevices, ledges and other intentional design elements that mimic a natural reef structure. The modules are a concrete material with steel hardware; steel is covered in concrete coatings. There are five interlocking units per module. Each module measures 6 feet wide by 6 feet long by a maximum of 6 feet tall and weighs an average of 5 tons. The modules are designed to withstand a 50-year southern swell storm event where wave heights reach or exceed 18 feet with a sustained 18-second period. Please refer to the attached Draft Construction Plans, which include an intended installation plan and module details.

Proposed Construction Methodology

The REEFrame modules have been fabricated on the mainland and will be shipped to Hawai'i. The placement of the REEFrame modules offshore of Waikīkī will require construction barges with heavy equipment to carefully lower the modules in a controlled manner and place them onto the sandy seafloor. To help control the risks of inadvertently placing a structure on the natural reef, modules shall be placed within the APE, the boundary of which lies a minimum of 100 feet clear of the existing reef edge. Construction will proceed only during fair weather conditions at the site (preferable waves, currents and winds). To help control the short-term risks of the construction activities on ocean water quality and the benthic environment, Best Management Practices (BMPs) will be established prior to the deployment of REEFrame. The construction Contractor shall comply with all BMPs required by local, State and Federal permitting agencies, including the Required BMPs from the NOAA Restoration Center – Pacific Islands (RC-PI) Programmatic Consultations, which is contained in Appendix B of the attached Draft Environmental Assessment, to avoid or minimize potential impacts of in-water activities.

Construction activities will commence upon obtaining all permits and approvals, which is estimated to be in late 2026/early 2027, avoiding large summer swells. Once approvals are issued and the construction company is contracted, on-site deployment activities (construction) are expected to take two to four weeks. After installation, the project site will be monitored periodically for successful coral recruitment and increased colonization by reef-associated fishes and invertebrates, with corals transplanted by divers and/or snorkelers.

Basis of Design

The foundation of REEFrame is based on the Coral Resilience Module Experiment (CReME) feasibility study conducted by the University of Hawai'i at Mānoa. In 2016, the CReME project began as an artificial reef pilot study with six modules deployed at each of two sites: Hanauma Bay and Waikīkī. Six 1 cubic meter concrete modules were deployed offshore of Waikīkī at depths ranging from 40 to 60 feet on the primarily sandy ocean floor, the same location as the preferred site for REEFrame. Following deployment, the modules were monitored every quarter over four years. The CReME study demonstrated that outplanted CoOs and naturally recruiting corals are able to grow and develop on artificial structures installed offshore of Waikīkī, which supports the concept for REEFrame to function as a structure for coral outplanting as well as a habitat for naturally colonizing corals. Moreover, the CReME project supports the prospect that the REEFrame project will enhance the surrounding natural environment by serving as high-shelter habitat for reef-associated invertebrates and fishes found in the nearby reef habitat. Data from the CReME study were used to inform the REEFrame design features such as surface textures, grooves, holes, and overhands to provide effective shelter for a diverse assemblage of reef species.

EXISTING CONDITIONS

Please describe the following, and attach maps, site plans, topo maps, colored photos, and biological or archaeological surveys as appropriate:

Prior Conservation District Use Permits or Site Plan Approvals (if applicable):

No prior Conservation District Use Permits (CDUPs) or Site Plan Approvals (SPAs) have been issued.

Existing access to site:

The project site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet. The project APE has no overlap with popular surf sites or navigation channels. Existing access to the site is via the ocean by recreational watercraft, swimming, scuba diving, freediving, and/or snorkeling. The Proposed Action would involve the temporary anchoring of barges and support vessels at the project site for approximately two to four weeks and would require transiting recreational watercraft to avoid the anchored vessels. In the long term, however, the Proposed Action would have no adverse effects on watercraft navigation in the area.

Existing buildings/structures:

Not applicable, as the project site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet.

Existing utilities (electrical, communication, gas, drainage, water & wastewater):

Not applicable, as the project site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet.

Physiography (geology, topography, & soils):

The REEFrame project will be deployed to subtidal waters offshore of Waikīkī, O‘ahu. The seafloor in the area is composed of limestone pavement, formed by the fossilization of coral reefs during the Pleistocene epoch. This limestone pavement substrate is covered by patches of marine carbonate sand interspersed with coral rubble. “Halekulani,” the planned project site, is located where unconsolidated sand has accumulated at the mouth of the ‘Āpuakēhau Channel that was dredged through the limestone pavement. Additional geologic resources in the surrounding area include living coral reefs, coral fragments, and gravel- to boulder-sized rock formations.

Eight potential sites between Kewalo Basin and Diamond Head were evaluated for feasibility to meet the project objectives. The alternative sites were divided into two distinct groups: shallow sandy sites and deeper sites. Two sites, “Halekulani Dagger” and “Halekulani East,” were combined as “Halekulani” and selected as the preferred location to install the REEFrame modules. The preferred location was selected because it exhibits several high-preference features including sandy, unconsolidated seafloor, low biological cover, proximity to a reef with high restoration potential, has been previously studied in the CReME project, is centrally located in the Waikīkī region, and is at depths ideal for coral restoration activities without affecting nearby surf spots and other human activities.

During construction, REEFrame modules will be intentionally placed on unconsolidated carbonate sand sediment where other geologic resources are absent. Long-term impacts to these resources will be limited to the project footprint area. Larger geological resources such as rocks, boulders, and non-living corals are not present within the selected project site, and no impacts to these resources are expected to occur.

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

The project area is located offshore of Southern O‘ahu within the Honolulu sector of the Ko‘olau Basalt regional aquifer system. The nearshore of Waikīkī comprises a fringing fossil limestone reef that extends offshore for about 1 mile and is intersected by several ancient stream channels. During the construction of the Ala Wai Canal in the 1920s, freshwater streams that once flowed to the ocean at Waikīkī were permanently diverted to the Ala Wai Canal and springs in the surrounding wetlands of Honolulu were filled with material dredged during canal construction. These actions significantly altered surface freshwater resources in the area.

Neither short- nor long-term impacts on hydrogrology and water resources are anticipated as a result of the Proposed Action. Project activities will involve placing reef modules on existing unconsolidated marine sediments in the project area. The modules resting on the seafloor are not expected to impact subaerial (shoreline) or submarine freshwater discharge at the project site. The Proposed Action does not involve drilling into or through the caprock layer and, thus, does not pose a risk of contaminating the underlying aquifer or increasing freshwater discharge from it. Since the project site is located offshore, there will be no impacts to surface water resources.

Flora & fauna (indicate if rare or endangered plants and/or animals are present):

Listed Species Managed by USFWS

According to Information for Planning and Consultation (IPaC), a project planning tool provided by the U.S. Fish and Wildlife Service (USFWS), there are no USFWS-managed critical habitats at the project site. However, the following USFWS-managed species, listed under the Endangered Species Act (ESA), may occur at the project site: Band-rumped Storm-petrel (*Hydrobates castro*), Hawaiian Petrel (*Pterodroma sandwichensis*), Newell’s Shearwater (*Puffinus newelli*), Short-tailed Albatross (*Phoebastria albatrus*), and Hawksbill Sea Turtle (*Eretmochelys imbricata*).

Listed Species Managed by NOAA Fisheries

In designated areas of the Main Hawaiian Islands, critical habitat for Hawaiian monk seals (*Neomonachus schauinslandi*) includes the marine environment with a seaward boundary that extends from the 200-meter depth contour line (relative to Mean Lower-Low Water), including the seafloor and all subsurface waters and marine habitat within 10 meters of the seafloor, through the water’s edge 5 meters into the terrestrial environment. Proposed critical habitat for green sea turtles (*Chelonia mydas*) includes the marine environment from the Mean High Water line to a 20-meter depth. Additional federally protected marine species known to occur in the region include spinner dolphins (*Stenella longirostris*). Coral species also occur in the area and are protected by Hawai‘i State regulations, but no coral species that occur in the Main Hawaiian Islands are currently federally listed.

EFH Designations

The project area is within Essential Fish Habitat (EFH) boundaries for three groups of Management Unit Species (MUS): pelagic fish, bottomfish, and crustaceans. However, the project area is not within or near a Habitat Area of Particular Concern (HAPC).

Please refer to Appendix A of the attached Draft Environmental Assessment for a detailed discussion of benthic resources within the project's APE. Over the long term, the project is anticipated to provide net ecological benefits by creating reef habitat and providing dimensional structure in an area with limited natural structure, supporting CoOs outplants, enhancing habitat for natural colonization by corals, reef-associated fishes and invertebrates, and contributing to broader coral restoration objectives.

Natural hazards (erosion, flooding, tsunami, seismic, etc.):

The project site is located 0.52 to 0.75 miles offshore in water depths between 40 and 60 feet. Therefore, natural hazards related to erosion, flooding, sea level rise, tsunamis, hurricanes, and earthquakes do not apply.

Historic & cultural resources:

The Draft Archaeological Literature Review (Appendix C of the attached Draft Environmental Assessment) found no historic properties are within the proposed project area. The nearest historic properties are along the beach, where no work will be conducted, and there is no potential for submerged former terrestrial archaeological sites in the APE. As for isolated artifacts, such as traditional Hawaiian fishing gear, such finds are unlikely because the APE is in the Halekulani Sand Channel, which experiences dynamic and fluctuating water conditions and was previously mined for sand to replenish Waikīkī beaches.

The Draft Cultural Impact Assessment (Appendix D of the attached Draft Environmental Assessment) found that no adverse effects on surfing or swimming practices are anticipated to result from the proposed REEFrame project. The project area lies well offshore, in deeper waters where new coral growth would not result in appreciable changes to the nature, size, frequency, or occurrence of the Waikīkī surf breaks. The Proposed Action would involve the temporary anchoring of barges and support vessels at the project site for approximately two to four weeks and would require transiting canoes to avoid the anchored vessels. Such avoidance requirements are applicable when encountering any stationary or anchored vessel and would have no adverse effects on the exercise of traditional paddling practices. There are no known cultural properties in the offshore project area, and there is no potential for the Proposed Action to affect iwi kūpuna that may be buried on shore or have eroded to nearshore areas. Anecdotal accounts indicate that cremation remains are occasionally scattered offshore, potentially in or near the project area. This ongoing practice would not be impacted by the Proposed Action. Any previously scattered remains would have been dispersed by ocean currents and are not anticipated to be present in the project area. The quantity and variety of sea life present in the project area is expected to increase as a result of the Proposed Action. The Proposed Action is also anticipated to improve conditions for fishing in the project area and in adjacent locations as the new reefs mature and fish recruitment increases in the area.

EVALUATION CRITERIA

The Department or Board will evaluate the merits 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. How is the proposed land use consistent with the purpose of the conservation district?** (*ref §13-5-1*)

The Proposed Action supports the purpose of the Conservation District, which aims to protect and preserve essential natural resources, including watersheds, beaches, forests, and endangered habitats. Waikīkī's coral reef ecosystem is currently among the most degraded in Hawai'i, due to increased pressures from urbanization, pollution, unsustainable fishing impacts, and climate change. Creating and installing permanent REEFrame modules offshore that mimic the structure of a naturally occurring reef will help enhance Waikīkī's coral reefs and provide habitat restoration. REEFrame aims to support coral growth and restore functional reef habitat, improve ecosystem health, support marine life, and reinforce the coastal benefits the reef provides to the Waikīkī community. In addition, REEFrame seeks to revitalize the historic significance and cultural practices that are inhibited due to continuing ecosystem degradation.

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

Per HAR §13-5-13, the objective of the Resource subzone is to "ensure, with proper management, the sustainable use of the natural resources of those areas." The Proposed Action is consistent with this objective as it seeks to protect and enhance Waikīkī's valuable coastal ecosystem by restoring coral populations and increasing habitats for benthic species in the area.

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 Proposed Action complies with the enforceable policies of Hawai'i's approved Coastal Zone Management (CZM) program and will be conducted in a manner consistent with such program. The CZM program identifies ten objectives and policies:

(1) Recreational Resources – The Proposed Action will support coastal recreational opportunities by restoring the coral ecosystem, thereby providing habitats for the benthic environment, including coral, fish, urchins and other ocean species. The increase in the benthic populations will provide diverse opportunities for gatherers, recreational fishers, divers and other water users to engage and interact with these ocean species. During deployment, BMPs will be employed to meet public safety standards and natural resources conservation.

(2) Historic Resources – An archaeological literature review and field survey study (Appendix C of the attached Draft Environmental Assessment) were conducted to determine whether there would be significant impacts to historical or archaeological resources under the Proposed Action. The Proposed Action is not anticipated to have significant impacts on existing historic and cultural resources within the project area.

(3) Scenic and Open Space Resources – The REEFrame structures will be installed in water depths between 40 and 60 feet and will not affect the coastal scenic and open space resources.

(4) Coastal Ecosystems – The Proposed Action supports the objective to protect valuable coastal ecosystems. Further, implementation of the Proposed Action will enhance the coastal ecosystem by increasing the coral population and habitats for benthic species in the area.

(5) Economic Uses – REEFrame is anticipated to have long-term beneficial biological, and therefore economic impacts to the community and the State by increasing underwater attractions for the resident and visitor populations.

(6) Coastal Hazards – REEFrame will be located 0.52 to 0.75 miles offshore in water depths between 40 and 60 feet and will have no impact on coastal hazards.

(7) Managing Development – Ninety-one Draft EA pre-consultation requests were sent to agencies, community organizations and individuals. These requests included an overview of project objectives, location and technology to provide a framework for public comments. In addition, the project team conducted and continues to conduct community outreach. (See Tables 5 and 6 of the attached Draft EA.)

(8) Public Participation – Extensive dialogue with public agencies, community organization and individuals has occurred, and will continue to occur through project deployment. In addition, a presentation was made to the Waikīkī Neighborhood Board No. 09 on September 9, 2025. (See Table 6 of the attached Draft EA.)

(9) Beach Protection – The Proposed Action does not involve construction of shoreline hardening structures nor will it affect coastal dunes.

(10) Marine Resources – All work in the marine environment will be carefully monitored with stringent BMPs in place. In the long term, the Proposed Action will have a positive effect on marine and coastal resources by restoring coral populations and increasing benthic habitats for ocean species in the area.

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 REEFrame modules have been fabricated on the mainland and will be shipped to Hawai'i. The placement of the REEFrame modules offshore of Waikīkī will require transporting the modules to the site by construction barge(s) and using heavy equipment to carefully lower

the modules in a controlled manner and place them onto the sandy seafloor. During placement, effective BMPs will prevent and minimize construction-related impacts. Notably, modules shall be placed within the APE, whose boundary lies a minimum of 100 feet clear of the existing reef edge, and construction operations will only occur during favorable weather conditions. Once installed, the modules will contribute to the State's coral restoration efforts, by enhancing biodiversity and providing ecosystem services to benefit CoOs, natural coral recruitment, and fish habitat. Coral restoration is relevant to both the aquatic ecosystem and the uniquely diverse culture of Waikīkī. Without coral restoration, significant losses of coral reefs will continue and the overall health of the benthic environment along the Waikīkī coastline will continue to degrade.

- 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 site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet. The Proposed Action would help to enhance the current use of the locality and nearby areas by increasing recreational potential for scuba divers, freedivers, and snorkelers. The Proposed Action is also anticipated to improve conditions for fishing in the project area and in adjacent locations as the new reefs mature and fish recruitment increases in the area.

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

The coastal water quality in the area is designated as Class A in State Water Quality Standards. In the long term, REEFrame will have a beneficial impact on natural resources, including local marine flora and fauna. Coral reef restoration can also improve water quality by fostering healthier ecosystems that act as natural filters that remove particulate matter and impurities from the surrounding water. In addition, rebuilding coral structures can help reduce nutrient pollution, trap sediment, and increase oxygenation in the water.

The Proposed Action is not anticipated to have any visual or coastal line-of-sight impacts beyond the deployment phase and arrival/departure of the barge(s). The height of the REEFrame modules is only about 6 feet and will be placed on the sandy seafloor in water depths of between 40 and 60 feet.

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

Not applicable, as the Proposed Action does not propose subdivision of the land.

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

The Proposed Action is not anticipated to affect public health, safety and welfare in the long term. The project's goal is to help restore the overall health of the benthic environment and marine ecosystem along the Waikīkī coastline, which is part of the social and cultural

conditions that make Hawai'i unique. In the short term, during construction activities, impacts will be mitigated with appropriate BMPs, including the use of protective facilities for the protection and safety of the public and construction workers. The Contractor shall observe and comply with all Federal, State and local laws required for the protection of public health, safety and environmental quality, and shall comply with all construction permits and approvals that are pertinent to the work.

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 Hawaiian and other ethnic groups.

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

This section summarizes the Draft Cultural Impact Assessment in Support of REEFrame that is contained in Appendix D of the attached Draft Environmental Assessment. Please refer to this study for specific references.

Waikīkī has a strong, well-documented association with Native Hawaiian practices and beliefs, some of which have endured for centuries and continue to hold cultural significance. Traditionally, Hawaiians relied on the ocean at Waikīkī for sustenance and recreation through practices such as fishing, gathering, swimming, surfing, and canoeing. Umu (fish aggregation devices) and several types of traps were constructed by Native Hawaiians near the Waikīkī shoreline to attract desirable fish for harvesting. Limu (seaweed) was cultivated along rocky shorelines for food, medicine, and spiritual practices. Other marine life was also gathered in those rocky areas for sustenance. On shore, several heiau (traditional Hawaiian temples) and ko‘a (fishing shrines) were once located in the Waikīkī ahupua‘a and numerous Native Hawaiian burials have also been discovered in sands along the Waikīkī shoreline.

Little remains of the constructions of the early inhabitants of Waikīkī. Modern development has replaced the temples and shrines; rocky beach areas have been replenished with imported sand to promote recreational beach use and tourism; umu have been degraded by natural processes and beach management practices; and many iwi kūpuna (ancestral remains) have been disturbed by development and natural weathering. These factors have contributed to a significant decrease in some of the cultural resources and practices associated with Waikīkī, such as marine resource gathering and fishing. Climate change, unsustainable fishing practices, pollution, and the loss of natural coral populations have also contributed to the degradation of conditions that once made Waikīkī a bountiful coastal environment. While some gathering and fishing may continue along the Waikīkī coast, the area no longer provides the level of sustenance it once did for Native Hawaiians.

Surfing and swimming remain important and enduring cultural practices along the Waikīkī shoreline. He‘e nalu (board surfing), pākākā nalu (outrigger canoe surfing), kaha nalu (body surfing), and swimming attract visitors and local residents alike to the area. Canoe paddling, considered a traditional Hawaiian practice, remains a popular recreational activity in Waikīkī; several canoe clubs store their wa‘a on shore and practice and compete in the area.

Research has not identified any historic properties within the proposed project area. The nearest historic properties are along the beach, and there is no potential for submerged former terrestrial archaeological sites in the project area. As for isolated artifacts, such as traditional Hawaiian fishing gear, such finds are unlikely because the project area is in the Halekulani Sand Channel, which

experiences dynamic and fluctuating water conditions and was previously mined for sand to replenish Waikīkī beaches.

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

The REEFrame project will not involve any actions on shore in Waikīkī. There are no known cultural properties in the offshore project area, and there is no potential for the Proposed Action to affect iwi kūpuna that may be buried on shore or have eroded to nearshore areas. Anecdotal accounts indicate that cremation remains are occasionally scattered offshore, potentially in or near the project area. This ongoing practice would not be impacted by the Proposed Action. Any previously scattered remains would have been dispersed by ocean currents and are not anticipated to be present in the project area.

No adverse effects on surfing or swimming practices are anticipated to result from the proposed REEFrame project. The project area lies well offshore, in deeper waters where new coral growth would not result in appreciable changes to the nature, size, frequency, or occurrence of the Waikīkī surf breaks. The REEFrame modules (each about 6 feet in height) will be placed 0.52 to 0.75 miles offshore in water depths between 40 and 60 feet. The Waikīkī surf breaks occur much closer to shore, approximately 300 to 700 feet offshore, and in shallower waters with depths of around 5 feet.

The Proposed Action would involve the temporary anchoring of barges and support vessels at the project site for approximately two to four weeks and would require transiting recreational canoes to avoid the anchored vessels. Such avoidance requirements are applicable when encountering any stationary or anchored vessel and would have no adverse effects on the exercise of traditional paddling practices.

The quantity and variety of sea life present in the project area are expected to increase as a result of the Proposed Action. As the new reefs are colonized and grow, they are anticipated to attract more sea life to the area, as compared to existing conditions. The Proposed Action is anticipated to improve conditions for fishing in the project area and in adjacent locations as the new reefs mature and fish recruitment increases in the area.

What feasible action, if any, could be taken by the Board of Land and Natural Resources regarding your application to reasonably protect Native Hawai'i rights?

The Board of Land and Natural Resources (BLNR) could assist in protecting cultural resources in the area by supporting ongoing community efforts to protect and conserve these resources. By allowing the installation of the REEFrame modules, the BLNR will be contributing to our community's knowledge of methods to protect natural/coastal resources and environmental quality. Creating and installing permanent modules offshore that mimic the structure of a naturally occurring reef will help enhance Waikīkī's coral reefs and provide habitat restoration.

OTHER IMPACTS

Does the proposed land use have an effect (positive/negative) on public access to and along the shoreline or along any public trail?

The Proposed Action will not affect public access to and along the shoreline nor affect public access along any public trail, as the project site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet.

Does the proposed use have an effect (positive/negative) on beach processes?

The Proposed Action will not affect beach processes, as the project site is located offshore, 0.52 to 0.75 miles off Waikīkī Beach in water depths between 40 and 60 feet. The Proposed Action will not affect erosion/accretion processes, not alter local currents, circulation patterns, or surf sites.

Will the proposed use cause increased sedimentation?

The coastal water quality in the area is designated as Class A in State Water Quality Standards. Short-term negative impacts will be related to deployment and construction activities. BMPs will be strictly followed to avoid, minimize, or mitigate impacts on ocean water quality. In the long term, REEFrame will have a beneficial impact to natural resources, including local marine flora and fauna. Coral reef restoration can also improve water quality by fostering healthier ecosystems that act as natural filters that remove particulate matter and impurities from the surrounding water. In addition, rebuilding coral structures can help reduce nutrient pollution, trap sediment, and increase oxygenation in the water.

Will the proposed use cause any visual impact on any individual or community?

The Proposed Action is not anticipated to have any visual or coastal line-of-sight impacts beyond the deployment phase and arrival/departure of the barge(s). The height of the REEFrame modules is only about 6 feet, and will be placed on the sandy seafloor in water depths of between 40 and 60 feet.

Please describe any sustainable design elements that will be incorporated into the proposed land use (e.g. the use of efficient ventilation and cooling systems; renewable energy generation; sustainable building materials; permeable paving materials; efficient energy and water systems; efficient waste management systems; etc.).

The Proposed Action as a whole helps foster long-term biological sustainability of Waikīkī's coral reef ecosystem.

If the project involves landscaping, please describe how the landscaping is appropriate to the Conservation District (e.g. use of indigenous and endemic species; xeriscaping in dry areas; minimizing ground disturbance; maintenance or restoration of the canopy; removal of invasive species; habitat preservation and restoration; etc.)

Not applicable, as no landscaping is planned as part of this project.

Please describe Best Management Practices that will be used during construction and implementation of the proposed land use.

The Contractor shall comply with all BMPs required by local, State and Federal permitting agencies, including the Required BMPs from the NOAA RC-PI Programmatic Consultations, which is contained in Appendix B of the attached Draft Environmental Assessment, to avoid or minimize potential impacts of in-water activities. Notably, modules shall be placed within the APE, whose boundary lies a minimum of 100 feet clear of the existing reef edge, and construction operations will only occur during favorable weather conditions.

Please describe the measures that will be taken to mitigate the proposed land use's environmental and cultural impacts.

Waikīkī offers approximately 2 miles of publicly accessible beachfront that spans from Fort DeRussy Beach at the west end to Kaimana Beach at the east end. Residents and island visitors enjoy passive and active recreational activities typically offered by beaches including, but not limited to, sunbathing, swimming, paddleboarding, snorkeling, and beachcombing.

Surfing is a popular activity along Waikīkī and three popular surf sites located near the REEFrame project location including Threes, Paradise and Populars. The closest surf breaks are approximately 1,000 to 2,000 feet mauka (landward) of the project area, and the Proposed Action is not anticipated to impact the proximal surf breaks.

Additionally, canoe paddling, considered a traditional Hawaiian practice, remains a popular recreational activity in Waikīkī. Several canoe clubs store their wa'a (outrigger canoes) on shore and practice and compete in the area. In the short term, the Proposed Action would require transiting canoes to avoid anchored vessels during active construction. In the long term, however, the Proposed Action would have no adverse effects on the exercise of traditional paddling practices. See "Cultural Impacts" section of this CDUA (pages 15 and 16) for further discussion.

During construction, any adverse environmental impacts of the Proposed Action will be minimal and temporary, and potential risks to environmental impacts will be reduced by the BMPs. The Contractor shall comply with all BMPs required by local, State and Federal permitting agencies, including the Required BMPs from the NOAA RC-PI Programmatic Consultations, which is contained in Appendix B of the attached Draft Environmental Assessment, to avoid or minimize potential impacts of in-water activities.

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	N/A	N/A	N/A
Paved areas/ impermeable surfaces	N/A	N/A	N/A
Landscaped areas	N/A	N/A	N/A
Unimproved areas	N/A	N/A	N/A

SETBACKS Front: N/A Side: N/A Back: N/A

SHORELINE PROPERTIES

Average Lot Depth (ALD): N/A Average annual coastal erosion rate: N/A
Minimum shoreline setback based on Exhibit 4: N/A
Actual shoreline setback or proposed structure: N/A

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: N/A
Actual Developable Area of proposed residence: N/A
Actual height of the proposed building envelope as defined in Exhibit 4: N/A

COMPATIBILITY

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

N/A

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

N/A

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?

N/A

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 based on such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

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.

Berna Senelly

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

AUTHORIZATION OF AGENT

I hereby authorize Berna Senelly, Senior Regulatory & Community Lead at Oceanit to act as my representative and to bind me in all matters concerning this application.

Ashleigh McGovern

Signature of applicant(s)

