Department of Land and Natural Resources
Division of Forestry and Wildlife

1151 Punchbowl St., Room 325; Honolulu, HI 96813
(808) 587-0166, (808) 587-0160 (Fax)

Application for NARS Special Use Permit

Name: **US Geological Survey (Brian Loving, Asst. Director, PIWSC)**
Title of Proposed Activity: **Flood Monitoring Station on Hanakapiai Stream**

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:

_X 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*
_X 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://dlnr.hawaii.gov/dofaw/rules

***** 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.

BRIAN LOVING Digitally signed by BRIAN LOVING DN: c=US, o=U.S. Government, ou=Department of the Interior, ou=Geological Survey, cn=BRIAN LOVING, 0.9.2342.19200300.100.1.1=14001000533559 Date: 2018.02.06 08:37:47 -10'00'

_____
Applicant's Signature

_____
Secondary Applicant's Signature
(Optional: for permits to more than one agency)

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

- *Applicant*
- *NARS Branch staff*
- *DLNR-DOCARE*

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**

_____ _____
Administrator, DOFAW **Date**

Permit # NARSFY_____

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: Brian Loving

If you are applying on behalf of an organization, the organization and your title:
US Geological Survey, Assistant Director of the Pacific Islands Water Science Center

Title of Proposed Activity: Installation and operation of a flood monitoring station on Hanakapiai Stream

Primary contact person for this permit application:
Brian Loving

Mailing Address:
US Geological Survey
1845 Wasp Blvd., Bldg. 176
Honolulu, HI 96818

Phone: 808-690-9603
Fax: 808-690-9599
E-mail: bloving@usgs.gov

Principal local contact, reference, or collaborator: (Same)

Mailing Address:

Phone:
Fax:
E-mail:

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 or taking longer to review and process.

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 beginning time or date until end of the event or project, for group hikes the number of hikers and leaders)?**

   Begin: March 12, 2018
   End: Will continue as long as State Parks funding allows. At least for 3 years, but hopefully longer.

2. **List the individual Natural Area Reserve(s) involved:** *Please note that Laupahoehoe is now has an overlay under the jurisdiction of the US Forest Service as part of the Hawai`i Experimental Tropical Forest (HETF). Applicants wishing to work in this*

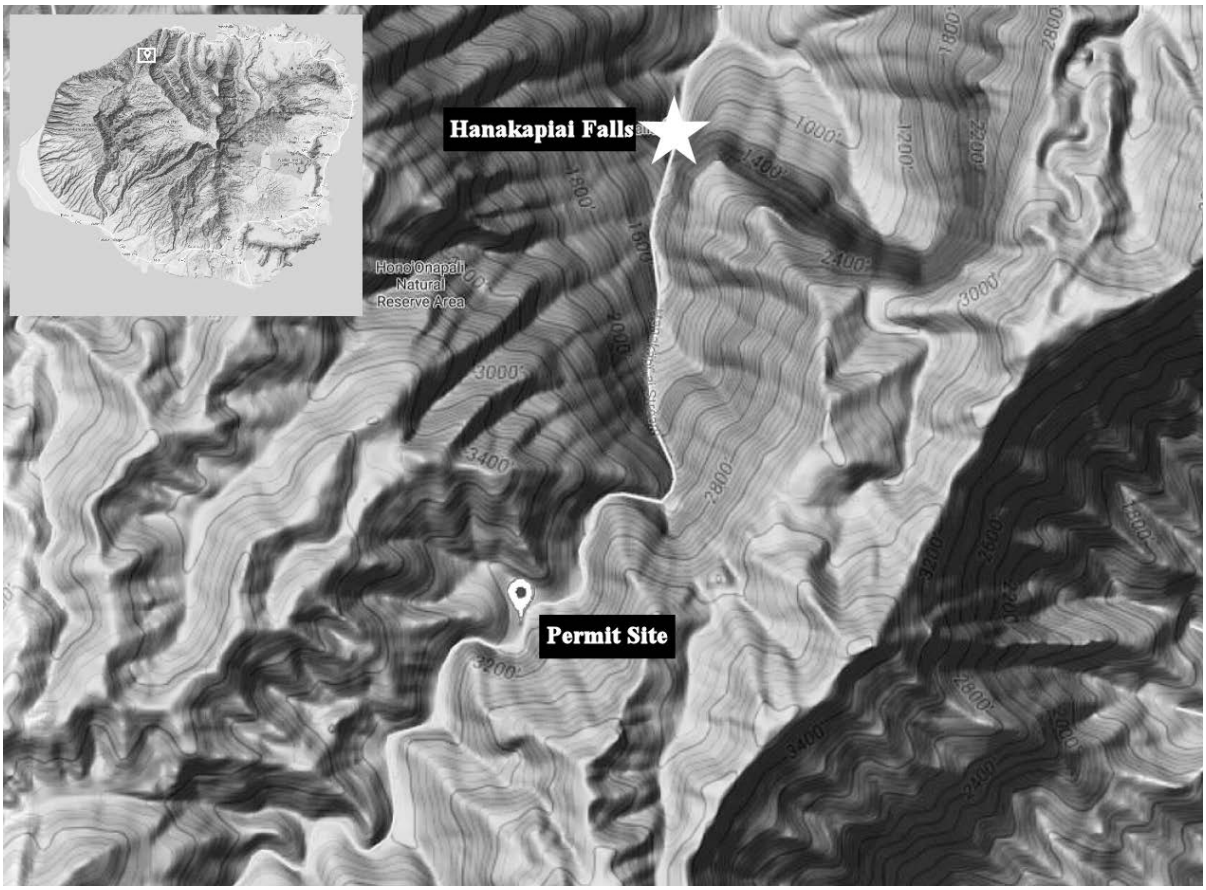
Natural Area Reserve will need to apply for a separate permit by going to http://www.hetf.us/page/conducting_research/ You will ***not*** *need to submit an additional application fee, but you will have to have it pass thorough the HETF review process. Permits are issued off of the Big Island DOFAW Branch.*

Kahauale`a is currently closed due to continuing volcanic activity; entry is prohibited, but may be granted under special use request made directly to the Big Island NARS Manager and issued off of the Big Island DOFAW Branch (also subject to approval of Hawaiian Volcano Observatory to insure safety).

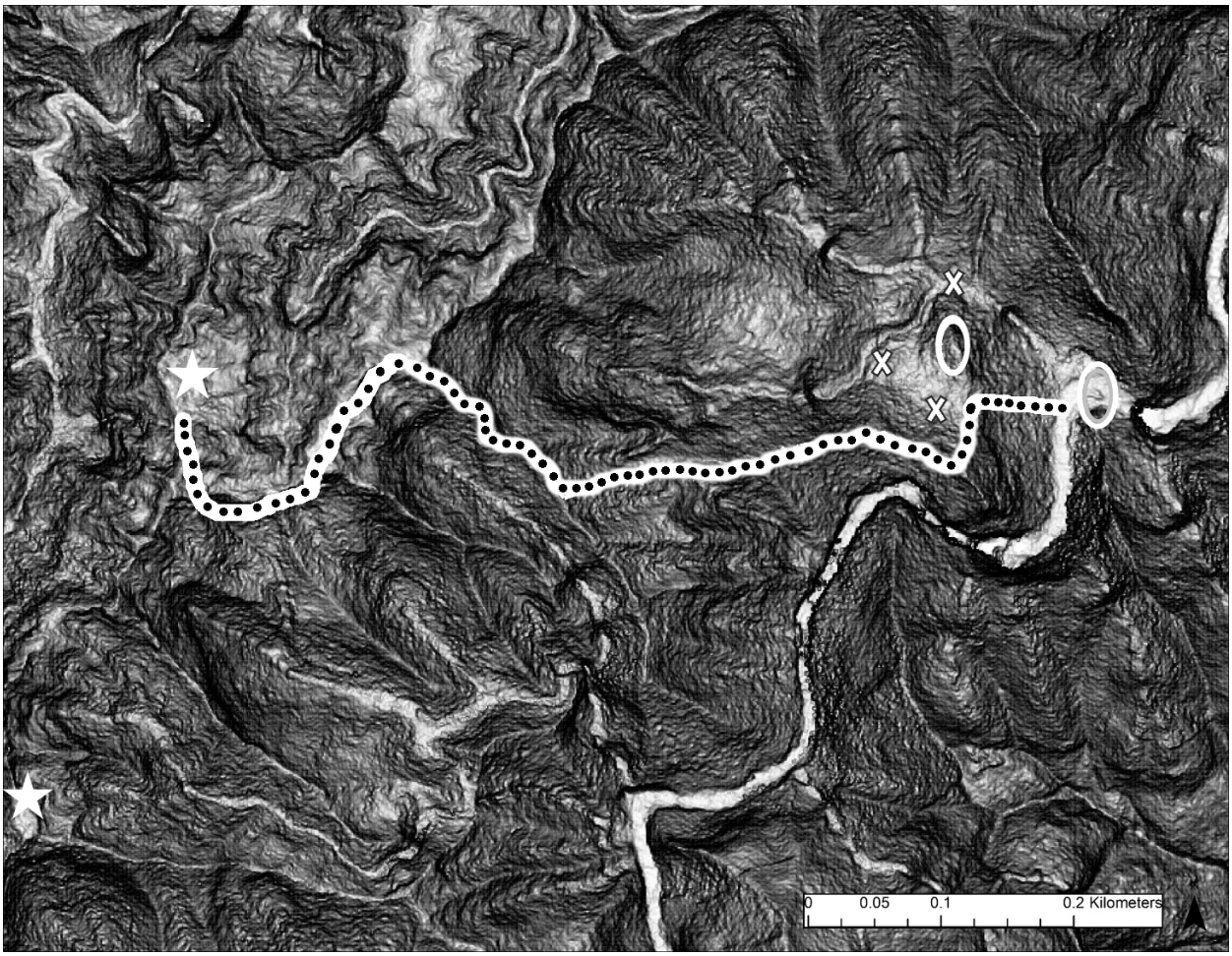
The majority of `Ahihi-Kina`u is closed to public access; entry for research or other purposes may be made under a Special Use Permit.

Hono O Na Pali NAR

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.*

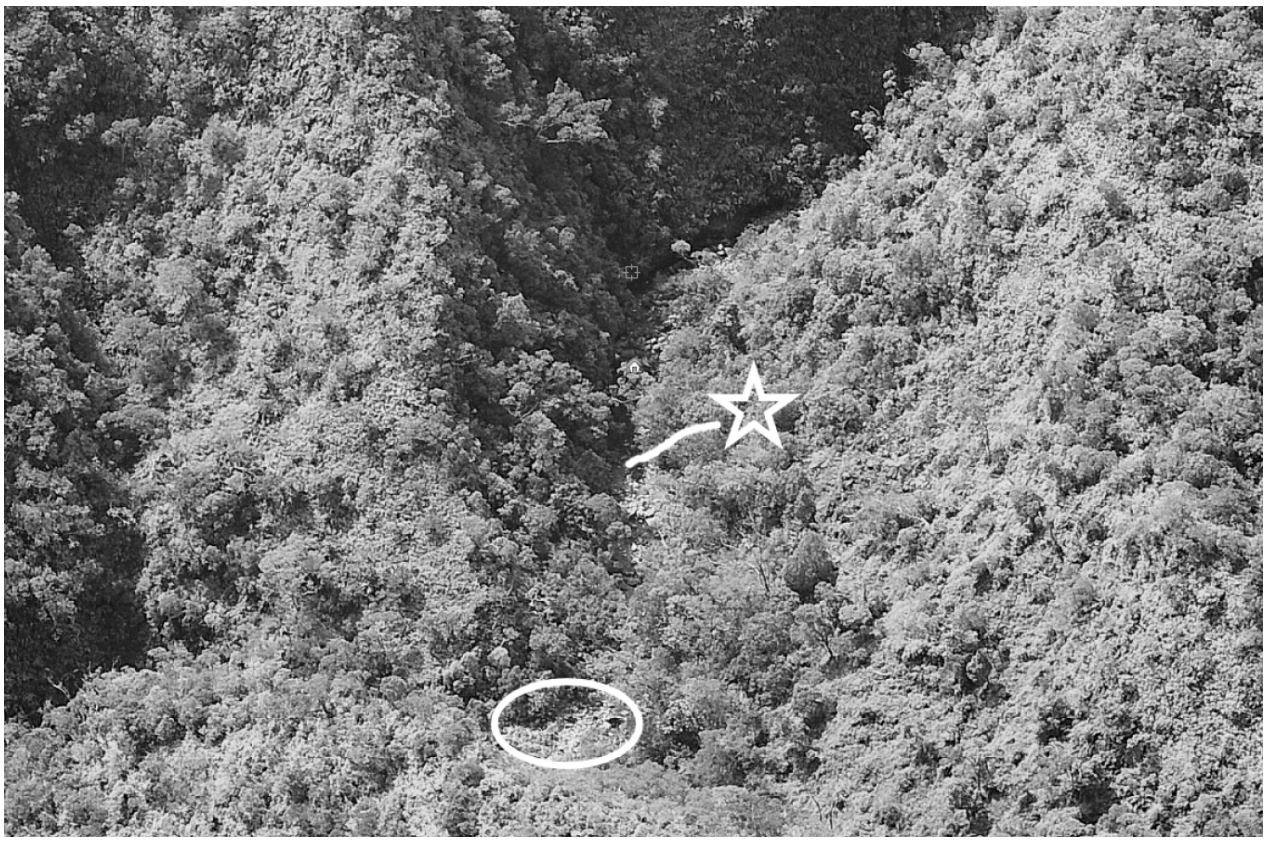


The site we are seeking a permit for is centered at 22.1758, -159.59835, in the Hono O Na Pali NAR, Kauai.



Rough map of the area in question, provided by Hono O Na Pali NAR staff (Kyle Pias), who is considering installing weatherports in the same area of our work.

- The stars are the existing NARS LZs. Until lower LZs (ovals on this map) are established by NARS or USGS, the LZ in the upper left of the map would be used to drop off staff working in the area.
- The white line with black dots indicates the ridge used to get down to the proposed area (I don't have actual tracks for the path used, it gets a bit messy down towards the stream)
- The left-most of the 2 white ovals is the pu'u that the pilot was interested in using as an LZ for the NARS weatherport, and X's are the potential places a NARS weatherport could sit.
- The right-most of the 2 white ovals is another potential LZ by the stream that USGS would like to establish for a stream monitoring station.



Oblique aerial photo of area of special use, looking south. Star is proposed location of flood monitoring station instrument shelter; freehand line is path of sensor cable from shelter to the stream; oval is proposed location for LZ.

4. **Provide a thorough and detailed description of the proposed special use, including names of 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.*

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.*

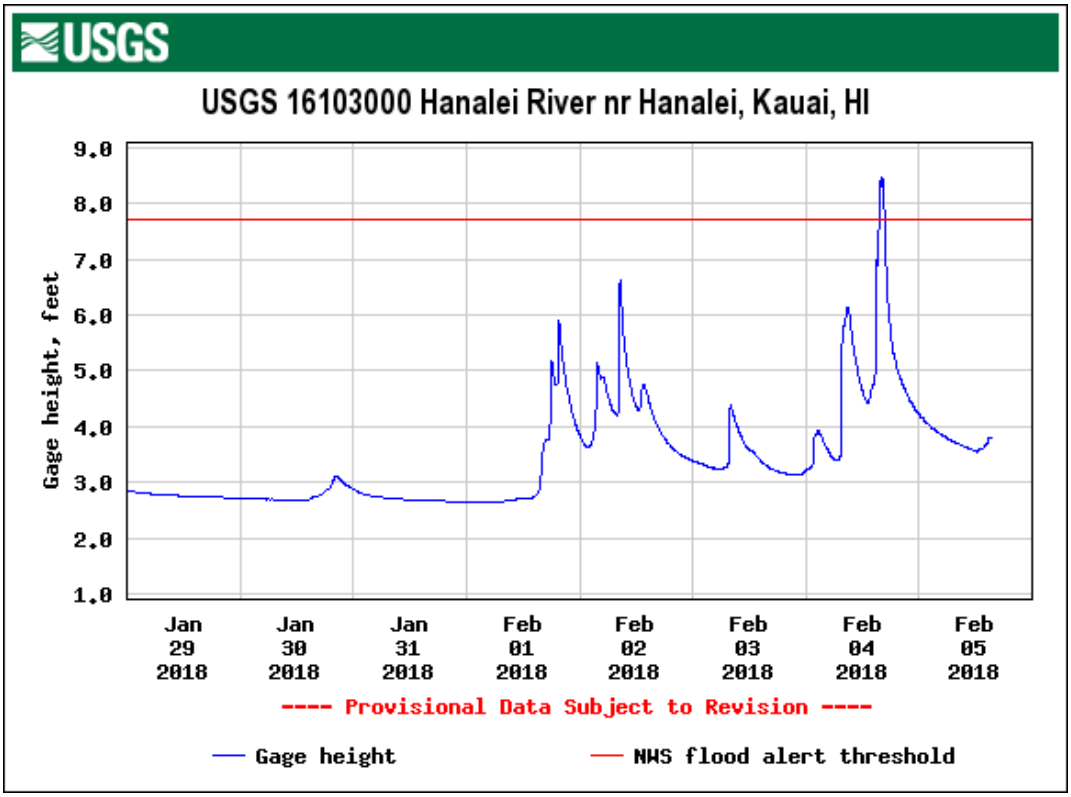
Failure to provide sufficient information may result in your application being returned for additional information or rejected. Please feel free to attach additional sheets as necessary.

The U.S. Geological Survey (USGS) requests to install and operate a flood monitoring station on Hanakapiai Stream within 50 meters of latitude N 22.1758, longitude W 159.59835, in the Hono O Na Pali NAR, Kauai. The monitoring station will be cooperatively funded with the Kauai County Emergency Management Agency, Hawaii Emergency Management Agency and Hawaii DLNR – State Parks Division, to provide streamflow information for flood forecasting and flood alert.

We will be working with NARS staff including Chris Mottley on our initial visit to the site to hike in and do on-site recons of where instrumentation and a potential new LZ will go. We will access the site via helicopter and hiking as shown in the 2nd map of item number 3 in this application. The recon will involve 2 USGS employees (Stacie Young and Casey Rita), and NARS staff (Chris Mottley, Adam Williams and Kyle Pias). For the installation of the station, up to 5 USGS staff will be involved (including myself, Stacie Young and Casey Rita). For routine service visits after the station installation, one or two USGS employees will access the station by landing at the nearest LZ and hiking.

Our stream monitoring station installation will involve anchoring a small (2x2x2 foot) instrument shelter with legs to either a rock on site or a small concrete pad we bring in, using anchor bolts. Then a sensor cable will be run from the shelter on the bank above the stream, down to the stream and in the water- anchored along the way by 1-foot-long pieces of rebar driven into the ground about 6 to 8 inches deep.

Example of station instrument shelter to be placed on bank above stream (left), and sensor cable run from the shelter down to the stream- anchored along the way by 1-foot-long pieces of rebar driven into the ground 6 to 8 inches deep (right).



Example of real-time stream data used for flood warnings from USGS station in Kauai.

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

No. The work is to install and maintain a flood monitoring station for Hanakapiai Stream, that needs to be above Hanakapiai Falls to allow time for warnings to reach people on trails between the Falls and the mouth of the stream. All locations meeting these criteria are in the Hono O Na Pali NAR.

    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?**

The station will monitor stream flow in addition to providing flood warning information, which can be used to identify changes in the runoff from the basin over time due to climate change, changes in vegetation, changes in the number of invasive plants and animals, etc.

    c. **Is your proposed special-use consistent with the management plan developed for the individual Reserve(s) (*Management plans are available for review at HTTP://DLNR.hawaii.gov/dofaw/ecosystems or by contacting the NARS office*)?**

Our work should not negatively affect the ecosystems in the Reserve. Care will be taken to ensure that no seeds or other biological materials are introduced from other areas. Our monitoring of stream flow and runoff in the basin will add to the available data that can be used to characterize the health of the ecosystem over time.

    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*).**

The stream gage will allow people working in the Reserve to know what the conditions of the stream are, and whether it will be safe to cross. It will also provide data that can show if runoff changes are occurring in the Reserve due to climate change, changes in vegetation, changes in the number of invasive plants and animals, etc.

    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. We will communicate and coordinate closely with the Kauai NARS staff (with whom we share a baseyard), to ensure that our activities do not damage or threaten to damage the integrity or condition of the natural, geological, or cultural resources in the Hono O Na Pali NAR.

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/Vol04_Ch0201-0257/HRS0205A/

We believe this is not applicable to our work. Our work will be above 3,100 feet in elevation and we will not do anything that would increase suspended sediment in the stream, or any other harmful substances downstream.

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)?

No, I have not previously received a NARS Special Use Permit.

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.

No, I do not.

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.***

At the gage site, nearby vegetation and trees may need to be trimmed to allow clearance for the solar panel and antennas. To establish the lower LZ, trees will likely need to be trimmed to allow clearance for the helicopter to drop the field crew directly at gage site after the first couple of site visits. We will visit the site for the first time without impacting the area. NARS staff (Chris Mottley, Kyle Pias, and Adam Williams) will be with us on the first visits to the site and we will be collaborating on what vegetation/trees can be trimmed to provide the clearance needed for the gaging equipment and establishment of the lower LZ. We will photograph and flag trees to be trimmed after approval from NARS staff.

7. **For research proposals, please list any local collaborators and their contact information (if any).**

Chris Mottley, DLNR- DOFAW NARS, Kauai
christopher.j.mottley@hawaii.gov

Chris Mottley and his team are considering installing a weatherport station within about 200 meters of our site location in the near future. We are planning to recon sometime in mid-March with Chris Mottley and his team.