



MEMORANDUM

May 8, 2025

TO: Mauna Kea Stewardship and Oversight Authority
FROM: Greg Chun, Executive Director, CMS
SUBJECT: Formal consultation, Site Plan Application for CFHT Conduit Removal

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| <ul style="list-style-type: none"> • Proposal rec'd: 3/11/2025 • Type A B C • CMS Project #356 • ED review: 3/31/2025 • EC review: 4/10/2025 • KKM review: 4/3/2025 • MKMB review: 5/6/2025 |
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I. Project Description

The Canada France Hawaii Telescope (“CFHT”) requests to remove the above-ground conduit it shares with the Gemini North Observatory. Development and use of the conduit received at least four written approvals from OCCL: HA 06-49 (issued 2006), HA 12-4 (issued 2011), HA 16-192 (issued 2016), and HA 20-49 (issued 2020). The final Site Plan Approval, HA 20-49, directed that *“The permittee shall remove all project components at the end of the conduit’s useful existence.”* CFHT and GNO have jointly determined to end the project and remove the conduit, while also requesting to temporarily leave-in-place the buried conduit ends until their respective facilities undergo full decommissioning.

Removal of the above-ground conduit portion, including insulative sheathing and cement blocks, is expected to take one day using only hand tools. All project debris will be transported to an appropriate, off-site waste facility. No hazardous materials are involved. The action is expected to have temporary and either minimal or no significant effects to any identified resources.

II. Resources Identified

The project area is within the:

- Mauna Kea Summit Region Historic District, State Inventory of Historic Places (SIHP) Site #50-10-23-26869;
- Mauna A Wākea Traditional Cultural Property and District, SIHP Site 31382; and
- Kūkahau’ula Traditional Cultural Property, SIHP Site 21438.

Project activity is limited to the regularly-used and maintained roadway supporting the conduit where no cultural or historic resources have been identified; there are also no known historic properties within at least 500 feet of either CFHT or GNO. The nearest water body, Lake Wāiau, is well over one mile from the project site, over porous and hilly terrain. Few if any vascular plants have been observed at the project site; vegetation is limited to lichens and/or moss. No rare, threatened, or endangered arthropod or animal species have been documented.



III. Impacts Identified

The work will not extend or enlarge CFHT or GNO's footprint and does not change the permitted use of either facility. The conduit is set at ground-level and CMS is not aware of any impact to celestial or oceanic view planes; further, the conduit removal may restore the original open-space characteristics of the landscape and surrounding vistas. The proposed land use is thus not anticipated to have any negative effect on any cultural or historic resources and may benefit visual appearances. No impacts to any hydrological resources such as Lake Wāiau are expected. Project activity will be limited to the existing roadway and will avoid any undeveloped geological formations. The project is subsequently anticipated to have no adverse impacts to any natural (biological, ecological, geological, and hydrological) resources. Given the brief duration and limited work area, the project is also expected to not affect any recreational or scientific resources.

IV. Recommended Mitigation

CMS identifies the land use as HAR § 13-5-22, Protective subzone, P-8, Structures and Land Uses, Existing, (B-1) Demolition, removal, or minor alteration of existing structures, facilities, land, and equipment. The project also identifies applicable exemptions, detailed in the Site Plan application. Request for approval by Land Division and Site Plan Approval from Office of Conservation and Coastal Lands (OCCL) will be submitted following consultation with KKM, the Environment Committee, Maunakea Management Board, and the Mauna Kea Stewardship and Oversight Authority. The project will not proceed unless all applicable reviews are completed and approvals obtained. Standard Best Management Conditions, applicable CMS approval conditions, and OCCL approval conditions will be complied with.

V. Compliance with Maunakea Comprehensive Management Plan

The request is consistent with the 2022 Comprehensive Management Plan (CMP), approved by the Board of Land and Natural Resources. In fulfillment of the CMP's community review requirements, the proposed use was reviewed by Kahu Kū Mauna Council (KKM) on April 3, 2025 and Environment Committee on April 10, 2025; no concerns or objections were expressed. CMS will share with MKSOA any concerns from the May 6, 2025 Maunakea Management Board meeting as the latter meeting is after MKSOA's posting deadline. The proposed land is also consistent with UH's General Lease for the Science Reserve (S-4191) and both CFHT and GNO subleases. Further, CMS' review of project requests like this complies with the following CMP Actions:

- NR-1: Limit threats to natural resources through management of permitted activities and uses. Habitat alteration and disturbance will be minimized via implementation of Construction Guidelines detailed in the CMP's six Permitting and Enforcement Actions, including:
 - P-1: Comply with all applicable federal, state, and local laws, regulations, and permit conditions related to activities in the UH management Areas.



- P-2: Strengthen CMP implementation by recommending that compliance with the CMP be a condition of permits and agreements.
- P-4: Educate management staff and users of the mountain about all applicable rules and permit requirements
- IM-5: Develop and implement a Debris Removal, Monitoring and Prevention Plan, particularly that “All incidental rubbish and debris shall be secured in a windproof rubbish bin or kept indoors.”
- C-9: Inspection of construction materials. Shipping containers and crates will be inspected by a DLNR-approved biologist or by Department of Agriculture personnel prior to arriving at Maunakea. Identified mitigation measures will be complied with.
- EO-2: Require orientation of users. All project workers will be required to successfully complete the Maunakea Resource Orientation prior to working onsite.
- AR-2: Prevent light pollution, radio frequency interference (RF) and dust. Contractors and staff will be informed to keep within posted speed limits to minimize dust.

VI. Center for Maunakea Stewardship Recommendation

CMS recommends MKMB approve this request proceed to OCCL review with the standard project conditions in the attached list, should the project be approved.

Facility Project Proposal for the UH-Managed Lands

Proposals due by the 15th monthly

Please mark all that apply to your project

- project was reviewed in a 5- or 3-Year Plan
- project is a CMP, lease, or sublease compliance measure
- project involves heavy machinery
- project requires ground disturbance such as digging or trenching
- project will result in a change to the facility footprint or use
- project affects a viewplane (e.g., star line or oceanic gridline)

Facility Name

Canada-France-Hawaii Telescope

Brief Descriptive Title of Project

Removal of the OHANA above-ground conduit

Project Description

Remove the above-ground portion of the 10-inch diameter PVC conduit along with its insulation and anchoring concrete piers between the Gemini Observatory and the Canada-France-Hawaii Telescope, and to temporarily leave in place the underground portions.

- Conduit houses the Optical Hawaiian Array for Nanoradian Astronomy (OHANA)
- The above-ground portion is approximately 270 ft in length
- Conduit transitions underground at both ends: On the CFHT side, roughly 125 ft of the conduit is buried from the weather tower through its termination into the CFHT building. On the Gemini side, approximately 30 ft of conduit is buried as it enters the building.
- CFHT requests to temporarily leave-in-place buried portions, to be completely removed upon decommissioning of the respective observatory.

Identified Land Use (see HAR § 13-5-22 through 13-5-25)

HAR § 13-5-22, P-8 Structures, (B-1) Demolition, removal, or minor alteration of existing structures, facilities, land, and equipment.

Identify the existing CDUP this proposal alters or affects, if any

HA 20-49

Identify [University of Hawai'i exemption](#) per HAR § 11-200-8(a), if any

HAR §11-200-8(a) Exemption Class #8, Demolition of structures not functional or economical to remodel and maintain, except those located on any historic site as designated in the National

Register or Hawai'i Register as provided for in the National Historic Preservation Act of 1966, Public Law 89-665, 16 U.S.C. Section 470, as amended, or Chapter 6E, Hawai'i Revised Statutes.

The project is also considered exempt pursuant to HAR §11-200.1-15(c)(6) Demolition of structures, except those structures that are listed on the national register or Hawaii Register of Historic Places;

Tax Map Key(s)

3-4-4-015:009 – Mauna Kea Science Reserve (por.)

Proposed Commencement Date

June 2025, or as soon as all necessary approvals are obtained.

Proposed Completion Date

Same day, pending weather.

Estimated Project Cost

\$8,000

Total size / area of proposed use

The surface area that the conduit runs above measures approximately 270 ft x 1 ft, or 270 ft².

Project Purpose and Need

CFHT installed the conduit in 2003 to protect specially fabricated fiber optic cables linking the Gemini North Observatory (GNO) and CFHT for the OHANA interferometry project. The project ended in 2011 with mixed results, but the conduit remained in place to accommodate the GRACES project, which used fibers developed in Canada to propagate the light from (GNO) to the CFHT high-resolution spectrograph, ESPaDOnS. GRACES had been highly successful until the fiber was damaged, presumably by a lightning strike in October 2023. GNO decided to terminate the project rather than incur the cost to repair or replace the fibers. With no alternative or foreseeable reason to continue using the conduit, GNO and CFHT have agreed upon its removal.

Has professional peer-review occurred

Yes, the project has been developed and reviewed by engineering consultants with CFHT and GNO staff. Review by CMS staff, community advisory boards, and the Mauna Kea Stewardship and Oversight Authority will occur in accordance with these boards' scheduled meetings.

Are there any related ongoing, pending, or planned projects associated with this submission?

No.

Existing Conditions at Project Site(s)

Geology, Climate, & Hazards

Geology: The project area is located in the summit region of Maunakea, a shield volcano. Primary geological features on the summit include cinder cones and 'a'a lava flows. The summit area has also been shaped by past glacial activity and lava-ice interaction, including subglacial eruptions where lava erupted through or near glaciers. The main rock type here is hawaiite, bearing signs of glacial striation and interlaid with cinder, ash and other volcanic pyroclasts.

Climate: In this area, the climate is very dry and cool with an inversion layer that prevents clouds from moving further upward. Annual precipitation is roughly 12 inches or less, often in the form of snow.

Hazards: Common hazards in this area include those relating to high altitude (e.g., altitude sickness) and weather or weather-related events. The latter include blizzards, rainstorms, road wash-outs, heavy fog, black ice, and falling ice. Maunakea is considered to be dormant and unlikely to experience summit eruptions or seismic activity that would directly affect the applicant. However, the summit may be affected by volcanic gasses emitted by other, on-island volcanoes. The project area is in Flood Zone D, as designated by the Federal Emergency Management Agency (FEMA), in which flood hazards are undetermined; the area has not experienced any flooding historically.

Flora, Fauna, Ecology, Water Resources

The alpine stone desert of the high summit region (above 11,000 ft elevation) hosts algae, lichens, mosses and over three dozen arthropod species, some of which may occur in the

project site. However, no rare, threatened, or endangered species have been documented at the site. Regular arthropod monitoring is conducted by CMS pursuant to the 2022 Comprehensive Management Plan Supplement. CFHT and GNO also comply with the Standard Operating Procedures of the [Maunakea Invasive Species Management Plan](#), including “Cleaning of Vehicles and Personal Belongings v 1.3” (SOP 1) and “Inspection of Vehicles, Construction Materials, Scientific Equipment, and Supplies v 1.4” (SOP 2).

All water used onsite is delivered by truck. Any naturally-occurring precipitation is seen only during the occasional storm and drains rapidly. Groundwater levels are assumed to be at significant depth, likely more than 3,000 feet below ground surface. Lake Waiau is a perched body of freshwater believed to be supplied by rainwater and other precipitation; due to the hilly, porous topography and distance from the project area, it is not believed that any summit run-off or seepage will reach the lake. The project is not anticipated to have any negative impacts to any flora, fauna, ecology or water resources.

Cultural Resources and Historic Properties

The project site is within the Mauna Kea Summit Region Historic District, State Inventory of Historic Places (SIHP) Site #50-10-23-26869. The project area is also within the Mauna A Wākea Traditional Cultural Property and District, SIHP Site 31382, and Kūkahau’ula Traditional Cultural Property, SIHP Site 21438. The nearest identified historic property, SIHP site 26224 on Pu’uwēkiu, is over 500 feet south of GNO and over 1,500 feet south of CFHT. No archaeological resources have been identified within either observatory sublease parcel, nor along the conduit route. No cultural resources or historic properties are anticipated to be adversely impacted by this project. Given the limited timeframe and physical scope of the activity, as well as smoothing the ground to blend with the surrounding landscape after the conduit is removed, the project may be seen as benefitting viewplanes, a cultural resource.

Recreation

During the daytime, when removal activity would occur, the CFHT and GNO facilities may see a few recreational visitors; these visitors will need to navigate around the work vehicles parked in the area. Any impacts to recreation are expected to be very brief (estimated one working day), negligible, and limited to those visitors seeking to access the CFHT site. Other sightseeing areas along the rest of the Pu’u Kea ridge and its viewplanes will remain open to public access.

Built Infrastructure

Existing infrastructure on the CFHT and GNO sites include the telescope buildings, GNO’s connected support building, electrical and telecommunication lines, vehicle accessways, parking, and the CFHT weather tower. As described in a previous section, the conduit is a 10-inch diameter PVC pipe enclosed in metal sheathing and anchored by partially-buried concrete support blocks. Local cinder/regolith surrounds the conduit.

Landscaping & Visual Conditions

The higher summit region is considered to be subalpine desert with no ornamental landscaping. Ground is composed of solid volcanic rock, cinder and ash.

Description of the Project

Location

The above-ground portion of the OHANA conduit runs from the Gemini Observatory building NE side to the edge of the weather tower concrete pad. Shown below are images of the conduit.



Fig 1. The aboveground conduit transitions to below-ground approximately 30 ft from the north side of the Gemini North Observatory dome.



Fig 2. The aboveground conduit, insulating cover, and small concrete anchors span a distance of roughly 270 feet between the CFHT weather tower and Gemini North.



Fig 3. The conduit transitions underground at the edge of the weather tower concrete pad, denoted by person to left of image, with foot on conduit

Description of the process of completing the project

The conduit, insulating cover, and concrete anchors will be removed, and the cinder will be restored to its original contour using only hand tools – no heavy mechanical equipment will be involved. The PVC conduit will be capped at the transition points near the GNO building and the weather station concrete pad, leaving the underground portion intact. The underground portions, which run from the weather tower to the CFHT building and for about thirty feet on the GNO side, will be removed when the respective observatory is decommissioned to minimize any ground disturbance, especially around the weather tower, where the area is unstable due to its proximity to the slope edge. Further disturbance may negatively impact the ground stability under the concrete pad, potentially causing the weather tower to tilt.

Who will do the work?

Septech Excavation will be contracted to do the work, which is expected to be completed in one day. The work will include hauling all conduit material off the summit.

Equipment & Transportation

Septech Excavation will use two pickup trucks and two trailers to remove all the material from the summit. Only hand tools will be utilized, with no heavy equipment involved.

Measures to protect the environment and/or mitigate impacts

Impacts

No adverse or more than brief (one day) impacts are anticipated to any cultural, historical, natural (geological, hydrological), biological, or recreational resources.

Approval Conditions and Protective Measures

CMS recommends the applicant adhere to the following conditions should the project be approved, pending OCCL review and approval.

- Applicant may request to arrange a pre-construction meeting with CMS before work commences. These meetings review orientation content, implications of project non-compliance, project-specific concerns regarding resource protection, health and safety, visitor and/or traffic impacts, etc. Meetings may be held in person or via phone, webinar, or other means.
- Notify CMS in writing via email to cmshilo@hawaii.edu at least five (5) days prior to beginning field work on UH-managed lands (Halepōhaku, Road Corridor, Maunakea Science Reserve, or Astronomy Precinct) with the following:
 - Identify the date that onsite work will commence.
 - Identify by name-of-entity all observatories, contractors, vendors, suppliers, etc. anticipated to be associated with and substantively present on UH-managed lands for the project.
 - Identify the individual(s) who will be coordinating all invasive species inspections.
 - Attest that the observatory or relevant entity will ensure compliance with all permit conditions and communicate with CMS if there is any uncertainty.
 - Notify CMS in writing of any other entities responsible for elements of compliance.
 - Attest that all individuals anticipated to be associated with the project have completed the Maunakea User Orientation.

CMS is not liable or responsible for delays due to inadequate or late submissions or submissions requiring verification.

- Use of lighting from sunset to sunrise is prohibited unless described in the project proposal and approved.
- Use of cell-phones, other than in airplane mode, is prohibited except in case of emergency.
- Placement of permanent markers, monuments, mag nails, or survey pins, etc. is not allowed without explicit prior approval from CMS (and the State if required). ALL surveyors' work must be shared with CMS in digital format with coordinate info stored in and using a common, transferrable coordinate reference system such as "State Plane Coordinates (NAD83), Hawai'i Zone 1".
- Allow CMS Rangers to visit and monitor activities.
- No use of mechanized equipment is allowed unless authorized by this permit.
- 4-wheel-drive required for travel above Halepōhaku.

- Large, heavy, non-4-wheel-drive or oversized loads must submit notification to the Maunakea Road Conditions listserv, MK-ROAD-CONDITIONS@lists.hawaii.edu, at least one day prior to transit. Loads requiring an escort on public roadways must have this escort accompany them to the final destination. Projects failing to submit notification or arrange for escort to the summit may be denied entry to Halepōhaku or above.
- During public closures of the Summit Access Road, vehicle access above Halepōhaku is limited to explicitly-marked observatory, CMS, federal, or state of Hawaii vehicles. Vehicles must be operated by approved employees or representatives on official business and possessing requisite orientation, training, safety, and rescue supplies.
- Motorized equipment, when stationary, must have a drain-pan in place suitable for catching fluid leaks.
- Ensure that any debris, tools and equipment are secured to avoid becoming windblown and are properly stored at the end of each day.
- Projects occurring in the summit region must verify that temporary and permanent infrastructure and improvements can sustain 120 MPH winds and severe weather.
- All perishable items including food, food wrappers, and containers must be removed from the site daily and properly disposed of.
- Remove and properly dispose of all waste material.
- Nēnē (*Branta sandvicensis*) may be present. If a nēnē appears within 100 feet (30.5 meters) of ongoing work, all activity shall be temporarily suspended until the animal leaves the area of its own accord. Federal law prohibits feeding or any “taking” (e.g., harassing, harming, killing) of nēnē.
- Best Management Practices for seabirds, including the endangered Hawaiian petrel (*Pterodroma sandwichensis*)
 - Use red light bulbs outside to the maximum practicable extent.
 - Fully shield outdoor bulbs so the light is only visible from below.
 - Install motion sensors or turn off lights when human activity is not occurring in the area.
 - September-December: Avoid nighttime construction.
- Best Management Practices for the endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)
 - No barbed-wire fencing allowed.
 - June-November: Do not trim, remove, or disturb trees over 15 feet tall.
- Employ invasive species prevention best practices, including inspections of materials by a DLNR-approved biologist, as identified in the Maunakea Invasive Species Management Plan prior to entering UH-managed lands.
 - Inspections can only occur at locations where landowners have given permission (i.e., facilities, base yards, and vendor locations).
 - Inspections shall not occur on UH-managed lands on Maunakea, at State or County parks, along public roadsides, or on Department of Hawaiian Homelands lands.
- The project must be completed within the time frame specified in the proposal and, when applicable, as specified by DLNR. Projects that cannot be completed within this timeframe are not allowed to continue (or commence) without explicit prior written approval from CMS.
- Notify CMS in writing when field activity associated with the project is completed.

Compliance with Lease, Sublease, or Comprehensive Management Plan (CMP)

The project seeks to comply with approval condition #7 of Site Plan Approval HA 20-49, “The permittee shall remove all project components at the end of the conduit’s useful existence...” ,

with the applicant also requesting approval to complete full conduit removal with final facility decommissioning (date currently unknown) of the CFHT and GNO.

Identify other required or associated permits

None identified.

Five Year Outlook

Project included in CFHT's 2023-2025 Three Five Year Outlook, for which KKM requested in-depth consultation. Consultation occurred on April 3, 2025 and KKM had no concerns or objections.

Community Benefits

Benefits to other Maunakea entities and/or global astronomy community

The conduit has enabled successful scientific partnerships between CFHT and GNO. Its removal upholds approval conditions to its installation.

Benefits to the Hawaii Island community

Prompt removal of infrastructure determined to be no longer needed. Groundsurface where aboveground conduit was located will be filled-in and swept/smoothed to resemble surrounding landscape as closely as possible for visual benefit.

Will data, publications, or other products be free and available to the public?

N/A.



Greg Green

Final Draft: 4/28/2025

1. Overview:

CFHT and GEMINI are requesting the removal of a 10" diameter, 270' long PVC conduit that runs between both observatories. The conduit was originally installed as the "Ohana" project in 2003 and ultimately ended up known as GRACES, a collaboration coupling GEMINI North telescope to the ESPaDOnS spectrograph at CFHT via two optical fibers. It was discovered both fibers developed a break, and the project has been abandoned for several reasons.

The conduit runs both below and above grade level. It is buried for approximately 125' where it crosses the parking lot area adjacent to the CFHT main entrance up to the South side of the MKAM (Maunakea Atmospheric Monitor - a tower housing a telescope that monitors atmospheric quality in operation since 2009) concrete pier. At this point the conduit is exposed all the way up to approximately 30' from the North side of GEMINI observatory building. See figure 1 below.



Fig. 1

2. Scope:

CFHT and GEMINI are proposing to remove the above ground conduit portion as responsible stewards of the summit. We are proposing the removal of only the exposed section to reduce soil disturbance, eliminate the need for heavy construction equipment such as excavators and skid steers, and not affect the outward appearance of the buildings. CFHT and GEMINI will each remove the buried portion entering their facility upon decommissioning of their respective facilities.

3. Requirements:

- a. The contractor removing the sections of exposed conduit will perform all work by hand (no heavy excavation equipment).
- b. All debris will be removed from the job site at the end of the day.
- c. Upon project completion, the cinder will be returned to a "natural" look as much as possible. Refer to preconstruction site photos for CFHT/GEMINI and conduct site renaturalization to achieve results similar to the CSO site decommissioning.
- d. All debris will be disposed of in the most proper and responsible means available.

4. Specifics:

The conduit is proposed to remain buried in the ground from the CFHT facility to just south of the weather tower concrete foundation, a distance of 130', until removal with full site decommissioning. See figure 2. The reason for is to prevent further disturbance to the cinder soil surrounding the MKAM weather tower foundation which is currently showing signs of cracking and settling as well as the reasons in section 2. **Scope** outlined above. Further disturbance of the ground beneath the weather tower may require extensive foundation pad repairs. The conduit will be dug out by hand, cut off and a cap will be glued in place. The capped end of the conduit will then be buried with the surrounding cinder soil and blended with all the existing terrain.

The conduit is also proposed to remain buried in the ground from the GEMINI facility to the point where it becomes unburied approximately 30' from the building. See figure 3. The conduit will be dug out by hand to expose an area to be cut and capped. It will then be buried with the surrounding cinder and blended with all the existing terrain.



LOCATION OF GAP. BURY EXPOSED END
WITH SURROUNDING LOOSE CINDER



Fig. 2



Fig. 3

5. Summary

The project has currently been quoted by SepTech Excavation, Inc. and they plan to complete the work in one day, and will do all the digging, carrying of cut sections and stacking on trailers by hand. They plan to bring two pickups and two trailers and three employees to do the work. The disposal will be handled by the County at the appropriate commercial transfer station. Other than common hand tools, the only supplies necessary will be two (2) 10" PVC pipe caps and a small amount of PVC cement. There will be no disturbance to the parking lot area adjacent to CFHT and nothing on the building surfaces of CFHT and GEMINI will be altered.

Costs will be shared by CFHT and GEMINI.

Figure 4 is an overhead drawing of the section to remain adjacent to the weather tower. The green color remains underground, and the red color is to be removed. Any remaining conduit is to be removed upon final decommissioning of the CFHT and GEMINI observatories.

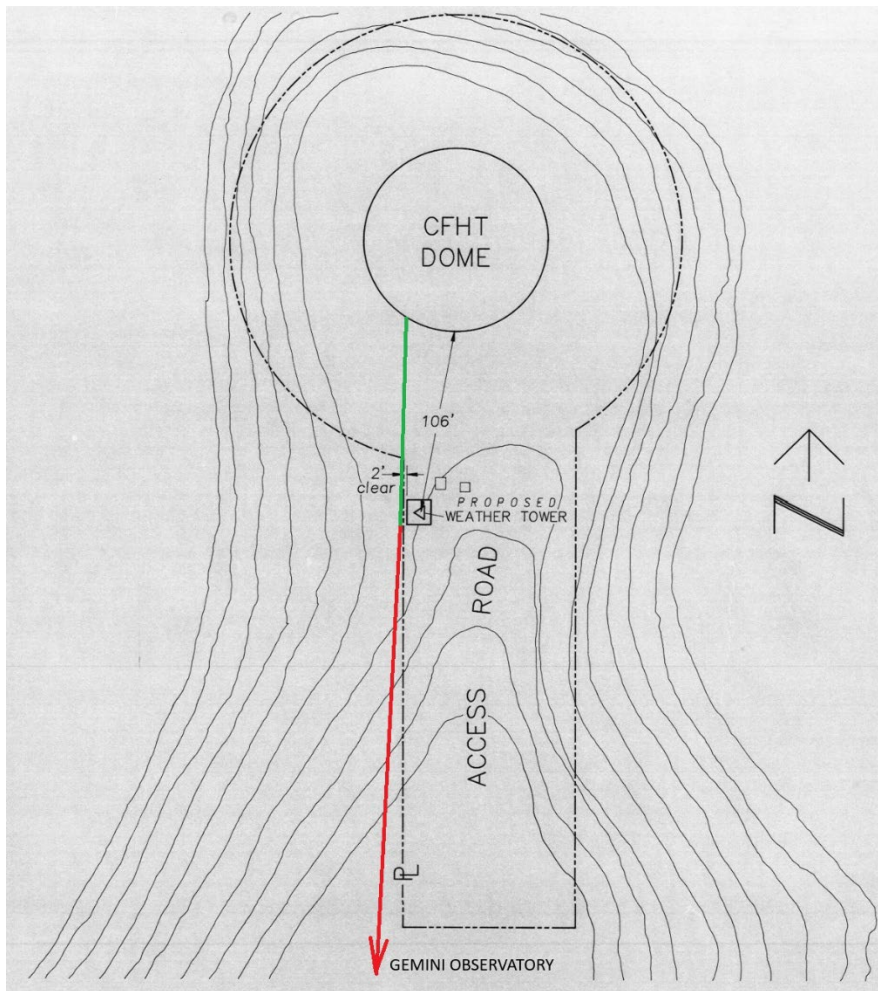


Fig. 4

Contact information for those involved:

CFHT/Project Lead

Greg Green - green@cfht.hawaii.edu

Kevin Ho - kho@cfht.hawaii.edu

GEMINI

Andy Adamson - andy.adamson@noirlab.edu

SepTech Excavation

Eliot Boneza - eliotkrt@gmail.com

Project approval conditions

Prepare to Start the Project

- Identify and comply with other permit requirements, such as County of Hawai'i building permits or Department of Land & Natural Resources permits (see *both*/any applicable DLNR permit and [HAR §13-5-42 Standard conditions](#)).
- Use of real-time GPS during any surveying or equipment operation requires advance written approval from CMS and the Institute for Astronomy. GPS use should be requested at least four (4) weeks prior to the proposed activity.
- Any required Best Management Practices, Communication Plans, contract scope questions, etc. must be finalized and approved by CMS prior to final approval.
- CMS will provide a final, written notice explicitly stating whether the project is approved to commence (i.e., issue a "Notice to Proceed"). The Notice to Proceed will include any additional, project-specific conditions. **No project work may commence before this time.**
- Project approval may not be transferred or assigned without prior authorization. A copy of the approval/permit must be present on-site and available for review at all times while working on UH-managed lands.
- Applicant shall comply with all actions and measures described in the proposal, including (community) benefits, CMP compliance list, and mitigation measures.

Notifications

- Applicant may request to arrange a pre-construction meeting with CMS before work commences. These meetings review orientation content, implications of project non-compliance, project-specific concerns regarding resource protection, health and safety, visitor and/or traffic impacts, etc. Meetings may be held in person or via phone, webinar, or other means.
- Notify CMS in writing via email to cmshilo@hawaii.edu at least five (5) days prior to beginning field work on UH-managed lands (Halepōhaku, Road Corridor, Maunakea Science Reserve, or Astronomy Precinct) with the following:
 - Identify the date that onsite work will commence.
 - Identify by name-of-entity all observatories, contractors, vendors, suppliers, etc. anticipated to be associated with and substantively present on UH-managed lands for the project.
 - Identify the individual(s) who will be coordinating all invasive species inspections.
 - Attest that the observatory or relevant entity will ensure compliance with all permit conditions and communicate with CMS if there is any uncertainty.
 - Notify CMS in writing of any other entities responsible for elements of compliance.
 - Attest that all individuals anticipated to be associated with the project have completed the Maunakea User Orientation.
 - CMS is not liable or responsible for delays due to inadequate or late submissions or submissions requiring verification.

Onsite Activity

General

- Use of lighting from sunset to sunrise is prohibited unless described in the project proposal and approved.
- Use of cell-phones, other than in airplane mode, is prohibited except in case of emergency.
- Placement of permanent markers, monuments, mag nails, or survey pins, etc. is not allowed without explicit prior approval from CMS (and the State if required). ALL surveyors' work must be shared with CMS in digital format with coordinate info stored in and using a common, transferrable coordinate reference system such as "State Plane Coordinates (NAD83), Hawai'i Zone 1".
- Allow CMS Rangers to visit and monitor activities.

Transportation and Motorized Equipment

- No use of mechanized equipment is allowed unless authorized by this permit.
- 4-wheel-drive required for travel above Halepōhaku.
- Large, heavy, non-4-wheel-drive or oversized loads must submit notification to the Maunakea Road Conditions listserv, MK-ROAD-CONDITIONS@lists.hawaii.edu, at least one day prior to transit. Loads requiring an escort on public roadways must have this escort accompany them to the final destination. Projects failing to submit notification or arrange for escort to the summit may be denied entry to Halepōhaku or above.
- During public closures of the Summit Access Road, vehicle access above Halepōhaku is limited to explicitly-marked observatory, CMS, federal, or state of Hawaii vehicles. Vehicles must be operated by approved employees or representatives on official business and possessing requisite orientation, training, safety, and rescue supplies.
- Motorized equipment, when stationary, must have a drain-pan in place suitable for catching fuel or fluid leaks.

Debris Prevention and Severe Weather Concerns

- Ensure that any debris, tools and equipment are secured to avoid becoming windblown and are properly stored at the end of each day.
- Projects occurring in the summit region must verify that temporary and permanent infrastructure and improvements can sustain 120 MPH winds and severe weather.

Environmental Concerns

- All perishable items including food, food wrappers, and containers must be removed from the site daily and properly disposed of.
- Remove and properly dispose of all waste material.
- Nēnē (*Branta sandvicensis*) may be present. If a nēnē appears within 100 feet (30.5 meters) of ongoing work, all activity shall be temporarily suspended until the animal leaves the area of its own accord. Federal law prohibits feeding or any "taking" (e.g., harassing, harming, killing) of nēnē.
- Best Management Practices for seabirds, including the endangered Hawaiian petrel (*Pterodroma sandwichensis*)
 - Use red light bulbs outside to the maximum practicable extent.
 - Fully shield outdoor bulbs so the light is only visible from below.
 - Install motion sensors or turn off lights when human activity is not occurring in the area.

- September-December: Avoid nighttime construction.
- Best Management Practices for the endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)
 - No barbed-wire fencing allowed.
 - June-November: Do not trim, remove, or disturb trees over 15 feet tall.

Invasive Species Prevention

- Employ invasive species prevention best practices, including inspections of materials by a DLNR-approved biologist, as identified in the Maunakea Invasive Species Management Plan prior to entering UH-managed lands.
 - Inspections can only occur at locations where landowners have given permission (i.e. facilities, baseyards, and vendor locations).
 - Inspections shall not occur on UH-managed lands on Maunakea, at State or County parks, along public roadsides, or on Department of Hawaiian Homelands lands.

Upon Project Completion

- The project must be completed within the time frame specified in the proposal and, when applicable, as specified by DLNR. Projects that cannot be completed within this timeframe are not allowed to continue (or commence) without explicit prior written approval from CMS.
- Notify CMS in writing when field activity associated with the project is completed.
- Unless otherwise stated in the proposal, copies of all data, field notes, photos, log books, collected specimens, and other forms of documentation will be shared with CMS for future, unrestricted use by CMS or its designee. All geospatial data, metadata or applications must be in a format compatible with CMS GIS software or other industry standard identified in advance.
- Collected specimens that are not consumed in analysis will be returned to CMS unless otherwise specified.
- Provide CMS with electronic and paper copies of all publications resulting from the work. When applicable, annual, final reports must be submitted to CMS.
- When applicable, a brief, approximately 1-page, non-technical summary suitable for public outreach (school groups, community meetings, newsletter articles, etc.) must be provided to CMS within 90 days of project completion or publication. Photos and illustrations are encouraged.



SITE PLAN APPROVAL APPLICATION (SPA)

File No:

Acceptance Date:

30-Day Expiration Date:

Assigned Planner:

for DLNR Use

Pursuant to Hawai'i Administrative Rules (HAR) §§13-5-22 through 24, identified land uses beginning with letter (B) require a site plan approval by the department.

PROJECT NAME: Canada France Hawaii Telescope (CFHT) Removal of Optical Hawaiian Array Nanoradian Astronomy (OHANA) Aboveground Conduit

Conservation District Subzone: Resource

Identified Land Use: HAR § 13-5-22, Protective subzone, P-8, Structures and Land Uses, Existing, (B-1) Demolition, removal, or minor alteration of existing structures, facilities, land, and equipment...

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

Project Address: CFHT Telescope Facility, Maunakea summit area

Ahupua'a, District, Island: Ka'ohe mauka, Hamakua, Hawaii Island

Tax Map Key(s): 3-4-4-015:009, Mauna Kea Science Reserve (por.)

Proposed Commencement Date: June 2025, as soon as all necessary approvals are obtained

Proposed Completion Date: Estimated one day, pending weather

Estimated Project Cost: \$8,000

Total area of proposed use: The surface area that the one-foot diameter conduit runs above measures 270 ft x 1 ft, or a total area of about 270 square ft.

ATTACHMENTS

- \$50 application fee (*ref §13-5-32 through 34*)
- Location map
- Site plan
- Construction, grading, site restoration, landscaping, or fire buffer plans, as applicable

Note: The application fee for State projects is waived pursuant to HAR §13-5-32.

REQUIRED SIGNATURES

Applicant

Name: University of Hawaii at Hilo, Center for Maunakea Stewardship (CMS)

Title; Agency: Center for Maunakea Stewardship

Mailing Address: 200 West Kawili Street, Hilo, Hawaii 96720

Contact Person & Title: Greg Chun, Executive Director, CMS

Phone: 808-933-0734

Email: cmshilo@hawaii.edu

Interest in Property: Property lessee, General Lease S-4191

Signature: _____ Date: _____

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

Landowner (if different than the applicant)

Name: State of Hawaii, Land Division

Title; Agency: Candace Martin, Land Agent

Mailing Address: 75 Aupuni Street, #204, Hilo, Hawaii 96720

Phone: 808-974-6203

Email: candace.m.martin@hawaii.gov

Signature: _____ Date: _____

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

Agent or Consultant

Agency: Click or tap here to enter text.

Contact Person & Title: Click or tap here to enter text.

Mailing Address: Click or tap here to enter text.

Phone: Click or tap here to enter text.

Email: Click or tap here to enter text.

Signature: _____ Date: _____

For DLNR Managed Lands

Chairperson, Board of Land and Natural Resources

P.O. Box 621

Honolulu, Hawai'i 96809-0621

Signature: _____ Date: _____

PROPOSED USE

Total size/area of proposed use (indicate in acres or sq. ft.): 270 sq ft

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.

The Canada France Hawaii Telescope (CFHT) requests to remove the above-ground portion of the 10-inch diameter PVC conduit, an area of approximately 270 sq ft, along with the conduit insulation sheathing and concrete anchor piers between the Gemini North Observatory (GNO) and the CFHT. The conduit housed specially-developed fiber optic cables for the Optical Hawaiian Array Nanoradial Astronomy (OHANA) interferometry project between CFHT and GNO. However, these fibers were damaged in fall 2023. CFHT and GNO have determined to end the project and remove the conduit.

The above-ground portion of the conduit is approximately 270 ft in length. Only hand tools will be used in the removal work, expected to be completed in one day. The conduit transitions underground at both ends: On the CFHT side, roughly 125 ft of the conduit is buried from the weather tower through its termination into the CFHT facility. On the GNO side, approximately 30 ft of conduit is buried as it enters GNO. CFHT requests to leave-in-place and cap the buried portions, to be completely removed upon decommissioning of the respective observatory, in order to minimize ground disturbance and to maintain the site stability of its weather tower. This requires an exception to an approval condition of Site Plan Approval HA 20-74, which directed CFHT to 'full removal' of all conduit components.

No other activity such as secondary improvements are involved in this request.

PROPOSED EXEMPTION

An exemption from needing an environmental assessment (EA) refers to specific situations or projects that are not required to undergo the standard EA process due to their minimal potential impact on the environment.

Government agencies should use the appropriate exemption list as concurred by the Environmental Advisory Council as found at planning.hawaii.gov/erp/agency-exemption-list

Private parties should use DLNR's Exemption List as concurred by the Environmental Council on November 10, 2020 as found at files.hawaii.gov/dbedt/erp/Agency_Exemption_Lists/State-Department-of-Land-and-Natural-Resources-Exemption-List-2020-11-10.pdf

The project is considered exempt pursuant to HAR §11-200.1-15(c)(6) Demolition of structures, except those structures that are listed on the national register or Hawaii Register of Historic Places; and HAR §11-200-8(a) Exemption Class #8, Demolition of structures not functional or economical to remodel and maintain, except those located on any historic site as designated in the National Register or Hawai'i Register as provided for in the National Historic Preservation Act of 1966, Public Law 89-665, 16 U.S.C. Section 470, as amended, or Chapter 6E, Hawai'i Revised Statutes.

EXISTING CONDITIONS

Please describe existing conditions on the parcel (geology, ecology, cultural and recreational resources, historic resources, structures, landscaping, etc). Provide information regarding existing buildings and structures as well as infrastructure and utilities as applicable.

Geology: The project area is located in the summit region of Maunakea, a shield volcano. Primary geological features on the summit include cinder cones and 'a'a lava flows. The summit area has also been shaped by past glacial activity and lava-ice interaction, including subglacial eruptions where lava erupted through or near glaciers. The main rock type here is hawaiite and bears signs of glacial striation and is interlaid with cinder, ash and other volcanic pyroclasts.

Ecology: The alpine stone desert where the project will occur experiences freezing temperatures, high solar radiation, and annual precipitation of 12 inches or less due to the inversion layer that prevents cloud formation or their upward movement. The flora and fauna of the area includes algae, lichens, mosses and over three dozen arthropod species, some of which may occur at the project site. The site, however, has had no documented rare, threatened, or endangered species. Regular arthropod monitoring is conducted by CMS pursuant to the 2022 Comprehensive Management Plan Supplement. CFHT and GNO also comply with the Standard Operating Procedures of the Maunakea Invasive Species Management Plan to reduce introduction of invasive species. The project is not anticipated to have any negative impacts to any floral, faunal or ecological resources.

Cultural, Recreational and Historic Resources: The project site is within the Mauna Kea Summit Region Historic District, State Inventory of Historic Places (SIHP) Site #50-10-23-26869. The project area is also within the Mauna A Wākea Traditional Cultural Property and District, SIHP Site 31382, and Kūkahau'ula Traditional Cultural Property, SIHP Site 21438. The nearest identified historic property, SIHP site 26224 on Pu'uwēkiu, is over 500 feet south of GNO and over 1,500 feet south of CFHT. No archaeological resources have been identified within either observatory sublease parcel, nor along the conduit route. No cultural resources or historic properties are anticipated to be adversely impacted by this project. Given the limited timeframe and physical scope of the activity, as well as smoothing the ground to blend with the surrounding landscape after the conduit is removed, the project may be seen as benefitting viewplanes, a cultural resource. During the daytime, when removal activity would occur, the CFHT and GNO facilities may see a few recreational visitors. The project is not anticipated to involve any road closures. However, for public safety, CFHT may determine to close its sublease area, where work vehicles, a trailer and a dumpster will be parked during the project duration. Any subsequent impacts to recreation are expected to be very brief (estimated one day) and only affecting those visitors seeking to access the CFHT site. Other areas such as the rest of the Pu'u Kea ridge and its viewplanes will remain open to public access.

Existing Infrastructure: Existing infrastructure on the CFHT and GNO sites include the telescope buildings, GNO's connected support building, electrical and telecommunication lines, vehicle accessways, parking, and the CFHT weather tower. As described in a previous section, the conduit is a 12-inch diameter PVC pipe enclosed in metal sheathing and anchored by partially-buried concrete support blocks. Local cinder/regolith surrounds the conduit.

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 Board of Land and Natural Resources adopted the 2022 Comprehensive Management Plan (CMP) Supplement for Maunakea as the approved management document for land use and activities in the University of Hawaii Management Areas on Maunakea; BLNR also previously adopted the CMP subplans. The proposed land use complies with the CMP and subplans, whose management strategies are designed to preserve and protect the resources located in the UH Management Areas. The requested conduit removal does not provide any known public health, safety and welfare effects. However, the project has been reviewed to assure no impacts to any natural and cultural resources and will conserve, protect, and preserve the resources.

- 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*)**

The objective of the Resource subzone, where CFHT is located, is "...to develop, with proper management, areas to ensure sustained use of the natural resources of those areas." This proposed land use is an allowable use within the Conservation District Resource subzone, pursuant to HAR 13-5-24, R-3, Astronomy Facilities, (D-1), under an approved management plan. The approved management plan is the 2022 Maunakea Comprehensive Management Plan Supplement. In addition to the proposed project being an identified use, CFHT and GNO are committed to managing the natural and cultural resources of the UH Management Areas in a way that fulfills the objective of the Resource subzone of the Conservation District. The project will facilitate sustained use of the site for existing, approved uses. The conduit removal may be considered to reduce the visual footprint of the astronomy facilities; otherwise, no change in type, extent, or intensity of use will occur as a result of this project. Natural and cultural resources will not be negatively impacted.

- 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. 7*).**

The site of the proposed use is over 20 miles from the coast and is not connected to shoreline resources. The project will have no effect on any of the coastal resources identified in 205A, including, but not limited to, recreational opportunities, historic resources, scenic and open space, ecosystems, economic uses, beach and coastal dune protection, and/or marine and coastal resources. The project is also not a coastal development. Consequently, the project complies with the objectives of HRS 205A.

- 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 site is currently used for regular operations including vehicle movement, vehicle parking, and routine road maintenance, as well as by occasional recreational visitors. Conduit removal will be done by manually, using only hand-tools. None of the waste generated is considered

hazardous and all waste will be removed from the summit. CMS will ensure the project complies with the 2022 CMP Supplement; all applicable Standard Operating Procedures of the Maunakea Invasive Species Management Plan to ensure that natural resources are not harmed and no invasive species are introduced; conditions recommended by the Environment Committee, Kahu Ku Mauna Council, Maunakea Management Board, the Mauna Kea Stewardship and Oversight Authority; and approval conditions provided by OCCL. This proposed use will not cause any substantial adverse impact to existing natural resources within the surrounding area, community or region.

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 seeks to remove infrastructure that is unused and for which there is no planned future use. This removal is compatible with the locality and surrounding area as it will restore the natural viewscape while allowing for continued scientific operations of CFHT and GNO.

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.

Removing the conduit may be considered to improve the natural beauty of the surrounding land through removal of a physical structure.

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

No new subdivision of land will occur.

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

The project will have no negative impact to public health, safety and welfare. Public safety will be maintained through Best Management Practices in the conduit removal.

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.

The proposed land use is located within a historic district and two Traditional Cultural Properties identified on the State Inventory of Historic Places. The nearest identified historic property, SIHP site 26224 on Pu'uwēkiu, is at least 500 feet south from the project site. No archaeological resources have been identified within either observatory sublease parcels, nor between them along the conduit route. CMS has considered impacts to cultural resources such as celestial viewplanes and ocean gridlines, significant to modern practitioners of kilo hoku, and finds negligible impacts given the project's brief duration. Regarding natural resources, the project site is within the alpine stone desert ecosystem, which significantly limits the abundance and diversity of plant and animal species that can survive here; CMS' invasive species and arthropod monitoring programs provides the most comprehensive reference for species discovered at the project site and document no rare, threatened or endangered species. Geologically, the project site is composed of local backfilled cinder and rocks. There are no hydrological resources on the site. Additional details provided in the previous "Existing Conditions" section of this application.

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

This area is of previously disturbed soil/cinder that is regularly used for parking, deliveries, and daily maintenance and operations. The cultural advisory council, Kahu Ku Mauna, has consulted on the proposed land use and not identified any traditional and customary Native Hawaiian rights that may be affected by the project, and the applicant does not anticipate any degree of disturbance or impacts to any cultural, historical, and natural resources, including traditional and customary Native Hawaiian rights.

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 applicant defers to BLNR on feasible actions to reasonably protect Native Hawaiian rights.

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.

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

AUTHORIZATION OF AGENT

I hereby authorize *Click or tap here to enter text.* to act as my representative and to bind me in all matters concerning this application.

Signature of applicant(s)