

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

October 16, 2018

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

NARS Commission Members:

SUBJECT: REQUEST TO RECOMMEND TO THE BOARD OF LAND AND NATURAL RESOURCES TO OPEN THE KAHUALE'A NATURAL AREA RESERVE, KAHUALE'A, PUNA, HAWAI'I ISLAND, TO THE PUBLIC, PURSUANT TO HAWAI'I ADMINISTRATIVE RULES § 13-209-4.5, TAX MAP KEYS: 1-2-008:001 AND 3-1-001:001.

BACKGROUND:

Kīlauea Volcano has been erupting continuously since January 1983. On July 21, 2007, Kīlauea began erupting as fissure lava flows from vents on the State lands of Kahauale'a Natural Area Reserve (NAR), particularly Pu'u 'Ō'ō, the source of the 2007 eruption. An unofficial and unmanaged hiking trail (known as the Captain's Trail, Kahauale'a Trail, or Pu'u 'Ō'ō Trail), developed over years of use, is widely publicized in visitor publications such as *Hawaii Revealed*, and encourages people to use the trail to access Pu'u 'Ō'ō. The northern slope of Pu'u 'Ō'ō is within the Kahauale'a NAR; with the majority of the vent within Hawai'i Volcanoes National Park (NPS).

Due to public safety concerns relating to unprepared visitors attempting to visit an active lava flow and an active volcanic area and the heightened risk of sulfur dioxide inhalation, and after discussions with staff from USGS-HVO, the Board closed Kahauale'a NAR to public access effective July 25, 2007, and closures have been continuously extended ever since. In May 2008, a Memorandum of Understanding was approved between the Board and the USGS-HVO that allows USGS-HVO access to Kahauale'a, for the purposes of volcanic hazard monitoring and provides the Board with hazard assessments and recommendations. Division staff regularly monitors the signage and barricade at the Captain's Trail, and Division of Conservation and Resource Enforcement (DOCARE) officers patrol the area. Over the years, in response to the number of rescues and incidents at Kahauale'a, NARS staff have partnered with the Hawai'i County Fire Department to increase signage and make minor trail improvements to minimize the number of hikers who become lost by going off-trail. A number of closure signs and fenced barriers have been placed across the trail. The NPS continues to restrict access to Pu'u 'Ō'ō.

During the closures, Special Use Permit Applications to conduct research, filming, cultural practices, and other uses have been considered on a case-by-case basis with restrictive conditions included as necessary. HVO also helps review permit requests when requested.

ANALYSIS:

Pursuant to Hawai'i Administrative Rule (HAR) § 13-209-4.5, the Board or its authorized representative, with the approval of the commission, may close or restrict the public use of all or any portion of a natural area reserve for up to two years, when deemed necessary by the commission for the protection of the

natural, geological, or cultural resources of the area or the safety and welfare of persons or property, by the posting of appropriate signs indicating the duration, extent, and scope of closure. Closures may be renewed with the approval of the board or its authorized representative and the commission. All persons shall observe and abide by the officially posted signs designating closed areas. The existing closure is effective until July 24, 2019.

NARS staff communicates with USGS-HVO staff on a regular basis about the status and condition of the area to confirm that the area continues to pose a safety risk to visitors. As indicated by the attached letter from USGS-HVO, the major threats from the eruption since 2007 (including active lava flows and sulfur dioxide emissions in excess of 2,000 tons per day) are no longer occurring. While long-term threats continue to exist, the status of the area is similar to the pre-2007 eruption conditions. The Division is seeking approval to reopen the entire 22,520.88-acre NAR. Reopening would make the area available to hiking and nature study in groups sizes of ten or less as well as daily year-round game mammal and bird hunting pursuant to HAR § 13-122, 123, and 209.

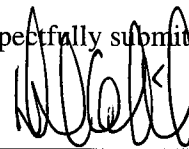
The Commission is not being requested to recommend a specific date of the reopening. If the Commission recommends the reopening of the NAR, this action will also need to be approved by the Board of Land and Natural Resources to become enacted. The Division will submit this request to the Board when the appropriate hazard signage is in place, and the date of the reopening will be determined by the Board.

The Division also has the flexibility to close the NAR in a short time frame if conditions worsen. On March 31, 2017, the Natural Area Reserves System Commission delegated authority to the Administrator of the Division of Forestry and Wildlife to temporarily close areas. On July 14, 2017, the Board enacted that delegation of authority, which provided a 60-day temporary closure authorization.

RECOMMENDATION:

That the Commission recommend to the Board of Land and Natural Resources to open the Kahauale'a Natural Area Reserve, Kahauale'a, Puna, Hawai'i Island, to the public, pursuant to Hawai'i Administrative Rules § 13-209-4.5, Tax Map Keys: 1-2-008:001 and 3-1-001:001.

Respectfully submitted,



DAVID G. SMITH, Administrator

Attachments: USGS-HVO letter
Maps



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Hawaiian Volcano Observatory
Post Office Box 51
Hawaii National Park, Hawai'i 96718-0051



IN REPLY REFER TO:

To: Betsy Gagne, Department of Land and Natural Resources
Cc: John Broward, Chief Ranger, HAVO
From: Christina Neal, Scientist-in-Charge
Date: October 4, 2018
Subject: Current Hazard Assessment of the Kahauale'a NAR

Eruptive activity at the Pu'u 'Ō'ō vent on Kīlauea Volcano's East Rift Zone ceased on April 30, 2018. As of today's overflight of the area, there is no live lava in or around the vent.

Additionally, there are no signs that significant pressure is building beneath the immediate area of Pu'u 'Ō'ō. Despite that observation, it is impossible to know if or when eruptive activity could resume in the immediate area of Pu'u 'Ō'ō which is part of the very active East Rift Zone.

HVO monitoring is in place to detect any changes of concern across the volcano. Web cameras are still operational atop and near Pu'u 'Ō'ō:

https://volcanoes.usgs.gov/volcanoes/kilauea/multimedia_webcams.html

Even without active eruption, volcanic hazards persist in the Kahauale'a NAR. They include low levels of volcanic gas; rugged, jagged unstable surfaces; potential ground collapse; hidden and exposed ground cracks; and explosions and ash emission.

Gas Emissions: Pu'u 'Ō'ō continues to release sulfur dioxide (SO₂). Currently, due to cooling of the vent, minor amounts of hydrogen sulfide (H₂S) gas are being emitted as well. SO₂ emissions from East Rift Zone vents are less than 250 metric tons per day, posing a limited hazard in the immediate vicinity of Pu'u 'Ō'ō. SO₂ concentrations at a distance of 8.5 km of Pu'u 'Ō'ō, have not exceeded 1 ppm since early August. A healthy steam plume has been observed issuing from the crater almost every day. HVO does not have real-time gas monitoring equipment in place near Pu'u 'Ō'ō.

Jagged and unstable surfaces, areas of high temperature: Lava flows are often unstable and surfaces can collapse underfoot posing a fall, trip, and cut hazard anywhere on the lava flow field. The recently active 61g lava flow tube may remain hot or warm for some time, although with time caves will cool.

Ground Collapse: The Pu'u 'Ō'ō cone and other features produced by lava flows over the past decades pose a sudden collapse hazard, particularly in the area of the recent 61g lava tube and crater areas near the deep, steep-walled and likely overhung summit crater rim and down the flanks of Pu'u 'Ō'ō. Intermittent collapses into the summit crater have continued, some triggered by local earthquakes.



Ground Cracks: The area north of the rift zone and the 1983-2018 flow field consists of mostly tube-fed pāhoehoe at least 400-500 years old. There are large cracks in this area. Some are known and others are not, and none have been well-mapped. Cracks are often well-hidden by vegetation and can be tens-of-meters to over-one-hundred-meters deep. These are a significant hazard to anyone walking in the area. Additional ground cracks occur on the Pu‘u ‘Ō‘ō cone and likely other areas of the recent flow field.

Explosions and ash: Collapse and explosions from Pu‘u ‘Ō‘ō producing ashy plumes that can rise thousands of feet into the air remain possible as long as the inner crater is hot and/or the walls unstable. These events are likely to impact only the area immediately around and downwind of Pu‘u ‘Ō‘ō.

Please contact us if you have any questions or wish to discuss these comments further. HVO very much appreciates the ongoing support and collaboration with DLNR.



Christina Neal
Scientist in Charge
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Hawaiian Volcano Observatory
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Kahaule'a Natural Area Reserve

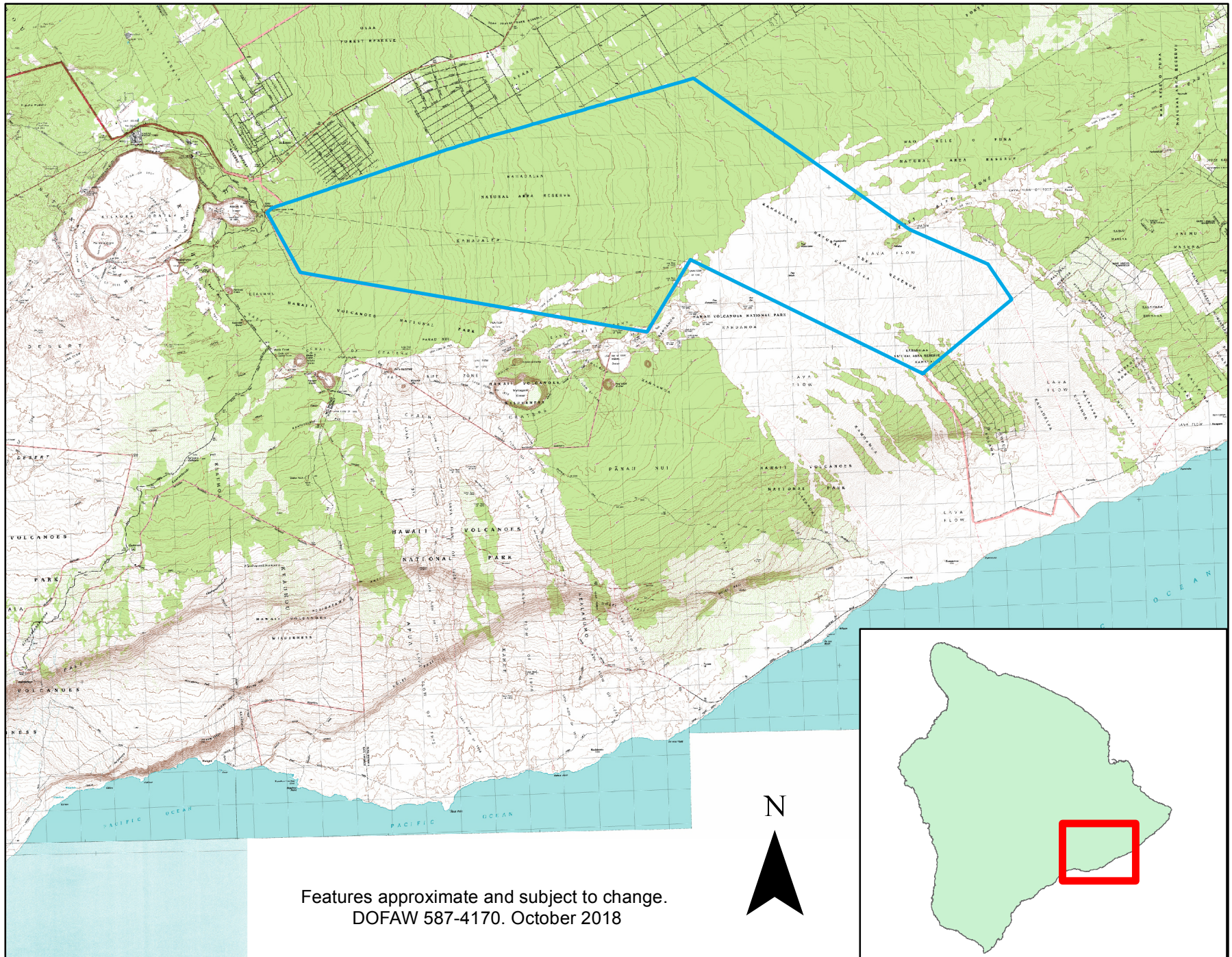




Figure 1. Kahaualeʻa NAR (blue outline) (Google Earth imagery date 2013)

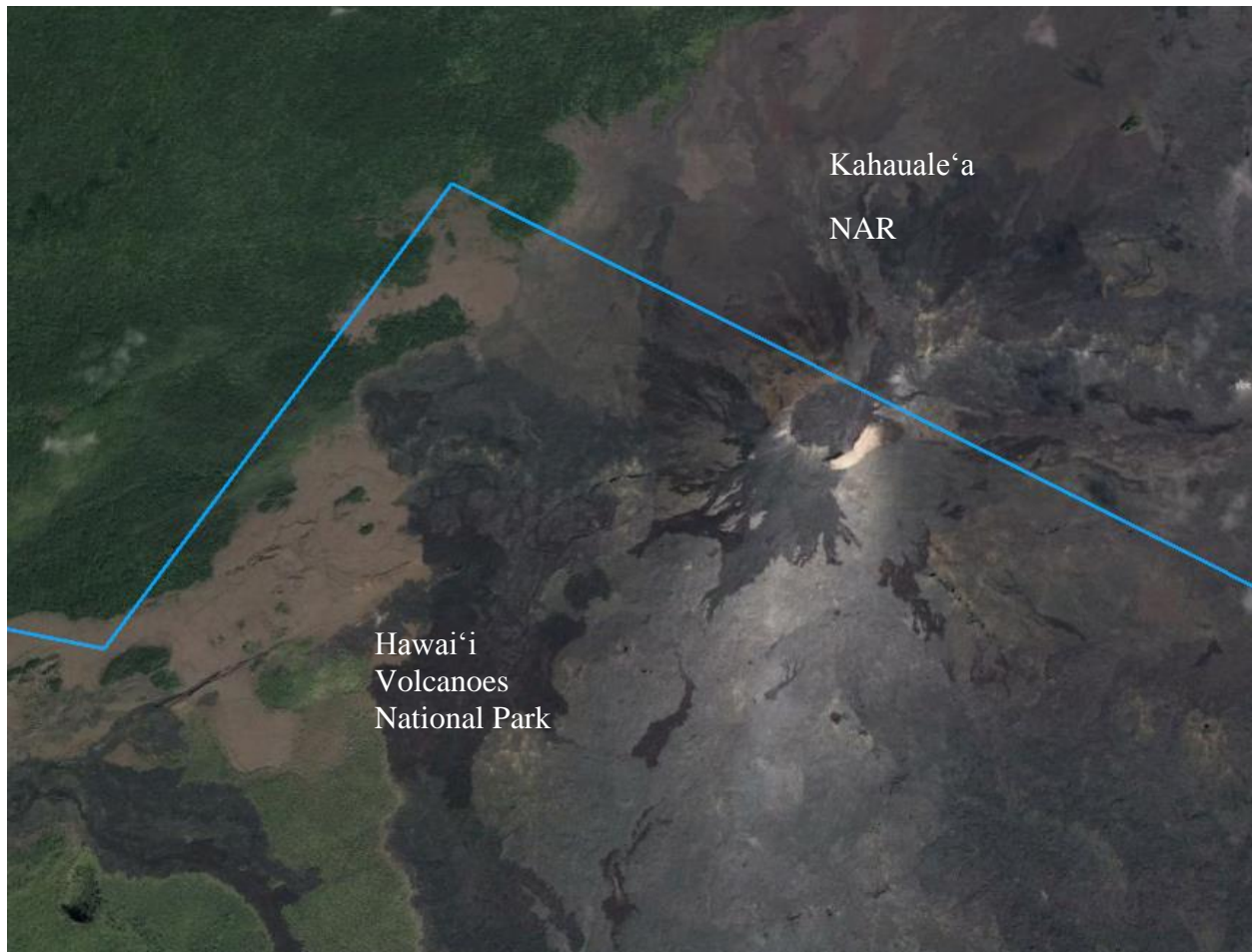


Figure 2. Close-up of the Kahaualeʻa NAR boundary (blue outline) and the Puʻu ʻŌʻō Crater (Google Earth imagery date 2013)