

State of Hawai`i  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Forestry and Wildlife  
Honolulu, Hawai`i 96813

June 20, 2011

Chairperson and Members  
Natural Area Reserves System Commission  
State of Hawai`i  
Honolulu, Hawai`i

NARS Commission Members:

**SUBJECT: REQUESTING APPROVAL TO PLACE A SMALL WEATHER STATION IN PU`U ALI`I NATURAL AREA RESERVE, MOLOKA`I.**

**BACKGROUND:**

There are no current remote weather stations to monitor weather patterns in the wet, remote areas of Moloka`i. With growing concerns about climate change, the National Park Service has determined that Pu`u Ali`i Natural Area Reserve (NAR), which also falls under the jurisdiction of Kalaupapa National Historical Park, is the ideal place to situate a small weather station.

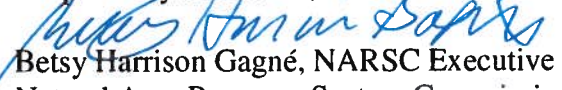
**STAFF ANALYSIS:**

The square footage of the tripod set up is about six by six feet on the ground, although a work area of about ten by ten feet is more typical; total height will be ten feet. There will be very minimal ground disturbance. Each tripod leg will need a small six by six inch patch of vegetation cleared around the site and then an anchor stake is driven through the leg into the ground. A grounding rod will also be driven into the ground, near the center of the tripod; that will be the extent of the ground disturbance. Equipment and personnel will be flown into the site via helicopter. If equipment is to be set up in the vicinity of the cabin or landing zone, it needs to be placed so that it does not create a hazard for helicopter operations. Other issues that NPS will be responsible for addressing: site safety, site impacts including but not limited to in-ground disturbance, equipment maintenance, and removal.

**RECOMMENDATION:**

That the NARS Commission recommends approval to install a small weather station in Pu`u Ali`i Natural Area Reserve, Moloka`i, by the staff of Kalaupapa National Historical Park staff, in cooperation with Maui NARS staff to minimize impacts to the Reserve; and further recommends that this be approved by the Board of Land and Natural Resources or its authorized representative.

Respectfully submitted,

  
Betsy Harrison Gagné, NARSC Executive Secretary  
Natural Area Reserves System Commission

Attachment: NARS Special Use Permit Application

**Department of Land and Natural Resources**

**Division of Forestry and Wildlife**

1151 Punchbowl St., Room 325; Honolulu, HI 96813

(808) 587-0063, (808) 587-0064 (Fax)

**Application for NARS Special Use Permit**



**Name: Guy Hughes, Wildlife Biologist, Kalaupapa NHP, Kalaupapa, HI, 96742**

**Title of Proposed Activity: Weather Station at Pu'u Ali'i Cabin**

**The following activities require a Special Use Permit under HAR §13-209-5. If your work in the Natural Area Reserve (NAR) will involve one or more of the following, please indicate with an 'X' below:**

- remove, injure, or kill any form of plant or animal life, except game mammals and birds hunted according to department rules\*
- introduce any form of plant or animal life\*
- remove, damage, or disturb any geological or paleontological features or substances\*
- remove, damage or disturb any historic or prehistoric remains\*
- engage in any construction or improvement\*
- engage in any camping activity
- establish a temporary or permanent residence
- start or maintain a fire
- litter, or to deposit refuse or any other substance
- operate any motorized or nonmotorized land vehicle or air conveyance in any area (including roads and trails) not designated for its use
- operate any motorized water vehicle of any shape or form in freshwater environments or marine waters, except as otherwise provided by DLNR's boating rules
- enter into, place any vessel or material on, or otherwise disturb a lake or pond
- engage in commercial activities, defined as "the use of or activity on state lands for which compensation is received by any person for goods or services or both rendered to customers or participants in that use or activity"
- have or possess the following tools, equipments or implements: fishing gear or devices (in 'Ahihi-Kina'u NAR), cutting or harvesting gear (in any NAR), and hunting gear or tools (except as permitted by the hunting rules of the department)
- hike or conduct nature study **with a group larger than 10**
- presence in an area closed pursuant to HAR §13-209-4.5 or after visiting hours established by §13-209-4.6
- anchor any motorized or non-motorized water vehicle in the marine waters of 'Ahihi-Kina'u NAR
- other (please explain): \_\_\_\_\_

\* May require additional State or Federal permits. Applicants are responsible for identifying and securing all approvals that may be required.

\*\* The NARS rules and recent rule amendments can be viewed on-line at <http://www.state.hi.us/dlnr/dofaw/Unofficial%20compilation%20HAR%2013.209.pdf>

\*\*\* Please allow for a minimum permit processing time of three months\*\*\*

**All permits will have the following standard conditions, pursuant to HAR § 13-209-5. Additional conditions may apply.**

- 1) The permittee shall adhere to the specifications given in the permit application
- 2) Disturbance of vegetation and wildlife shall be avoided as much as possible
- 3) Precautions shall be taken to prevent introductions of plants or animals not naturally present in the area. The permittee is responsible for making sure that participants' clothing, equipment, and vehicles are free of seeds or dirt to lessen the chance of introducing any non-native plants or soil animals. Should an infestation develop attributable to the permittee, the permittee is responsible for eradication by methods specified by the department
- 4) Once approved, the permit is not transferable
- 5) Once approved, the permit does not exempt the permittee from complying with any other applicable rule or statute
- 6) The State of Hawaii shall be released and held harmless from any and all liability for injuries or death, or damage or loss of property however occurring during any activity related to the permit

**I certify that the information contained in this application is true and correct.**

  
Applicant's Signature

*If approved, copies of the permit will be provided to:*

- Applicant
- NARS Commission Executive Secretary
- NARS Branch staff
- DLNR-DOCARE

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**For internal use only:**

**Application received on:** \_\_\_\_\_

**Distributed to District staff for review on:** \_\_\_\_\_

**Approval** ( ) recommended ( ) not recommended by NARS Commission or authorized representative on: \_\_\_\_\_ ( ) with the attached special conditions.

( ) Approved

( ) Not Approved

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**Chairperson, DLNR**

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**Date**

**Applicant Contact Information**

You may either enter the information directly onto this form; if you need more space or need to attach additional pages, please indicate that there are attachments.

**Name:** Guy D. Hughes, Wildlife Biologist  
Chief of Natural Resources Management  
Kalaupapa National Historical Park  
PO Box 105, Kalaupapa, HI 96742  
tel. 808.567.6802 x1500  
fax. 808.567.6682

**If you are applying on behalf of an organization, the organization and your title:**

Wildlife Biologist, National Park Service, Chief of Natural Resources Management, Kalaupapa National Historical Site

**Title of Proposed Activity: Installation and maintenance of Campbell Scientific Weather station.**

**Primary contact person for this permit application:** Guy Hughes

**Mailing Address:** P.O. Box 105, Kalaupapa, HI 96742

**Phone:** 808-567-6802 x 1500

**Fax:** 808-567-6682

**Email:** guy\_hughes@nps.gov

**Supporting Information**

Please provide the following information about your proposed activity that requires a special-use permit (“proposed special-use”). Failure to provide responses to the following questions may result in your application being rejected.

**1. What is the period of time for which the permit is requested (e.g., the date of a proposed single event or an ongoing research project from when to when)?**

*\* Please note: research permits are limited to one year in length, except where waived for permits to other governmental agencies where the board determines the waiver to be in the best interest of the State. Proposals for multi-year projects are advised of the need to apply for a new permit EACH year.*

Installation will be approximately July 2011 and station will be monitored and maintained on a 3- 4 month schedule by NPS personnel indefinitely.

**2. List the individual Natural Area Reserve(s) involved:**

Pu`u Ali`i NAR, Molokai

**3. Attach a map that illustrates where in the Natural Area Reserve(s) you propose to conduct your special-use. The map should be legible and reproducible in black and white. The map should also be at the appropriate scale for the type of activity proposed and of sufficient detail to allow the Division to identify activity sites within 10 meters. For any activity off established trails, entry and exit routes should be marked.**

- 4. Provide a thorough and detailed description of the proposed special use, including field assistants and other collaborators.** *The description should be detailed enough so that those reviewing your application understand what you propose to do and the scope of your proposal. As part of your description, please include: a) a description of the planned method of transportation to and within the Natural Area Reserve, and b) if other people than you will participate in the proposed special-use, please note how many people, and whether they are volunteers, students, research assistants, paying customers, etc...*

A Campbell Scientific Inc. weather station will be installed near the Pu'u Ali'i cabin area. It will be transported via four wheel drive or helicopter, depending on funding. It will be set up by Greg McCurdy of the Desert Research Institute who is funded by a cooperative agreement with the National Park Service's Pacific Island Inventory and Monitoring Network (PACN). It will be maintained by NPS personnel at Kalaupapa National Historical Site (KALA). There will normally be one to two people maintaining the station. It will be connected to the RAWS (Remote Automated Weather Stations) which sends data via the GOES (Geostationary Operational Environmental Satellite) to the WRCC, Western Regional Climate Center. The PACN downloads the data from the internet after the WRCC has verified it.

***For research proposals,***

- a) *please explain your objectives, your methods, and why the proposed special-use is necessary to your research;*
- b) *if the research is part of your undergraduate or graduate studies, please include the name and affiliation of your major professor;*
- c) *if you are seeking permission to remove or introduce any form of plant or animal life, please list all species involved and specifically identify which are threatened, endangered, or candidate species.*
- d) *if you are seeking permission for the collection of any specimens, please note type of specimen (species and parts collected, if less than entire specimen), quantities to be collected, storage methods, and ultimate disposition.*

***Failure to provide sufficient information may result in your application being returned for additional information or rejected. Please feel free to attach additional sheets as necessary.***

- 5. Please answer the following questions about your proposed special use:**
- a. **Can your proposed special use be conducted elsewhere? If not, why not?**

There are presently no weather stations at the upper elevations of Molokai. Data on all aspects of climate: precipitation, temperature, wind and solar radiation are basic to all functions of the ecosystem. With detailed daily information, researchers and managers can use this information for many different studies. Pu'u Ali'i cabin area is accessible, already disturbed and relatively easier to get to for maintenance of the weather station. Very few other sites are available with these components within the area adjacent to the KALA environs.

- b. Is your proposed special-use consistent with the purpose and objectives of the Natural Area Reserves System (the purpose and objective of the NARS is to protect in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna of Hawai`i)? If so, how?**

Yes, the data recorded will help with long term climate change information as well as daily weather patterns. Information on weather is a vital part of the knowledge regarding ecosystem health.

- c. Is your proposed special-use consistent with the management plan developed for the individual Reserve(s) (*Management plans are available for review at [www.dofaw.net/nars](http://www.dofaw.net/nars) or by contacting the NARS office*)?**

Yes, the information received from the weather station will help with any research regarding plants, birds, snails or any other organism that might be of scientific or cultural interest.

- d. Does your proposed special-use provide a benefit (direct or indirect) to the Natural Area Reserves System or to the individual Reserve(s) or both? (*For research, please note whether any studies have previously been made similar to the one proposed and how you will convey your research findings to the Department*).**

It provides a benefit with data collection on weather phenomena which affects all aspects of the natural history of the area. There was a previous weather station located in the area which will provide five years of historical data with which to compare future data. Hopefully this weather station will provide many years of future data if maintenance is regular and funding remains intact.

- e. Will the proposed special-use damage or threaten to damage the integrity or condition of the natural, geological, or cultural resources in the individual Natural Area Reserve(s) and adjacent area or region? If so, how? If not, why not?**

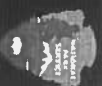
No, the weather station will be approximately 10 feet high and occupy a radius of 10 feet. It will be in the clearing near the Pu`u Ali`i cabin, and as far from vegetation as possible. This will allow better accuracy of data collection for wind, precipitation, temperatures and solar radiation.

- f. Does the proposed special-use comply with the provisions and guidelines contained in HRS Chapter 205A, entitled 'Coastal Zone Management,' where applicable? *HRS Chapter 205A can be accessed at: [http://www.capitol.hawaii.gov/hrscurrent/Vol104\\_Ch0201-0257/HRS0205A/](http://www.capitol.hawaii.gov/hrscurrent/Vol104_Ch0201-0257/HRS0205A/)***

It is at elevation, rather than on the coast.

- g. Have you (the applicant) previously received a NARS Special Use Permit? If so, did you comply with the conditions of any previously approved permit (including providing a final report as requested)?**
  
  - h. Do you (the applicant) have any other current NARS special-use permits? If so, please list and state whether you are currently in compliance with the conditions of those permits.**
- 6. Is the proposed special-use expected to have an environmental impact on the Natural Area Reserve(s) or the surrounding area? If, so please elaborate. If not, why not? *Please include discussion of any off-trail work, such as mist-netting, setting of traps, removal of vegetation, etc. and any measures planned to mitigate any short and long-term damage.***
- No, the weather station will need to be maintained, and that will involve travel up the road at three to four month intervals, or at some other time, if there is an indication that some part of the weather station is malfunctioning.
- 7. There is an application fee of \$50 to cover the cost of processing; please attach a check made out to: *Department of Land and Natural Resources.***
- 8. For research proposals, please list any local collaborators or contacts (if any).**

Collaborator: Greg McCurdy, Desert Research Institute, Reno, NV.  
greg.mccurdy@dir.edu,  
office: 775-674-7165, or cell 775-722-2252



Area of Detail



Island of Molokai

Kalaupapa National Historical Park

K A L A W A I I

Molokai

H A W A I I

Kala 2 CS

Lat: 21.140378  
Lon: -156.90237

Waiohokalo Stream

Kaihihi Stream

Kawauiki Stream

Palekunu Stream

Waikolu Stream

Waialeala Stream

Waipahoehoe Stream

Puu Alii

Pilipiliu Stream

Kawaiho Stream

Palekunu Stream

Weather Station Map

○ KALA\_CS\_Proposed\_NARS

— Roads and Trails

— Perennial Streams

— Intermittent Streams

— Park Boundary



1,200 Meters





