

National Park Service  
U.S. Department of the Interior

Hawai'i Volcanoes National Park  
July 2022  
Public Draft



## Hawai'i Volcanoes Disaster Recovery Project Environmental Assessment



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## PUBLIC COMMENT

Hawai'i Volcanoes National Park encourages public participation throughout the National Environmental Policy Act process. We are offering several ways for you to provide feedback.

- Visit <https://parkplanning.nps.gov/HAVODisasterRecovery> for project information and to submit your comments.
- We have a phone line dedicated to receiving your comments on this project. You can leave a detailed message or request that someone call you back at (808) 460-6212.
- Those who would prefer printed copies of the materials available on the website, can also call (808) 460-6212, or email [havo\\_planning@nps.gov](mailto:havo_planning@nps.gov)

This environmental assessment will be available for public review for a minimum of 30 days.

Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

## ACRONYMS AND ABBREVIATIONS

AFM	automated fee machine
Annex building	Geochemistry Annex building
APE	area of potential effect
CBA	choosing by advantages analysis
CCC	Civilian Conservation Corps
CFR	Code of Federal Regulations
CLI	cultural landscape inventory
DLNR	Hawai'i Department of Land and Natural Resources
EA	environmental assessment
GMP	General Management Plan
GSF	gross square feet
HALS	Historic American Landscape Survey
HVO	U.S. Geological Survey Hawaiian Volcano Observatory
KMC	Kilauea Military Camp
KOP	key observation point
KVC/HQ	Kilauea Visitor Center/Headquarters
NEPA	National Environmental Policy Act
nm	nanometer
NRHP	National Register of Historic Places
Okamura building	Reginald T. Okamura building
PEPC	Planning, Environment and Public Comment
PIERC-KFS	U.S. Geological Survey Pacific Island Ecosystems Research Center-Kilauea Field Station
ROD	Rapid 'Ōhi'a Death
USGS	U.S. Geological Survey
VA	Value Analysis
VBDM	Value Based Decision Making
VEOC	Visitor Emergency Operations Center

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# 1 PURPOSE AND NEED

## 1.1 INTRODUCTION

Beginning in May 2018, the summit of Kīlauea at Hawai'i Volcanoes National Park (the park) underwent a major change as magma drained from the chamber beneath Halema'uma'u crater, and the caldera began to collapse, triggering thousands of felt earthquakes and clouds of rock and ash that did not cease until early August. Strong seismic activity was primarily centered near the crater. This impacted buildings in the immediate vicinity on Uēkahuna bluff, including the Jaggar Museum (a visitor center) and the Reginald T. Okamura (Okamura) building of the U.S. Geological Survey (USGS) Hawaiian Volcano Observatory (HVO) facility, resulting in the current closure of the area. Damage to buildings further away was minimal. Buildings located at the main National Park Service complex at the north edge of the caldera, including the Volcano House Hotel and the existing Kīlauea Visitor Center/Headquarters (KVC/HQ), received minimal to no damage.

The National Park Service developed a disaster recovery project (the proposed action) consisting of actions including deconstruction of buildings on Uēkahuna bluff, repair and improvements to Uēkahuna bluff viewing areas, construction of a new USGS field station, and construction of a replacement visitor center in the KVC/HQ administration area. Full details of the proposed action can be found in Chapter 2, Alternatives.

## 1.2 NEED FOR THE PROPOSAL

The purpose of the project is to repair or replace critical park and USGS infrastructure and park visitor facilities damaged in the 2018 eruption addressing the National Park Service and USGS long-term operational and visitor use needs. This project is needed to restore and enhance park visitor use and enjoyment, restore park and USGS operations, and improve interagency response to eruptive activity. Replacing the lost visitor facilities is intended to resolve the overcrowding and diminished visitor experience as a result of the 2018 eruption. Additionally, the proposal is intended to address compliance with the Architectural Barriers Act and Americans with Disabilities Act, and improve safety while protecting natural and cultural resources.

An initial post-disaster assessment conducted in October 2018 found that major investment would be necessary to make the Jaggar Museum and Okamura building safe to occupy and operational and that such investments would be compromised by continued ground movement in the area. The Jaggar/HVO complex is surrounded by cracks and active faults, and the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations.

Even when the Jaggar Museum was operational, the existing KVC/HQ building was inadequate for current visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The visitor use spaces were not designed to accommodate the current level of visitation. The exhibits are in disrepair and detract from the visitor experience. The closure of the Jaggar Museum has exacerbated the overcrowding of the facility by concentrating visitor contact in one location instead of the previous two facilities. The overcrowding has impacted the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and non-profit partner's park store.

The loss of the HVO-occupied Okamura and Annex buildings at Uēkahuna bluff in 2018 forced HVO to relocate the majority of its personnel and equipment to Hilo, Hawai'i, as well as other satellite locations. Critical radio and telemetry infrastructure remain intact and will continue to function near the site of the Okamura building. However, it has been determined that a field station to support operations within the park would need to be constructed in a more stable area. This facility would

house HVO and USGS staff from the Resources Management Complex when they are conducting fieldwork and crisis response activities in the Kīlauea summit area.

### 1.3 IMPACT TOPICS CONSIDERED

Issues were identified during internal and external scoping (see Section 4.2, Scoping Summary, for a description of the scoping process). Issues are problems, concerns, and opportunities regarding the proposed action and the alternatives being considered. The issues are organized by *impact topics*, which are headings that represent the impacted resources associated with the issues that are analyzed in detail. Issues were retained for consideration and discussed in detail if:

- the impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the impacts associated with the issue are notable points of contention among the public or other agencies; or
- there are potentially significant impacts on resources associated with the issue.

If none of the considerations above applied to an issue or impact topic, it was dismissed from detailed analysis as described in Section 1.4, Impact Topics Dismissed. The issues and corresponding impact topics retained for analysis in this environmental assessment are presented in Table 1.

TABLE 1. ISSUES AND IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

Issues	Impact Topics Related to the Issues
The nēnē (Hawaiian goose; <i>Branta sandvicensis</i> ) is a federally listed species that occurs within Hawai'i Volcanoes National Park. Specific to this project, there is known nēnē nesting habitat at Uēkahuna bluff. Nēnē that could potentially use this habitat would be subject to noise and visual disturbance during deconstruction of existing buildings and construction of new buildings as these activities would occur during the breeding season. Therefore, due to potential impacts on the nēnē and its habitat, a detailed analysis of impacts is necessary to make a reasoned choice between alternatives and to comply with the Endangered Species Act.	Nēnē
Decommissioning and construction would directly remove native 'ōhi'a lehua ('ōhi'a) trees ( <i>Metrosideros polymorpha</i> ), koa ( <i>Acacia koa</i> ) trees, and other native trees, which would result in the loss of forest habitat. 'Ōhi'a is a keystone species in Hawaiian forests. Because of the potential impact on this native vegetation, both from a habitat and a cultural perspective, this topic is carried forward for detailed analysis.	Native Forest Removal ('Ōhi'a Trees)
Viewsheds have the potential to be both beneficial through the deconstruction of structures on Uēkahuna bluff as well as adverse through the construction of the replacement visitor center, proposed USGS field station, and road improvements along Crater Rim Drive. Many of these views are important in furthering park interpretive themes and stories in addition to their importance as sacred sites for many Native Hawaiians. Because of the potential impacts on important park viewsheds, both in terms of visitor experience and cultural landscape, this topic is carried forward for detailed analysis.	Viewsheds

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Issues	Impact Topics Related to the Issues
<p>Crater Rim Historic District is eligible for the National Register of Historic Places (NRHP) under Criterion A. The Kīlauea Administration and Employee Housing Area is listed under Criteria A and C. The Kīlauea Military Camp (KMC) historic district is eligible under Criteria A and C. The Kīlauea crater was nominated for the NRHP in 1974. Deconstruction and construction activities would have varying impacts on these cultural landscapes and NRHP site through the deconstruction of the historic and non-historic structures at the bluff, addition of new buildings in the ball field and the KVC/HQ area, and the installation of a roundabout. A detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives, therefore this topic is carried forward for detailed analysis.</p>	Cultural Landscapes
<p>Uēkahuna bluff is an important area to many Native Hawaiians, as it is considered a sacred area and it is utilized for cultural practices. The bluff will be available for cultural practices such as ho'okupu (giving offerings) during the 2-year deconstruction and construction period. However, noise and visual effects to the area from the deconstruction of the existing buildings and construction of the overlook may have impacts to the integrity of the setting as natural scenery and quiet solitude are sought after and valued during the cultural practices. The National Park Service would implement a project requirement that outdoor work activities shall be restricted to one hour after sunrise until one hour prior to sunset. However, it is expected that impacts would still occur and a detailed analysis of impacts related to the issue is necessary to make a reasoned choice between alternatives, therefore this topic is carried forward for detailed analysis.</p> <p>In addition, the 'ōhi'a and native forest are considered a highly valued cultural resource, therefore the removal of 'ōhi'a and native forest is of concern from a cultural perspective. Disclosure and analysis of this removal is necessary to make a reasoned choice between the alternatives.</p>	Ethnographic Resources
<p>The project proposes the deconstruction of the Jaggar Museum at Uēkahuna bluff. The Jaggar Museum is a historic building that is a contributing structure to the Crater Rim Historic District. The deconstruction would be an adverse effect to the historic resource. Disclosure and analysis of this deconstruction is necessary to make a reasoned choice between the alternatives.</p>	Historic Structures
<p>There would be an increase in traffic and equipment movement during deconstruction and construction. A fence would be installed to keep visitors away from the construction limits and traffic controls would be implemented to manage traffic in and out of the new roundabout during construction. The roundabout is meant to improve traffic control and address the existing safety issue at the intersection.</p>	Human Health and Safety
<p>The project is intended to improve visitor use and experience, therefore this topic is carried forward to support the purpose and need.</p>	Visitor Use and Experience
<p>The 2018 eruption and subsequent inability to use the Okamura building, Annex building, and Jaggar Museum has created numerous issues with park and USGS operations. Analysis of this topic is carried forward to support the purpose and need.</p>	Park and U.S. Geological Survey Operations

## 1.4 IMPACT TOPICS DISMISSED

Table 2 provides a brief explanation of impact topics that were dismissed from detailed analysis.

**TABLE 2. IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS**

Impact Topic	Reason Dismissed
Air Quality and Climate Change	There would be localized increases in fugitive dust and vehicle emissions in and around the project area throughout the deconstruction and construction period. Most increases would occur during site preparation, deconstruction, and construction and would cease once construction is completed. Air quality mitigations described in Section 2.2.9.7, Air Quality and Soundscapes, would minimize dust and emissions so that the project would not result in significant air quality impacts. The proposed action would not introduce new permanent, stationary sources that would generate measurable air pollutants or greenhouse gas emissions. Therefore, this issue is dismissed from further analysis.
Nonnative Species	For biosecurity, all equipment, materials, and vehicles used during deconstruction and construction would be inspected for nonnative species prior to entry into the park. In addition, potential presence of little fire ants ( <i>Wasmannia auropunctata</i> ) would be monitored following demolition and construction activities. If any little fire ants are detected, a determination of the full extent of infestation would occur and the infestation would be treated with an approved pesticide.  Soils used in revegetation projects would only be used sourced from within the park. If not enough soil from within the park is available, any imported soils would be steam sterilized and inspected prior to entry into the park to prevent introduction of nonnative species.
'Ōpe'ape'a (Hawaiian Hoary Bat)	Deconstruction and construction would result in the removal of the federally listed 'ōpe'ape'a ( <i>Aeorestes semotus</i> ) habitat. No tree removal would occur during the hoary bat pupping season (June 1–September 15). In addition, vegetation over 15 feet would not be disturbed during that same time period. No barbed wire will be used for any fencing to eliminate the potential for bats to be impaled. Noise from deconstruction and construction could temporarily displace bats from the area; however, there is abundant habitat in the park for the bat.
Hawaiian Catchfly	Prior to deconstruction and construction, a survey for Hawaiian catchfly ( <i>Silene hawaiiensis</i> ) plant would be completed and where possible, individual plants would be avoided. If avoidance isn't possible, the National Park Service would work with the U.S. Fish and Wildlife Service to transplant plants that would be impacted. Fencing would be installed around known populations to protect them.
'Io (Hawaiian Hawk)	Construction would result in the removal of potential habitat for the 'io ( <i>Buteo solitarius</i> ), a state listed species. Project areas would be surveyed during the breeding season (March to September) and if 'io nests are found, no trees would be removed in that area until after the nesting is complete.
Forest Birds	Deconstruction and construction would result in the removal of trees that could be used by forest birds. No more than seven days prior to tree removal, nest surveys would be completed. Trees with active nests would not be cut until the young are fledged.

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Impact Topic	Reason Dismissed
Hawaiian Seabirds	<p>Federally listed Hawaiian seabirds (Hawaiian petrel, band-rumped storm petrel, and Newell's shearwater) nest at high elevations within the park. Hawaiian seabirds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1–December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.</p> <p>To avoid and minimize potential project impacts to seabirds the following would be required:</p> <ul style="list-style-type: none"> <li>• No nighttime construction.</li> <li>• Any temporary lighting for safety requirements would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nanometer {nm} or greater] lamping).</li> <li>• Any new permanent lighting would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).</li> </ul>
Archeological Resources	<p>Many archeological surveys have taken place within the several areas of potential effect in the project area. In 2001 the Uēkahuna bluff and the surrounding areas were surveyed for archeological resources and the extent of the Lithic Block quarry site was documented. The Peter Lee Road archeological survey was completed in 2015. In 2021 the Tahara House site was surveyed, and a draft inventory report prepared. All known archeological sites would be avoided during construction. Sites would be flagged for avoidance and an archeological monitor would be on-site during ground disturbing activities. If unknown sites are uncovered, work would stop, the feature would be evaluated, recorded or recovered, and the State Historic Preservation Office would be notified.</p>
Lightscapes	<p>All new lighting would be compliant with the park's Dark Sky/Night Lighting Avoidance and Minimization Policies (National Park Service 2018).</p>
Soundscapes	<p>There would be increased noise during the deconstruction and construction period. However, measures would be put in place to reduce noise as much as possible (see Section 2.2.9.7, Air Quality and Soundscapes). The impact of this increased noise is discussed under the applicable resource topics such as nēnē and visitor use in Chapter 3, Affected Environment and Environmental Consequences. Therefore, this topic will not be analyzed as a stand-alone topic.</p>
Socioeconomics	<p>There could be temporary impacts on commercial services in the park during deconstruction and construction periods and potential for increased employment during those times. However, it is not known if construction crews would come from local communities. There would be no long-term impact to socioeconomics.</p>
Stormwater	<p>There are some stormwater conveyance pipes in the project areas, although they are fairly limited in extent. The conveyance pipes send water to an infiltration gallery, so water does not discharge directly to a stream or water body. Therefore this topic is dismissed.</p>
Floodplains, Wetlands, Streams	<p>There are no floodplains, wetlands, or streams in the area. Therefore, this topic is dismissed.</p>
Coastal Zone Management Act	<p>The proposed activities are more than 11 miles from the coast. The risk for erosion and sediment movement from the construction sites to the coastal areas is very low. Construction best management practices will be required to prevent erosion and control sediment so it does not leave the area.</p>

## 2 ALTERNATIVES

Two alternatives, the proposed action and no action, are carried forward for evaluation in this environmental assessment (EA). A number of suggestions and alternate designs were also considered and dismissed (see Section 2.3, Alternatives Considered but Dismissed and Design Elements Refined).

### 2.1 NO-ACTION ALTERNATIVE

The no-action alternative describes the conditions that would continue to exist in the project area if no improvements, repairs, or changes were made. Under the no-action alternative, buildings would continue to be unusable at Uēkahuna bluff and would continue to be unsafe as the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations; KVC/HQ would continue to be inadequate for current visitation (visitors would continue to experience overcrowding); HVO would continue to house personnel and equipment in Hilo and other locations; the entrance station would continue to have traffic congestion problems that pose collision hazards for motorists and pedestrians; and the traffic congestion would continue to impact the visitor experience through increased waiting times to enter the park.

### 2.2 PROPOSED ACTION

#### 2.2.1 Decision Making Process for the Siting of the New Visitor Center and USGS Field Station

At the beginning of this process National Park Service Denver Service Center, regional, and local park staff and technical experts from the consulting team visited the park to evaluate locations for the replacement buildings. Following this site visit, four concepts were developed as follows. Figures detailing these concepts can be found in Appendix B.

- Concept 1: Relocate facilities and functions to an area adjacent to existing primary visitor use area, including USGS field station.
- Concept 2: Consolidate visitor use adjacent to existing primary visitor area, but USGS field station would be located across from the Visitor Emergency Operations Center (VEOC)/backcountry office parking area.
- Concept 3: Maximize reuse of existing visitor space by repurposing the existing KVC/HQ and auditorium area and constructing an adjacent, smaller replacement visitor center and expanding parking.
- Concept 4: Relocate National Park Service and USGS functions lost at Uēkahuna bluff to the former ball field area adjacent to the KMC land assignment.

These concepts were then presented to the public and agencies during the civic engagement process (further described under Section 4.1, Civic Engagement Summary). Following the civic engagement period, a Value Analysis (VA) workshop was held on June 30 to July 2, 2020. The purpose of the workshop was to select the preferred site location concept for the facilities replacing those lost at Uēkahuna bluff. The workshop was attended by National Park Service Denver Service Center, regional, and local park staff; technical experts from the consulting team; and a certified value specialist who facilitated the meeting. The study team was composed of a mix of professional disciplines and varied subject matter experts in planning, design, operations, sustainability, engineering, facilities, visitor interpretation and education, law enforcement and emergency services, natural resource management, and cultural resource management. Public and consulting parties feedback received during civic engagement were used during the VA workshop.

Function analysis is core to any value analysis study. For this project, the VA team confirmed the functions required to complete the purpose and need for this project. This information was used to help document the purpose and need for this disaster recovery project. The VA team identified the following functions to be used in the evaluation process:

- Providing safe visits and working conditions
- Protecting natural and cultural resources
- Improving visitor enjoyment through better services
- Improving park operational efficiency, reliability, and sustainability
- Providing cost-effective, environmental responsible solutions, and initial and life cycle costs

During the VA workshop, the four concepts were evaluated using a process called Value Based Decision Making (VBDM). VBDM decisions are based on a choosing by advantages analysis (CBA), a process that evaluates the importance of advantages between alternatives.

Based on the CBA analysis, the VA team identified Concept 2 as the preferred concept. The final effort in the CBA process is referred to as the Reconsideration Phase. In this process Concept 2 was further refined by considering advantages from other alternatives. These changes included relocating the USGS facilities to the former ball field in order to provide separation of visitor functions from USGS functions. The results of the Reconsideration Phase are shown on Figures 7 and 8 in Appendix A. From this initial VA process, the concept was further refined to reduce cultural and natural impacts, improve functionality, reduce initial and life cycle costs, and address staff, consulting parties, and public concerns. Modifications included removing the third full fee booth and reducing the size of the lane at the park entrance, reducing the size of the replacement visitor center by retaining the use of the existing auditorium, and optimizing outdoor visitor orientation, exhibits, and programming on the replacement visitor center lānai to allow for 24/7 access. The result of these additional modifications is the proposed action as described in this EA in detail and shown on Figures 1-6 in Appendix A.

It is important to note that all of the options have some level of impact to something, even the no-action alternative. The goal of the VA was to go through an iterative process of considering all of the pros and cons of a concept, including consideration of long-term impacts of each concept. A summary of the advantages of the proposed action over the other concepts is as follows:

**Visitor Use and Experience:** When compared to the other concepts, the proposed action better improves the function of the visitor use facilities, creates an intuitive and clear understanding of where to find facilities, improves visitor pedestrian flow, and enhances the connectivity of visitor facilities. The first facility the visitor encounters when they enter the park is the replacement visitor center where orientation and wayfinding is provided. Separation of visitor functions from USGS functions in the proposed action should create less confusion for the visitor.

**Cultural Resources:** The proposed action's advantage over the other concepts is that it avoids or minimizes effects to historic properties. These include archeological resources, historic buildings and structures, cultural landscapes, and ethnographic resources. Identified historic properties located within the project component areas that were considered during the concept selection include the following: the Kīlauea Crater NRHP site, the Footprints Historic District, the Lithic Block Quarry, Peter Lee Road, the KMC Historic District (including the ball field), the Crater Rim Historic District (which includes the viewsheds from the Volcano House and Waldron's Ledge looking toward the Uēkahuna bluff as contributing features), Crater Rim Drive NRHP site (listed on the Hawai'i Register of Historic Places), the Kīlauea Administration and Employee Housing Historic District, the Tahara House site, and known ethnographic resources such as the forested areas and Uēkahuna bluff. When deliberating the

concepts, each of these resources and/or districts were considered so that any potential adverse effects could be avoided or minimized to the extent feasible.

**Natural Resources:** Among the concepts, greater preference was given to the concept that minimized adverse impacts to native habitat including 'Ōhi'a/Hāpu'u or 'Ōhi'a /Uluhe Montane Wet Forest near the visitor center, Koa/Nonnative Grass Semi-natural Woodland near the ball field, and 'Ōhi'a/Pūkiawe/'A'ali'i Montane Woodland or sparse vegetation near Uēkahuna bluff. Within each of these habitats greater weight was given to protection of undisturbed habitat compared with sites that are recovering from previous disturbance. For example, construction near the current KVC/HQ was preferred to clearing undisturbed forest (larger older trees) near the VEOC and near the housing area. Also considered was reducing the perimeter of new construction in forested sites to reduce the amount of wounding (with subsequent disease infection) of remaining 'ōhi'a trees in the surrounding area. In addition, options that minimized disturbance to sensitive species (rare plants such as 'iliahi, forest birds), and limited impacts to threatened and endangered species ('ōpe'ape'a, 'io, nēnē, Hawaiian catchfly) were preferred. Factors for sensitive species included avoiding direct removal of habitat or increasing harmful visitor-wildlife interactions. None of the options had zero impacts. The impacts varied depending on the species. By changing Concept 2 USGS facilities location to the ball field, the undisturbed forested area near the VEOC remains intact.

**Operations:** When compared to the other concepts, the proposed action provides reduced maintenance and staffing requirements and supports long-term sustainability of park operations by maximizing use of outdoor lānai, and co-locating the replacement visitor center with existing visitor facilities and staff offices. The proposed action separates visitor functions from USGS functions. There is improved constructability by allowing for more efficient and independent phasing of both National Park Service and USGS construction.

**Safety:** The proposed action minimizes visitor and employee safety risks from vehicular sources. During emergencies, the location of the replacement buildings allows visitors and staff to exit the park quickly. The USGS building separated from visitor functions allows USGS alternative access routes during emergencies that avoid the congestion of a visitor center and park entrance.

**Costs:** The proposed action was designed to reduce initial and life cycle costs by limiting the expansion of utility systems, allows for the reduction in size of the new facility by leveraging the use of the existing theater in the KVC/HQ, and improves staff operational efficiency due to close proximity to other visitor use facilities.

### 2.2.2 Proposed Action Description

The proposed action would consist of several improvements within the summit area of Hawai'i Volcanoes National Park. The proposed elements include the following:

- Deconstructing the damaged facilities and repairing visitor use amenities in the Uēkahuna bluff area
- Replacing the HVO research facilities with a new field station in the historic ball field adjacent to KMC
- Construction of a replacement visitor center next to the existing KVC/HQ and repurpose KVC/HQ for special programs and environmental education
- Enhancing the park entrance and realigning Crater Rim Drive to improve visitor safety
- Deconstruction of non-historic National Park Service office space in the park resources management complex and relocation of National Park Service offices to former USGS Pacific Island Ecosystems Research Center-Kilauea Field Station (PIERC-KFS) buildings

Each of these elements are discussed in the following sections. Figures showing these elements are in Appendix A of this EA. Deconstruction and construction would last approximately 2 years. During this period, visitors would be restricted from entering construction areas. Specifically at the Uēkahuna bluff, half of the parking lot would remain open to visitors but the rest of the area would be closed to visitor access.

### 2.2.3 Uēkahuna Bluff

The Okamura building and the adjacent Annex building, operated by the USGS HVO as research facilities, and the historic Jaggar Museum, operated by the National Park Service as a visitor center, would be deconstructed to reduce the amount of infrastructure at the bluff. The remaining visitor amenities and utilities would be repaired and improved. Improvements and repairs at Uēkahuna bluff would include:

- Deconstruction of the Okamura building, Annex building, and Jaggar Museum
- Berm regrading. The existing earth berm north of the buildings was constructed at the time of the construction of the Okamura building from the material excavated for the project. A portion of this berm would be used to fill the basement of the Okamura building. The east end of the berm would be regraded to continue to provide screening for the replacement water tank.
- Majority of building footprints restored to natural conditions. Vegetation would reestablish naturally with some limited planting of native species.
- Relocation of the utility connections to the existing comfort station
- Development of a natural surface trail to connect to the Crater Rim Trail
- Replacement of the deteriorated water tank
- Installation of new post and cable barrier around visitor use areas
- Repair and improvements to the overlook and stone perimeter wall
- Expanding the overlook area into the Jaggar Museum footprint and including a reference to the museum by delineating the original building footprint on the ground with salvaged stone from the building
- Installation of large benches to serve as both seating and the opportunity for elevated viewing, incorporating salvaged stone from the Jaggar Museum

### 2.2.4 USGS Field Station

The USGS research facilities would be relocated to a site adjacent to KMC. The new building would be nestled among an existing grove of trees, between KMC and an open grass area. The open area includes a historic ball field that is used for recreation and also for overflow parking during peak visitation. Elements of the new USGS field station would include:

- Construction of a 15,320 -square-foot, two-story-high modern research facility, with on-grade parking wrapped around the north and east sides of the building. The building and parking area were carefully located to minimize loss of existing koa and 'ōhi'a trees on-site. Most of the parking and loading area is directly adjacent to the KMC motor pool/service area.
- The form of the building is derived from a prototypical gable building that is split into two halves—one for administrative offices and one for research laboratories and lab support

functions. The aesthetic design, including a lava rock base and vertical siding, is compatible with the architectural character of other existing park buildings.

- Minimization of physical and visual impact to adjacent, historic ball field.
- Minimization of impacts to existing trees and use of existing trees to help new building blend into the landscape.

### 2.2.5 Visitor Center

A 6,870-square-foot replacement visitor center building would be constructed next to the existing KVC/HQ building and near other visitor destinations, to replace the loss of the Jaggar Museum. This replacement visitor center follows the 2016 General Management Plan that recommended an integrated campus, or *kauhale*. Improvements related to the replacement visitor center are further described below.

- Upon construction of the replacement visitor center, the visitor use portion of the existing KVC/HQ would be adaptively reused to provide a space for indoor park programs, special events, and K-12 educational programming. The existing KVC/HQ would continue to serve as the park headquarters and retain office spaces in the back of the building, but the existing bookstore and visitor center would be moved to the replacement facility.
- The replacement visitor center would be built on a portion of existing visitor parking and a forested area to the east of the existing KVC/HQ. The building would include a sales area, orientation space, exhibit space, administrative area, public restrooms, and storage. Multiple entrances to the replacement building would accommodate access from the bus drop off and the expanded parking area.
- Expanded visitor parking would be built around the east and south sides of the replacement building to accommodate just over 200 vehicles, an increase of approximately 60 spaces compared to current parking. A new access point from Crater Rim Drive (discussed further in Section 2.2.6, Park Entrance) would serve the expanded parking lot and replacement visitor center.
- A new bus drop-off point would be located directly in front of the replacement visitor center building.
- The replacement visitor center building would be compatible with the surrounding historic landscape and aesthetic design of the existing buildings at and near the existing KVC/HQ.
- The replacement visitor center and parking would align with existing development in this visitor use area. The main entry of the building would front Crater Rim Drive, similar to the existing KVC/HQ and Volcano House.
- A covered outdoor area for orientation, exhibits, and gathering space, identified as an interpretive *lānai*, would be built adjacent to the replacement visitor center. The interpretive *lānai* would be an outdoor extension of the visitor center where visitors can get information for planning their visit and learn about the park resources without having to enter the building. This allows for a smaller indoor space, as well as orientation and interpretation that is available 24/7. This outdoor area would also serve as covered programmatic space for ranger programs and cultural demonstrations.
- The existing trails around the existing KVC/HQ would be connected to form a loop trail connecting KVC/HQ to other amenities and nearby overlooks (as funding allows).
- The existing restrooms next to the existing KVC/HQ would be renovated (as funding allows).

### 2.2.6 Park Entrance

Proposed improvements to the park entrance and Crater Rim Drive are intended to reduce traffic congestion problems that pose collision hazards for motorists and pedestrians. Approximately 50% of the traffic that comes through the entrance station is administrative traffic. Improvements between the turn off from State Highway 11, through the entrance station, and along Crater Rim Drive to the existing KVC/HQ are described further below.

- The addition of a new entrance lane for administrative-only use would result in three in-bound lanes at the entrance station. The new lane would allow administrative traffic to bypass the visitor traffic more quickly and the two existing lanes could serve as visitor queueing capacity during peak visiting times.
- The Crater Rim Drive intersection would be relocated and converted to a roundabout. The roundabout would create free-flowing traffic and would allow for safer connectivity and turns towards the replacement visitor center, Crater Rim Drive East, Crater Rim Drive West, or the exit lane.
- A section of Crater Rim Drive that is south of the entrance station would be realigned to connect to the new roundabout. The new section of road would follow an older alignment of Crater Rim Drive as much as possible to minimize impacts to cultural resources on each side of the old road and older stands of trees.
- Entrance station staff parking would be relocated within the existing Crater Rim Drive road footprint. The new parking area would include one accessible stall and three standard stalls. A security camera and light complying with dark sky standard operating procedures would be installed for staff safety. An accessible route from staff parking to the entrance station would also be added.
- The exit lane would be separated from the entrance station by a vegetated median. A speed table would be added where the accessible route from staff parking crosses the exit lane. An exit pull-off area would be formalized on the side of the exit lane before State Highway 11 for visitors to safely pull off if needed before turning onto the highway.
- The existing section of Crater Rim Drive and current staff parking that would be vacated would be removed and revegetated with native plants.

### 2.2.7 Resources Management Complex

In the Resources Management Complex, the following existing non-historic National Park Service office space would be deconstructed:

- 1) Building 217, the Vegetation Management office (built post-1978)
- 2) Building 321, the Turtle Program office (built post-1988)
- 3) Building 322, Resources Management Administration office (built post-1988)

The National Park Service offices would be relocated to the former USGS PIERC-KFS buildings (343, 344, 216, 295). The majority of PIERC-KFS staff and functions would move to a new facility in Hilo. The remainder would relocate to the new USGS field station in the park, which would house both PIERC-KFS and HVO field operations.

## 2.2.8 Proposed Action Activities

The following sections detail the type of activities that would occur under the proposed action. The intent is to disclose the types of activities that have the potential to cause impacts to the issues analyzed in Chapter 3 of this EA. Deconstruction and construction of the proposed action would last approximately 2 years. Each type of activity is summarized below.

### 2.2.8.1 Deconstruction and Demolition

- Cutting and removing of asphalt would occur in Crater Rim Drive, parking lots, and Uēkahuna bluff overlook.
- The Okamura building, Annex building, Jaggar Museum, and existing non-historic National Park Service office space in the Resources Management Complex would be deconstructed.

### 2.2.8.2 Clearing and Grading

- Clearing and grading would occur for new parking areas, field station building, replacement visitor center building and interpretive lānai, utilities for the new structures, new road alignment, and the Uēkahuna bluff berm.
- Clearing for the new parking area and new road alignment would include tree removal.
- Prior to clearing, tree seedlings and cuttings, and hāpu'u ferns (*Cibotium glaucum*) would be salvaged for park staff to use in revegetation efforts.

### 2.2.8.3 Revegetation

- Ground disturbance in areas not covered by structures or pavement at the end of construction would have topsoil replaced and would be revegetated.
- The majority of building footprints at Uēkahuna bluff would be restored to natural conditions by relying largely on the natural return of the vegetation augmented by planting of native species.
- 'Ōhi'a seedlings, hāpu'u ferns, and other appropriate native plants would be replanted in the former roadbed of Crater Rim Drive.

### 2.2.8.4 Utilities and Stormwater Facilities

- Existing electric and water lines that are currently fed through the buildings to be deconstructed at the Uēkahuna bluff would be replaced on-site to continue servicing the comfort station. The two existing water tanks would be removed. Because deconstructing the buildings would decrease the water demand, only one new water tank would be required to serve the existing comfort station, Nāmakanipaio Campground, and fire suppression needs. The new tank to be installed would be similar in size to the existing large tank.
- A portion of the site lighting along the path to the overlook at Uēkahuna bluff would be removed. New site lighting would be installed along the path to the overlook, along the north side of the overlook extension, and on the ends of each proposed bench to improve safety for visitation at night. All site lighting would be compliant with the park's dark sky requirements.
- Electric, water, communication, and septic services would be installed at the replacement visitor center and field station to serve the new buildings and site facilities.
- Electric and communication lines would be installed at the park entrance to serve the new traffic loop counters, parking area light, and security cameras.

### 2.2.8.5 Traffic Control

- Temporary traffic control measures (e.g., signs, temporary closures, potential parking reservations) would be implemented for both vehicles and pedestrian foot traffic in the following areas:
  - Crater Rim Drive at entrance station, replacement visitor center parking area, Uēkahuna bluff parking area, Uēkahuna bluff overlook and comfort station, Crater Rim Drive at KMC, and KMC Road R-9.

### 2.2.8.6 Pavement and Concrete Work

- Various areas throughout the project site would be re-surfaced and would involve pavement and concrete work.

### 2.2.8.7 Staging, Equipment, and Deliveries

- Topsoil intended for reuse in revegetation would be stripped from the sites prior to construction and stored at the existing Mauna Loa Horse Corral.
- Construction staging is customary for a project of this scope, and would involve storage and parking of construction equipment, materials, and vehicles in already developed areas of the park during the deconstruction and construction period. Staging would occur at the existing Mauna Loa Quarry area (not an active quarry) for National Park Service work and part of the ball field for USGS work. Additional staging may occur in existing parking areas or other existing disturbed areas.
- Truck deliveries and transports to and from staging areas would occur during construction, plus additional vehicle traffic would be generated from construction workers accessing the site daily.

### 2.2.8.8 Earth Cracks and Steam Vents

- If earth cracks or steam vents are discovered, the construction contractor would follow National Park Service standards for addressing them. For earth cracks, Hawai'i Volcanoes National Park standards stipulate that construction dig down to solid substrate, and layer rocks and geotextile to create solid ground. This could also be applied to steam vents, or the contractor would vent the steam.

### 2.2.8.9 Fill Material

- Deconstruction of the buildings and restoration of the bluff would require filling the basement of the Okamura building and the crawl space of the Annex building. A portion of the fill material would be sourced from the east end of the existing berm north of the Okamura building. The berm was built with soil excavated during the construction of the Okamura building. The rest of the fill material would be sourced from the park stockpiles. This material has been generated from other projects within the summit area of the park and would not include any imported or synthetic material.
- Prior to excavating the berm for use as fill, the topsoil layer would be salvaged to be reused as the final topsoil layer in the areas to be restored with native vegetation. The finished grading would leave enough of the berm to screen the replacement water tank when viewed from Crater Rim Trail. The building areas to be restored would be graded to have an undulating topography like the surrounding natural landscape where swales and depressions provide places for plants and water to collect.

## 2.2.9 Mitigation Measures and Design Features of the Proposed Action

In accordance with the National Park Service Organic Act, National Historic Preservation Act, Endangered Species Act, Coastal Zone Management Act, Clean Water Act, and Clean Air Act the following mitigation measures would be implemented to minimize the degree or severity of adverse impacts during deconstruction and construction. The design features have been incorporated into the project during the design phase to minimize impacts. In addition to these measures, the proposed action was designed to reduce impacts. See Section 2.2.1, and Section 2.4, Proposed Action Design Changes, for further discussion on changes to the proposed action.

### 2.2.9.1 Wildlife and Species of Concern

- Nighttime construction would be prohibited to prevent impacts to the Hawaiian petrel, Newell's shearwater, and band-rumped storm-petrel.
- Disturbance, removal, or trimming woody plants greater than 15 feet tall during the 'ōpe'ape'a (Hawaiian hoary bat) birthing and pup rearing season (June 1 through September 15) would be avoided.
- Bird nest surveys would be completed prior to tree cutting. No trees would be cut if there are active nests found in them.
- Barbed wire would not be used for fencing to remove the potential impalement of hoary bats.
- Construction staff would be educated to not approach, feed, or disturb nēnē.
- National Park Service biologists would monitor the project component areas for any nēnē activity prior to work starting and regularly during the project.
- Project specifications would include specific measures to ensure project work does not impact nēnē, such as requiring all food-related waste to be in fully sealed refuse containers and removed from the site daily to ensure birds and predators do not have access to the food waste.
- All construction vehicles, materials, and equipment would be inspected for nonnative species, including little fire ants, prior to entering the park. Preventing the introduction of harmful species would protect nēnē nesting habitat.
- All work would cease immediately if a nēnē nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins. Work would not start in that area until the nest is no longer active and the birds have left the area.
- If nēnē are observed loafing or foraging in the project area during the breeding season (September through April), work would halt and a biologist familiar with the nesting behavior of nēnē would survey for nests in and around the project area prior to the resumption of work. Surveys would continue for 3 or more days following the observation of nēnē presence (during which the birds may attempt to nest).
- No blasting would occur.
- In areas where nēnē are known to be present, the National Park Service would post and implement reduced speed limits, and inform project personnel and contractors about the presence of threatened species on-site.
- Project component areas would be fenced at the limits of the construction zone. Fencing would be chain link with skirting at the base that can be removed if a bird is inside the fenced area. In addition, at Uēkahuna bluff, an additional fence would be installed approximately

150 feet from the edge of the construction zone. The distance to the second outer fence may be adjusted based on the practicalities of the landscape and locations of known nesting sites. Fencing will be installed in advance of breeding season to allow time for the birds to become aware of it.

- Post construction revegetation would not include species known to be nēnē food plants to minimize the attractiveness of the landscaped areas. In addition, signs would continue to be posted to inform visitors that feeding nēnē is prohibited. At Uēkahuna bluff, the lawn around the existing bathroom would be removed in summer 2022, well in advance of construction, to minimize the attractiveness of the area. No new lawn would be established post construction to reduce human-bird conflicts.
- Rock and soil material stockpiled from past summit area projects would be transported from the Mauna Loa Quarry to Uēkahuna bluff to fill the building basement. This area would be frequently monitored by a biologist during nēnē breeding season. If a nest is discovered within 150 feet of the quarry piles, contractors would cease all work immediately at this site. Work would not begin again until the family leaves the area (at least 150 feet between family and project area). The contractor would not have access to the quarry area during the duration of the pause.
- Lighting needed for traffic control signs or barriers would be dark sky compliant. Any temporary lighting for safety requirements would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).
- Any new permanent lighting would meet or exceed the park's dark sky policies (minimum necessary, full cut-off, downward directed, amber [560-nm or greater] lamping).

#### 2.2.9.2 Vegetation

- Native plants would be salvaged as much as possible prior to ground disturbance. 'Ōhi'a trees would be propagated and replanted using local sources of materials (e.g., air layering, seeds and salvaged seedlings).
- Equipment used for clearing vegetation (including vehicles) would be cleaned prior to entering the park to decrease the likelihood of transporting nonnative species and the pathogens that cause Rapid 'Ōhi'a Death (ROD). Crews would follow the latest protocols on nonnative species prevention: Hawai'i Volcanoes National Park Invasive Pest Protocols (2022) and Hawai'i Volcanoes National Park Green Waste Standard Operating Procedures (2022).
- Tree removal would be minimized as much as possible.
- Surveys for the Hawaiian catchfly would be completed prior to any ground disturbance and individual plants would be fenced and avoided. Surveys would be completed during the peak time for flowering when identifiable features of the plants are more likely to be visible. If avoidance is not possible, the National Park Service would work with the U.S. Fish and Wildlife Service to transplant the plants to suitable undisturbed habitat.
- The National Park Service would monitor plants periodically during construction to monitor health and any impacts. If dust buildup on Hawaiian catchfly plants is evident, dust would be gently removed with compressed air or water by the National Park Service botanist.
- Invasive plants colonizing the area post construction would be removed and the area revegetated with native species.

#### 2.2.9.3 Soils

- Any topsoil removed from construction sites would be salvaged and used for revegetation in the project component areas.

- Soils used in revegetation projects would only be sourced from within the park. If not enough soil from within the park is available, any imported soils would be steam sterilized and inspected prior to entry into the park to prevent introduction of invasive species
- To prevent erosion and protect both soil and vegetation, including the threatened Hawaiian catchfly, erosion-control measures that provide for soil stability and prevent movement of soils, such as silt fence structures made of burlap or biodegradable mesh, would be implemented in areas where there is high potential for runoff.

#### 2.2.9.4 Cultural Resources

- All ground-disturbing activities would be monitored by a qualified archeologist meeting the Secretary of the Interior's Professional Qualification Standards.
- If previously unknown archeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources are identified and documented and an appropriate mitigation strategy developed, if necessary, in accordance with pertinent laws and regulations, including the stipulations of the 2022 Programmatic Agreement Among the National Park Service Hawai'i Volcanoes National Park, U.S. Geological Survey, Hawai'i State Historic Preservation Officer, and the Advisory Council On Historic Preservation (Appendix E).
- In the event that human remains are discovered during construction activities, all work on the project in that area would stop and as required by law, and the Cultural Resources Program Manager notified immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- Known historic and prehistoric sites and isolated occurrences would be fenced or flagged and avoided during project activities.
- The National Park Service would prepare a revised and updated Crater Rim Historic District NRHP nomination, incorporating the historic resources identified in the 2006 Crater Rim Historic District Cultural Landscape Inventory (CLI) report and the 2009 Hawai'i Register of Historic Places Crater Rim Drive Historic District nomination form. Changes resulting from the 2018 eruption and from the current project will be included.
- The National Park Service would conduct a Traditional Cultural Property study of Hawai'i Volcanoes National Park and, based on the results of the report findings, prepare an NRHP nomination form for the Traditional Cultural Propert(ies) identified.
- The National Park Service would prepare a Historic American Landscape Survey (HALS) of the Uēkahuna bluff area that will meet the National Park Service HALS documentation requirements. The details of the history of the landscape change, including building changes and the viewing platform at the summit, will be covered in the HALS documentation. Demolition shall not proceed until the HALS documentation package is accepted by the National Park Service Heritage Documentation Program.
- Stone from the deconstructed buildings at Uēkahuna bluff would be salvaged for reuse in the replacement visitor center and at the bluff.
- The roundabout has been designed to maximize the amount of forest being retained, and to reduce the amount of visible pavement. Low-growing vegetation would be planted in the islands around and within the roundabout.
- The National Park Service will ensure that some of the existing berm material at Uēkahuna bluff would be used for the fill material that would be needed for the basement of the Okamura Building. The remaining fill would come from sources within the park that are left over from previous projects.

- The National Park Service would ensure that the expanded viewing platform at the summit will include the former Jaggar Museum footprint.
- The National Park Service would complete the Kīlauea Administration and Employee Housing District NRHP nomination form.
- The design of the replacement visitor center would respect many of the materials and forms of the existing KVC/HQ building.
- All new National Park Service buildings would use the park's standard park brown and tan paint colors for the exterior paint and trim.
- The roof of the replacement visitor center would have a similar roof slope and massing similar to the existing KVC/HQ.
- The windows of the replacement visitor center would be the same form and size as those of the existing KVC/HQ.
- The siding of the replacement visitor center would be horizontal siding with the same exposure pattern as that of the existing KVC/HQ and other park buildings.
- The eave soffits of the replacement visitor center would match those of the existing KVC/HQ.

#### **2.2.9.5 Visitor Use and Experience**

- During construction, the park anticipates roadway and parking lot congestion and associated safety hazards; reduced visitor access to some popular destinations; and overcrowding at some parking lots and overlooks that diminishes visitor experience. To improve the visitor experience during construction, the park may implement strategies such as parking restrictions, reservations, or other measures to better distribute vehicles and visitors throughout the day in the summit areas. In addition, signs, news releases, social media, and other communication methods would be used to inform visitors about facility and access restorations or closures during construction.

#### **2.2.9.6 Visual Resources**

- The height of proposed structures would be reduced to the extent possible to decrease their visibility (and level of visual dominance) from viewpoints and to blend them with the existing setting.
- Building materials, paint, stain, and other color treatments would be selected to match existing park structures and the natural, existing setting to minimize their visual intrusion and adverse effects on natural and cultural resources; this would include selecting the replacement visitor center roof color to match adjacent structures.
- Additional site interpretation opportunities (e.g., signs, ranger-led activities, or additions to National Park Service app) would be introduced to describe historic, cultural, or natural elements modified by the project. For example, this could include describing the cultural importance of Uēkahuna bluff, the construction of structures on the bluff, and the subsequent deconstruction of most of these structures to return the area to a more natural condition after the 2018 volcanic activity.
- Landscape plantings adjacent to the replacement visitor center and USGS field station would be maintained or expanded, including selective clearing of mature 'ōhi'a and koa during construction to maintain existing vegetative screening.
- Landscape plantings along Crater Rim Drive would be maintained or expanded to minimize visibility of structures proposed for the project. Additional plantings within the proposed traffic circle, in medians, and along the roadside would visually break up expanses of pavement to

blend with the natural setting, minimize visibility of the traffic circle, minimize the visual width of entry into the park, and minimize visibility of the project within historic districts. Plantings within the traffic circle would be low-growing species to ensure they do not hinder traffic safety.

- Enough of the redesigned berm would be retained to reduce the visibility of the replacement water tank on Uēkahuna bluff as viewed from the Crater Rim Trail.
- Landscape plantings would be expanded on and adjacent to the redesigned berm to further screen views of the replacement water tank.
- A paint color for the replacement water tank on Uēkahuna bluff would be chosen to blend in with the natural setting.
- All of the park's Dark Sky/Night Lighting Avoidance and Minimization Policies (National Park Service 2018) would be followed.

#### **2.2.9.7 Air Quality and Soundscapes**

- All construction motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order to prevent excessive or unusual noise, fumes, or smoke.
- To reduce noise and air pollutant emissions, construction equipment would not be permitted to idle for longer than 3 minutes when not in use.
- Dust generated by construction would be controlled as necessary by spraying water on the construction site, or other best management practices for dust control.
- Outdoor work activities shall be restricted to one hour after sunrise until one hour prior to sunset.

#### **2.2.9.8 Public Health, Safety, and Park Operations**

- To reduce potential impacts on public health and safety, appropriate signage, barriers, and barricades would be used to clearly delineate work areas and prevent visitor travel near construction areas. Visitors would not be allowed into construction zones.
- To reduce potential safety hazards, construction crews would employ a hierarchy of hazard controls to protect themselves and visitors from hazards. The construction contractor would be required to develop a safety plan that would include (but is not limited to) securing areas of work, a traffic control plan, and fire protections.
- To reduce potential impacts on public health and safety, trucks hauling debris and other loose materials would be covered to prevent spillage.
- Emergency response protocols would be developed for implementation during construction. Construction activities would be conducted in accordance with established safety protocols to reduce potential safety hazards for visitors, employees, and construction crews.
- To reduce potential impacts on normal park operations during construction, employees and construction crews would be required to park their vehicles in designated locations.
- Existing water, gas, sewer, fire, fiber optic, and electric utility lines would be protected during construction activities.

### **2.3 ALTERNATIVES CONSIDERED BUT DISMISSED AND DESIGN ELEMENTS REFINED**

The National Park Service initially evaluated four site concepts with additional elements that all concepts would have in common. Through the civic engagement process and the value analysis

process, these site concepts were narrowed down to the proposed action. In addition, as the proposed action was developed, including public input during scoping, different design elements were further refined to reduce impacts on cultural and natural resources. These elements are described below.

Alternatives and alternative elements may be dismissed for the following reasons:

- Technical or economic infeasibility. This means the alternative could not be implemented if it were selected or would be unreasonably expensive.
- Inability to resolve the purpose and need for taking action, to a large degree
- Duplication with other, less environmentally damaging or less expensive alternatives
- The alternative conflicts with an up-to-date and valid park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would be needed
- The alternative would require a major change to a law, regulation, or policy
- Too great of an environmental impact
- The alternative addresses issues beyond the scope of the National Environmental Policy Act (NEPA) review
- If the alternative would not be allowed by another agency from which a permit is required, it should be eliminated as "environmentally infeasible"

### **2.3.1 Uēkahuna Bluff**

- An open-air viewing shelter was considered for the Uēkahuna bluff overlook to provide visitors with protection from sun and rain. This was dismissed to minimize the amount of development and infrastructure at the sacred site.
- The repair and reuse of the Annex building was considered to maintain administrative office space at Uēkahuna bluff. This was dismissed due to safety and operations and maintenance concerns related to maintaining buildings so close to the crater. Another factor was the cost to relocate/reroute utilities from the Okamura building into the Annex building. This was also dismissed due to the desire to decrease the amount of infrastructure on the sacred site.
- Paving the western unpaved overlook was considered to provide visitor access to another viewing area. This was dismissed to minimize potential impacts of development on the ethnographic, cultural, and natural resources.
- Expansion of visitor parking was considered to alleviate severe congestion and resource damage that occurs during summit eruptions. This was dismissed to reduce the amount of new development and potential impacts to ethnographic, cultural, and natural resources.

### **2.3.2 Kīlauea Visitor Center/Headquarters Area**

- Reducing the existing covered lānai at the existing KVC/HQ in size to restore the integrity of the historic KVC/HQ building was considered.

### **2.3.3 Replacement Visitor Center and USGS Field Station Location**

- To create a consolidated interpretive, education, and research campus, relocating all facilities and functions formerly at Uēkahuna bluff to the existing KVC/HQ area was considered. A new stand-alone visitor center on the south/caldera side of Crater Rim Drive was proposed to be constructed to enhance pedestrian connectivity to most visitor facilities and caldera views. The visitor use portion of the existing KVC/HQ was proposed to be repurposed as an environmental education center to provide more space and accessibility than the current

location. USGS functions were proposed to be relocated adjacent to the existing KVC/HQ, on the north side of Crater Rim Drive. This concept was intended to leverage existing parking and utilities with minor realignment and expansion needed to accommodate replacement facilities and visitor use levels.

This concept was dismissed to reduce impacts to the forested area south of Crater Rim Drive. It was also dismissed due to the greater distance of USGS operations from their primary field observation area overlooking Halema'uma'u crater and the difficulty for USGS operations to enter and exit an area of heavy visitor use.

- To consolidate visitor-use facilities adjacent to the existing primary visitor area, constructing a new stand-alone visitor center east of the existing KVC/HQ and repurposing the visitor use portion of KVC/HQ as an environmental education center was considered. The stand-alone visitor center would have been a 7,000 square-foot facility with a 1,300-square-foot restroom building to accommodate all functions of the existing KVC/HQ including the auditorium, and 12,200-square-foot exterior space. The building numbers were derived from a facility model that indicated the park needs 7,800 gross square feet (GSF) of visitor center space and 1,500 GSF of restroom space for its level of visitation. This concept would also leverage existing parking and utilities with expansion needed to accommodate replacement facilities and visitor use levels.

The new facility as a stand-alone visitor center was dismissed in favor of constructing a smaller new building that would house most of the visitor use, while the existing KVC/HQ would continue to support indoor park programs, special events, and overflow orientation when needed. The proposed site for the new building (east of the existing KVC/HQ) was retained in the proposed action.

- To separate USGS functions from the main visitor use area but keep them near park emergency operations, locating the USGS field station next to VEOC was considered.

This concept was dismissed due to the greater distance of USGS operations from the crater. It was also dismissed due to the greater distance of USGS operations from their primary field observation area overlooking Halema'uma'u crater and the difficulty for USGS operations to enter and exit through an area of heavy visitor use.

- To maximize reuse of existing visitor-use facilities, repurposing the existing KVC/HQ and auditorium area and constructing an adjacent smaller new visitor use building to the west of the existing KVC/HQ and expanding the parking area in front of the existing KVC/HQ was considered. This concept was to leverage existing parking and utilities and expand them to accommodate the replacement facilities and visitor use levels and to minimize impacts to the forest east of the existing parking lot. The USGS functions would be separated from National Park Service functions and relocated to the historic ball field area, west of the KMC land assignment.

The visitor center actions of this concept were dismissed due to impacts to the historic buildings and landscape of the existing KVC/HQ and the 1877 Volcano House. It was also dismissed because it was determined it would not function well for visitors. The proposed USGS field station location in the historic ball field area was retained in the proposed action.

- To consolidate all new development of replacement facilities in one area, relocating all functions lost at Uēkahuna bluff to the historic ball field area adjacent to the KMC land assignment was considered. Visitor services currently provided at the existing KVC/HQ and formerly provided at Jaggar Museum would be combined in a replacement visitor center at the historic ball field. A new USGS field station would be constructed adjacent and west of the replacement visitor center. New parking and utility infrastructure to support the new facilities

would be constructed. The existing KVC/HQ would be repurposed as an environmental education center to provide more space and accessibility than the current location.

The visitor center actions of this concept were dismissed due to impacts to the natural area beyond the historic ball field, historic KMC landscape, and USGS operations with USGS functions being so close to visitor use. To provide adequate separation between USGS and visitor functions, the development footprint would need to be increased and would increase impacts to the surrounding landscape. Separating the replacement visitor center from the other visitor use facilities near the park entrance would place a higher demand on maintenance and staffing requirements, as it would create two distinct locations of visitor-use facilities that attract many visitors. Initial costs would also be higher due to the need to extend utilities out to this location. The visitor experience would be less intuitive, because as a stand-alone visitor center, the new building would be a typical first stop for visitors. When located next to KMC, the new building would be more hidden and require a further drive after entering the park.

- The USGS building entry drive was proposed to connect from Crater Rim Drive. This was changed to connect to the KMC road to reduce impacts to natural area, a historic road, and views along Crater Rim Drive.

#### 2.3.4 Park Entrance

- To increase vehicle queuing capacity and speed of processing incoming vehicles at the entrance station, adding a third booth and inbound lane was considered. This was dismissed due to concerns about park managers' ability to staff the additional booth and to reduce the amount of widening of the entrance road and the related impacts to forested area. It was determined that traffic improvements of a third booth would not outweigh the natural resource impacts of the increased roadway width all the way out to the highway.
- To increase the speed of processing incoming vehicles at the entrance station with additional widening of the roadway, adding a third booth that would be stacked with booth one was also considered. This was dismissed due to concerns with park managers' ability to staff the additional booth. A designated location for a potential future stacked booth and conduit running to that location was retained in the proposed action.
- To manage the administrative bypass lane without increasing demand on entrance staff, a swing arm gate was considered that would either be operated by a keypad by the driver, a card swiped by driver, or the fee staff pushing a button to open. This was dismissed due to operation and maintenance costs. The National Park Service determined that this could be dismissed for now but could evaluate it at a later date if it is still needed following implementation of the proposed action.
- To manage for visitors during peak visitation, installation of an automated fee machine (AFM) was considered. This was dismissed due to timing issues with updating the park's system to incorporate an AFM or similar automated entrance facility. A designated location for a potential future AFM or similar facility and conduit running to that location was retained in the proposed action.
- To increase vehicle queuing capacity, relocating the entrance station further west was considered. This was dismissed due to the challenges of relocating both the Crater Rim Drive intersection and the entrance station building. Impacts to the forested area south of Crater Rim Drive and the Kilauea Administration and Employee Housing Historic District would be increased. Relocating the utilities for the station would also increase impacts.
- To avoid the adverse effect of introducing a roundabout to the historic district, relocating the intersection but maintaining it as a "T" intersection was considered. This was dismissed due to the limited benefits it would have for traffic safety, traffic management during peak visitation,

and wayfinding improvements. The connection to the visitor center would need to be one-way to reduce potential conflicts at the intersection, which would reduce the flexibility of circulation at the visitor center. The "T" intersection would also still include left-turn conflicts.

- Maintaining the fee staff parking in its current location was considered. This was dismissed due to traffic safety concerns for staff arriving to the parking area from within the park, which would require them to do a U-turn on the east side of the entrance station.
- Locating the leg of the roundabout connecting to the visitor center due north on the roundabout was considered. This was changed to a location further west on the roundabout and in alignment with the existing access road to reduce impacts to forested area north of the intersection.

## 2.4 PROPOSED ACTION DESIGN CHANGES

Throughout the design process, the proposed action was further refined to reduce impacts in the following ways.

- The proposed natural surface trail at Uēkahuna bluff was realigned to connect to the overlook at the northeast corner and connect to Crater Rim Trail northwest of the triangulation marker. The purpose of the change is to further decrease visitor impacts to the natural area and improve visitor safety by reducing incentives to cut across areas between access routes.
- The proposed color of the new water tank has been revised to a custom color to improve its ability to blend in with the surrounding landscape.
- The main entrance of the visitor center building was revised to be oriented south instead of east to improve the compatibility of the building with the orientation of the historic buildings.
- The size of the interpretive lānai has been reduced from an initial 12,200 square feet to 6,130 square feet and the interior space was reduced from 8,300 to 6,870 GSF to decrease the development footprint and provide more landscape area around the building, as identified in scoping comments.
- The size of the visitor parking expansion has been decreased from 249 to just over 200 total parking spots (an increase of 60 parking spaces) to further reduce impacts to the forested area, as identified in scoping comments.
- The location of the field station building was revised to decrease the development impact on the historic ball field and avoid geologic hazards located behind the ball field.
- The east and west legs of the roundabout were revised to reduce the overall proposed footprint and changes to the existing road to further reduce traffic conflicts and reduce the visual impact of pavement by maintaining more of the mature vegetation along the roadsides. The west leg alignment was adjusted to follow the existing road more closely, and the west leg was reduced from two lanes to one. Having vehicles merge to one lane just after the fee booth reduces potential vehicle conflicts due to the slow speeds and metered exiting from the fee booth.
- The width of the truck apron on the roundabout was decreased to reduce the amount of pavement and the associated impact on the entrance road character. The narrower truck apron would allow for a larger central island with native plants that soften and frame the roadway.
- Streetlights around the roundabout were removed from the design to reduce dark sky impacts and minimize height of proposed structures.
- The size of the formal pull-off area on the exit lane was decreased to further reduce impacts to the existing entrance road corridor and forested area.

### 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the current and expected future conditions of resources related to the topics listed in Table 1 that are analyzed in detail in the EA. This chapter also analyzes the environmental consequences (impacts or effects) that would occur from implementing the alternatives. The analysis considers short and long-term effects and adverse and beneficial effects. "Short-term" is used for impacts lasting only for the project duration or during the construction period for an action. "Long-term" impacts occur beyond the date the project is considered fully implemented and are not readily mitigatable. "Beneficial" is a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition. "Adverse" is a change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition. A direct impact is caused by the action and occurs at the same time and place. Indirect impacts are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable.

The cultural resources analysis found in Section 3.5, Cultural Landscapes and Historic Structures, complies with the requirements of NEPA and Section 106 of the National Historic Preservation Act and the methodology for this analysis varies from the above description. Section 3.5.3, Proposed Action, describes this methodology.

#### 3.1 CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 Code of Federal Regulations [CFR] 1508.1(g)(3)).

Cumulative impacts are considered for the no-action and the proposed action. Cumulative impacts were determined by combining the impacts of the actions included in the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, present, or reasonably foreseeable future actions in the park that could result in cumulative impacts.

Past and present actions within the analysis areas (defined in each section below) include ongoing National Park Service management actions intended to maintain or improve facilities and meet established goals and objectives outlined in the park's various planning documents, including:

- Hawai'i Department of Transportation repairs to Highway 11 from seismic damage in 2018.
- National Park Service repairs to various park roads and trails and a water line that suffered seismic damage in 2018.
- Renovation of the 'Ōhi'a Wing (the prior 1932 Administration Building). This building will be used for a cultural museum.
- Replacement of wayfinding signs on park roads.
- Rehabilitation to address accessibility deficiencies at the Devastation parking lot and Puhimau Overlook.
- Replacement of theater seats, carpet, and lights inside the current visitor center.
- Replacement and realignment of power poles and lines along Highway 11 from Ka'ū boundary to Pi'i Mauna Drive.

Reasonably foreseeable actions include:

- Waterline replacement from Rainshed to the existing KVC/HQ and VEOC building. This proposed project would occur at the same time as the actions identified for the disaster recovery project.
- Fiber optic line replacement from Rainshed/cell tower to the Resources Management Complex. This proposed project would occur at the same time as the actions identified for the disaster recovery project.
- An air tour management plan. The Federal Aviation Administration and National Park Service are currently developing this plan. A final decision and implementation of the plan is likely to overlap with the disaster recovery project.

## 3.2 NĒNĒ

### 3.2.1 Affected Environment

The analysis area for nēnē is the area between the Kīlauea crater rim and Highway 11 from the entrance station to the Uēkahuna bluff area because nēnē use this area for traveling, foraging, or roosting. Nesting and roosting habitat also occurs on the north side of Highway 11, including by the Mauna Loa Quarry area. The temporal scale is the 2-year deconstruction and construction period when there would be increased noise and human activity.

The nēnē is a visible resident species of the park that uses varied habitats on a seasonal basis, including grasslands, scrub forests, and sparsely vegetated volcanic slopes, which are primarily located in the Ka'ū Desert, which includes KMC and the Uēkahuna bluff. The western part of the analysis area (from KMC to Uēkahuna bluff) is suitable nēnē habitat and the eastern part of the analysis area (from the entrance station to KMC) is not. Though nēnē may still use the eastern part of the analysis area for flying over or landing, the habitat is mostly forested and where forested, it is not suitable for nesting or foraging. Nēnē are frequently observed flying over the road between existing KVC/HQ and the Jaggar Museum (Misajon 2005c). The western part of the analysis area is part of the Ka'ū Desert and is used for nesting, brooding, molting, and foraging. This area is sparse 'ōhi'a/pūkiawe (*Leptecophylla tameiameia*)/'a'ali'i (*Dodonaea viscosa*) woodland and sparse 'a'ali'i/pūkiawe shrubland. Nēnē frequently forage on the KMC front lawn and historic ball field. Occasionally, pairs bring goslings to the KMC grounds to forage. Nēnē fly over this area frequently, often two times a day. Nests and broods have been documented in this area in the last several years. Pairs have raised goslings here and molt on both sides of Crater Rim Drive and Highway 11. The area may be used for foraging throughout the year.

Nēnē feed on a wide variety of plant parts including leaves, berries, seeds, and flowers of native and nonnative species (Black et al. 1994). Within the project area nēnē depend on native shrubs, such as pūkiawe and 'ōhelo, and nonnative maintained grasslands such as the historic ball field for food. Poor foraging conditions can lead to poor reproductive success through low nesting attempts or gosling survival (Banko 1992). Preservation and improvement of forage resources is important to the survival of nēnē. Over the last 100 years drought frequency, intensity, and severity have increased at Hawai'i Volcanoes National Park. Drought events have the potential to adversely impact nēnē directly through lack of water resources or indirectly through impacts to food resources, particularly grasses. Native dominated ecosystems in the park can be impacted during drought events in several ways including increased incidences of wildfire, loss of bird habitat, decreased availability of forage, increased growth of nonnative shrubs and grasses, increased activity of invasive rodents and insects, and damage to perimeter fences by cattle and other invasive mammals.

Nēnē are particularly sensitive to stress during nesting, brooding, and molting from September through April. During the molting phase (March–June) they are flightless for 4 to 6 weeks. While flightless they exhibit highly secretive behavior and are particularly difficult to locate, even if an area is surveyed by an experienced bird biologist.

The foraging, roosting, and traveling habitat described above is crossed by several trails and by Crater Rim Drive, which receive regular daily foot and vehicle traffic, respectively. Increased sound and human activity occur daily around the road and trails primarily during daylight hours, but also at night when there is an active eruption. In addition, helicopter tours of the summit area occur daily and increase baseline sound levels.

Nēnē were originally listed as endangered under the Endangered Species Act in 1967 and there were only 30 nēnē in the wild, and 13 in captivity at that time. In 2019 it was downlisted to threatened as the U.S. Fish and Wildlife Service determined that the data were indicating that the threats to this species have been reduced to the point that it no longer meets the definition of endangered under the act, but that it is likely to become an endangered species within the foreseeable future. At the time of downlisting, there were 3,252 nēnē in Hawai'i. The increase in the nēnē population is due to efforts by state and federal agencies, national parks, nonprofits, and private landowners. In addition, there was a captive breeding program that started in 1949 and ended in 2011, that introduced approximately 2,800 captive-bred nēnē to the Hawaiian Islands. This reintroduction succeeded because a diverse network of conservation organizations and individuals also took steps to manage the nēnē's habitat and keep predators at bay, providing the conditions the newly introduced birds needed to survive.

### **3.2.2 No-Action Alternative**

Under the no-action alternative, no additional impacts to nēnē would occur. The trends discussed above would continue.

### **3.2.3 Proposed Action**

Nēnē that could potentially use the habitats described above could be subject to noise and visual disturbance during deconstruction and construction, as these activities would occur during the breeding season. However, the measures listed in Section 2.2.9.1, Wildlife and Species of Concern, would restrict activity within 150 feet of breeding or nesting nēnē, ensuring that they are not disturbed. The project could also indirectly disturb or displace nēnē individuals foraging or flying to or from nests due to localized noise, lights, and human or vehicle activity associated with deconstruction and construction activities. This activity would be intermittent but result in short-term adverse impacts by increasing the existing baseline levels of human activity and traffic in the analysis area.

The National Park Service consulted with U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act, and determined the project may affect, but is not likely to adversely affect, nēnē. The U.S. Fish and Wildlife Service provided concurrence with this finding on June 1, 2022.

### **3.2.4 Cumulative Impacts**

As discussed in Section 3.2.1, Affected Environment, the analysis area for nēnē encompasses areas from the entrance station to Uēkahuna bluff and the temporal scale is the 2-year deconstruction and construction period. The past, present, and reasonably foreseeable actions have and will continue to increase the noise and visual disturbance to nēnē in the analysis area. Under the no-action alternative, no additional impacts to nēnē would occur.

Construction activities for the waterline replacement project would not impact nēnē because they do not forage or nest in the area of the project. The air tour management plan would include conditions designed to protect resources, including nēnē, and could be a beneficial impact by directing and/or limiting flights that could reduce the amount of noise disturbance.

### **3.3 NATIVE FOREST REMOVAL**

#### **3.3.1 Affected Environment**

The analysis area for native forest removal is the project ground disturbance footprints. The area around the existing KVC/HQ is wet montane forest composed of mostly 'ōhi'a, koa, and hapu'u in the overstory, with a mix of smaller native trees and shrubs in the understory. The area around the ball field area is open 'ōhi'a woodland with a mix of native shrubs and nonnative grasses. 'Ōhi'a is a keystone species in Hawaiian forests. A number of native forest birds rely on 'ōhi'a trees for food and shelter. The temporal scale is approximately 30 years (2 years for construction and revegetation plus 30 years for second growth forest to develop). It would take longer for native forests to mature to their pre-construction condition.

The seasonally dry forest on Uēkahuna bluff contains scattered 'ōhi'a, grasses, and other vegetation that is primarily located in low points or depressions in the landscape formed by undulating and cracking lava flows. There is limited vegetation in the area, therefore this area will not be discussed further.

Because 'ōhi'a are a keystone species, effects to them can have broader implications for the ecosystem as a whole. Current trends impacting 'ōhi'a include ROD, which is a fungal disease that is killing 'ōhi'a on Hawai'i Island, including in the park and in the vicinity of project ground disturbance (National Park Service 2022a). 'Ōhi'a is the most abundant native tree in the state of Hawai'i, and hundreds of thousands of 'ōhi'a trees have died on the island as a result of ROD (University of Hawai'i at Mānoa 2022). Healthy trees appear to die within a few days to a few weeks, which is how the disease came to be called "Rapid 'Ōhi'a Death." This disease has killed trees in all districts of Hawai'i Island and has the potential to kill 'ōhi'a trees statewide.

Over the last 100 years drought frequency, intensity, and severity have increased at Hawai'i Volcanoes National Park. Drought events have the potential to adversely impact native forests directly through lack of water resources. Native forests can be impacted during drought events though increased incidences of wildfire.

Vegetation and forested areas are an important source of spirituality and self-identification for many residents of Hawai'i. Analysis of this issue can be found under Section 3.6, Ethnographic Resources.

#### **3.3.2 No-Action Alternative**

Under the no-action alternative, there would be no native forest removal as a result of the project. The current trends discussed above would continue.

#### **3.3.3 Proposed Action**

Deconstruction and construction would result in the direct removal of 108 trees greater than 6 inch in diameter at breast height, with 75 of these trees being 'ōhi'a trees. Most of these trees are native and their removal would result in the loss of forest habitat. Smaller trees would also be removed but were not included in the survey. In addition, trees that occur on the edge of the proposed disturbance could be indirectly damaged due to construction equipment and compaction. Appropriate buffers would be placed around the construction limits and monitoring would occur to ensure there is no indirect damage to the trees outside of the direct footprint.

Additionally, construction equipment could act as vectors for transmission of the pathogens that cause ROD. Rapid 'Ōhi'a Death occurs in the areas of proposed ground disturbance. Shoes of construction workers, tools, gear, vehicles, and construction equipment would be cleaned following the latest protocols from the National Park Service, which include but are more restrictive than the DLNR and U.S. Department of Agriculture protocols to reduce the likelihood of ROD spread.

In anticipation of potential project approval, the National Park Service has begun air layering on potentially affected trees to clone the trees that may be removed, to preserve their lineage. These clones, which would be genetically identical to removed trees and adapted to local conditions, would be used in the revegetation efforts. In addition, seed collection is occurring in each area so native plant restoration can use plant material that is adapted to local conditions.

Though second growth 'ōhi'a forests can reestablish in less than 30 years in areas where nonnative species have not already colonized (Hughes et al. 2022), it would take substantially longer for mature old growth 'ōhi'a forests to develop (such as some of the areas that would be affected in the park).

### 3.3.4 Cumulative Impacts

As discussed in Section 3.3.1, Affected Environment, the analysis area for native forest removal encompasses areas from the entrance station to Uēkahuna bluff and the temporal scale is the 2-year deconstruction and construction period. The past, present, and reasonably foreseeable actions have and will continue to remove native forests, including 'ōhi'a trees.

Construction activities for the waterline replacement project may result in removal of wet montane 'ōhi'a forest. However, the measures listed in Section 2.2.9.2, Vegetation, would also apply to the waterline replacement project to reduce potential impacts to wet montane forest, including avoidance of removing additional 'ōhi'a trees if possible. The air tour management plan would not impact native forests due to the height at which air tours would be required to fly. Overall, the past, present, and reasonably foreseeable projects have had and would have long-term adverse impacts to the native forest.

Because hundreds of thousands of 'ōhi'a trees have died on the island as a result of ROD, additional removal of this species compounds those effects. The additive adverse effects of the project in combination with past, present, and reasonably foreseeable actions (including ROD) would remove individuals of this keystone species over the long term.

## 3.4 VIEWSHEDS

A visual inventory and impact assessment report was prepared for this project (Appendix D). As part of this report, seven key observation points (KOPS) were identified to assess the effects of the project. To support the analysis and depict the proposed changes within the view from each KOP, visual simulations were developed from the KOP locations and are also included in Appendix D.

### 3.4.1 Affected Environment

The analysis area for viewsheds is the area within 3 miles of project components, which corresponds to the boundary between the middle ground (0.5–3 miles) and background (more than 3 miles) visual distance zones.

The entirety of the park is in the Hawaiian High Island Ecoregion (Nature Conservancy 2018) which is composed of many micro-climate zones based on elevation and orientation to typical wind directions. The proposed project component areas are at an elevation of approximately 4,000 feet above mean sea level and include both Kīlauea crater, with its expanding caldera, and the dense forest surrounding the existing KVC/HQ. The rain shadow produced by Mauna Loa and the effect of long-term volcanic

activity on Kīlauea crater creates two distinctive vegetative zones in the study area even though project component areas are located less than 2 miles apart.

The wet montane 'ōhi'a forest is composed of mostly 'ōhi'a, koa, and hapu'u adjacent to the existing KVC/HQ and Resources Management Complex forms a dense canopy where buildings are "cut out" of the forest, forming mostly enclosed landscape settings. Within this KVC/HQ area, there are multiple historic structures including the Volcano Art Center, Volcano House, and 'Ōhi'a Wing. Terrain is generally flat to rolling except closer to the edge of Kīlauea crater, where multiple benches have been formed by volcanic activity with steep drop-offs between each bench.

The seasonally dry forest on Uēkahuna bluff contains scattered 'ōhi'a, grasses, and other vegetation that is primarily located in low points or depressions in the landscape formed by undulating and cracking lava flows. These cracking, settling lava flows form the edge of the crater rim with a steep drop into Kīlauea crater and then into Halema'uma'u crater. Due to the limited vegetation in the area and rolling terrain, views are generally unobstructed across the caldera. Uēkahuna bluff is a sacred site for many Native Hawaiians and continues to be the site for Native Hawaiian cultural practices.

KMC is located at the edge of the seasonally dry 'ōhi'a woodland area along Crater Rim Drive and includes areas of turfgrass and ornamental landscaping. Similar to the KVC/HQ area, the terrain is flat to rolling except near the edge of Kīlauea crater. Views toward the boundary of KMC are mostly enclosed by adjacent dense vegetation. The KMC complex is not open to the general public; access is allowed only for authorized patrons. The area has a developed recreation character (cabins, open spaces, and sports facilities) that is unique in the park compared to the more common natural-lands recreation focus throughout the park.

The proposed project elements associated with the KVC/HQ area, entrance area, and Uēkahuna bluff would be located within the Visitor Services Zone identified in the General Management Plan (GMP) as managed primarily for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. The proposed USGS field station and modifications to the Resources Management Complex would be located within the Park Support Zone (note: KMC and the Resources Management Complex are not open to the general public), which is managed primarily to support park operations and maintenance, including the operational needs of park partners. Access for visitors is primarily for limited visitor services (such as backcountry permitting), orientation, and organized meetings or events.

Table 1 in Appendix D summarizes the KOP inventory information focusing on the existing landscape, viewer groups and their sensitivity to changes in their view, and National Park Service interest associated with the viewpoint's importance, uniqueness, and management commitment to enhance the viewer's experience.

### **3.4.2 No-Action Alternative**

#### **3.4.2.1 Uēkahuna Bluff**

Under the no-action alternative visual impacts on Uēkahuna bluff from the presence of existing structures inconsistent with the natural-appearing setting would continue to have adverse impact on the sacred landscape as currently viewed from Crater Rim Trail and other overlooks around Kīlauea Crater. Additionally, since the existing buildings on Uēkahuna bluff are no longer able to be used by the increasing number of park visitors, there would be decreasing recreation opportunities in this area as no replacement would be provided in the park.

### 3.4.2.2 USGS Field Station

Under the no-action alternative, the existing structures at Uēkahuna bluff would remain and the proposed USGS field station near KMC would not be constructed. Similar existing impacts as described for Uēkahuna bluff would remain as the Okamura building and the adjacent Annex building would not be removed. The setting adjacent to KMC and historic ball field would not be modified by the project, resulting in no change to the existing landscape as viewed from Crater Rim Drive or KMC.

### 3.4.2.3 Replacement Visitor Center

Under the no-action alternative, the replacement visitor center and other improvements would not be constructed adjacent to the existing KVC/HQ. The balanced existing recreation/natural setting would be maintained as no additional structures would be introduced into the setting. However, there would be no additional interpretive opportunities constructed in the kauhale (integrated campus) with increasing park visitation, and in consideration of the Jaggar Museum no longer being usable, there is a potential for decreasing viewer and recreation experiences as a result of the no-action alternative.

### 3.4.2.4 Park Entrance

Under the no-action alternative, no additional improvements or modifications to the park entrance area would occur. The existing natural setting viewed after passing the park fee station would remain in its current condition. There would continue to be longer wait times to enter to park, which may reduce the viewer and recreation experiences in this area.

### 3.4.2.5 Resources Management Complex

Under the no-action alternative, no additional modifications to the Resources Management Complex would occur. Since this area would continue to not be open to the general public, there would be no impacts to viewers or recreation experiences.

### 3.4.3 Proposed Action

As mentioned above, seven KOP locations were identified for project analysis; Table 3 identifies which project element each KOP is associated with. The following sections, organized by project element, describe impacts on the existing landscape, viewer experience, and National Park Service management as well as the overall impact to park visual resources.

TABLE 3. PROJECT ELEMENTS VIEWED FROM EACH KEY OBSERVATION POINT LOCATION

KOP Number and Name	Project Element			
	Uēkahuna Bluff	USGS Field Station	Replacement Visitor Center	Park Entrance
KOP 1: Park Entrance Road				X
KOP 2: Kīlauea Visitor Center Entrance			X	
KOP 3: Crater Rim Trail	X			
KOP 4: Volcano House Overlook	X			
KOP 5: Crater Rim Drive west of Kīlauea Visitor Center			X	

KOP Number and Name	Project Element			
	Uēkahuna Bluff	USGS Field Station	Replacement Visitor Center	Park Entrance
KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field		X		
KOP 7: Kilauea Military Camp		X		

Note: Since the Resources Management Complex is not open to the general public and the dense forest canopy screens adjacent views, no KOPs were identified for this project element.

### 3.4.3.1 Uēkahuna Bluff

Two KOPs would have views of the proposed modifications on Uēkahuna bluff with KOP 3 located on Crater Rim Trail northeast of the existing Jaggar Museum and KOP 4 located approximately 2 miles away at the Volcano House Overlook with views across the caldera toward Uēkahuna bluff (see visual simulations in Appendix D).

The redesign of the facilities on Uēkahuna bluff would be compatible with the existing landscape character as viewed from Crater Rim Trail (KOP 3). Because of the deconstruction of the HVO buildings and Jaggar Museum as well as retaining some of the existing berm, to screen views toward the replacement water tank, the project would improve scenic quality, ethnographic resources, and the ethnographic landscape. If visible, the water tank would attract attention with the utilitarian-appearing feature being incompatible with the natural setting. To reduce impacts where the replacement water tank could be visible from other locations, the tank would be painted a darker color to match the setting, allowing it to blend with the natural landscape. Through the deconstruction of existing structures and retaining some of the existing berm to screen views of the project, the experience for most viewer types would be improved by returning the area to a more natural-appearing character, allowing visitors to focus on the landscape, including its cultural significance. The experience of hiking the trail from the Kīlauea Overlook to Uēkahuna bluff would be improved, without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation experience. For many repeat local observers, especially Native Hawaiians and those with a generational connection to the land, the presence and visibility of any structures on Uēkahuna bluff is seen as an impact on this culturally important landscape. The deconstruction of infrastructure on Uēkahuna bluff was identified in the 2016 GMP as an option to relocate these facilities to a less impactful location. By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area. This area is a focal point for views throughout this portion of the park, including views from KOP 4. The project would result in moderate beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. The planting of additional native plants on the redesigned berm would further screen views of the project and allow project components to blend with the natural setting, resulting in additional beneficial impacts.

The deconstruction of most structures on Uēkahuna bluff, as viewed from KOP 4, would reduce the extent of incompatible landscape features in the viewshed. The proposed overlook would use natural materials (lava rock and wood), be low profile in design, and would be constructed to blend with the setting's existing form, line, color, and texture to minimize their impact from this viewpoint approximately 2 miles away. The experience for all viewer types would be improved as a result of the project, with casual eye observers having views with fewer human-made modifications, critical observers viewing a less modified setting similar to those prior to the construction of modern facilities on Uēkahuna bluff, and repeat local observers, especially those with a generational connection to the land, having views of a more intact culturally important landscape. Through the partial deconstruction

of structures on Uēkahuna bluff, the National Park Service is further committing to the importance of the setting adjacent to Kīlauea Crater, including views from this and the other overlooks toward the bluff. Due to the potential increased visitation and landscape improvements within the viewshed, the interpretive signage could be updated to provide additional information regarding Hawaiian culture to support the overall park purpose to educate visitors on traditional Hawaiian culture in addition to protecting, studying, and providing access to Kīlauea. These would facilitate enhanced understanding of the landscape and viewshed interpretation for visitors. The project would result in long term beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

In summary, the project would increase visitor interpretive opportunities on Uēkahuna bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. By removing most of the structures on Uēkahuna bluff, not only are views from that area more natural appearing but views from around the Kīlauea crater toward the bluff would appear more visually intact. In addition, the project would implement the GMP's option to remove infrastructure on the bluff.

### 3.4.3.2 USGS Field Station

Two KOPs would have potential views of the proposed USGS field station with KOP 6 located along Crater Rim Drive west of KMC and KOP 7 located in the KMC entrance area, adjacent to the front office and first row of cabins (see visual simulations in Appendix D).

From KOP 6, views of the proposed USGS field station would be screened from view in the large openings in the forest along Crater Rim Drive and if visible in small gaps in the forest, the project would not attract attention from roadway as the dark colors proposed for the building would blend into the forest setting. Two simulation overlays were completed, confirming the project would not be visible in the larger openings along the roadway. Since views would be screened, there would be limited impacts on viewers and their experience driving Crater Rim Drive. Other than a small existing telecommunications line, the highly visited natural appearing landscape from Uēkahuna bluff to KMC would continue to support park interpretive themes, including those associated with perpetuating endemic Hawaiian ecosystems. Preservation of the native vegetation along Crater Rim Drive and adjacent to the proposed USGS field station, especially the koa and 'ōhi'a trees on the southwest corner of the proposed building, are essential to maintain this intact corridor and indirectly support interpretive themes for this unique drive along the north side of an active volcano.

As viewed from KOP 7, the proposed USGS field station would be partially compatible with the existing landscape character, as there are existing structures from different eras, including the historic KMC cabins as well as a maintenance facility with a large warehouse. The project would interrupt the continuity of the landscape and introduce a more modern building into a view dominated by historic structures. Specifically, the split-gable roof and height of the building would attract attention and would be prominent as viewed from KMC. Existing vegetation would partially screen views of the proposed building. Casual observers would likely view the proposed USGS field station as being outside of the portion of KMC with an orderly design and if they were visiting later in the day, such as for parking for lava viewing, the building would have limited impacts on their experience. History and military history focused visitors, as well as repeat local observers, may view the project as an incongruent landscape feature, which could begin to reduce the intactness of the historic setting, but since the proposed USGS field station would not be readily visible from many locations in KMC, there would be limited impacts on the experience of walking the grounds. Because there are limited existing interpretive opportunities at KMC, the project would have no impacts on those park values and themes. During volcanic events, when the area is used as an overflow parking area, the presence of the USGS field station may increase the ability for USGS staff to interact with the public, resulting in potential long-term beneficial impacts. This strengthens the mission for the Park Support Zone

identified in the GMP to work with National Park Service partners to provide a range of experiences for visitors. This additional attention also affords the National Park Service an opportunity to increase interpretive themes in KMC, at the proposed USGS field station, and adjacent to the historic ball field, to educate the public on this evolving historic landscape. Based on these potential opportunities to increase interpretive opportunities and through minor modifications to the proposed USGS field station design to better blend with the existing setting, including planting of additional native vegetation to further screen views, the project would not result in long-term adverse effects when considering its overall effects on landscape character, viewer experience, and National Park Service management.

### 3.4.3.3 Replacement Visitor Center

Two KOPs would have views of the replacement visitor center with KOP 2 located at the current entrance to the existing KVC/HQ parking lot and KOP 5 located where motorists and hikers would have their first view of the existing KVC/HQ as they return from the Steam Vents area (see visual simulations in Appendix D).

As viewed from KOP 2, the replacement visitor center would result in long-term adverse impacts as the project would be co-dominant with the existing KVC/HQ and expand the area viewed as modified, leading to a more recreation-focused landscape compared to the existing recreation/natural setting. For most viewer types, this would be counterbalanced with the additional interpretive opportunities afforded by the replacement visitor center with enhanced 24/7 interpretive and trip planning information. Additionally, the design of the replacement visitor center mimics the elements found in the existing KVC/HQ. Through maintaining vegetation along Crater Rim Drive and behind the new building, as well as the planting of native plants within the replacement visitor center parking lot, medians, and entrance, the physical presence of the building, including the proposed solar panels, would be reduced, bringing it more in scale with the existing KVC/HQ and the surrounding forest. From a National Park Service management perspective, the replacement visitor center would further the purpose of the Visitor Services Zone to support a high level of visitor use, access, and interpretation. Through thoughtful design of the replacement visitor center (e.g., choosing appropriate building materials to match the existing buildings, including roof color, and planting additional vegetation to screen views) and additional interpretive opportunities, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors, the project would not result in long-term adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

Since the replacement visitor center would be partially screened from view and the design would mimic the existing KVC/HQ, the project would attract attention but would not be prominent in the setting as viewed from KOP 5. Some viewer types would likely not notice the addition of the project, especially first-time visitors or casual eye observers who may anticipate a more developed character adjacent to a visitor center in a national park. For critical eye observers and repeat local observers, the addition of the replacement visitor center would begin to shift this landscape toward a more recreation development-focused character, instead of the existing balanced recreation/natural composition, which is more directly visible from KOP 2. The historic setting of the area would be minimally impacted as the project would not dominate the historic character of this area and would visually blend with the existing KVC. As described for KOP 2, maintaining native vegetation between Crater Rim Drive and the buildings (mostly 'ōhi'a and koa), would maintain the visual continuity of this setting for the high number of visitors who travel this corridor. The intactness of vegetation along this corridor is especially important for critical observers and repeat local observers. From a National Park Service management perspective, the replacement visitor center would facilitate increased visitor interpretive opportunities. Based on the thoughtful design of the replacement visitor center, including using existing and proposed vegetation to screen views; choosing appropriate building materials to match the existing buildings, including roof color; increasing opportunities for site interpretive

experiences; and furthering the purpose of the Visitor Services Zone to support high level of visitor use, the project would result in long-term beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.

In summary, the addition of the replacement visitor center would expand the area viewed as modified within the Visitor Services Zone, leading to a more recreation-focused landscape within the kauhale (integrated campus).

#### **3.4.3.4 Park Entrance**

As viewed from KOP 1, the proposed transportation improvements near the park entrance station would result in long-term adverse impacts on landscape character, as the project would be incompatible with the existing setting through the introduction of more transportation features into a mostly natural setting. Vegetation clearing proposed to accommodate the traffic circle and new entrance to existing KVC/HQ would interrupt the existing continuity of the forest and introduce a new focal point after passing the park entrance station. The first impression of driving Crater Rim Drive and approaching the existing KVC/HQ, compared to the existing setting, would be modified as the densely vegetated road corridor would be more open. The additional signage would improve wayfinding upon entering the park, construction of the traffic circle would facilitate safer traffic flow, and the additional entrance lane would reduce wait times to enter the park during times of high visitation. Based on these potential opportunities to increase interpretive opportunities sooner in the park through entrance signage as well as mitigation to preserve vegetation to the extent possible and plant native vegetation within the center of the traffic circle, the project would result in some long-term adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. However, to further reduce these impacts, the planting of low-growing native vegetation within medians and along the roadside would visually break up expanses of pavement to blend with the natural setting and minimize the visual width of entry into the park.

#### **3.4.3.5 Resources Management Complex**

The deconstruction of non-historic National Park Service structures in the Resources Management Complex would decrease the extent of human made modifications in that area, trending toward a more natural landscape character. The dense forest surrounding the Resources Management Complex and the distance from visitor use areas means that it is unlikely that visitors would see any changes to this area. Since this area would continue to not be open to the general public, there would be no adverse impacts to viewers or recreation experiences except for those who would work in the National Park Service relocated office space within the former PIERC-KFS buildings.

#### **3.4.4 Cumulative Impacts**

The past, present, and reasonably foreseeable actions have modified the natural character of the landscapes that comprise area of visual effect, including the areas along Crater Rim Drive, adjacent to KMC, on Uēkahuna bluff, in the Resources Management Complex, and in the kauhale (integrated campus). Some of the past and present projects focused on increasing recreation and interpretive opportunities (e.g., 'Ōhi'a Wing renovation and replacement of wayfinding signs), which have improved visitor experiences without generating additional visual impacts.

Under the no-action alternative, the addition of the waterline and fiber optic replacement projects would generate short-term adverse visual and recreation experience impacts until vegetation has successfully regrown in the areas disturbed during construction. The air tour management plan would include conditions designed to protect resources, including viewsheds, which would reduce impacts on visual and recreation opportunities within the park. Overall, the past, present, and reasonably foreseeable projects have had long-term adverse impacts to natural-appearing viewsheds.

The proposed action would, in general, increase visitor interpretive opportunities both at the existing KVC/HQ and on Uēkahuna bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. The construction of the replacement visitor center, park entrance improvements, and the proposed USGS field station would further modify the natural landscape character adjacent to the kauhale, the area adjacent to KMC, and the park entrance area as described in Sections 3.4.3.2, 3.4.3.3, and 3.4.3.4. The construction of the waterline and fiber optic replacement projects would create short-term visual and recreation experience impacts, which if done at the same time as the construction of the project, would generate temporary additive impacts, including those to views along Crater Rim Drive. All alternatives under the air tour management plan, except the no-action alternative, may have the potential to reduce impacts on visual and recreation opportunities within the park due to less visual distraction generated by helicopter overflights, which in combination with proposed building deconstruction on Uēkahuna bluff, would further reduce impacts on the setting adjacent to Kīlauea Crater. However, the air tour management plan is not complete yet. Overall, the past, present, and reasonably foreseeable projects, in combination with the proposed action, would have long-term adverse impacts to viewsheds adjacent to the kauhale, KMC, and park entrance area with the potential to increase interpretive and recreation opportunities at these locations. On Uēkahuna bluff, the past, present, and reasonably foreseeable projects, in combination with the proposed action, would trend toward decreasing impacts in this visually sensitive and sacred landscape.

## **3.5 CULTURAL LANDSCAPES AND HISTORIC STRUCTURES**

### **3.5.1 Affected Environment**

Cultural landscapes consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or that exhibit other cultural or aesthetic values" (Page et al. 1998). There are three cultural landscapes and an NRHP-nominated site that are relevant to the project that intersect the approximately 24.04-acre project area of potential effect (APE) (Figure 1). The cultural landscapes are 1) Crater Rim Historic District, 2) Kīlauea Administration and Employee Housing Historic District, and 3) KMC Historic District; the NRHP-nominated site is the Kīlauea crater. A CLI has been completed for three of these landscapes: Crater Rim Historic District, Kīlauea Administration and Employee Housing Historic District (National Park Service 2006a, 2006b), and KMC Historic District (National Park Service 2012).

These districts contain numerous historic structures, viewsheds, and associated landscape features. A brief summary of each cultural landscape is provided below.



Per the CLI (National Park Service 2006a), the Crater Rim Historic District retains sufficient overall integrity to convey its historical significance. "The district's location around the edge of Kīlauea Caldera, its setting as a relatively developed section of the park, its feeling as a coherent group of similar resources, and its associations with the park's development history are intact." The historic district's character is further enhanced by the natural setting and views. Additionally, the district's overall design, materials, and workmanship have not been compromised by previous park additions and façade changes.

As mentioned above, although the Crater Rim Drive is a contributing structure to the overall Crater Rim Historic District, it is also independently listed on the Hawai'i State Register of Historic Places. The road is significant under Criterion A for its association with the history of the National Park Service road design and construction principles as well as the National Park Rustic style. It is also significant in the history of volcanology and the story of tourism and the Hawaiian Islands. The period of significance for the road spans 1916 to 1942 with additional significant volcanic eruptions and earthquakes that influenced the development of the road in 1959, 1971, 1974, 1980, and 1982 (National Park Service 2007). A portion of this road fell into the crater in 2018 and the National Park Service does not currently have plans to rebuild that section of the road.

#### *3.5.1.1.1 Historic Structures/Features*

The Crater Rim Historic District contains two historic structures that are present within the APE and could be impacted by project activities: Jaggar Museum and Crater Rim Drive.

The following is a description of the Jaggar Museum, excerpted from the park's CLI (National Park Service 2006a).

The Jaggar Museum, named for renowned volcanologist Thomas Jaggar, was built in 1927 and donated to the Department of Interior, of which the National Park Service is a part. Located on the rim of Kīlauea on Uwekahuna [Uēkahuna] bluff, the Rustic style museum provides views of Kīlauea crater, Ka'ū Desert, Mauna Loa and Mauna Kea in addition to housing interpretive exhibits.

This one-story lava stone and wood clapboard building on the rim of the caldera is rectangular in plan with a modern metal-clad, hipped roof. The front elevation features a projecting entry canopy with lava stone piers and a pair of glazed wood doors. To the north of the entry are six louvered vent panels above a lava stone base. The south side elevation is composed of three bays separated by lava stone piers with rows of fixed wood sash windows, while the east elevation facing the caldera is stone-clad with three windows. A rather long asphalt walkway leads from the parking area to the main entry and to large asphalt viewing areas on the building's south and east sides. These platforms have lava stone retaining walls. The building includes a large addition constructed by the USGS in the 1980s.

In 1986, the USGS attached a large, new facility to the Jaggar Museum. Despite the large addition, the Jaggar Museum retains the architectural details, spatial layout, use, and relationship to the rest of the district's resources, and contributes to the district's integrity.

Crater Rim Drive is the primary park road located within Hawai'i Volcanoes National Park on the island of Hawai'i. It is accessed by the short entrance road to the park, which extends from Highway 11, a highway that circles the entire island. The 10.6-mile, two lane, paved loop Crater Rim Drive circles the rim of Kīlauea caldera, providing scenic views, as well as parking lots and pull offs for trails and scenic overlooks. The road's design was originally established in the 1930s General Development park plans. Crater Rim Drive and its associated structures were constructed by 1942, but have since undergone periodic reconstruction and rerouting in response to natural disasters like volcanic eruptions and

earthquakes, notably from 1959 to 1962, 1975 to 1976, and 1982 to 1983. A portion of this road fell into the crater in 2018 and the National Park Service does not currently have plans to rebuild that section of the road.

The road design follows the National Park Service general principle of minimally invasive park road construction via use of design features such as 1) aligning park roads to highlight scenic elements, 2) following the topography of the land, 3) creating scenic vistas through vegetation management, 4) introducing traffic calming measures such as narrow roadways, and 4) using native materials in construction. As noted in the National Park Service (2007) nomination for eligibility for the NRHP, Crater Rim Drive retains a high degree of integrity:

These characteristics of park road construction can be seen at Crater Rim Drive with its siting along the edge of and in the Kīlauea caldera. This gives visitors the opportunity to see such landscape features as the grasslands along the Steam Vents, the barren volcanic landscape and lava flows within the crater, and the lush vegetation in the vicinity of the Nāhuku, Thurston Lava Tube. The sinuous layout follows the topography of the land, with cuts and fills naturalized so that the engineering involved in constructing the road is concealed. The physical road and structures along it are integrated as a seamless whole. The engineered structures associated with the road, such as lava-rock lined ditches, culverts with lava rock headwalls, and lava rock guardwalls, reflect the National Park Service Rustic style, as do structures associated with visitor use, such as the Thurston Lava Tube comfort station. The structures blend in with their surrounding environment through the use of native materials and form, a hallmark of early NPS [National Park Service] design philosophy.

The Crater Rim Historic District includes contributing viewsheds and vistas. Two contributing viewsheds that are applicable to this undertaking are the Volcano House view and the Waldron's Ledge view, from which the Uēkahuna bluff is visible across the caldera.

### **3.5.1.2 Kīlauea Military Camp Historic District**

The KMC Historic District encompasses 52.7 acres at the northern edge of Kīlauea crater and has been evaluated and determined to be eligible at the state level under NRHP Criterion A for its association with historic events involving the early establishment and development of the U.S. Army on Hawai'i Island, and its role during World War II as the U.S. Army Hawaii District headquarters, as a detention center for Japanese-American civilians rounded up in the aftermath of the December 7, 1941, attack on Pearl Harbor, and as a prisoner-of-war camp in the late years of the war. It has also been determined eligible under NRHP Criterion C as an intact example of a lengthy period of military construction in Hawai'i beginning in 1916 and extending to just after World War II. It represents some of the earliest military construction in the Hawaiian Islands, and its initial development was the earliest important event in U.S. military history on the island of Hawai'i. The camp has also been determined eligible under NRHP Criterion C for being architecturally significant in its Hawai'i-focused architectural styles (Plantation and Vernacular), use of local materials, particularly lava rock, and the adaptation of the camp buildings to the mountain environment.

The period of significance is 1916, when the first three buildings (Buildings 34, 35, and 40) were constructed, to 1947 following the last period of major development in the camp (National Park Service 2021a). KMC is on National Park Service land and authorized to be operated by the U.S. Army as a Morale, Welfare, and Recreation site used by active and retired military members. Although some of the contributing features have been slightly altered, and non-contributing structures added, the district retains sufficient overall integrity to convey its historical significance (National Park Service 2006a).

#### *3.5.1.2.1 Historic Structures*

No historic structures were identified within the APE, however, the proposed new USGS facility is directly adjacent to the historic ball field.

### **3.5.1.3 Kīlauea Administration and Employee Housing Historic District**

The Kīlauea Administration and Employee Housing Historic District covers 43 acres along Crater Rim Drive. The housing and administrative district was determined eligible for the NRHP under Criterion A for its association with early park planning at Hawai'i Volcanoes National Park and with the CCC program. It is also significant at the state level under Criterion C, distinctive architectural design, because its contributing features exemplify the "Park Service Rustic" style. The period of significance spans 1927 to 1942, covering the years of initial master planning efforts, development, and CCC involvement.

Today, the historic district contains the main administrative and residential area for Hawai'i Volcanoes National Park, and existing landscape characteristics continue to contribute to the historic district's integrity. Despite alterations to individual contributing buildings, such as small additions, new roofs, and the replacement of a small number of windows, the district's overall design, materials, and workmanship have not been compromised (National Park Service 2006b). The district is divided by zones: the Administrative Zone, Housing Zone, and Maintenance Zone. The project is within the Administrative Zone of the historic district.

#### *3.5.1.3.1 Historic Structures*

No historic structures were identified that are directly located within the APE, however, the proposed replacement visitor center is adjacent to the existing KVC/HQ, which is a historic building and a contributing structure to the Kīlauea Administration and Employee Housing Historic District.

### **3.5.1.4 Kīlauea Crater**

The Kīlauea crater was nominated for the NRHP in 1974 for both its religious and scientific significance. The site is one of the world's most active volcanoes, which, as discussed in the NRHP nomination form (National Park Service 1974), "has affected human life, cultures, religions and undertakings and in historic times has attracted local and worldwide governmental, tourist and scientific interests. Kīlauea crater has been, and is, both worshipped and studied." The site boundary is defined by the crater edge.

#### *3.5.1.4.1 Historic Structures*

No historic structures were identified within the property boundary although the buildings and observation platform at Uēkahuna are sited directly adjacent to the crater's edge, which is the boundary for the NRHP site.

### **3.5.2 No-Action Alternative**

Under the no-action alternative, no repair, replacement, deconstruction, or relocation of the facilities and functions that were damaged at Uēkahuna bluff by the 2018 eruption would be made within Hawai'i Volcanoes National Park. Leaving the buildings would most likely result in an adverse effect to the Kīlauea crater because the damaged buildings would remain on the landscape directly adjacent to the crater's edge. The buildings would likely continue to degrade, increasing their adverse effect. However, by not replacing the damaged buildings, the no-action alternative would reduce educational and scientific research land uses that have historically been provided at the park. Since critical radio

and telemetry infrastructure would remain intact and continue to function near the site of the Okamura building, and the existing KVC/HQ would still be operational, these changes would not be an adverse effect.

### 3.5.3 Proposed Action

In this environmental assessment, cultural resources impact analysis complies with the requirements of NEPA and Section 106 of the National Historic Preservation Act. Under 36 CFR 800, the implementing regulations for Section 106, a determination of either adverse effect or no adverse effect must be made for affected NRHP listed or eligible cultural resources. For the purposes of this EA, any project action that results in a change that would alter, directly or indirectly, any of the characteristics of a site, structure, or landscape pattern or feature that would qualify a historic property for inclusion in the NRHP would be considered adverse. Direct impacts are those changes that result in noticeable physical impacts to the historic property's historic character, such as major earthmoving or construction of new buildings and structures. Indirect impacts result in impacts to the historic property that do not directly alter its physical character, but are noticeable, such as changes to the viewshed during construction.

Deconstruction of National Park Service office spaces in the Resources Management Complex (see Section 2.2.7, Resources Management Complex) is not discussed below, as the structures are less than 50 years old, are temporary structures, and do not display any craftsmanship or unique architectural elements. The Resources Management Complex would be evaluated under a revised and updated Crater Rim Historic District NRHP nomination form (as discussed under Section 2.2.9.4, Cultural Resources).

As part of the Section 106 of the National Historic Preservation Act process, an evaluation of effects for the overall undertaking has been prepared for the project and will be submitted to the Hawai'i State Historic Preservation Office for review and concurrence.

#### 3.5.3.1 Crater Rim Historic District

The proposed action would implement several actions with potential to impact the landscape characteristics of the Crater Rim Historic District and historic structures that contribute to its historical significance:

- Deconstruction of all the buildings and structures at the Uēkahuna bluff, excluding the 1986 comfort station and a radio transmission tower.
- Revegetation and repair or improvements to remaining utilities and visitor amenities at Uēkahuna bluff.
- Construction of a two-story-high modern research USGS facility adjacent to KMC.
- Road realignment and installation of a roundabout at the park entrance along the Crater Rim Drive. (Note: this is not within the district but adjacent to the district, so there are potential indirect impacts.)
- Construction of the replacement visitor center and parking lot in the Administrative Zone of the Kīlauea Administration and Employee Housing Historic District.

##### 3.5.3.1.1 Uēkahuna Bluff

The Uēkahuna bluff is located at the summit of Kīlauea and is considered a sacred site to many Native Hawaiians and other groups. It is also where the Okamura and Annex buildings, which make up the HVO buildings complex, and the Jaggar Museum were constructed. The Okamura building and Annex

are not historic and are non-contributing features to the historic district therefore the deconstruction of these two buildings would have no adverse effect to the Crater Rim Historic District. As described in the 2006 CLI, the Jaggar Museum is a historic building, retains historic integrity although it has undergone some alterations, and contributes to the character of the historic district (National Park Service 2006a). Deconstruction of the Jaggar Museum is an adverse effect, both for the structure itself and overall to the historic district. However, since Uēkahuna bluff is considered a sacred site for many and is used as an area for cultural practices that honor Pelehonuamea, removing the structures is a long-term beneficial effect to the ethnographic resource. The proposed action would make repairs and additions to remaining features at Uēkahuna bluff, including incorporating the Jaggar Museum building footprint into the existing viewing area and repairing historic perimeter stone walls. The two parking lots, including the one closest to Crater Rim Drive identified as a contributing feature to the Historic District, would remain unchanged. The National Park Service would maintain the historic character of features by following the Secretary of the Interior's Standards for the treatment of historic properties and will also reuse salvaged material where feasible. Revegetation of demolished building footprints with native plants and improved access to views could enhance these landscape characteristics. While deconstruction of much of the vertical construction at Uēkahuna bluff is considered beneficial to the ethnographic landscape, the removal of Jaggar Museum is an adverse effect to the Crater Rim Historic District.

The Crater Rim Historic District includes contributing viewsheds and vistas. Two contributing viewsheds that are applicable to this undertaking are the Volcano House view and the Waldron's Ledge view, from which the Uēkahuna bluff is visible across the caldera. Removing the buildings at the Uēkahuna bluff will be an improvement to the spectacular views that characterize these contributing features therefore there will be no adverse effects to the viewsheds and vistas from this action.

#### *3.5.3.1.2 USGS Field Station*

The new USGS field station adjacent to KMC would be located approximately 282 feet from Crater Rim Drive, with parking and other ancillary structures set behind the building. No new driveway is proposed leading from Crater Rim Drive. With the siting of the building within existing vegetation, the colors chosen to purposefully help the building blend in with the natural surroundings, and the proposed location of the building at the edge of the historic district and not visible from the main locations within the historic district, the building will have no adverse effect on the historic district. Building construction would have no adverse effect on the Crater Rim Historic District because it will not be visible from Crater Rim Drive. USGS intends to use a portion of the historic ball field for staging materials and vehicles during construction. This use would be temporary and would not permanently alter its feeling or setting. Therefore, there would be no adverse effect.

#### *3.5.3.1.3 Park Entrance*

The section of road along which the roundabout is proposed to be constructed lies within a non-contributing segment of Crater Rim Drive. The roundabout would reestablish a portion of the original road alignment that was previously abandoned because of seismic events that occurred in the 1960s. The installation of the roundabout will have an adverse effect on the integrity of the Crater Rim Historic District because it introduces a road intersection configuration and width of road that is not compatible with the intersection configuration and entrance road width used during the historic district's period of significance. The National Park Service would design and construct the road and roundabout to maximize the amount of forest retained and to be consistent with the Secretary of the Interior's Standards for the treatment of historic properties.

### **3.5.3.2 Kilauea Military Camp Historic District**

Construction of the new USGS field station and associated parking lot immediately west of KMC would be sited adjacent the historic ball field on the western side of the camp, precluding any direct

adverse effects. The National Park Service would maintain vegetation to the maximum extent possible between the new facility and historic ball field to minimize changes to the historic district's natural setting. The new facility would be located on the very perimeter of the camp, directly adjacent to the non-contributing motor pool service area that contains modern buildings. From many places of the camp the proposed building will not be visible. In addition, the building will have its own unique characteristics, delineating it from the historic buildings that make up the historic district. While the building will be clearly a modern addition to the landscape, it references the materials and stylistic language of the park, which further reduces impacts. It will be painted to blend in with the natural forest surroundings it will be constructed within. In addition, this road serves primarily as a service road and is not within the primary path of visitors to the site. The new field station would require aboveground power lines along KMC Road R-9 to provide electricity to the facility. Introduction of these powerlines would not alter views from KMC because the entire district has above ground power lines. Based on the siting of the building being tucked away within the existing vegetation, the colors chosen to purposefully blend it in with the natural surroundings, and its proposed location on the very perimeter of the camp, not visible from many locations throughout the camp, it is assessed to have no adverse effects to the historic district and cultural landscape.

### **3.5.3.3 Kīlauea Administration and Employee Housing Historic District**

Construction of the replacement visitor center would introduce a new 13,000-square-foot structure that would be built on a portion of the existing visitor parking and forested area. The existing KVC/HQ, visitor parking lot, and surrounding forested setting all currently contribute to the character of the historic district (National Park Service 2006b). Therefore, although the replacement visitor center would be designed to comply with Secretary of the Interior's Standards for Rehabilitation, in particular Standard 9 (36 CFR 67.7) as it would be consistent with existing architecture and compatible with the massing, size, scale of the existing KVC/HQ, the proposed action would represent a direct adverse effect on the historic district by introducing a new building and parking lot into the Administrative Zone. The National Park Service would leave a strip of natural landscape between the existing KVC/HQ and the replacement visitor center to minimize adverse effects to the historic district.

### **3.5.3.4 Kīlauea Crater**

Based on the current definition and boundary established for the Kīlauea Crater, most actions associated with the proposed action would occur outside the crater and would have no effect on the NRHP-listed property. Proposed deconstruction of buildings at Uēkahuna bluff would occur directly adjacent to the property. However, as noted in Section 3.6. Ethnographic Resources, Uēkahuna Bluff, the caldera is considered sacred by many Native Hawaiians and others, and deconstruction of structures and the restoration of a more natural environment would be considered beneficial to the sanctity of the property. Therefore, there would be no adverse effect.

## **3.5.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described under Section 3.5.1, Affected Environment, have not resulted in changes to the overall integrity of the three historic districts and Kīlauea Crater. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management could result in temporary or intermittent changes to the integrity of setting and feeling due to construction activities, vegetation removal, or potential changes in views and sounds of planes or helicopters. Evaluation of cultural resource impacts and mitigation (as needed) would occur prior to adoption of any air tour management changes. If the air tour management plan is determined to have adverse effect, then appropriate mitigation/documentation will be completed. Other future projects would be localized and limited in duration. Therefore, no adverse effects are

anticipated, but the air tour management plan is too early in the planning process to know what effect it will have.

Under the no-action alternative, there would be no additional cumulative impact than those disclosed in Section 3.5.2, No-Action Alternative, because no project construction or renovation activities would occur that would impact the integrity of the NRHP site.

The proposed action would deconstruct the Jaggar Museum, which contributes to the Crater Rim Historic District, as well as introduce modern elements into road design and remove vegetation that supports the current natural setting. However, the National Park Service would implement mitigation measures and design features to minimize project impacts. Likewise, the deconstruction of buildings on Uēkahuna bluff would be beneficial to preserve the sacredness of the caldera. However, the effects from the air tour management plan are currently unknown and even with mitigations for the reasonably foreseeable actions there could be potential adverse effect to resources. Therefore, there could be additional cumulative adverse effects when project impacts are added to past, present, and reasonably foreseeable impacts.

## 3.6 ETHNOGRAPHIC RESOURCES

### 3.6.1 Affected Environment

As defined in *Cultural Resource Management Guidelines*, ethnography is "concerned with the peoples associated with parks, with their cultural systems or ways of life, and with the related technology, sites, structures, other material features, and natural resources." Ethnographic resources can include subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users (National Park Service 1998).

The volcanic landscape found throughout the park is considered an ethnographic landscape that is very important to the Native Hawaiians. Based on a 2003 ethnographic study conducted by Charles M. Langlas, *Native Hawaiian Use of Hawai'i Volcanoes National Park: A Historical and Ethnographic Overview*, Native Hawaiians view the entire Kīlauea crater as sacred and as the "origin of new land." Many Native Hawaiian cultural practitioners come to Kīlauea for ceremonies, ho'okupu, and paying tribute to the deity Pelehonuamea who resides at Halema'uma'u. Chants and recorded oral accounts say that Pele and her family traveled to Hawai'i from Kahiki, searched the island chain and settled at Kīlauea. Pele is an aumakua (ancestral god) for some Hawaiians and an akua (unrelated god) for others. Those that are descended from Pele have a special relationship with her; they may pray for help and have the right to be united with her after death. For some, Pele is important as the goddess who controls and is embodied in volcanic phenomena. She must be respected and given offerings by those seeking protection from her forces. Pele is manifested in molten lava, steam, earthquakes, and thunder and lightning connected with volcanism. She is present at Halema'uma'u crater, within Kīlauea caldera, but also at other pit craters around Kīlauea, and in east and southwest rift zone eruptions and the other volcanoes on Hawai'i Island. Traditionally, Hawaiians have left offering to her, especially when there is an eruption, and the whole area around Kīlauea caldera is sacred (Langlas 2003). As summarized in the 1974 NRHP nomination form for the Kīlauea crater:

To prehistoric Hawaiians, many historic Hawaiians, and to many contemporary residents of the Hawaiian islands of various ethnic backgrounds, Kīlauea Crater was, and is, the permanent home of the Polynesian volcano goddess Pele. The goddess is believed to leave it for temporary residence at eruption sites outside the crater, but to always return to her home under Kīlauea Crater, where she may rest, perhaps sleep, for the periods between eruptions of Kīlauea, Mauna Loa, Hualalai and Haleakala volcanoes on the islands of Hawaii and Maui... Many individuals still believe in and make offerings to propitiate the goddess believed to have the capacity to kill people, and to destroy farms, homes, and land. Reward and punishment by

Pele through her lava flows is a frequent motif in old and updated stories and lore. (National Park Service 1974)

The ethnographic study (Langlas 2003) also found that religious rituals and collection of plants for religious or medicinal purposes, in particular 'a'ali'i (*Dodonaea viscosa*) and liko lehua (the leaf buds of the 'ōhi'a tree), occur throughout the park. Collection is also done of plants to wear as lei in performing hula. Uēkahuna bluff is one of three traditional ritual sites reported in the study for giving offerings (ho'okupu). Due to visitor activity, cultural practitioners often go early in the morning or evening to increase the likelihood of privacy.

### 3.6.1.1 Vegetation

Vegetation and forested areas within the Crater Rim Historic District are a major character-defining feature and an important source of spirituality and self-identification for many residents of Hawai'i. One study examining resident connection with nature found that cultural heritage is strongly linked to forest for many residents of Hawai'i, particularly for Native Hawaiians (Gould et al. 2014). Similarly, a study prepared for the park (Keali'ikanakoleohailani 2009) found that ceremony and ritual take place most commonly in the kīpuka, the forested areas, at Kīlauea and other craters, at the coast where new lava is being formed, and at places where private family ceremonies are conducted, including the visiting of grave sites. Medicine collection requires lightly and densely forested regions. In addition, forested areas are the places where traditional plant picking occurs for cultural use.

A study completed by Kumu Pono Associates LLC (2004) states the following:

We find in native traditions and beliefs, that Hawaiians shared spiritual and familial relationships with the natural resources around them. Each aspect of nature from the stars in the heavens, to the winds, clouds, rains, growth of the forests and life therein, and everything on the land and in the ocean, was believed to be alive. Indeed, every form of nature was a body-form of some god or lesser deity. In the Hawaiian mind, care for each aspect of nature, the kino lau (myriad body-forms) of the elder life forms, was a way of life. This concept is still expressed by Hawaiian kūpuna (elders) through the present day, and passed on in many native families. Also, in this cultural context, anything which damages the native nature of the land, forests, ocean, and kino lau therein, damages the integrity of the whole. Thus caring for, and protecting the land and ocean resources, is important. In the traditional context above referenced, we find that the land, the native plants and life-forms, and the intangible components therein, are a part of a sacred Hawaiian landscape. Thus, the landscape itself is a highly valued cultural property. It's [sic] protection, and the continued exercise of traditional and customary practices, in a traditional and customary manner, are mandated by native custom, and State and Federal Laws.

### 3.6.2 No-Action Alternative

Under the no-action alternative, no repair, replacement, deconstruction, or relocation of the facilities and functions that were damaged at Uēkahuna bluff by the 2018 eruption would be made within Hawai'i Volcanoes National Park. Leaving the buildings would most likely result in an adverse effect to the ethnographic resources because the damaged buildings would remain on the landscape. The buildings would likely continue to degrade, increasing their adverse effect.

### 3.6.3 Proposed Action

Project construction and deconstruction activities at Uēkahuna bluff would occur over a 2-year period. During that timeframe, the National Park Service would implement a project requirement that no loud (defined as 60 decibels at 50 feet) outdoor deconstruction or construction work could occur

60 minutes after sunrise and 60 minutes before sunset, the time period when many come to the area for cultural practices. These actions would minimize, but not avoid, adverse impacts to traditional practices in the area. However, effects would cease when the construction period ends. Long term, deconstruction of Uēkahuna bluff buildings would be beneficial since structures are considered inappropriate to Uēkahuna bluff as an ethnographic resource and detract from the sacred landscape.

As part of mitigation measures implemented for the project, the National Park Service would conduct a traditional cultural property study to document the ethnographic significance of the park, including the Kīlauea summit and caldera, focusing on Pelehonuamea and her physical representations within the park. This would expand National Park Service knowledge and potential future protection of ethnographic resources that extend beyond the caldera edge. This study would be completed during implementation of the proposed action.

The proposed action would also remove up to 75 'ōhi'a trees (that range from 6 to 20 inches in diameter at breast height) during construction of the park entrance, replacement visitor center, and USGS field station. Vegetation clearing would eliminate ethnographic resources (e.g., 'ōhi'a trees) as it would remove a section of a forested area and some individuals' sense of spiritual or heritage connection could be adversely affected by clearing and grading activities. As described in Section 2.2.9.2, Vegetation, the National Park Service would minimize tree removal and replant 'ōhi'a trees from locally sourced genetic materials. These actions would minimize, but not avoid, adverse ethnographic impacts; impacts would persist long term until revegetation efforts are successful.

### **3.6.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions have generally maintained access to and use of ethnographic resources. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management could result in temporary or intermittent changes in access to or use of ethnographic resources due to construction activities, vegetation removal, or potential changes in views and sounds of planes or helicopters. Evaluation of ethnographic resource impacts and mitigation (as needed) would occur during development of an air tour management plan. It is too early in the planning process to know if there will be an adverse effect from the air tour management plan. Other future projects would be localized and limited in duration.

Under the no-action alternative, there would continue to be an adverse impact from the buildings on the Uēkahuna bluff. No other cumulative impacts would occur that would impact ethnographic resources because there would be no project construction or renovation activities.

The proposed action would not limit access to the Uēkahuna bluff for cultural practices other than the area that would be fenced off for construction. The National Park Service would implement mitigation measures and design features to minimize project impacts, including restricting outdoor work activities to one hour after sunrise until one hour prior to sunset. Likewise, the deconstruction of buildings on Uēkahuna bluff would be beneficial to preserve the sacredness of the caldera. However, the effects from the air tour management plan are currently unknown and even with mitigations for the reasonably foreseeable actions there could be potential adverse effect to resources. Therefore, there could be additional cumulative adverse effects when project impacts are added to past, present, and reasonably foreseeable impacts.

## **3.7 HEALTH AND HUMAN SAFETY**

### **3.7.1 Affected Environment**

The analysis area for health and human safety is the footprint of the project and Crater Rim Drive because this is the area where deconstruction and construction activities are proposed. The temporal

scale is the 2-year deconstruction and construction period when there would be increased safety issues and when the existing safety issues would be resolved.

Due to the eruption in 2018, the Jaggar Museum and Okamura building are not safe to occupy and ground movement in the area continues to impact these buildings. The Jaggar Museum and HVO complex is surrounded by cracks and active faults, and the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundations. Currently these buildings are fenced off and no visitors are allowed in the area. The observation deck is also damaged and has sink holes and damaged walls.

During high visitor use times, there is traffic congestion at the entrance to the park that poses collision hazards for motorists and pedestrians. The location of the entrance station in relation to the left turn to access Crater Rim Drive creates confusion and collision hazards.

The existing KVC/HQ was not designed for the visitation it gets, as it was originally designed to be USGS lab spaces. This further contributes to the overcrowding of the space and causes safety concerns when the space is overcrowded, as it routinely is.

### **3.7.2 No-Action Alternative**

Under the no-action alternative, the existing safety issues listed in the affected environment would continue to occur resulting in long-term adverse impacts.

### **3.7.3 Proposed Action**

During deconstruction and construction the project would increase sound levels, traffic, and presence of heavy machinery in the park, which could adversely affect health and safety. Signs, barriers, and barricades would be used to clearly delineate work areas and prevent visitor travel near deconstruction or construction areas. Thus, the health and safety of visitors would not be adversely affected by the project. Under the proposed action, the Jaggar Museum, Okamura, and Annex buildings would be deconstructed and replaced with an expanded overlook area with the installation of new post and cable barriers around visitor use areas. Because the buildings that would be removed are unsafe, as is the current damage to the viewing area, the project would improve safety for visitors and staff resulting in long-term beneficial impacts.

The addition of a new entrance lane and the conversion of the Crater Rim Drive intersection to a roundabout are intended to address the safety issues that are currently occurring. The new entrance lane would allow administrative traffic to bypass the visitor traffic more quickly and would allow for two full lanes for visitor queuing capacity during peak visiting times. This would result in less frequent backups onto Highway 11. Visitor confusion on where to proceed at the intersection would be removed. The roundabout would create more free-flowing activity and would allow for safer connectivity and turns towards the visitor center, Crater Rim Drive West, Crater Rim Drive East, or the exit lane. According to studies completed by the Transportation Research Board, the installation of roundabouts can result in more than 90% reduction in fatalities, a 76% reduction in injuries, and a 35% reduction in all crashes. In addition, the slower speeds that are required for a roundabout are safer for pedestrians (Transportation Research Board 2001). The addition of the new entrance lane and the roundabout would provide long-term beneficial impacts to health and human safety.

The replacement visitor center is designed to address the overcrowding of the space and therefore would have a long-term beneficial effect on health and human safety.

### 3.7.4 Cumulative Impacts

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved the health and human safety aspects of the park. Reasonably foreseeable actions of waterline and fiber optic replacement or changes to air tour management are not likely to have an impact on health and human safety.

Under the no-action alternative, there would continue to be the safety issues described in Section 3.7.1, Affected Environment. The park would continue to address safety issues on a case by case basis, which may include items related to the 2018 disaster (e.g., deconstruction of the damaged buildings at the bluff, addressing congestion issues) but activities would be funding dependent and compliance would be completed as appropriate.

Under the proposed action there could be short-term adverse impacts from increased sound levels, traffic, and the presence of heavy machinery. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact. The proposed action would deconstruct unsafe buildings, create a safe viewing experience, and address traffic congestion and safety issues. The waterline and fiber optic replacement would provide increased reliability. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## 3.8 VISITOR USE AND EXPERIENCE

### 3.8.1 Affected Environment

As stated in the need for this project, even when the Jaggar Museum was operational, the existing KVC/HQ building was inadequate for current visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The visitor use spaces were not designed to accommodate the current level of visitation. The exhibits are in disrepair and detract from the visitor experience. The closure of the Jaggar Museum has exacerbated the overcrowding of the facility by concentrating visitor contact in one location instead of the previous two facilities. The overcrowding has impacted the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and nonprofit partner's park store.

In 2017, the park saw its highest visitor count, with a total of 2,016,702 visitors. Numbers have declined since the eruption in 2018 due to the eruption and then the pandemic; however, 2019 still saw a total of 1,368,376 total visitors (National Park Service 2022c).

Increases in visitation over the past decade and changes to road circulation due to past eruptions have led to traffic congestion problems that create long waits for visitors, starting at the turn onto the park entrance roadway from Highway 11 and continuing through the entrance station to the main visitor center area. The entrance station is located on Crater Rim Drive, approximately 500 feet from the intersection with Highway 11.

The proposed project elements associated with the KVC/HQ area, entrance area, and Uēkahuna bluff would be located within the Visitor Services Zone identified in the GMP as managed primarily for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. The existing KVC/HQ building is used for orienting visitors, special events, a store, and education. The proposed USGS field station would be located within the Park Support Zone, which is managed primarily to support park operations and maintenance, including the operational needs of park partners (note: KMC is on National Park Service land and authorized to be operated by the U.S. Army as a Morale, Welfare, and Recreation site used by active and retired military members).

It is not open to general public). Access for visitors is primarily for limited visitor services (such as backcountry permitting), orientation, and organized meetings or events. The Resources Management Complex is not in an area that is used by visitors and will not be discussed further in this section.

### **3.8.2 No-Action Alternative**

Under the no-action alternative, visitor use and experience would continue to be degraded due to the inadequate space available at the existing KVC/HQ and loss of operations at Uēkahuna bluff that is resulting in overcrowding. The entrance station would continue to function in its current capacity and visitors to the park during peak times would continue to experience long waits. Visitor counts are expected to continue to increase, which would further degrade the visitor experience.

### **3.8.3 Proposed Action**

Under the proposed action, construction would result in short-term adverse impacts to visitor use during the 2-year deconstruction and construction period. Visitors would not be allowed in construction areas and construction would cause additional noise, impacting visitor experience. However, the park would inform visitors in advance of construction activities via multiple methods, including the park's website, social media, signage, and at the existing KVC/HQ. Due to limited parking at key visitor parking lots in this area, parking reservations, restrictions or other methods could be employed to reduce congestion and enhance visitor experience. Park staff would be available to address visitor questions during construction and provide regular updates to the public about project progress and associated restrictions or closures. Long-term impacts are beneficial due to increased ability to serve visitors, including sufficient parking for the facility.

#### **3.8.3.1 Uēkahuna Bluff**

As discussed in Section 3.4, Viewsheds, due to the deconstruction of existing structures and retaining some of the existing berm to screen views of the project, the experience for most visitors would be improved by returning the area to a more natural-appearing character, allowing visitors to focus on the landscape, including its cultural significance. The experience of hiking the trail from the Kīlauea Overlook to Uēkahuna bluff would be improved, without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation experience. For many repeat local observers, especially those with a generational connection to the land, the presence and visibility of structures on Uēkahuna bluff is seen as an impact on this culturally important landscape (see Section 3.6, Ethnographic Resources). By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area and the fact that it is a focal point for views throughout this portion of the park. There would be an increase in visitor interpretive opportunities, and additional trail and expanded vistas for viewing, resulting in a long-term beneficial impact.

#### **3.8.3.2 USGS Field Station**

As noted in the Section 3.8.1, Affected Environment, the proposed USGS field station would be located within the Park Support Zone that is not open to the general public. As discussed in Section 3.4, Viewsheds, views of the proposed USGS field station would be screened in the large openings in the forest along Crater Rim Drive and if visible in small gaps in the forest, the building would not attract attention from roadway as the dark colors proposed for the building would blend into the forest setting. Since views would be screened and the field station is located in an area that is not open to the general public, there would be no adverse impacts on visitors and their experience driving Crater Rim Drive and from KMC.

### **3.8.3.3 Replacement Visitor Center**

The replacement visitor center would further the purpose of the Visitor Services Zone to support a high level of visitor use, access, and interpretation. The existing KVC/HQ and its auditorium would still be used for administrative offices, public presentations, and K-12 educational programs in the future. The replacement visitor center would solve the issue of overcrowding with additional park operational services (restrooms, parking) and allow for greater interpretive opportunities indoors and outdoors with increased exhibit space and lānai areas, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors. The proposed action would result in a long-term beneficial impact for visitor use and experience.

### **3.8.3.4 Park Entrance**

The addition of a new entrance lane and the conversion of the Crater Rim Drive intersection to a roundabout are intended to address the visitor use and experience issues that are currently occurring. The new entrance lane would allow administrative traffic to bypass the visitor traffic more quickly and would allow for two full lanes for visitor queuing capacity during peak visiting times, reducing wait time. This would result in less frequent backups onto Highway 11. The roundabout would create more free-flowing activity and would allow for better connectivity and turns towards the replacement visitor center and expanded parking, a safer option for visitors to access Crater Rim Drive East and Crater Rim Drive West, or the exit lane, all improving the visitor experience when entering and exiting the park.

## **3.8.4 Cumulative Impacts**

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions have generally improved the visitor use and experience. Reasonably foreseeable actions of implementation of an air tour management plan could improve the visitor experience because except for the no-action alternative, that plan would potentially have less visual distraction generated by helicopter overflights, especially adjacent to Kīlauea crater. The waterline and fiber optic replacement would be completed at the same time as the proposed action and are not likely to have additional adverse impacts on visitors.

Under the no-action alternative, there would continue to be the visitor issues described in Section 3.8.1, Affected Environment.

The proposed action would improve the visitor experience at Uēkahuna bluff, the visitor center, and the park entrance. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## **3.9 PARK AND U.S. GEOLOGICAL SURVEY OPERATIONS**

### **3.9.1 Affected Environment**

#### **3.9.1.1 National Park Service Operations**

Hawai'i Volcanoes National Park is divided into two management units: Kīlauea and Kahuku. The park is administered by a superintendent and the park headquarters is in the Kīlauea Unit near the summit of Kīlauea volcano. Management of the park is organized into the following divisions: Administration, Cultural Resources, Interpretation, Maintenance and Facilities Management, Natural Resources, Visitor and Resource Protection, Kahuku Unit staff, Planning and Compliance, and Fire Management.

The Jaggar Museum contained the largest exhibit and bookstore spaces in the park and was the single most popular park destination in the decade leading up to the 2018 eruption. Once the Jaggar Museum closed, the existing KVC/HQ building and parking lot became further inadequate for current

visitation due to its small size and configuration. The historic building contains both National Park Service administration offices and visitor use spaces. The closure of the Jaggar Museum has intensified the already existing overcrowding of the existing KVC/HQ facility and adversely impacted the visitor experience by concentrating all visitor contact in one small location instead of the previous two facilities. The overcrowding has affected the visitor circulation space to the point where visitors cannot easily approach the reception desk, negotiate between exhibits, or navigate through the lānai and non-profit partner's park store. This overcrowding and poor experience at the KVC facility has significantly reduced the ability for visitors to plan their visit on their own using the exhibits and displays designed for this purpose. As a consequence, park staff have canceled most formal interpretive programs, guided hikes, and educational opportunities throughout the park in order to provide nearly constant orientation talks at the existing KVC lānai, diminishing park staff morale and adding additional strain on the already understaffed team. The overcrowding of KVC has therefore drastically reduced the opportunities for visitors to learn and understand the park's rules and the impacts visitors may have on park resources, resulting in potential increases in administrative time addressing these impacts. Overcrowding has also increased the use of the KVC restrooms, which now must be cleaned multiple times per day. In addition, with more traffic in the existing parking lot, park staff routinely have to divert from their normal duties to provide traffic and parking control.

### **3.9.1.2 USGS Operations**

The loss of the HVO-occupied Okamura building at Uēkahuna bluff in 2018 forced HVO to relocate staff outside of the park, which has created considerable inefficiencies in workflow and resulted in delays in response time when volcanic activity resumed at the summit region. The summit location is central to accessing the East and Southwest Rift Zones of Kīlauea as well as much of Mauna Loa. The lack of an operating base means that all equipment and personnel are continually shuttled between Hilo and the park. During volcanic events the roads are usually impassable due to the number of people trying to see the event or access the park.

With the loss of the building, HVO has lost the ability to conduct on-site instrument repairs, storage of monitoring gear, and space for eruption planning/conferencing with park personnel. This has hampered HVO's ability to produce timely and accurate hazard assessments for the park and the community.

Critical radio and telemetry infrastructure remain intact and will continue to function near the site of the Okamura building. For more than 100 years, these volcanoes have been a laboratory for fundamental research by USGS and many other scientists into how volcanoes work.

### **3.9.2 No-Action Alternative**

#### **3.9.2.1 National Park Service Operations**

Under the no-action alternative, park operations would continue to experience adverse long-term impacts as described under the affected environment.

#### **3.9.2.2 USGS Operations**

Under the no-action alternative, HVO operations would continue to have considerable inefficiencies in workflow and response delays.

### 3.9.3 Proposed Action

#### 3.9.3.1 National Park Service Operations

During deconstruction and construction activities, there could be additional issues with staffing due to having to direct visitors and traffic around active project areas. Under the proposed action, there would be long-term beneficial impacts to park operations through the addition of a replacement visitor center that is large enough to accommodate visitors. With only one visitor center, instead of the existing KVC/HQ and Jaggar Museum, it could be better staffed and still allow flexibility for park staff to provide interpretive programs, guided hikes, and educational opportunities throughout the park again. It would also provide park staff with the ability to maintain facilities in an efficient manner without having to travel to other parts of the park. The improved parking lot, roundabout, and traffic signs would reduce the amount of time park staff currently have to spend directing traffic in the parking lot.

#### 3.9.3.2 USGS Operations

Under the proposed action there could be short-term adverse impacts from construction vehicles potentially conflicting with USGS access. Having a facility within the park with the ability to have a separate emergency entrance would ensure that HVO staff can continue to maintain necessary monitoring equipment and respond rapidly to volcanic and earthquake events, and this would be a long-term beneficial impact.

### 3.9.4 Cumulative Impacts

#### 3.9.4.1 National Park Service Operations

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved park operations. Reasonably foreseeable actions of waterline and fiber optic replacement are intended to improve operations. Changes to air tour management may have an impact on park operations depending on the selected alternative.

Under the no-action alternative, there would continue to be the issues described in Section 3.9.1.1, National Park Service Operations. The park would continue to address operations concerns on a case by case basis, which may include items related to the 2018 disaster (e.g., deconstruction of the damaged buildings at the bluff, addressing staffing and congestion issues) but activities would be funding dependent and compliance would be completed as appropriate.

Under the proposed action there could be short-term adverse impacts from potential issues with staffing due to having to direct visitors and traffic around active project areas. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact but would have additional beneficial impacts to operations. The proposed action would provide adequate buildings, create a safe viewing experience, and address traffic congestion and safety issues. The waterline and fiber optic replacement would provide increased reliability for park operations. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

#### 3.9.4.2 USGS Operations

Past and present actions in the park include existing facility, trail, and road repairs or renovations; replacement of wayfinding signs; and utility upgrades. These actions, as described in Section 3.1, Cumulative Impact Scenario, have generally improved USGS operations by improving utilities and improving access. Reasonably foreseeable actions of waterline and fiber optic replacement are

intended to improve operations, but the fiber optic replacement would not impact USGS operations because the majority of PIERC-KFS staff and functions would move to a new facility in Hilo and the remainder would relocate to the new USGS field station in the park, which would not be serviced by the fiber optic line. Changes to air tour management would not have an impact on USGS operations.

Under the no-action alternative, there would continue to be the issues described in Section 3.9.1.2, USGS Operations.

Under the proposed action there could be short-term adverse impacts from construction vehicles potentially conflicting with USGS access. The waterline and fiber optic replacement would intentionally occur at the same time as the proposed action and therefore would not increase the potential adverse impact but could have additional beneficial impacts to operations. The proposed action would provide adequate building space and access for USGS operations within the park. When combined with the past, present, and reasonably foreseeable impacts, there is a long-term beneficial cumulative effect.

## 4 CONSULTATION AND COORDINATION

### 4.1 NATIONAL HISTORIC PRESERVATION ACT

In accordance with the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation regulations, the National Park Service initiated Section 106 consultation [36 CFR Part 800.3(c) (3)] with the State Historic Preservation Division (SHPD) on May 12, 2020. As described in Section 3.5.3, there would be adverse effects on historic properties. An evaluation of effects for the overall undertaking has been prepared for the project and will be submitted to the Hawai'i State Historic Preservation Office for review and concurrence. In addition, due to the adverse effects on historic properties, a Programmatic Agreement between the National Park Service, U.S. Geological Survey; Hawai'i State Historic Preservation Officer; and the Advisory Council For On Historic Preservation has been developed and will be finalized in conjunction with this EA (see Appendix E).

### 4.2 ENDANGERED SPECIES ACT

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on any action that may affect endangered or threatened species or candidate species, or that may result in adverse modification of critical habitat. As part of the consultation process for this EA, the National Park Service initiated informal Section 7 consultation with the USFWS on May 13, 2022, for the Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian goose (*Branta sandvicensis*), Hawaiian petrel (*Pterodroma sandwichensis*), Newell's Townsend's shearwater (*Puffinus auricularis newelli*), the band-rumped storm-petrel (*Oceanodroma castro*), and Hawaiian catchfly (*Silene hawaiiensis*). In a letter dated June 1, 2022, the U.S. Fish and Wildlife Service concurred with the park's recommendations to avoid/minimize impacts to the above species and the park's determination that the proposed action is not likely to adversely affect these species.

### 4.3 CIVIC ENGAGEMENT SUMMARY

In May 2020, Hawai'i Volcanoes National Park initiated the civic engagement process to solicit public feedback on four site concepts that would best meet the needs of the park and the public. To slow the spread of COVID-19, scoping was conducted using numerous methods to solicit public comment without in-person meetings. The park sent outreach letters on May 12, 2020, and accepted comments on the project from May 15 to June 15, 2020. Park managers and USGS evaluated feedback on the plan elements and four site design concepts. The proposed action was selected using comments received as part of civic engagement and a Value Based Decision-Making workshop in July 2020. Appendix B (Civic Engagement Summary and Comment Analysis Report) provides details on the civic engagement process.

#### 4.3.1 Agency Outreach

On May 12, 2020, the National Park Service distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the National Park Service Planning, Environment and Public Comment (PEPC) website or by U.S. mail to the Office of the Superintendent.

#### 4.3.2 Kūpuna Outreach

On May 12, 2020, the National Park Service distributed civic engagement letters via email or hard copy materials to the Kūpuna consultation group which consists of Native Hawaiian Organizations, Native Hawaiian individuals, and select individuals with institutional knowledge of Hawai'i Volcanoes National

Park. In addition, phone calls were made to each member of this group to further engage this group during the start of the pandemic. Additional discussions regarding the proposed action were held with the consultation group as described under Section 4.4.2, Kūpuna Outreach, below.

#### **4.4 SCOPING SUMMARY**

To slow the spread of COVID-19, scoping was conducted using numerous methods to allow public comment without in-person meetings. Comments on the project were accepted starting February 9, 2022, and the comment period ended March 11, 2022. The National Park Service also implemented a dedicated phone line specifically to receive comments, request hard copies of the materials, or request a call back. Sixty-two pieces of correspondence from nine states were received during the civic engagement comment period. Individuals living in Hawai'i submitted 50 (approximately 80%) of those correspondences. Appendix C (Scoping Summary and Comment Analysis Report) provides details on the scoping process.

The National Park Service and the USGS have incorporated the comments received during the scoping period into this EA.

##### **4.4.1 Agency Outreach**

On February 9, 2022, the National Park Service distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the National Park Service's PEPC website or by U.S. mail to the Office of the Superintendent.

##### **4.4.2 Kūpuna Outreach**

On February 9, 2022, the National Park Service distributed scoping letters via email and hard copy materials to the Kūpuna consultation group. The National Park Service held a consultation group meeting on February 25, 2022, with a focus on the Disaster Recovery project. This project has also been discussed with the Kūpuna consultation group outside of the official scoping period during regularly scheduled consultation group meetings including meetings on the following dates:

- November 12, 2020; December 20, 2020; February 12, 2021; April 9, 2021; August 13, 2021; September 30, 2021; November 19, 2021; January 14, 2022; May 7, 2022; and May 13, 2022

##### **4.4.3 News Release and Planning, Environment and Public Comment Website**

On February 9, 2022, the National Park Service issued a news release to area-wide news organizations and posted project information including the public scoping letter and a story map explaining the project to the PEPC website. The news release and PEPC website provided a project overview and invited the public to participate in the civic engagement process. Members of the public were invited to submit comments on the project through the PEPC website, U.S. mail, email, or via the project phone line. The materials that were distributed to the public can be found in Appendix C.

In addition to these outreach efforts, the news release was posted on social media, and the National Park Service posted reminders about the comment period to encourage participation. The Hawai'i Volcanoes Public Affairs Specialist and USGS HVO Scientist-in-Charge were interviewed by several local news outlets about the scope of the project.

#### **4.5 ENVIRONMENTAL ASSESSMENT DISTRIBUTION: PERSONS, ORGANIZATIONS, AND AGENCIES CONTACTED**

The scoping information was sent to federal, state, and local agencies; non-governmental organizations; and federal, state, and local elected officials. The notice was also provided electronically via news release, social media, and emails, and made available on the PEPC website.

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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# Appendix A

## Proposed Action Figures



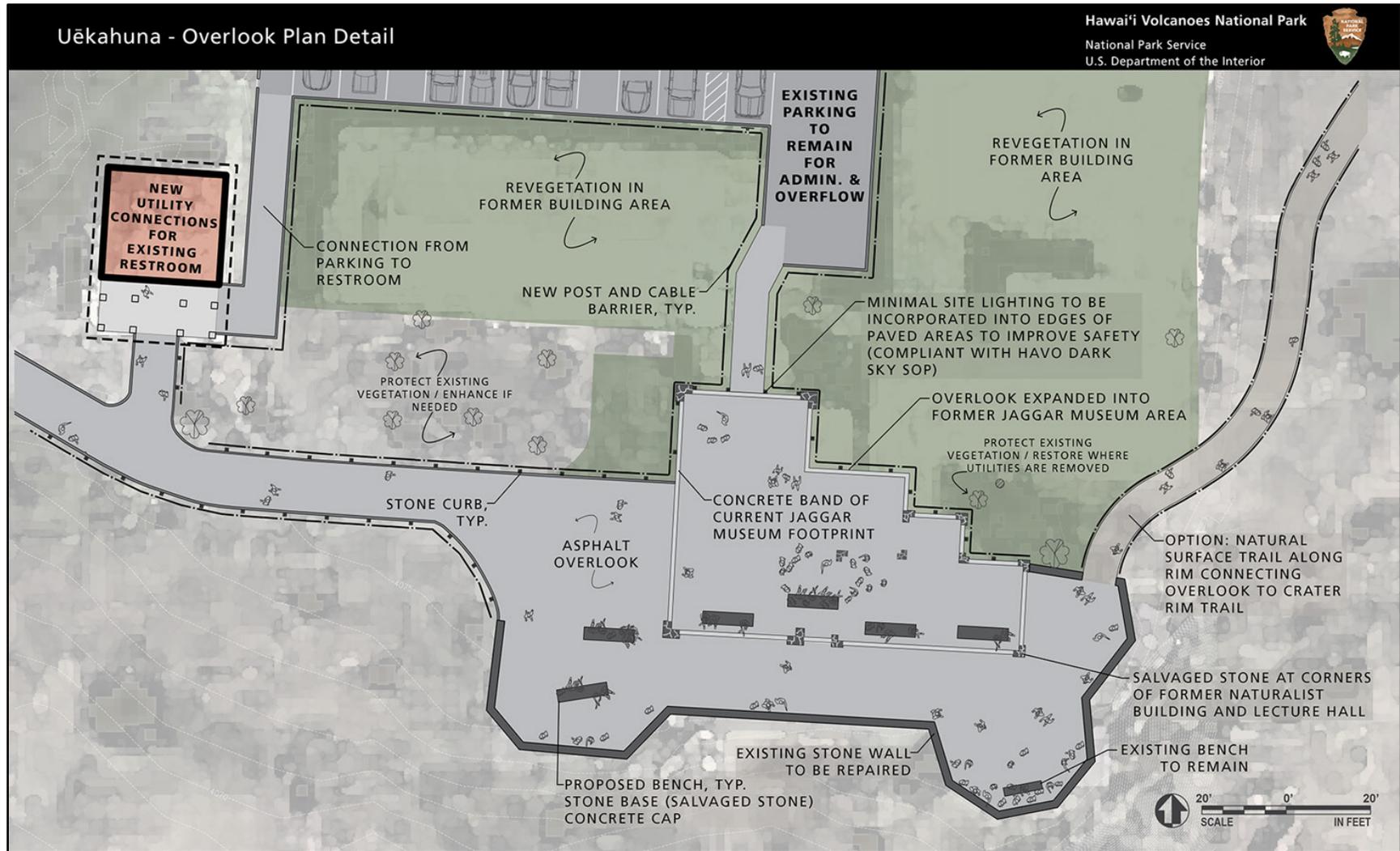


Figure 1. Proposed Action – Uēkahuna Overlook Plan Detail

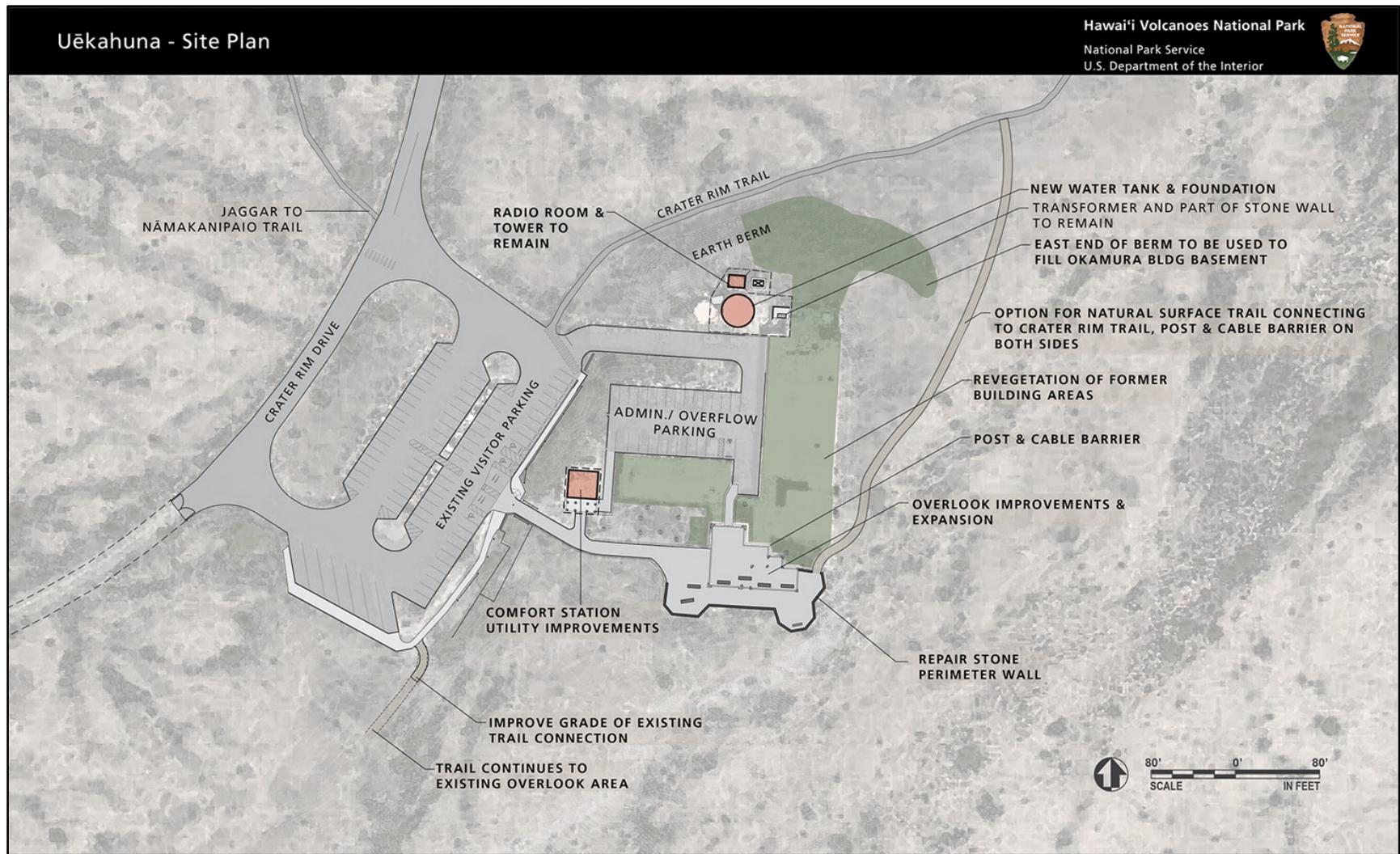


Figure 2. Proposed Action – Uēkahuna Site Plan



Figure 3. Proposed Action – USGS Field Station Site Plan



Figure 4. Proposed Action – Visitor Center Site Plan

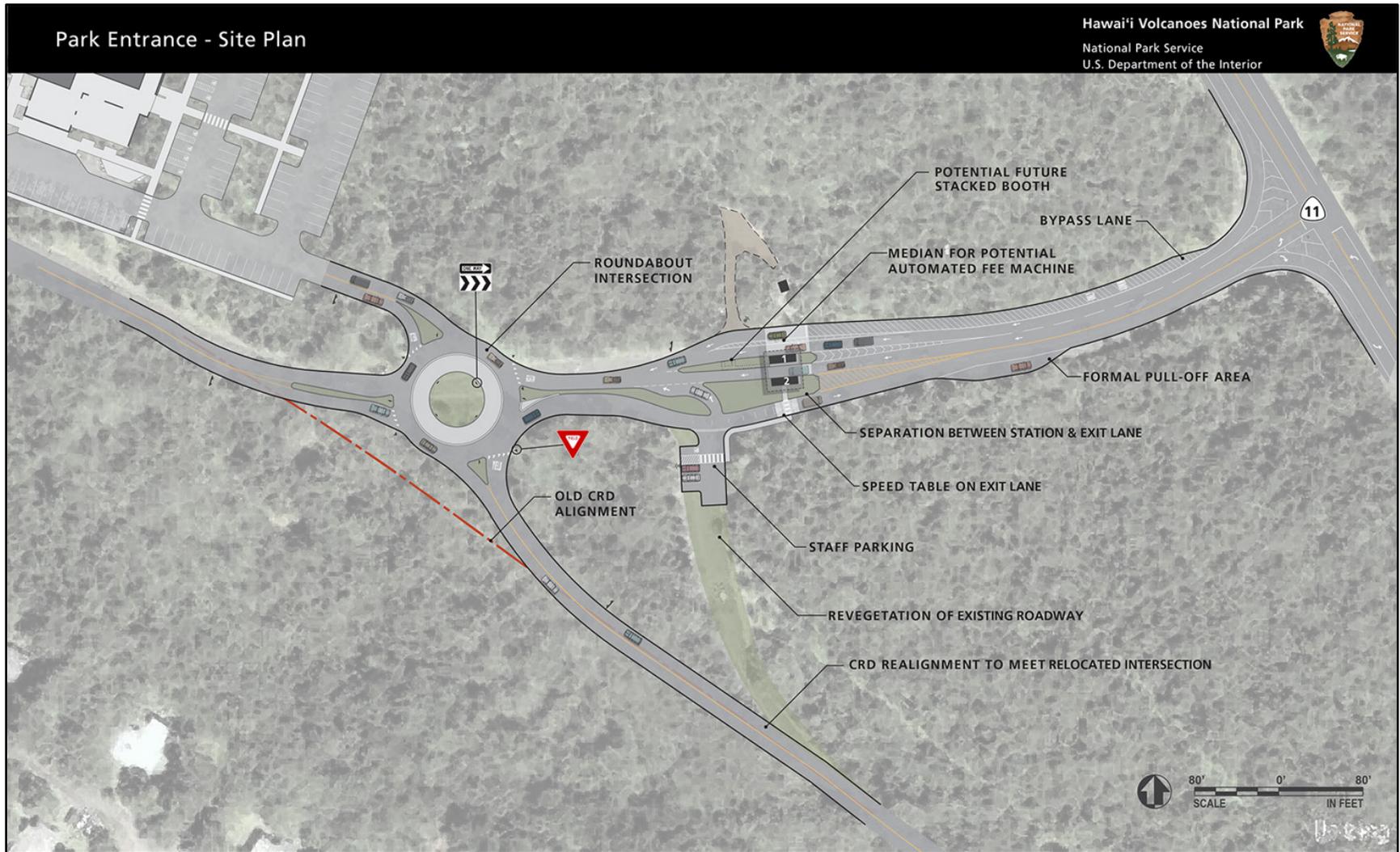


Figure 5. Park Entrance Site Plan

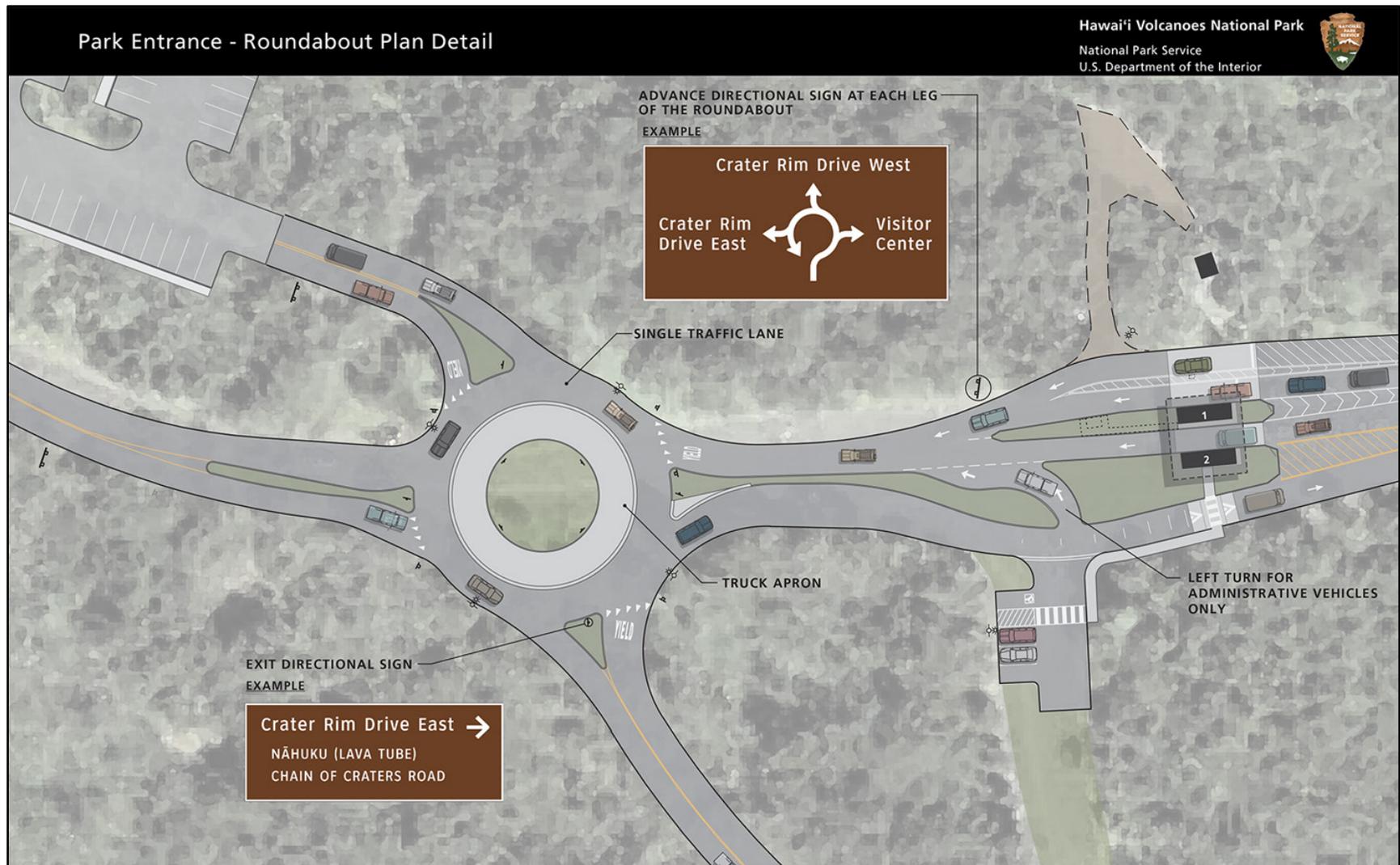


Figure 6. Proposed Action – Park Entrance Roundabout Plan Detail

HAWAI'I VOLCANOES DISASTER RECOVERY PROJECT ENVIRONMENTAL ASSESSMENT  
APPENDIX A



Figure 7. Concept 2 that was Developed During the Reconsideration Phase

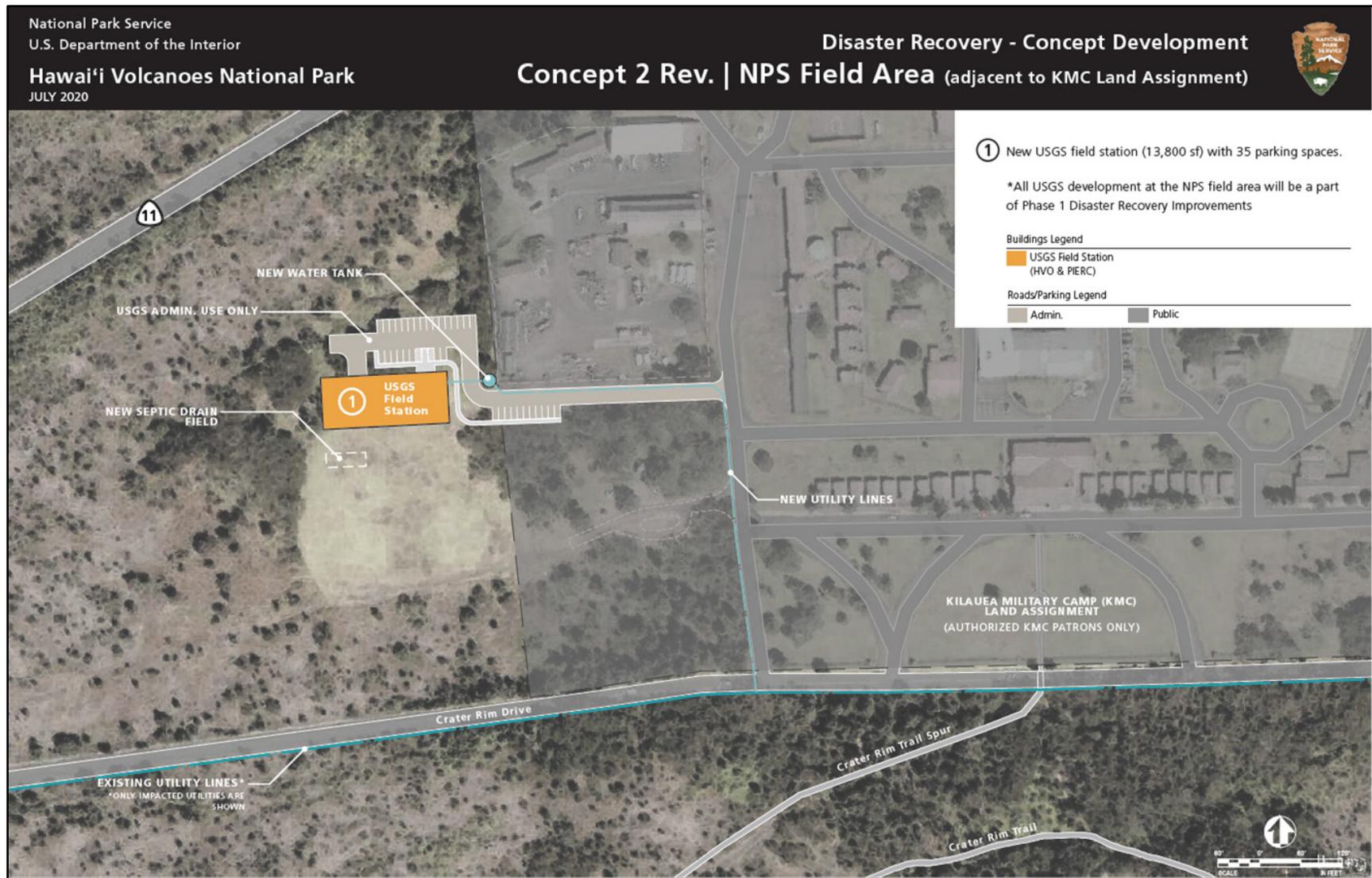


Figure 8. Concept 2 that was Developed During the Reconsideration Phase

Appendix B  
Civic Engagement Summary and  
Comment Analysis Report





# Hawai'i Volcanoes Disaster Recovery Project

## Civic Engagement Summary and Comment Analysis Report



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- Appendix B – Correspondence Index by Code
- Appendix C – Materials Provided During Civic Engagement

## 1 INTRODUCTION

Hawai'i Volcanoes National Park (HAVO) and the U.S. Geological Survey (USGS) led a civic engagement process to seek community input to consider and refine four initial design concepts for the proposed HAVO Disaster Recovery Project.

The intent of the project is to repair and/or replace critical park infrastructure and USGS-operated facilities and equipment damaged during the 2018 eruption and summit collapse of Kīlauea volcano. The project addresses potential future use of the Uēkahuna Bluff area and other park sites. Uēkahuna Bluff is an area of geologic, natural, and cultural significance and is regarded as sacred by Native Hawaiians and other groups.

Beginning in May 2018, the park and Kīlauea summit underwent a major change as magma drained from the chamber beneath Halema'uma'u Crater, and the caldera began to collapse, triggering 60,000 strong earthquakes and clouds of rock and ash that continued until early August. The seismic activity was primarily centered near the crater, and significantly impacted buildings in the immediate vicinity on Uēkahuna Bluff, including Jaggar Museum and the USGS-operated Reginald T. Okamura facility and equipment, resulting in the closure of the area. The 2018 eruption and caldera collapse were the most destructive eruptive events in Hawai'i in the last two centuries.

The results of an initial post-disaster assessment conducted in October 2018 found that significant investment would be necessary to make Jaggar Museum and the USGS Hawaiian Volcano Observatory–operated Reginald T. Okamura building safe to occupy and operational. Most importantly, the buildings are surrounded by fault lines and the area continues to subside on the crater side, undermining slope stability at the existing terraces and building foundations.

The focus of this planning effort is the repair, replacement, removal or relocation of the facilities and functions that were damaged at Uēkahuna Bluff. The project concepts present potential solutions to the loss of function at Uēkahuna Bluff and current overcrowding at Kīlauea Visitor Center (KVC), ranging from renovation of existing buildings to constructing new facilities elsewhere in the park. The existing KVC building is inadequate for current visitation due to its small size, and the closure of Jaggar Museum has exacerbated the overcrowding of KVC by concentrating all visitor contact in one location.

### 1.1 Civic Engagement

To slow the spread of COVID-19, civic engagement was conducted using as many methods as possible to allow public comment, but without the use of in-person public meetings. Comments on the project were accepted starting May 15, 2020, and the comment period ended June 15, 2020. The National Park Service (NPS) also implemented a dedicated phone line specifically to receive comments, request hard copies of the materials, or request a call back.

The NPS and the USGS will incorporate comments made during the Civic Engagement period to develop a single proposed alternative which will be carried forward in the planning process.

#### 1.1.1 Agency Outreach

On May 12, 2020, the NPS distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the NPS's Planning, Environment and Public Comment (PEPC) website or by U.S. mail to the Office of the Superintendent.

### 1.1.2 Kūpuna Outreach

On May 12, 2020, the NPS distributed civic engagement letters via email or hard copy materials to the Kūpuna consultation group. In addition, phone calls were made to members of this group to further engage this group.

### 1.1.3 News Release and Planning, Environment and Public Comment Website

On May 12, 2020, the NPS issued a news release to areawide news organizations and posted project information including the civic engagement newsletter to the PEPC website. The news release and PEPC provided a project overview and invited the public to participate in the civic engagement process. Members of the public were invited to submit comments on the project through PEPC, U.S. mail, email, or via the project phone line. The materials that were distributed to the public can be found in Appendix C.

In addition to these outreach efforts, the news release was posted on social media, and NPS posted reminders about the comment period to encourage participation. The HAVO Superintendent and USGS HVO Scientist in Charge were interviewed by several local news outlets about the scope of the project.

## 1.2 Summary of Public Participation During Civic Engagement

One hundred and fifty-nine (159) pieces of correspondence from nine states were received during the civic engagement comment period. Individuals living in Hawai'i submitted 123 (approximately 78%) of those correspondences. The majority of comments received during this period expressed the following:

- Commenters provided suggestions on alternative uses for buildings or alternative suggestions such as taking pieces of one design concept and combining it with another or providing additional public facilities such as restrooms and equipment such as bike racks. .
- Expressed that the Uēkahuna Bluff is a sacred site and requested that the bluff be treated as such. Commenters requested that an area be set aside at this location for ceremonial purposes.
- Commenters expressed their preference for design concepts based on natural and/or cultural resource concerns and impacts on visitor use.
- Commenters expressed the need for USGS buildings to be separated from the visitor use areas and to be located close to the caldera.
- Commenters expressed a preference to reduce the footprint of new development and reuse already developed areas. Repurpose old buildings and sites for historical preservation or use as additional offices, equipment staging areas, or educational sites for public use. Incorporate space for alternative modes of transportation. Develop the new space with the intent to use for multiple purposes for the public and community members. Preserve the visual aesthetics of the natural areas.
- Commenters stated that NPS should involve the public with decisions and include cost of each alternative. Identify the limiting factors and include how alternatives were created.

- Commenters stated concerns with public safety for crowded parking areas, escape routes in case of emergency, congestion on the roads, and pedestrian safety.
- Commenters stated concerns with the visitor experience including clear signage to identify where everything is located within the park (because it is large). Clearly communicate interest points: hiking, educational center, historical areas, viewpoints, parking, and bathrooms.
- Historic Hawai'i Foundation provided comments and requested to be a consulting party for the future planning effort.

## 2 THE COMMENT ANALYSIS PROCESS

### 2.1 Definition of Terms

Primary terms used in the document are defined below:

**Correspondence:** A correspondence is the entire document received from the public—including individuals, organizations, government officials, and agency representatives. It can be in the form of a letter, comment card, or PEPC website comment form.

**Comment:** A comment is a portion of the text within a correspondence that addresses a single subject. It could include such information as an expression of support or opposition to a proposed activity, additional data regarding the existing condition, an opinion questioning a matter of policy, or an opinion regarding the adequacy of an analysis.

**Code:** A code is a grouping centered on a common topic or subject matter with which the public is concerned.

**Concern Statement:** Concern statements were developed to summarize the multiple issues represented by the comments.

### 2.2 Guide to this Document

This report is organized as follows:

**Content Analysis Report** – This is the basic report produced from PEPC that provides information on the numbers and types of comments received, organized by code.

**Civic Engagement Comment Summary** – This report summarizes the substantive comments received during civic engagement. These comments are organized by codes and further organized into concern statements. Comment text is presented as submitted which can include spelling errors. This text has not been edited.

**Correspondence Index of Organizations (Appendix A)** – This list identifies the commenters or authors by organization type.

**Index by Code (Appendix B)** – This list identifies the commenters or authors who commented on the listed topics, as identified by the codes used in this analysis.

### 3 CONTENT ANALYSIS

The NPS will use public and agency feedback to evaluate the design concepts presented to determine which concept; or variation of concepts, will be evaluated as the proposed action during the National Environmental Policy Act (NEPA) process. This report summarizes approximately 688 comments taken from 158 public correspondences received during civic engagement. Comments were categorized into 79 topics identified by unique codes. For the purpose of this report, all comments relevant to the proposed design concepts were coded.

The distribution of comments by code is provided in **Table 1**. If no comments were received for a code, that code will not show up on this list. For example, code AL203 includes alternative building use suggestions for Design Concept 3 (in Appendix B). However, there were no comments suggesting alternative uses for buildings for Design Concepts 1, 2, or 4, therefore, there are no codes for these three design concepts.

**Table 1: Comment Distribution by Code**

Code	Description	No. of Comments	Percent of all Comments
AL100	Alternative Suggestions	51	8.5%
US100	USGS Building	50	8.4%
VE104	Visitor Experience Concept 4	35	5.9%
VE103	Visitor Experience Concept 3	23	3.9%
AL200	Alternative Uses for Buildings	21	3.5%
VE101	Visitor Experience Concept 1	20	3.4%
VE102	Visitor Experience Concept 2	18	3.0%
GNS100	General Project Support	18	3.0%
NR101	Natural Resource Concerns Concept 1	15	2.5%
VE100	Visitor Experience	15	2.5%
NR103	Natural Resource Concerns Concept 3	14	2.3%
CC100	Ethnographic Concerns	13	2.2%
GN300	Prefer Concept 3 General Comment	13	2.2%
NR102	Natural Resource Concerns Concept 2	13	2.2%
NR104	Natural Resource Concerns Concept 4	13	2.2%
NR100	Natural Resource Concerns	12	2.0%
CE100	Civic Engagement	12	2.0%
ED100	Education and Interpretation	12	2.0%
RM100	Request for materials	11	1.8%
TR102	Traffic Improvements Concept 2	11	1.8%
GN200	Prefer Concept 2 General Comment	11	1.8%
PD101	Pedestrian Safety and Access Concept 1	8	1.3%
GNC100	General Project Concerns	8	1.3%
GN100	Prefer Concept 1 General Comment	8	1.3%

<b>Code</b>	<b>Description</b>	<b>No. of Comments</b>	<b>Percent of all Comments</b>
TR101	Traffic Improvements Concept 1	7	1.2%
TR201	Traffic Increases Concept 1	7	1.2%
PK200	Parking Increased	7	1.2%
PE104	Park Entrance Concept 4	6	1.0%
GN400	Prefer Concept 4 General Comment	6	1.0%
MT100	Operation and Maintenance	6	1.0%
ED102	Education and Interpretation Concept 2	6	1.0%
CR100	Cultural Resource Concerns	6	1.0%
AL104	Alternative Suggestions Concept 4	6	1.0%
TR100	Traffic Improvements	5	0.8%
ED104	Education and Interpretation Concept 4	5	0.8%
PK203	Parking Increased Concept 3	5	0.8%
PD103	Pedestrian Safety and Access Concept 3	5	0.8%
AL103	Alternative Suggestions Concept 3	5	0.8%
PE100	Park Entrance	5	0.8%
PK100	Parking Reduced	5	0.8%
PK202	Parking Increased Concept 2	4	0.7%
ALT300	Alternative Trails Suggestions	4	0.7%
PE102	Park Entrance Concept 2	4	0.7%
AL102	Alternative Suggestions Concept 2	4	0.7%
ALT304	Alternative Trails Suggestions Concept 4	4	0.7%
PE103	Park Entrance Concept 3	3	0.5%
PD100	Pedestrian Safety and Access	3	0.5%
OS100	Out of Scope	3	0.5%
TR204	Traffic Increases Concept 4	3	0.5%
PE101	Park Entrance Concept 1	3	0.5%
TR104	Traffic Improvements Concept 4	3	0.5%
CR103	Ethnographic Concerns Concept 3	3	0.5%
PD104	Pedestrian Safety and Access Concept 4	3	0.5%
CO103	Project Cost Concerns Concept 3	3	0.5%
MT101	Operation and Maintenance Concept 1	2	0.3%
CR104	Cultural Resource Concerns Concept 4	2	0.3%
TR103	Traffic Improvements Concept 3	2	0.3%
CO100	Project Cost Concerns	2	0.3%
TR200	Traffic Increases	2	0.3%
PK204	Parking Increased Concept 4	2	0.3%
CO104	Project Cost Concerns Concept 4	2	0.3%

Code	Description	No. of Comments	Percent of all Comments
CO102	Project Cost Concerns Concept 2	2	0.3%
AL101	Alternative Suggestions Concept 1	1	0.2%
MT103	Operation and Maintenance Concept 3	1	0.2%
CC103	Ethnographic Concerns Concept 3	1	0.2%
ED101	Education and Interpretation Concept 1	1	0.2%
ED103	Education and Interpretation Concept 3	1	0.2%
CR102	Cultural Resource Concerns Concept 2	1	0.2%
TR203	Traffic Increases Concept 3	1	0.2%
VI103	Visual Impacts Concept 3	1	0.2%
AL203	Alternative Building Use Suggestions Concept 3	1	0.2%
MT102	Operation and Maintenance Concept 2	1	0.2%
VI101	Visual Impacts Concept 1	1	0.2%
CO101	Project Cost Concerns Concept 1	1	0.2%
ALT301	Alternative Trails Suggestions Concept 1	1	0.2%
VI104	Visual Impacts Concept 4	1	0.2%
CR101	Cultural Resource Concerns Concept 1	1	0.2%
PD102	Pedestrian Safety and Access Concept 2	1	0.2%
PK201	Parking Increased Concept 1	1	0.2%

The majority of correspondence received was from unaffiliated individuals (**Table 2**).

**Table 2: Correspondence Signature Count by Organization Type**

Organization Type	Correspondences
Civic Groups	3
Conservation/Preservation	1
County Government	1
Federal Government	1
Non-Governmental	2
Unaffiliated Individual	151

**Table 3** shows the distribution of how correspondence was received.

**Table 3: Correspondence Distribution by Correspondence Type**

Type	Number of Correspondences
Web Form	113
E-mail	22
Park Form	10
Phone Tree	11
Letter	3

With HAVO being located in the State of Hawai'i, the majority of correspondence was received from commenters within the state (**Table 4**)

**Table 4: Correspondence Distribution by State**

State	No. of Correspondences	Percent of all Correspondences
HI	123	77.4%
UN	21	13.8%
AZ	4	2.5%
OR	2	1.3%
CA	2	1.3%
CO	2	1.3%
WA	1	0.6%
TN	1	0.6%
OH	1	0.6%
KS	1	0.6%

The majority of correspondence received was from the United States. One comment was received from Great Britain (**Table 5**).

**Table 5: Correspondence Distribution by Country**

State	No. of Correspondences	Percent of all Correspondences
GBR	1	0.6%
USA	157	99.4%

## 4 CIVIC ENGAGEMENT COMMENT SUMMARY

### 4.1 General Alternative Suggestions

#### 4.1.1 Concern Statement: Event Space Suggestion

A new event space structure could be built and used for park service events and to create an additional revenue source.

##### **Representative Comment(s)**

Correspondence Id: 102 Comment Id: 904119

Comment Text: Build a new structure for the Park Service, educational exhibits and event space (second floor with views of the park). The one aspect the park is missing is an event space (potential revenue stream). An event space can be used by schools, local community, and for celebrations like weddings, birthdays, graduations, etc. Outsource catering, floral, equipment and event staff at the client's expense.

#### 4.1.2 Concern Statement: Multi-Storied Buildings (parking, visitor center)

A multi-story parking structure or multi-story visitor center could reduce the environmental footprint of the building and parking congestion.

##### **Representative Comment(s)**

Correspondence Id: 102 Comment Id: 904116

Comment Text: I believe a multi-story parking structure can be accommodated near the visitor center. I know this would be an eyesore to the locals, but for the sake of the environment and to eliminate parking congestion, this is the best solution.

Correspondence Id: 145 Comment Id: 904720

Comment Text: It could be two stories with an elevator to reduce the footprint of the building.

#### 4.1.3 Concern Statement: Order of Construction

Opening public access and an interpretive overlook on the old Jaggar footprint is of higher priority before building a visitor center.

##### **Representative Comment(s)**

Correspondence Id: 3 Comment Id: 904165

Comment Text: Begin with working on the interpretive overlook on the old Jaggar footprint 1st. Complete this before a new visitor center is built. Give visitors a chance to view the summit!

Correspondence Id: 34 Comment Id: 904241

Comment Text: I'm not sure in what order things are going to be done, but public access (by trail and vehicle) to the former Jaggar museum site would be a top priority for me. Hopefully this could be done first before the more expensive new visitor center and USGS field station.

#### 4.1.4 Concern Statement: Bicycle Facilities

Include bicycle infrastructure within the visitor center design to include: bicycle trails, parking, and a permanent space for bike rentals and repairs.

**Representative Comment(s)**

Correspondence Id: 12 Comment Id: 904171

Comment Text: Please remember to include bicycle parking facilities at the visitor center.

Correspondence Id: 60 Comment Id: 904314

Comment Text: I'd like to request that consideration be given to new and/or improved bicycling trails and storage racks. I'd like to suggest a concession space be allotted at the visitor center for bike rentals and repairs.

**4.1.5 Concern Statement: Develop a Shuttle System**

Create a shuttle bus system within the park to reduce traffic congestion.

**Representative Comment(s)**

Correspondence Id: 18 Comment Id: 904194

Comment Text: Get people out of their cars as soon as possible and use as many shuttle buses as you need. This should be done no matter which Concept is chosen. Take a leaf out of the South Rim of the Grand Canyon (and now Yosemite, too). Where are those hydrogen buses?

Correspondence Id: 18 Comment Id: 904195

Comment Text: Traffic on Crater Rim drive should be minimized. Use shuttle buses to Thurston Lava Tube and other over-looks and view areas (e.g. Devastation Trail).

Correspondence Id: 38 Comment Id: 904258

Comment Text: There should be a shuttle bus to transport people down and up Chain of Craters Road to limit the number of vehicles on this roadway. Rental cars should not be allowed beyond the visitor center.

**4.1.6 Concern Statement: Theatre**

Hawai'i Volcanoes National Park is a highly visited spot on the island, and an IMAX theater can be used for both educational videos and as an additional source of income.

**Representative Comment(s)**

Correspondence Id: 31 Comment Id: 904221

Comment Text: Recognizing that HVNP is the most visited location on the Big Island I would love to see the NPS build a world class facility (IMAX possibly?) that really showcases the science of the volcano as well as the history and the history of HVNP and its community. A world class facility, rather than just a rebuild of what was there before, would be a great economic stimulus for the Volcano, HI community. That being said, I understand that budgets are tight and money might not be available fo a bigger project then currently proposed (maybe it could be designated as the Patsy Mink or Daniel Inouye Hawaii Volcano National Park Museum and or Visitor Center and consequently access to more funds?)

Correspondence Id: 35 Comment Id: 904242

Comment Text: If you are going to build a new theater, you should design and build for an IMAX size theater. That way the IMAX theater could also be rented out as an additional source of income for groups or the public. It could also play hollywood films on weekends/nights.

#### 4.1.7 Concern Statement: Alternate Locations for Visitor Center

Build a new visitor center within a less crowded area of the park.

##### **Representative Comment(s)**

Correspondence Id: 18 Comment Id: 904197

Comment Text: Now is the time to buy up, or lease, the lands where the active flow was and build a VC near Pahoa. That new park area could be accessed from Hilo on the Keaau-Pahoa Road, and a nice VC built in or near Pahoa, which instead of a last-ditch, last-stop, village becomes a gateway to the park with very real commercial possibilities.

Correspondence Id: 67 Comment Id: 904322

Comment Text: I think it would be good to have a small visitor center part way down Chain of Craters Road. It is uncrowded, has less vog, and needs more of a park presence.

#### 4.1.8 Concern Statement: Sustainability

Prioritize all new buildings and designs around reducing their carbon footprint and energy consumption.

##### **Representative Comment(s)**

Correspondence Id: 31 Comment Id: 904224

Comment Text: Hopefully all buildings would be constructed to LEED certified standards using materials and designs that create the least amount of impact on the Park and environment.

Correspondence Id: 119 Comment Id: 904566

Comment Text: This planning effort should do everything possible to push forward in conservation and a reduced carbon footprint. The use of PV or alternative energies should be prioritized for all facilities and included in the details for all concepts to jump the park forward in energy conservation.

Correspondence Id: 145 Comment Id: 904735

Comment Text: Will future alternatives look at earth cooled buildings? The carbon footprint would have to be determined if there is a savings over the life cycle of the field station. The footprint on the landscape and protecting park resources is a key evaluation criterion. Concept 4 appears to offer the most climate friendly benefits: infrastructure, water, electric and cell tower are close to the ball field and therefore appear to have a lower carbon footprint.

#### 4.1.9 Concern Statement: Alternative Parking Locations

Build parking within areas that have already been disturbed to reduce additional impacts on native vegetation and provide a safer area for pedestrian travel.

##### **Representative Comment(s)**

Correspondence Id: 142 Comment Id: 904678

Comment Text: If future parking is needed, could that be placed on the footprint of the removed Okamura and Geochemistry Annex? This would seem have less impact of the natural vegetation on the other side of the Crater Rim Drive and eliminate some of the unsafe pedestrian crossing of that road.

#### 4.1.10 Concern Statement: Alternative Recreation Suggestions

Create additional areas for recreational use within the park.

#### 4.1.10.1 Representative Comment(s)

Correspondence Id: 35 Comment Id: 904246

Comment Text: Adding a Disc Golf course through a forested area would make a nice addition to the park. The cost for a course is small (only buying 18 disc golf baskets at \$400 each, which could be sponsored by local businesses to offset that cost). It would increase people coming to the park specifically to play the course. A small fee to play the course would easily pay for the course installation and maintaining (clearing brush etc) after a few years. Disc golf is a hugely popular sport that has spread across the USA with multiple courses in each state, and around the world. There exists a professional disc golf association with over 40000 members. As well as hundreds of thousands of players nationwide. It is an easy to play game and can be enjoyed by anyone age 6 to 96.

Correspondence Id: 91 Comment Id: 904466

Comment Text: I would like to see another campground in the park as well. More places to stop, have a picnic and camp. But I don't know if this is on the current agenda.

Correspondence Id: 122 Comment Id: 904574

Comment Text: To destroy the KMC ballfield would seem like a waste of a recreational space that already exists... I would think markets recreation or outdoor activities would be a much better use for that area and would not make a giagantic footprint that is currently there. How about a softball league for the Park?

#### 4.1.11 Concern Statement: Restroom Improvements

Improve restroom facilities throughout the park by increasing signage, facilities, and regular maintenance.

##### Representative Comment(s)

Correspondence Id: 81 Comment Id: 904395

Comment Text: Improving all restrooms throughout the park is desperately needed. Increase availability of portable toilets at other locations. As long as they are cleaned in a timely manner they provide a good service instead of the bushes. Indicate locations on the park map if they are not already there. Many people don't realize where the restrooms are at Nahuku and use a bush before they find the restroom. Improve signage?

Correspondence Id: 88 Comment Id: 904456

Comment Text: Bathroom facilities in the park need major improvement. Consider adding portable toilets at major parking lots such as Kilauea Iki, Puu Pua'i, keep them at Devastation, etc. Then make sure they are listed on the park map and have good signage. We see a lot of use of the 'bushes' by visitors who are at a location without bathrooms, or where the location is not obvious, such as Nahuku.

Correspondence Id: 142 Comment Id: 904692

Comment Text: Another concern or question is if the new Visitor Center will have restrooms. It seems like a very long walk from east side parking to get to the west side restrooms. Please consider these essential visitor needs.

#### 4.1.12 Concern Statement: Viewing at Bluff

Update overlook at the old Jaggar Museum to include covered shelters, benches with views unobstructed by standing visitors, and an improved safety wall.

**Representative Comment(s)**

Correspondence Id: 68 Comment Id: 904323

Comment Text: My suggestion for the overlook at the old Jaggar Museum site is a wall that is higher than the existing so that visitors do not stand on the wall to try and improve their view.

Correspondence Id: 81 Comment Id: 904398

Comment Text: The proposals for the Jaggar area seem workable and even increase the viewing opportunity. A covered area with a few benches in the back would be nice up there.

Correspondence Id: 142 Comment Id: 904677

Comment Text: Improving the second area would be greatly beneficial for the public. Perhaps that viewing area could be designed for a more silent/meditative experience. It needs to offer areas for people to stand as well as benches for people to sit with unobstructed view (clear from people standing front of them). It should be designed with a cliff-side safety barrier that will not allow for sitting or standing on it - as was always a safety concern at existing overlook at Jaggar Museum.

**4.2 Alternative Suggestions Concept 2****4.2.1 Concern Statement: Ideas to Improve Concept 2**

Update Concept 2 to include: inclusion of the education center, covered picnic areas, an additional kiosk entrance with a roundabout, and USGS backcountry office near KMC.

**Representative Comment(s)**

Correspondence Id: 126 Comment Id: 904584

Comment Text: I would select Concept #2 with following amendments: The portions of the Concept I particularly like are the inclusion of the Education Center, the covered picnic area near VAC, and the 2 kiosk entrance station and roundabout. I do not like the USGS near the backcountry office. The following amendments to the concept are proposed: The USGS portion of the concept would follow Concept # 3 and be located near KMC.

**4.3 Alternative Suggestions Concept 3****4.3.1 Concern Statement: Ideas to Improve Concept 3**

Update Concept 3 to include: benches, picnic areas, and restrooms.

**Representative Comment(s)**

Correspondence Id: 1 Comment Id: 904141

Comment Text: I like the idea of a picnic area which concept 3 doesn't have

Correspondence Id: 2 Comment Id: 904148

Comment Text: Areas near parking with benches and picnicking and restrooms would keep folks close to their cars and away from the facilities when congregating to eat, look at maps, take care of kids, etcetera.

## 4.4 Alternative Suggestions Concept 4

### 4.4.1 Concern Statement: Ideas to Improve Concept 4

Update Concept 4 to include: shuttle buses from the main entrance, commemoration of the ballfield's historical significance, and visitor services that are kept inside a facility staffed with park rangers.

#### **Representative Comment(s)**

Correspondence Id: 18 Comment Id: 904193

Comment Text: Concept 4: People can enter (current main entrance) and park at the old VC and take a shuttle bus to the new VC. And, shuttle from the new VC to Jaggar. OR, they can enter off of Highway 11 (new entrance to park) and park right there.

Correspondence Id: 87 Comment Id: 904445

Comment Text: I do not see the KMC ball field used terribly often now, but I respect that the location has historical significance so perhaps if this location is chosen, some commemoration of the ballfield historical significance should be incorporated.

Correspondence Id: 142 Comment Id: 904683

Comment Text: I propose that part of the existing KVC be repurposed to include a separated Education Center for school groups (in the section where the current biological exhibits are) yet keep the lobby for the Orientation Center. This visitor service should be offered in a comfortable facility, not outdoor in the cold and rain nor right beside the very noisy restrooms (this is the current function of the KVC lanai and is it not conducive to a pleasant experience). The indoor KVC lobby should be staffed by multiple Park Guides/Rangers (with the assistance of multiple park volunteers) as to minimize the time visitors need to wait in line and therefore relieve parking congestion.

## 4.5 Alternative Uses for Buildings

### 4.5.1 Concern Statement: Keep the Annex/Alternative Uses

Repurpose the annex building for use as a USGS field station, administration building, or visitor building.

#### **Representative Comment(s)**

Correspondence Id: 83 Comment Id: 904416

Comment Text: The annex building is largely undamaged. For a few hundred thousand dollars, the building can be made habitable for multiple administrative and visitor uses into the future. I strongly encourage the retention of the annex, even after the USGS field station and other summit area rebuilding occurs. It seems wasteful to take down a functioning building, especially since in the concept of the bluff, this would be the only 4-walled, weatherproof, securable building in the area. Here are some potential uses now and into the future, and I am sure there are more: \*For USGS: staging area for inner caldera and upper Kau Desert fieldwork, campaign deployments by USGS and international scientists conducting experiments in the summit area, eruption response, UAS launches, future platform for all manner of cameras and instrumentation yet to be developed (an example is a housing for a million dollar absolute gravimeter that has to be as near to Halema'uma'u as possible in a climate controlled and powered space). Other technological advances will take advantage of a building proximal to the caldera rim and the inner portions of Halema'uma'u. I can foresee the need for instrument siting in the future that needs power and internet and security. If the annex is gone, there may be pressure to construct a

small new building or park temporary trailers - less than idea. Yes, USGS will have a new field station, but a perch within feet of real time viewing of the inner caldera will be scientifically important in ways we may not even now know. It is the best place to view an eruption on the caldera floor or uppermost SWRZ. Views of future Mauna Loa eruptions will be ideal from this vantage, as they were in 1984. NPS will want cameras here, it may also be a place for media events, VIP tours, etc. A building will be much appreciated as support for all those activities. \*For NPS: NPS rangers and other staff working the visitor overlook will need a place out of the weather, a place to stage SAR missions and law enforcement actions. NPS can use a forward cache of gear and in the event of a eruptive crisis, or an incident that blocks the road back to the main KVC and admin area, this will become even more useful. It can also be a space for visitor services: bookstore, exhibits, first aid station, etc.

Correspondence Id: 87 Comment Id: 904446

Comment Text: In either of these scenarios, concept 2 or 3, HVO should be permitted to continue using the Uēkahuna Bluff Annex building. Continued use of the Uēkahuna Bluff Annex building would ensure that HVO has eyes on Halema'uma'u in Kīlauea Caldera. This is necessary to evaluate volcanic hazards in the event of rapidly changing summit conditions, and rapidly communicate information on those hazards to the public (especially visitors and nearby residents in Volcano and the Golf Course).

Correspondence Id: 53 Comment Id: 904350

Comment Text: We would like to emphasize that we believe the HVO Annex Building should not be demolished. We suggest the HVO annex can be repurposed to enable USGS scientists, HVNP interpretive staff, Practitioners, artists, and others to interact with the public. There may also be space for additional displays that might include historical geoscience instruments, interactive displays, computer models, etc.

#### **4.5.2 Concern Statement: Reuse Jaggar Museum or Pieces of Jaggar Museum**

Repurpose the historic Jaggar Museum as a covered pavilion for visitors.

##### **Representative Comment(s)**

Correspondence Id: 142 Comment Id: 904676

Comment Text: It rains a lot over there and the winds are usually extraordinarily strong. The public overlook needs some protection from the elements. Remember how the Rangers-on-duty and the public would huddle against the building to get out of the elements when watching the volcanic activity? Consider incorporating the walls of the historic Jaggar Museum into a covered area that can be used for interpretive exhibits, interpretive presentations, cultural demonstrations, or public gathering/sitting. If possible, remove the doors and windows and perhaps the caldera-facing wall and use the remainder of the historic structure for the purposes outlined above.

Correspondence Id: 124 Comment Id: 904581

Comment Text: Further, I want to urge the NPS to consider how to preserve as much of the structures as Uwekahuna Bluff as is practical. The Jaggar building at least is on the historic register and may even pre-date the park itself. The idea of an open-air pavilion at the Jaggar site is a nice idea if the structure really is not salvageable, but I would hope that all/most of it could be re-used, even if it repurposed in a different way.

Correspondence Id: 91 Comment Id: 904464

Comment Text: Is there going to be anything done with the Jaggar Museum? Is it possible to move and preserve this historic building elsewhere in the park?

### 4.5.3 Concern Statement: Ideas for Using Okamura

Repurpose the Okamura building and keep portions of the facilities for a laboratory or additional educational/visitor areas.

#### Representative Comment(s)

Correspondence Id: 23 Comment Id: 904205

Comment Text: Without knowing the extent of the damage, it seems a shame to have to demolish the Okamura building. The top viewing tower was a primo site from which to observe the caldera (and for Friday night happy hours with Reggie and Jack Lockwood). I wonder if the basement at least could be saved and kept as a subsurface site for laboratory facilities and storage of monitoring equipment. With the originally expensive excavation for the building (I was there when it was built), it's a shame to have to fill it back in with dirt when it might have good use as an underground facility.

Correspondence Id: 70 Comment Id: 904354

Comment Text: Regarding the volcano observation center offices and tower, I wonder if there is any historic value in keeping some of the interior units or equipment for educational purposes?

### 4.5.4 Concern Statement: Other Alternatives Raised for Uses

Alternative uses proposed for other buildings.

#### Representative Comment(s)

Correspondence Id: 109 Comment Id: 904521

Comment Text: Are there options for using the ohia wing for visitor education/enrichment/ or a KVC annex?

Correspondence Id: 77 Comment Id: 904378

Comment Text: I believe the present facility used as the Educational Center continue to be used in the housing area as it is quiet and away from tourist distractions.

Correspondence Id: 58 Comment Id: 904311

Comment Text: Is the current research area (the older buildings behind the new Back Country office) able to be renovated or rebuilt to accommodate USGS?

## 4.6 Alternative Trail Suggestions

### 4.6.1 Concern Statement: General Make More Trails

There is a need for shorter and easily accessible trails that are close to parking areas.

#### Representative Comment(s)

Correspondence Id: 102 Comment Id: 904492

Comment Text: Trail Access: Some of our guests' time is limited, but they want to experience as much as they can in a short period of time, so maybe create new viewpoints/trails that are not too far from the parking area and easy to access with highlights of the park.

#### 4.6.2 Concern Statement: Crater Rim

There is a need for a connector trail between Crater Rim Trail and the visitor center.

##### Representative Comment(s)

Correspondence Id: 36 Comment Id: 904253

Comment Text: I would also propose a new trail from the visitor center directly to the Crater Rim trail - the proximity of the visitor center to the unspoiled crater rim (no volcano house) is one the biggest pros for the location of the concept-4-visitor center.

#### 4.6.3 Concern Statement: Concept 4 Trail Connections

There is a need for an accessible trail that connects the caldera viewing areas to the visitor center.

##### Representative Comment(s)

Correspondence Id: 142 Comment Id: 904689

Comment Text: In addition to Jaggar Museum showcasing the operations of HVO, the original and primary function of that facility was as a caldera viewing area. In the spirit of the relocating the functions lost at Uekahuna, an accessible trail system should connect the new Visitor Center to a series of caldera viewing areas. One viewing area designed for a more silent/meditative experience, and another designed for a larger capacity crowd with exhibits and a well-planned interpretive presentation space. Both viewing areas need to offer areas for people to stand, and both need to offer benches for people to sit with unobstructed view (clear from people standing front of them). Both should be designed with a cliff-side safety barrier that will not allow for sitting or standing on it - as was always a safety concern at Jaggar Museum. These trails and viewing areas should be planned, financed, and constructed concurrently with the New Visitor Center. Otherwise the opportunity for funding, compliance, and construction might be lost.

Correspondence Id: 119 Comment Id: 904558

Comment Text: Concept Four: USGS/New HAVO Visitor Center at Ball field • This concept should include a trail to cross the CRD and link visitors with the Crater Rim trail to provide walking access to at least one new overlook on the rim. It is a critical part of the success of this concept to link visitors with the resource. A slight modification of the existing rim trail could offer messages on Halemaumau and Pele and Hawaiian protocol embedded in the walkway, (similar to the directions of the tribes embedded along the trail at Mather Point at the Grand Canyon). HAVO is a culturally sacred site. Using many languages would be great as well. HAVO receives many international visitors.

### 4.7 Ethnographic Concerns

#### 4.7.1 Concern Statement: Reduce the footprint

Do not build new buildings, this land is sacred and should be protected.

##### Representative Comment(s)

Correspondence Id: 62 Comment Id: 904317

Comment Text: We must bring to the forefront and always remember how our kupuna traditionally viewed this wahi pana. Only specialized activities took place here - ceremony, specific types of gathering. The place, the 'Aina dictates and guides the activities of kanaka, not the other way around. Any type of imposition of kanaka over sacred wahi pana will eventually be met with disaster - Jaggar, HVO station, Kapoho ponds, Waha'ula. He alii ka 'aina, he kauwa ke kanaka. Let us lessen the footprint of kanaka to

this area. Even if it means less revenue for the Park, it will mean restorative health for our beloved Kilauea.

Correspondence Id: 84 Comment Id: 904417

Comment Text: The park is a sacred place, to see more forest removed by man to build buildings that are not needed and be disrespectful to the significance of this area would be wrong and should not be done. The park service is there to protect and preserve. Protect and preserve the land and what is there, not to build more unsightly buildings. Preserve Kilauea in its natural state. Preserve Kilauea in what it is now. Changing this in any way will not be preservation. I don't choose any of these as every plan has building new buildings in it.

#### **4.7.2 Concern Statement: Building Design Should Reflect Hawaiian Culture**

Incorporate Hawaiian culture into new buildings and redesigns.

##### **Representative Comment(s)**

Correspondence Id: 46 Comment Id: 904285

Comment Text: -New buildings/re-design should be designed by local A/E to create a "sense of place." Doesn't want to see another "haole" looking building (e.g. the 30's, 40's historic buildings at the summit), but rather something new that references Hawaiian culture such as Imi Loa center and the Hawaiian Language building at UH-Hilo.

#### **4.7.3 Concern Statement: Ceremonial Use Should be Incorporated**

New designs of the visitor area should incorporate Hawaiian culture and protect ceremonial uses.

##### **Representative Comment(s)**

Correspondence Id: 85 Comment Id: 904429

Comment Text: The Park should consider carefully a new layout for viewing at Uēkahuna. Obviously, safety issues will determine the general footprint, but I would hope that, besides accommodating tourists, the new design would allow space separate from the visitor flow and dedicated to Hawaiian cultural/ceremonial use, in recognition that Uēkahuna is a wahi pana, a sacred place.

Correspondence Id: 113 Comment Id: 904529

Comment Text: Please consider making the former site of Jagger Museum and the Hawaiian Volcano Observatory into a designated permanent spot for cultural practitioners to gather. For many years Uēkahuna has been an important space for Hawaiians to offer chant, hula, and gifts to Pele and her family. This seems to be a good opportunity to reclaim a culturally important space for their use. As the highest point of the pali around Kaluapele, and because of the significant importance of Uēkahuna and surrounding wahi pana to Hawaiian history, this is an appropriate area to designate as a cultural site. It is vitally important that accommodations continue to expand that allow native Hawaiians to visit Kaluapele not just for ceremony and gathering rights, but also even to just maintain familiarity and connection with the land itself. Pele is literally family to many Hawaiians. It is difficult to maintain a good relationships with one's family when there are many limitations and restrictions on how and when one is allowed to visit them.

#### 4.7.4 Concern Statement: Sacred Place

The parks needs to be treated with respect, since it is a scared place for native Hawaiians.

##### Representative Comment(s)

Correspondence Id: 146 Comment Id: 904754

Comment Text: This is the land of Pelehonuamea and her family. Besides volcanic activity, we've also been subjected to transformational catastrophic earthquakes, land subsidence, tsunamis, and landslides. There is no way of predicting future volcanic activity; its scale, scope, location, or duration are unknowns. Building "Bigger and Better" in a place famed for volcanic hazards, as we've seen (and not necessarily learned) is NOT the best course of action. With increased visitation having pushed us past our carrying capacity, we've witnessed destruction of resources, increasing helicopter noise, traffic jams, inability to accommodate vehicular parking, and perhaps the most disturbing, the inability of Native Hawaiian cultural practitioners to conduct ritual when and where they desire. The late Edward Kanahale once said, "We have to go at midnight so we aren't bothered by tourists." During this time of pandemic, of economic upheaval, and of great uncertainty, we must have the foresight and fortitude to at last do what's right for the land, for Native Hawaiian practitioners, and for all who practice aloha 'āina on our 'āina aloha.

Correspondence ID: 149 Comment ID: 904763

Comment Text: The park is a sacred place, to see more forest removed by man to build buildings that are not needed and be disrespectful to the significance of this area would be wrong and should not be done. The park service is there to protect and preserve. Protect and preserve the land and what is there, not to build more unsightly buildings. Preserve Kilauea in its natural state. Preserve Kilauea in what it is now. Changing this in any way will not be preservation. I don't choose any of these as every plan has building new buildings in it. How can you build more buildings when you can't even upkeep and preserve what is already there.

#### 4.8 Ethnographic Concerns Concept 3

##### 4.8.1 Concern Statement: Prefer this Concept

This area is a sacred site, where ceremonial practices should be protected from the increased traffic of tourists.

##### Representative Comment(s)

Correspondence Id: 75 Comment Id: 904373

Comment Text: Of all for plans, #3. Least amount of impact. It's a scared site and should be treated as such. I understand that visitors contribute to the functioning of this site. as a Kanaka, I, at times fell very "congested" when accessing this sacred site and being surrounded by "visitor" who want to "ease-drop" on what's going on. Ruines the mana flow that is trying to be achieved.

#### 4.9 Civic Engagement

##### 4.9.1 Concern Statement: Request for Further Information in the Process

Include narratives of how concepts were developed and identify trade-offs for each concept.

**Representative Comment(s)**

Correspondence Id: 53 Comment Id: 904349

Comment Text: We would respectfully suggest that future narratives include how the concepts were developed. What stake holders had input to the process, what are the currently understood trade-offs. The amount of work that has gone into these concepts is evident! It would be valuable to share some of that process with the community you are soliciting for input. For example, is there a Concept that appeals more to HVNP interpretative staff? What trade-offs do the scientists and staff see between the different concepts?

**4.9.2 Concern Statement: More Communication Needed**

Increase the ability for the community to give input so that Hawaiian culture can be intentionally incorporated into the project.

**Representative Comment(s)**

Correspondence Id: 69 Comment Id: 904333

Comment Text: I sit on the Kupuna Council for HAVO and was disappointed that we could not have had at least a ZOOM meeting to discuss these ideas with the kupuna. I feel you will not have enough public or cultural comments for these projects due to the nature of review and submission. These are my personal comments and no reflection of my employer agency.

Correspondence Id: 115 Comment Id: 904534

Comment Text: The National Park Service must - service - the Hawaiian community more than it has historically done. It must be proactive in seeking input from, and then effectuating the priorities of, the Hawaiian community regarding all matters; not only related to the disaster recovery project - short-term - but all matters into the future - long-term. Since its start in Hawai'i, in my opinion, the NPS has too often operated under a continental, "What is good for Yosemite is good for Hawai'i" mentality. That has to stop. That mentality focuses on the visitor industry being the cash cow that supports NPS operations. That is not true. If the NPS scaled down the size of preparations for tourists ie parking for exhaust-spewing buses and rental cars it would be better for the aina. Most importantly though, is the idea that interpretative efforts must be planned for and implemented through a culturally Hawaiian lens. Hawaiians, a living culture, must not be museum-ized by the NPS. The Hawaiian community must be participatory in all aspects of the process, subsequent action plans and actions.

Correspondence Id: 108 Comment Id: 904513

Comment Text: It must be noted that the park's communication with the neighboring community is significantly lacking. The community's hospitality, food, retail, art and cultural establishments provide a positive blend of the park's purpose with a vibrant and welcoming community.

**4.9.3 Concern Statement: Request to be a Consulting Party**

Include the Historic Hawaii Foundation as a consulting party to the NPS to preserve and highlight Hawaiian culture.

**Representative Comment(s)**

Correspondence Id: 140 Comment Id: 904630

Comment Text: Historic Hawai'i Foundation is a statewide nonprofit organization established in 1974 to encourage the preservation of sites, buildings, structures, objects and districts that are significant to the history of Hawai'i. HHF is a consulting party to the National Park Service pursuant to the implementing regulations of the National Historic Preservation Act (NHPA) at 36 Part 800.2(c)(5) as an

organization with a demonstrated interest in the undertaking and a concern for the effects on historic properties. In addition to participating in the current planning effort, HHF also affirms that it will be a consulting party to NPS as part of the future Section 106 consultation.

#### **4.10 Project Cost Concerns**

##### **4.10.1 Concern Statement: Costs Would Influence Preference**

Include initial and long-term maintenance costs for each concept.

###### **Representative Comment(s)**

Correspondence Id: 53 Comment Id: 904348

Comment Text: An important factor for evaluating the different Concepts is cost. It is clear that detailed costs can not have been worked out yet, however even a simple qualitative discussion, both initial costs and long-term maintenance costs would have been valuable. Our guess, noted above, is that the largely co-located infrastructure proposed in Concept 1 would have both the lowest initial and long-term costs. It would have been helpful to have even qualitative cost comparisons between the concepts (WAG's are better than no information at all).

##### **4.10.2 Concern Statement: Concept Costs**

Identify all construction and project costs for each concept.

###### **Representative Comment(s)**

Correspondence Id: 121 Comment Id: 904570

Comment Text: Concepts 2 and 4 require less construction and overall building and considering funds needed that seems wise to me.

Correspondence Id: 144 Comment Id: 904706

Comment Text: Also the longer realignment of Crater Rim seems wasteful of green space and the longer length of new roadway is probably more expensive

Correspondence Id: 100 Comment Id: 904484

Comment Text: I support Concept 3, with qualifications, for the following reasons: I believe the changes to the existing infrastructure would be minimal, resulting in less time and expense to complete the project in the KVC vicinity.

Correspondence Id: 121 Comment Id: 904570

Comment Text: Concepts 2 and 4 require less construction and overall building and considering funds needed that seems wise to me.

#### **4.11 Cultural Resource Concerns**

##### **4.11.1 Concern Statement: New Information on Sites**

Include cultural understanding of these scared sites, as not all historically important areas have archeological evidence of their importance.

**Representative Comment(s)**

Correspondence Id: 113 Comment Id: 904530

Comment Text: As further evidence of the cultural importance of Uēkahuna as a sacred site, I would like to inform you that it is possible that Uēkahuna was at one time the site of a heiau for Pele. In the 1920's Superintendent Boles believed that Uēkahuna formerly had a heiau on top of it, though it isn't apparently known why he thought this. I realize that there is no archaeological evidence of a typical heiau in the area, but it is also important to note that Hawaiian sacred sites cannot always be detected by archaeological evidence. Many heiau in the old days were composed of a just a single unusual stone, or a particular tree, or were perhaps some other type of natural feature that would not align with a Western understanding of what a temple might look like. There is some evidence that heiau built for Pele specifically were not stone structures; so naturally no archaeological evidence would ever have been found alerting scientists to the existence of such a site.

**4.11.2 Concern Statement: Mitigation for Demolition of Historic Properties**

The Jaggar Museum is a significant historical building that should be documented.

Correspondence Id: 140 Comment Id: 904632

Comment Text: HHF is concerned with the proposed demolition of Jaggar Museum, which is a significant historic building. We understand that NPS has determined that the building is not safe for habitation and is structurally unsound. We request to discuss that analysis and proposed mitigation measures during the future Section 106 consultation.

**4.11.3 Concern Statement: Follow Secretary of the Interior Standards when Remodeling Buildings**

Follow Secretary of the Interior (SOI) standards when repurposing buildings.

**Representative Comment(s)**

Correspondence ID: 140 Comment ID: 904655

Comment Text: The existing education center in the NPS administrative area would be repurposed for NPS administrative use. HHF Comment No concerns, subject to detailed plans following SOI Standards

**4.11.4 Concern Statement: Impacts to Historic Properties in Concept 1**

Concepts 1 and 3 have the greatest impacts to historic properties due to large areas of development.

**Representative Comment(s)**

Correspondence Id: 140 Comment Id: 904636

Comment Text: Concepts 1 and 3 have the greatest level of impact on historic properties, and also appear to extend the visitor amenities with a large amount of paved areas through new parking, roadways and pavilions. HHF opposes this level of development, which appears to be more suited to a suburban office park than to a premier national park.

**4.11.5 Concern Statement: Support for Concept 2 to Avoid Impacts to Historic Properties**

Concept 2 avoids the most impacts to historic properties and avoiding impacts may be possible if designs comply with SOI Standards.

**Representative Comment(s)**

Correspondence Id: 140 Comment Id: 904635

Comment Text: Of the four alternative concepts for the Kīlauea Visitor Center Area, HHF is most supportive of Concept 2. • Concept 2 avoids most impacts to historic properties, including the 1877 Volcano House and its landscape, Volcano House, 'Ōhi'a Wing, the Kīlauea Administration and Employee Housing Historic District, and the Kīlauea Military Camp Historic District. While the details of treatments for each of the historic properties and sites are to be determined, avoiding effects will be possible under this concept if the designs comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOI Standards).

**4.11.6 Concern Statement: Concept 3 Crowds the Historic District**

Concept 3 crowds the historic district and is therefore not preferred.

**Representative Comment(s)**

Correspondence Id: 140 Comment Id: 904666

Comment Text: We find that this concept is the least desirable configuration within the existing Visitor Complex site north of the road. It crowds the visitor facilities to the far west end of the site, eliminates the park and picnic area next to the 1877 Volcano House (Art Gallery), and does not incorporate an education component. The parking is spread out and remote from the visitor facilities and the realigned Crater Rim Drive crowds the historic Administration District.

**4.11.7 Concern Statement: Artifacts at KMC Area**

Concept 3 and 4 impact historical artifacts.

**Representative Comment(s)**

Correspondence ID: 79 Comment ID: 904389

Comment Text: I think Concept 3 and 4 are not recommended because of possible historical artifact impacts in the KMC area

**4.12 Education and Interpretation****4.12.1 Concern Statement: Reuse Exhibits and Jaggar Museum as Part of Interpretation**

Include the remnants of the historic Jaggar Museum as part of an educational feature within the park.

**Representative Comment(s)**

Correspondence Id: 87 Comment Id: 904435

Comment Text: Given that significant investment would be needed to repair the Okamura Building, in addition to instability of the bluff in that location, it makes sense to demolish this building, as well as the historic Jaggar Museum building. In the "Aspects Common to All Draft Concepts," it states that "remnant elements from the buildings may be salvaged and incorporated into a viewing shelter located on site." Because Jaggar Museum is a historic building, I do hope that part of it survives and can serve as an educational feature incorporating signage.

#### **4.12.2 Concern Statement: Co-locate USGS-PIERC with the Natural Resources Division, put Education Center in Central Location**

Co-locate the Pacific Island Ecosystems Research Center (PIERC) organization with the Natural Resources Division to provide more opportunities for formal and informal collaboration.

##### **Representative Comment(s)**

Correspondence Id: 88 Comment Id: 904449

Comment Text: Next, it is unfortunate to think of the PIERC organization being moved of the 'research area' of the park. The co-location with the Natural Resources Division has provided great opportunities for formal and informal collaboration, sometimes as simple as seeing someone in the parking lot and asking a question that would not otherwise be asked. The need to get into a vehicle and drive to another location will eliminate chance encounters and really limit casual contacts as the effort required will be too much.

Correspondence Id: 88 Comment Id: 904452

Comment Text: 3. Education Center a. The Education Center should be part of the core area, not off in the housing area. b. Place the Education Center where the USGS Field station is shown in Concept 1. c. To accommodate more parking for KVC, it may be necessary to move the Education Center somewhat closer to Highway 11 with additional parking between it and KVC

#### **4.12.3 Concern Statement: Education Center – Concept 2 Preferred**

Concept 2 is preferred because the educational and visitor center are located within the same area.

##### **Representative Comment(s)**

Correspondence Id: 128 Comment Id: 904586

Comment Text: Concept 2 is the most appealing to me with the educational center located near the visitor center. Clear signage would be helpful.

#### **4.12.4 Concern Statement: Concept 4 and USGS Co-Location and Education**

Co-locating the USGS and NPS into one location provides valuable collaboration and information between scientists and NPS staff.

##### **Representative Comment(s)**

Correspondence Id: 145 Comment Id: 904733

Comment Text: Co-location with HVO/BRD Scientists are essential colleagues to the interpretive staff as are the Kupuna and Native Hawaiian Practitioners. Co-locating HVO/BRD and the NPS at the new field station encourages brown bags, briefings, and seminars for interpreters to learn about the ever-changing volcano, effects of climate change on the Parks Ecosystems and other new discoveries to share the pulse of science with the visitors.

#### **4.12.5 Concern Statement: Better Use of Education Center/Design**

Update the education center with an interpretive planning effort that prioritizes education into the design.

**Representative Comment(s)**

Correspondence Id: 146 Comment Id: 904748

**Comment Text:** If the point of the Education Center is to teach and to have school children experience the outdoors and the natural and cultural resources of HAVO, maintain the EC at its current site. Construct open hālau (pavilions) as learning spaces, construct appropriate restroom facilities, and utilize the current building as the piko (center) of the operation. Increase variety of native plantings, construct short connector trails, and encourage guided exploration and activities outside.

**4.13 Operation and Maintenance****4.13.1 Concern Statement: Costs of Staffing**

Evaluate how the concepts impact the park's cooperating association, Hawai'i Pacific Parks Association.

**Representative Comment(s)**

Correspondence Id: 145 Comment Id: 904721

**Comment Text:** Historically the park didn't have enough funding to staff both KVC and Jaggar. Fortunately Pacific Island Parks Association (PIPA) personnel ran Jaggar. One interior staffed facility seems preferable for park budgets with interpretation outside, as well as limits maintenance and utility costs. Has PIPA evaluated the different concepts? What roles and square footage do they need to meet the mission as set forth in their collaboration/partnership with the Park? How much interpretive space is left in each concept after they have their bookstore area? Or areas? What is the most cost effective model for PIPA to serve the visitor and provide resources as well as be financially solid?

**4.13.2 Concern Statement: Costs for Additional Kiosk**

There should be adequate funding to staff the proposed additional kiosk and this funding should be in place before it is built.

**Representative Comment(s)**

Correspondence Id: 3 Comment Id: 904164

Adequate funding for staffing extra kiosk needed before decision to build it.

**4.13.3 Concern Statement: Support for Concept 1 Costs**

Concept 1 and co-located infrastructure minimizes costs.

**Representative Comment(s)**

Correspondence Id: 53 Comment Id: 904341

Concept 1 Co-located infrastructure would also seem minimize initial construction cost and maintenance cost and facilitate repairs after future damaging eruption events.

**4.14 Natural Resources****4.14.1 Concern Statement: Preserve 'Ōhi'a Forests**

The priority of the project should be to impact the least amount of native forest and incorporate removed materials into the final design.

**Representative Comment(s)**

Correspondence Id: 69 Comment Id: 904331

Comment Text: I would recommend the least amount of destruction to the native environment for your projects. Maintaining the forest and cultural resources should be a number priority. If you must remove an 'Ōhi'a tree please dedicate that tree as a bench or something that is used and incorporated into the park.

**4.14.2 Concern Statement: High Impacts on Forest**

Concept 1 causes the greatest impacts on the last old growth 'ōhi'a stands on the island.

**Representative Comment(s)**

Correspondence Id: 43 Comment Id: 904271

Comment Text: Concept #1 is also the concept that has the greatest impact on undisturbed areas, as other concepts make use of places like the ballfield at KMC. Finally, concept #1 must consider the disproportionate impact it will have on ohia; although it is not a huge area of forest, that stand of ohia is much older, with trees that are well over a hundred years old, an increasingly rare occurrence for an easily observed stand of ohia on the big island. In fact one might realistically argue it is one of the most visible old growth ohia stands on the island.

**4.14.3 Concern Statement: Reduced Impacts on Forest**

Concept 2 strikes a balance between upgrading facilities, repurposing existing areas, and minimizing disturbance of natural areas.

**Representative Comment(s)**

Correspondence Id: 30 Comment Id: 904216

Comment Text: I support Concept 2 of the Disaster Recovery Concept Development for Hawai'i Volcanoes National Park. That concept accomplishes all central elements desired for the disaster recovery plan, with a minimum expansion to the footprint of disturbed and/or developed areas at the Kīlauea Summit. Concept 2 strikes the best balance of meeting the needs of park visitors, staff, and USGS, while doing an excellent job of preserving the character of the place and area (and minimizing how much 'ōhi'a forest gets bulldozed). It makes intelligent use of existing disturbed areas, re-purposing many (such as using old road corridor area for new entrance station staff parking). It also preserves the old ballfield at KMC, and makes important and necessary changes to the entrance station area.

**4.14.4 Concern Statement: Ball Field Already Disturbed**

Concept 4 incorporates the old baseball field within the design and reduces the amount of native forest removed.

**Representative Comment(s)**

Correspondence Id: 132 Comment Id: 904603

Of the various proposals, I favor most elements of concept 3. I am especially positive about the siting of the USGS field station in this concept. -The ballfield location is already disturbed and does not require the bulldozing of native forest that the other two proposed sites for the USGS field office would need.

Correspondence Id: 39 Comment Id: 904263

Comment Text: The use of the old baseball field at KMC in Concept 4 seems to have the least destruction of native forest of all the options. The least amount of forest destroyed in the construction

of new facilities should be of utmost importance in a national park. Also concerning is the spread of ROD during construction, so the less Ohio that is cut down the better.

#### **4.14.5 Concern Statement: Concerns about Nēnē for Concept 4**

Concept 4 . . . could cause nēnē habitat to be overrun with visitors.

##### **Representative Comment(s)**

Correspondence Id: 96 Comment Id: 90447

Comment Text: Concept #4 is the worst plan, in my opinion, as people will probably stop at other sites en route to the visitor center before being adequately oriented to the Park. It sounds like the Education Center is intended to fulfill that role - but I think people will hear "Visitor Center" and head there first before stopping at an "Education Center". It also seems like it would have an impact on KMC, which currently has the feeling of being a charming and unique historic location within the Park (and a great place to get a chance to see Nene), due to being a bit remote from the main visitor facilities. I think tons of people would spread over the KMC grounds, turning them into a scene, and making the area Nene unfriendly.

#### **4.15 Pedestrian Safety and Access General**

##### **4.15.1 Concern Statement: Safety on the Bluff**

Clarify how a new building design can be safer than the Jaggar Museum when the area is currently being undermined by cracks and active faults.

##### **Representative Comment(s)**

Correspondence Id: 86 Comment Id: 904430

Comment Text: In Superintendent's memo dated 5/12/20 (HAVO I.A.2), paragraph 3: ". . . The Jaggar/HVO complex is surrounded by cracks and active faults, and the area continues to subside on the crater side due to the caldera collapse, undermining slope stability and the building foundation." If area is not safe for the buildings, how/why is it going to be safe for visitors and staff even after "repair"?

##### **4.15.2 Concern Statement: Pedestrian Safety Concept 1**

Concept 1 keeps the visitor center and VAC along the same side of the road with clear entrance and exits for parking, which will keep pedestrians safer.

##### **Representative Comment(s)**

Correspondence Id: 74 Comment Id: 904364

Comment Text: There will be a lot of foot traffic using the pedestrian loop, but there's still a chance that folks will just walk along the roadways to get to the picnic area or the Volcano Art Gallery. It think it's safer to keep the VC and VAC on the same side of Crater Rim Drive.

Correspondence Id: 12 Comment Id: 904170

Comment Text: I prefer Concept 1 because: there is an entrance and exit to visitor center parking so that pedestrians are safer.

Correspondence Id: 100 Comment Id: 904485

Comment Text: I think that the separation of PIERC and USGS from KVC facilities will minimize traffic problems, and could also reduce pedestrian and driver safety hazards for visitors.

### 4.15.3 Concern Statement: Signs

Signs should clearly mark pedestrian walkways to improve safety for vehicles and pedestrians.

#### **Representative Comment(s)**

Correspondence Id: 2 Comment Id: 904147

Comment Text: Pedestrian pathways and congregating areas should be clearly designated and made friendly to use. This would help to lesson people wandering around traffic on roads and parking.

Correspondence ID: 126 Comment ID: 904585

Comment Text: Increase public directional signage especially for the Volcano House and the Volcano Art Center. This should be along the main road at the turnouts to each. Sing some parking at the west end of the complex (which includes bus parking) for the Volcano Art Center/V House to improve visibility of and access to the concessions at the west end.

### 4.15.4 Concern Statement: Pedestrian Safety Concept 4

Concept 4 provides a safer design for pedestrians.

#### **Representative Comment(s)**

Correspondence Id: 3 Comment Id: 904152

Comment Text: I like Concept 4 best because: o Visitor stops are spread out and not congested near the current KVC. This is the safest version for pedestrians of all the concepts.

## 4.16 Park Entrance General

### 4.16.1 Concern Statement: Alternative Entrance Suggestions

Create one entrance along the Mauna Loa Road and remove the front entrance to alleviate congestion within the park.

#### **Representative Comment(s)**

Correspondence Id: 145 Comment Id: 904718

Comment Text: The new roundabout, as well as the employee pass through lane near the current park entrance is an attempt to address congestion at the front gate. It does not appear to alleviate congestion. The loss of forest is excessive. It appears very congested and wasn't this included in the CRD EA and discarded? My suggestion is to make one park entrance at the Mauna Loa Road. Close the current entrance, reshape the landscape geomorphology, fill in the cut (if there was a cut?) and reforest that area. Perhaps a roundabout on Highway 11 and a reduction in speed limit could be considered with some widening by Hawaii Dept. of Transportation. Or could there be turning lanes? This new entrance gate would be significantly away from the highway turn-off to provide space for cars not to be backed up to Highway 11. Suggest this new entrance gate be evaluated in the disaster recovery plan. As the park learned in the past, HAVO is very fortunate to have only one gate, as two gates can be very expensive to operate and may reduce the Park fee revenue needed. Will transportation study findings influence the disaster recovery concepts? How were the lava tube/ KVC shuttles evaluated in context of the climate crisis and current disaster recovery projects? It's not clear if this transportation effort is still part of the 2016 GMP implementation or if it now interfaces with this plan.

#### **4.16.2 Concern Statement: Need a Secondary Entrance/Exit**

Add a second entrance/exit to the park to alleviate congestion in emergencies.

##### **Representative Comment(s)**

Correspondence Id: 146 Comment Id: 90474

Comment Text: A secondary park entrance/exit at the connector between Maunaloa Road and Crater Rim Drive should be established. Having a single entrance and exit is problematic during emergencies.

Correspondence ID: 14 Comment ID: 904180

Comment Text: Concept #4 would only work if you open another entrance from Highway 11 near to KMC.

#### **4.16.3 Concern Statement: Concept 3 Kiosk Placement**

Move the kiosk away from the highway to reduce traffic.

##### **Representative Comment(s)**

Correspondence ID: 74 Comment ID: 904366

Comment Text: Concept 3 •By moving the kiosk further from the highway, traffic will be less likely to be backed up all the way to the highway.

#### **4.16.4 Concern Statement: Concept 4 Entrance Concerns**

The concepts do not appear to address congestion or areas for busses to turn around, visitors to wait for being picked up by busses. Suggestions for changes to the entrance such as turning lanes or other changes to Highway 11.

##### **Representative Comment(s)**

Correspondence ID: 70 Comment ID: 904352

Comment Text: In Concept 4, it appears that there is only one access entrance and it is shared by buses and smaller vehicles. The light blue lines on the west access lane near the staff office building are labeled for use by staff only. How are the buses going to turn around and exit? Where is the large covered passenger waiting area that surely will be necessary if 24 busses (and those waiting to pick up or drop off their passengers) converge on the park? Perhaps it would be prudent to have a closer look at the logistics of a parking lot entry/exit exclusively for busses

### **4.17 Parking**

#### **4.17.1 Concern Statement: Reduce Parking to Control Visitors**

Limit the number of visitors by limiting the amount of parking onsite.

##### **Representative Comment(s)**

Correspondence Id: 69 Comment Id: 904332

Comment Text: I would like to see a limit to the number of visitors allowed in the park daily. The lack of parking should dictate how many visitors can be accommodated. This would not apply to Hawaii residents.

#### 4.17.2 Concern Statement: Concept 1 More Parking

Concept 1 increases parking onsite.

##### Representative Comment(s)

Correspondence ID: 79 Comment ID: 904383

Comment Text: I support concept 1 for the following reasons: - It gives additional visitor and NPS parking. Sometimes the visitor center can be very busy when all of the buses come in and the day tourists drive in.

#### 4.17.3 Concern Statement: Bus Parking Locations

Bus parking should be placed to reduce congestion.

##### Representative Comment(s)

Correspondence ID: 153 Comment ID: 905333

Comment Text: I like Concept two for these reasons: 2. I love that bus parking is in the middle and not so intrusive. Having said that, I don't like the bus parking in front of the picnic area. Buses are so large and intrusive and takes away from the beauty of the area. I like it behind of like shown here, in between the buildings

Correspondence ID:119 Comment ID: 904556

Comment Text: Concept Three: KVC • The bus parking seems to be in an odd location that will create a lot of congestion and seems better placed on the outside of any new parking not right at the center of the turn off to CRM.

#### 4.17.4 Concern Statement: General Support or Opposition to More Parking

Assess the need for additional parking onsite.

##### Representative Comment(s):

Correspondence Id: 48 Comment Id: 904295

Comment Text: For U'ekahuna area- • likes proposed add'l parking lot

Correspondence Id: 144 Comment Id: 904710

Comment Text: I think it is wise to wait and see if the additional parking area across the road is really needed. Since you can have the additional parking of the former HVO employees; that already increased the number of spaces.

Correspondence Id: 46 Comment Id: 904284

Comment Text: Don't pave an extra parking lot near Jaggar

### 4.18 Traffic Improvement

#### 4.18.1 Concern Statement: Roundabout

Use new traffic designs that will increase traffic flow in and out of the park.

**Representative Comment(s)**

Correspondence Id: 3 Comment Id: 904153

Comment Text: I like Concept 2 next best: o But ONLY if the roundabout is omitted. (I am not in favor of the roundabout. It will cause more congestion, and the turning radius is not large enough to accommodate large vehicles in case they need to turn around. It is WAY too small. People are not used to roundabouts here on the island, and accident potential is HIGH. A second option to a roundabout would be an added inbound lane that goes as far as the south side visitor center parking area and then merges back in to Crater Rim Drive.)

Correspondence Id: 74 Comment Id: 904361

Comment Text: International visitors will know how to navigate a roundabout, but many locals and mainlanders are not familiar and will not know how to yield or signal properly. I have lived in Hawaii for most of my adult life and can attest to the difficulties of properly navigating a roundabout, having lived in the UK for two years. I'm assuming it will be a mini-roundabout (only 1 lane) which means people may try to drive over the center hump or they won't know how to signal which exit they will be taking. In either case, it may turn into a cluster of confusion, where everyone just takes turns passing through the roundabout...which defeats the whole purpose of a roundabout!

Correspondence Id: 81 Comment Id: 904400

Comment Text: A traffic circle should be considered for any concept chosen. It will eliminate the hazardous U-turns that currently occur.

**4.19 Traffic Increases****4.19.1 Concern Statement: Congestion**

Update the layout of the visitor center and parking lot to alleviate traffic congestion.

**Representative Comment(s):**

Correspondence ID: 74 Comment ID: 904363

Comment Text: Building the new Visitor Center and new parking lot so close the highway is a poor choice for several reasons: the positions of the VC Entrance and Exit will increase traffic in the roundabout because it forces folks who are leaving the VC but want to head towards Thurston to have to go through the roundabout and past the entrance to the VC again. You also increase the risk of people trying to exit using the entrance, since that's the shortest path to get to Thurston.

**4.19.2 Concern Statement: Concept 4 Increases the Traffic**

There would be an increase in visitors driving through the park.

**Representative Comment(s):**

Correspondence ID: 70 Comment ID: 904616

Comment Text: Placing the Visitor Center immediately adjacent to KMC will destroy much of that serenity with increased traffic and noise.

**Representative Comment(s):**

Correspondence ID: 120 Comment ID: 904568

Comment Text: Concept 4 negative - Too much visitor driving thru park

## 4.20 USGS Building Location

### 4.20.1 Concern Statement: USGS Should Be Close to the Crater

The USGS office should be closer to the crater to allow ingress and egress away from crowded tourist areas for work and emergencies.

#### Representative Comment(s)

Correspondence Id: 83 Comment Id: 904410

Comment Text: The HVO mission will be best achieved at the KMC ballfield, separated from the vicinity of KVC or the VEOC due to the following: 1. Power and internet (critical needs) are more reliable on the west side of the caldera, fed by lines from Kau, and avoiding the heavily treed corridor to Hilo that suffers outages frequently due to storms. 2. Distance from the nexus of visitor services means HVO and PIERC staff will not have to fight traffic and people to get to field areas including the important drive down into the caldera where much of our drive to gas monitoring, geology studies, and instrumentation maintenance occurs. Given intermittent crowds at KVC and the entrance traffic and pedestrians pose a problem and safety risk for HVO staff rushing to a new eruptive outbreak and then upstream back to the office. This could be disastrous for rapid response in support of managing visitor safety. The same is true for NPS staff. 3. The viewshed from locations near the current KVC and the EOC by a one or even two level field station would not be as open as that from KMC, hampering potential radio links to instrumentation in the future. 4. Environmental conditions of the forest on the east side mean more moisture and mold issues for design and maintenance and storage of equipment and records. 5. The KMC site offers multiple ingress/egress options should a large earthquake or other situation make the main exit impossible or too difficult (e.g. traffic jam) to use. This is a safety issue in the event of road failure or rapidly evolving eruption conditions.

### 4.20.2 Concern Statement: USGS Should Be Separated from Visitor Center

Separate the USGS office from visitor facilities to avoid congested tourist areas.

#### Representative Comment(s)

Correspondence Id: 54 Comment Id: 904310

Comment Text: That brings me to 2 which seems to be a good compromise as it keeps the USGS office away from the visitors area, which should make it easier for those USGS employees to get to the office and not have visitors roaming the grounds looking for information etc.

### 4.20.3 Concern Statement: USGS Should Be Close to the Visitor Center for Increased Education

Place the USGS office next to the visitor center for increased educational opportunities for the public.

#### Representative Comment(s)

Correspondence Id: 124 Comment Id: 904579

Comment Text: I think Concept 4 is also worthy of consideration since it places the USGS at the KMC ball field site also. I would rank it slightly less ideal since a visitor center would be next door, potentially causing extra traffic and distraction. However, on the other hand, it could also be an opportunity to mimic the arrangement HVO and the Jaggar Museum had at the bluff, with interpretive activities synergizing with limited tours of HVO for student groups, for example.

## 4.21 Visitor Experience

### 4.21.1 Concern Statement: Design of Interior

Update the design of visitor centers to increase the flow of foot traffic and facilitate visitor and staff interactions.

#### Representative Comment(s)

Correspondence Id: 53 Comment Id: 904345

Comment Text: We also hope that the design of the visitor spaces (both interior and covered exterior shelters) will be designed to facilitate visitor foot traffic flow. The layout of the existing KVC and Jagger Museum have too many "dead end" spaces and bottlenecks. PLEASE design any future information desk areas to facilitate staff interactions with visitors without causing severe congestion that impedes flow through the visitor center.

### 4.21.2 Concern Statement: Visitor Experience Should be First Priority

Prioritize visitor experience in the design and layout of the new infrastructure.

#### Representative Comment(s)

Correspondence Id: 145 Comment Id: 904714

Comment Text: Visitor experience detail and/or structure function is also missing from the concepts. It's challenging to comment if you don't know the desired visitor experience, as it results in "force-fitting" interpretation into the buildings and infrastructure. This can stifle creativity for interpretive exhibits and design and is never ideal. Interpretive planning is integral as a driver in determining the best location of facilities. This type of planning helps ensure natural resource protection, protection of the sacredness of site and protection of other visitor experiences that are foundational to the planning process. How will interpretive and environmental education planning be integrated into the disaster recovery planning effort? The visitor centers are more than just a building. The location, ease of access, messaging, type of exhibits etc. all determine the visitor experience and if the sacredness and protection of the resources is more likely.

Correspondence Id: 119 Comment Id: 904561

Comment Text: For decades the park has offered outstanding visitor experiences to access volcanic features and eruptive activity with very few safety issues. It is critical that the park should continue to provide outstanding visitor experiences for viewing the eruptions and the visitor experience should shine in any implemented concept. I would hope that any matrix for concept priority would include visitor experience as a factor for team selection of preferred concept elements.

### 4.21.3 Concern Statement: Keep Visitor Services in One Area

Keep the visitor services in one area to create a better visitor experience.

#### Representative Comment(s):

Correspondence Id: 88 Comment Id: 904455

Comment Text: It is important to keep the Kilauea Visitor Center near the Volcano Art Center and Volcano House so that all these facilities are convenient to walk between. Visitors patronizing these concessions is important for the success of these businesses and the overall visitor experience.

Correspondence Id: 2 Comment Id: 904150

Comment Text: I think keeping all of the visitor service in one area is a better plan (concept 3). It makes it easier for The visitor to experience all of the facility without missing anything. They won't have to regroup and drive, or find, or perhaps miss an area because it's all there. The visitor center, theater, gift shop and arts centre and hula platform are all together, without negotiating cars and busses. This obviously has less of an impact on the park and keeps people there longer.

Correspondence Id: 108 Comment Id: 904510

Comment Text: Presentations of the four concepts appears to ignore impacts on existing infrastructure, particularly the Volcano House Hotel, the Volcano Art Center Gallery, nearby staff offices dispersed in the former residential area, and the nearby facilities maintenance storage yard and rain catchment area. Although it is desirable to relocate visitor services, USGS, and park administrative services to a site adjacent to the Kilauea Military Camp, it seems important to consider the impact this will have on both KMC as well as on the dispersal of visitor and staff movement into new territory. One consideration might be to relocate the park entrance to a nearer access to Highway #11, such as where there is a gated drive that leads directly to the west end of the KMC complex.

#### **4.21.4 Concern Statement: Need Covered Areas for Weather**

Include covered walkways for inclement weather.

##### **Representative Comment(s):**

Correspondence Id: 142 Comment Id: 904679

Comment Text: The integrity of the historic structure will not be restored by removal of the covered lanai and walkway. The entire front of the building (windows and doors) was completely remodeled in the renovations of 2002-2003. The covered lanai and walkways were added to the building perhaps 40 years ago in response to visitor needs - visitors that the building was built to serve in the first place. According to Weather Atlas, Volcano gets an average of 288 rainfall days a year, and 107.8 inches of precipitation yearly. Visitors moving from the parking areas to the building, restrooms, and exhibits need a covered lanai walkway. If a concept is chosen that converts the KVC into an Education Center, the school children will line-up and wait at the front door before entering and they need a covered lanai and walkway. Removal of the covered lanai and walkways will not restore the historic integrity of the building and by doing so would be a complete denial of visitor needs and expectations to fulfill a partial fantasy of a completely remodeled structure.

#### **4.21.5 Concern Statement: Prefer Concept 1 for Visitor Experience**

Concept 1 creates a better visitor experience and integrates Hawaiian life into the design.

##### **Representative Comment(s)**

Correspondence Id: 70 Comment Id: 904334

Comment Text: Concept 1 masses the HAVO experience close to the entry and offers a more integrated presentation to visitors. The Concept 1 visitor center and irregularly shaped lanai appear to present an architectural and design footprint closer to Hawaiian life with a large integrated lanai, than the three other Concepts.

#### **4.21.6 Concern Statement: Concept 1 Adversely Impacts the Visitor Experience**

Concept 1 provides a confusing visitor experience and takes away the physical beauty of the entrance.

##### **Representative Comment(s)**

Correspondence Id: 103 Comment Id: 904495

Comment Text: One of the beautiful things about driving into the park is being welcomed by native forest, apapane flying about, and a feeling of openness and being enveloped by a native forest, which is a very pleasant first impression of the park. I am concerned that if all the facilities were to occupy both sides of the entrance road as proposed in Concept #1, that feeling of peace and calm will be compromised and visitor impressions might be affected as well.

Correspondence Id: 135 Comment Id: 904617

Comment Text: Concept 1 is overly complex and will definitely lead to confusion and lost visitors. It also concentrates too many functions in one relatively small area. The congestion in that area will likely be terrible from mid-morning to the mid or late afternoon. Signage will not overcome Concept 1's complexity. I can imagine 40-50% of visitors taking the first right out of the roundabout, finding themselves at the Visitor Center exit, continuing on in confusion, and turning around in the worst/most dangerous places down the road. What a mess Concept 1 is!

#### **4.21.7 Concern Statement: Avoid Visitor Impacts to KMC Authorized Patrons**

Keeping visitor facilities close to the park entrance will allow a peaceful and better experience for authorized patrons of KMC.

##### **Representative Comment(s):**

Correspondence Id: 135 Comment Id: 904616

Comment Text: 1. KMC serves those who now defend our nation and military retirees as a peaceful and beautiful location for rest and recuperation. Many of those staying at KMC have endured multiple deployments and combat. Placing the Visitor Center immediately adjacent to KMC will destroy much of that serenity with increased traffic and noise. 2. We have visited KMC multiple times since Crater Rim Drive was closed in 2018. Each time, despite the many signs, an almost constant stream of tourist vehicles drives through KMC attempting to see if they can get farther down the road. With the Visitor Center right next door, I would venture that 10-25% of the visitors intending to go to the Visitor Center will drive into and out of KMC, increasing the noise and traffic hazards for those staying there. Again, no amount of signage will prevent this. 3. We therefore also support Concept 2 or 3's location of the Visitor Center on the right side of the road as you enter the park. The simplicity of this location is ideal. Rangers would be able to direct visitors to the center with a simple, "straight ahead and it's your first right" direction as they do now.

#### **4.21.8 Concern Statement: Concept 2 Reduces Confusion over Concept 1, Provides Visitor Familiarity**

Concept 2 has the visitor center near the entrance, which will draw visitors due to the simple and familiar layout.

##### **Representative Comment(s):**

Correspondence Id: 34 Comment Id: 904240

Comment Text: Concept 2 makes the most sense to me. It would leave the new consolidated visitor center as the first building that people see after entering the park and would have the USGS field station

nearby but separate to avoid confusion. Having the new visitor center immediately on the right after entering would make it more easily accessible. It makes access to the loop trail, Volcano House, and other nearby points of interest easy. It looks like it makes good use of existing parking and would also involve little new impact to native vegetation.

#### **4.21.9 Concern Statement: Concept 4 Spreads Visitors Out More**

Spreading buildings to different areas of the park will spread out visitors and encourage them to explore more.

##### **Representative Comment(s):**

Correspondence Id: 64 Comment Id: 904319

Comment Text: I favor Concept 4, because it leaves the existing structures more or less as is and promotes a new Visitor Center in an area that is underutilized (the Ballfield near KMC). I believe that focusing new structures in the Ballfield will help to buffer the increased traffic near the Park entrance after expansion. By extending the facilities further down Crater Rim Dr. visitors will be encouraged to spread out more into the Park. This may also encourage more foot traffic between the Park entrance, the Sulfur Banks, the Steam Vents, the new Visitor Center, and the new open air viewing shelter (currently Jaggar Museum).

#### **4.22 Visual Impacts**

##### **4.22.1 Concern Statement: Concentration of Buildings Distracts from Visual**

Identify the visual impacts for each concept.

##### **Representative Comment(s)**

Correspondence ID: 118 Comment ID: 904544

Comment Text: so many buildings so close might detract from the natural beauty of the area

Correspondence ID: 145 Comment ID: 904734

Comment Text: There might be less tree removal and forest fragmentation down at the old CC camp (**concept 4**). The diminutive forest at the ball field makes buildings more difficult to construct to be subservient to the landscape. How will the infrastructural changes proposed by the disaster relief concepts impact the visual landscape? Where can each alternative infrastructure be seen from in the Park? This would be important to include in the future.

**Appendix A**  
**Correspondence Index of Organizations**

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**Correspondence Index of Organizations**

Org. Type	Organization Name	Correspondence ID	Code	Description	
O	Big Island Invasive Species Committee	71	MT100	Operation and Maintenance	
			NR100	Natural Resource Concerns	
	Historic Hawai'i Foundation	140	AL102	Alternative Suggestions Concept 2	
			AL200	Alternative Uses for Buildings	
			CE100	Civic Engagement	
			CO102	Project Cost Concerns Concept 2	
			CO104	Project Cost Concerns Concept 4	
			CR100	Cultural Resource Concerns	
			CR101	Cultural Resource Concerns Concept 1	
			CR102	Cultural Resource Concerns Concept 2	
			CR103	Cultural Resource Concerns Concept 3	
			CR104	Cultural Resource Concerns Concept 4	
			GNS100	General Project Support	
			PD101	Pedestrian Safety and Access Concept 1	
US100	USGS Building				
VE104	Visitor Experience Concept 4				
P	Coalition To Protect America's National Parks	76	TR200	Traffic Increases	
			VE104	Visitor Experience Concept 4	
C	Planning Department, County of Hawaii	154	CE100	Civic Engagement	
F	Kilauea Military Camp (KMC)	50	GNS100	General Project Support	
L	Edith Kanakaole Foundation	148	CC100	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)	
			PK100	Parking Reduced	
			GNS100	General Project Support	
	The Nature Conservancy of Hawai'i	25			
	Community Environmental Education	120		AL100	Alternative Suggestions
				NR103	Natural Resource Concerns Concept 3
				TR204	Traffic Increases Concept 4
	EpicLava llc.	122		US100	USGS Building
				AL100	Alternative Suggestions
				GNS100	General Project Support
	Hale 'Oahu Bed & Breakfast	102		US100	USGS Building
VE102				Visitor Experience Concept 2	
AL100				Alternative Suggestions	
Kuamoo Foundation	62		AL200	Alternative Uses for Buildings	
			ALT300	Alternative Trails Suggestions	
			CC100	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)	
Kupuna		158	GNS100	General Project Support	

Org. Type	Organization Name	Correspondence ID	Code	Description
	Mauka Makai Adventures	97	NR104	Natural Resource Concerns Concept 4
			VE104	Visitor Experience Concept 4
	Office of Hawaiian Affairs	69	CE100	Civic Engagement
			CR100	Cultural Resource Concerns
			ED101	Education and Interpretation Concept 1
			NR100	Natural Resource Concerns
			PK100	Parking Reduced
			US100	USGS Building
			VE102	Visitor Experience Concept 2
	Volcano Art Center	80	US100	USGS Building
			VE103	Visitor Experience Concept 3
	Volcano Out & About	118	GN300	Prefer Concept 3 General Comment
			GNS100	General Project Support
			TR100	Traffic Improvements
			US100	USGS Building
			VE104	Visitor Experience Concept 4
			V1101	Visual Impacts Concept 1

**Appendix B**  
**Correspondence Index by Code**

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AL100	Alternative Suggestions	Hale 'Oahu Bed & Breakfast	102
AL100	Alternative Suggestions		73
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<b>ED104</b>	Education and Interpretation Concept 4		145
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<b>GN300</b>	Prefer Concept 3 General Comment		89
<b>GN300</b>	Prefer Concept 3 General Comment		106
<b>GN300</b>	Prefer Concept 3 General Comment		123
<b>GN300</b>	Prefer Concept 3 General Comment		131
<b>GN300</b>	Prefer Concept 3 General Comment		152
<b>GN300</b>	Prefer Concept 3 General Comment		155
<b>GN400</b>	Prefer Concept 4 General Comment		23
<b>GN400</b>	Prefer Concept 4 General Comment		52
<b>GN400</b>	Prefer Concept 4 General Comment		57

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>GN400</b>	Prefer Concept 4 General Comment		125
<b>GN400</b>	Prefer Concept 4 General Comment		136
<b>GN400</b>	Prefer Concept 4 General Comment		155
<b>GNC100</b>	General Project Concerns		117
<b>GNC100</b>	General Project Concerns		70
<b>GNC100</b>	General Project Concerns		88
<b>GNC100</b>	General Project Concerns		109
<b>GNC100</b>	General Project Concerns		121
<b>GNC100</b>	General Project Concerns		124
<b>GNC100</b>	General Project Concerns		130
<b>GNC100</b>	General Project Concerns		149
<b>GNS100</b>	General Project Support	EpicLava llc.	122
<b>GNS100</b>	General Project Support	Historic Hawai'i Foundation	140
<b>GNS100</b>	General Project Support		73
<b>GNS100</b>	General Project Support	Kilauea Military Camp (KMC)	50
<b>GNS100</b>	General Project Support		158
<b>GNS100</b>	General Project Support	The Nature Conservancy of Hawai'i	25
<b>GNS100</b>	General Project Support	Volcano Out & About	118
<b>GNS100</b>	General Project Support		93
<b>GNS100</b>	General Project Support		2
<b>GNS100</b>	General Project Support		5
<b>GNS100</b>	General Project Support		17
<b>GNS100</b>	General Project Support		32
<b>GNS100</b>	General Project Support		83
<b>GNS100</b>	General Project Support		113
<b>GNS100</b>	General Project Support		119
<b>GNS100</b>	General Project Support		134
<b>GNS100</b>	General Project Support		142
<b>GNS100</b>	General Project Support		155
<b>MT100</b>	Operation and Maintenance	Big Island Invasive Species Committee	71
<b>MT100</b>	Operation and Maintenance		18
<b>MT100</b>	Operation and Maintenance		84
<b>MT100</b>	Operation and Maintenance		144
<b>MT100</b>	Operation and Maintenance		145
<b>MT100</b>	Operation and Maintenance		150
<b>MT101</b>	Operation and Maintenance Concept 1		53
<b>MT101</b>	Operation and Maintenance Concept 1		3
<b>MT102</b>	Operation and Maintenance Concept 2		3
<b>MT103</b>	Operation and Maintenance Concept 3		145

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
NR100	Natural Resource Concerns	Big Island Invasive Species Committee	71
NR100	Natural Resource Concerns	Office of Hawaiian Affairs	69
NR100	Natural Resource Concerns		38
NR100	Natural Resource Concerns		41
NR100	Natural Resource Concerns		48
NR100	Natural Resource Concerns		52
NR100	Natural Resource Concerns		77
NR100	Natural Resource Concerns		111
NR100	Natural Resource Concerns		119
NR100	Natural Resource Concerns		134
NR100	Natural Resource Concerns		145
NR100	Natural Resource Concerns		157
NR101	Natural Resource Concerns Concept 1		53
NR101	Natural Resource Concerns Concept 1		13
NR101	Natural Resource Concerns Concept 1		14
NR101	Natural Resource Concerns Concept 1		27
NR101	Natural Resource Concerns Concept 1		32
NR101	Natural Resource Concerns Concept 1		33
NR101	Natural Resource Concerns Concept 1		36
NR101	Natural Resource Concerns Concept 1		43
NR101	Natural Resource Concerns Concept 1		48
NR101	Natural Resource Concerns Concept 1		52
NR101	Natural Resource Concerns Concept 1		54
NR101	Natural Resource Concerns Concept 1		74
NR101	Natural Resource Concerns Concept 1		119
NR101	Natural Resource Concerns Concept 1		142
NR101	Natural Resource Concerns Concept 1		145
NR102	Natural Resource Concerns Concept 2		30
NR102	Natural Resource Concerns Concept 2		14
NR102	Natural Resource Concerns Concept 2		27
NR102	Natural Resource Concerns Concept 2		32
NR102	Natural Resource Concerns Concept 2		33
NR102	Natural Resource Concerns Concept 2		34
NR102	Natural Resource Concerns Concept 2		52
NR102	Natural Resource Concerns Concept 2		86
NR102	Natural Resource Concerns Concept 2		95
NR102	Natural Resource Concerns Concept 2		119
NR102	Natural Resource Concerns Concept 2		142
NR102	Natural Resource Concerns Concept 2		145
NR102	Natural Resource Concerns Concept 2		157

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>NR103</b>	Natural Resource Concerns Concept 3	Community Environmental Education	120
<b>NR103</b>	Natural Resource Concerns Concept 3		14
<b>NR103</b>	Natural Resource Concerns Concept 3		27
<b>NR103</b>	Natural Resource Concerns Concept 3		32
<b>NR103</b>	Natural Resource Concerns Concept 3		33
<b>NR103</b>	Natural Resource Concerns Concept 3		40
<b>NR103</b>	Natural Resource Concerns Concept 3		48
<b>NR103</b>	Natural Resource Concerns Concept 3		74
<b>NR103</b>	Natural Resource Concerns Concept 3		95
<b>NR103</b>	Natural Resource Concerns Concept 3		109
<b>NR103</b>	Natural Resource Concerns Concept 3		119
<b>NR103</b>	Natural Resource Concerns Concept 3		132
<b>NR103</b>	Natural Resource Concerns Concept 3		142
<b>NR103</b>	Natural Resource Concerns Concept 3		145
<b>NR104</b>	Natural Resource Concerns Concept 4	Mauka Makai Adventures	97
<b>NR104</b>	Natural Resource Concerns Concept 4		19
<b>NR104</b>	Natural Resource Concerns Concept 4		27
<b>NR104</b>	Natural Resource Concerns Concept 4		36
<b>NR104</b>	Natural Resource Concerns Concept 4		38
<b>NR104</b>	Natural Resource Concerns Concept 4		39
<b>NR104</b>	Natural Resource Concerns Concept 4		52
<b>NR104</b>	Natural Resource Concerns Concept 4		96
<b>NR104</b>	Natural Resource Concerns Concept 4		99
<b>NR104</b>	Natural Resource Concerns Concept 4		113
<b>NR104</b>	Natural Resource Concerns Concept 4		119
<b>NR104</b>	Natural Resource Concerns Concept 4		142
<b>NR104</b>	Natural Resource Concerns Concept 4		145
<b>OS100</b>	Out of Scope		26
<b>OS100</b>	Out of Scope		101
<b>OS100</b>	Out of Scope		129
<b>PD100</b>	Pedestrian Safety and Access		86
<b>PD100</b>	Pedestrian Safety and Access		146
<b>PD100</b>	Pedestrian Safety and Access		157
<b>PD101</b>	Pedestrian Safety and Access Concept 1	Historic Hawai'i Foundation	140
<b>PD101</b>	Pedestrian Safety and Access Concept 1		1
<b>PD101</b>	Pedestrian Safety and Access Concept 1		3
<b>PD101</b>	Pedestrian Safety and Access Concept 1		12
<b>PD101</b>	Pedestrian Safety and Access Concept 1		13
<b>PD101</b>	Pedestrian Safety and Access Concept 1		74
<b>PD101</b>	Pedestrian Safety and Access Concept 1		81
<b>PD101</b>	Pedestrian Safety and Access Concept 1		131

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
PD102	Pedestrian Safety and Access Concept 2		156
PD103	Pedestrian Safety and Access Concept 3		2
PD103	Pedestrian Safety and Access Concept 3		20
PD103	Pedestrian Safety and Access Concept 3		27
PD103	Pedestrian Safety and Access Concept 3		85
PD103	Pedestrian Safety and Access Concept 3		100
PD104	Pedestrian Safety and Access Concept 4		3
PD104	Pedestrian Safety and Access Concept 4		18
PD104	Pedestrian Safety and Access Concept 4		54
PE100	Park Entrance		117
PE100	Park Entrance		81
PE100	Park Entrance		88
PE100	Park Entrance		145
PE100	Park Entrance		146
PE101	Park Entrance Concept 1		74
PE101	Park Entrance Concept 1		131
PE101	Park Entrance Concept 1		144
PE102	Park Entrance Concept 2		74
PE102	Park Entrance Concept 2		131
PE102	Park Entrance Concept 2		144
PE102	Park Entrance Concept 2		153
PE103	Park Entrance Concept 3		3
PE103	Park Entrance Concept 3		74
PE103	Park Entrance Concept 3		124
PE104	Park Entrance Concept 4		14
PE104	Park Entrance Concept 4		18
PE104	Park Entrance Concept 4		70
PE104	Park Entrance Concept 4		74
PE104	Park Entrance Concept 4		119
PE104	Park Entrance Concept 4		142
PK100	Parking Reduced	Edith Kanakaole Foundation	148
PK100	Parking Reduced	Office of Hawaiian Affairs	69
PK100	Parking Reduced		16
PK100	Parking Reduced		75
PK100	Parking Reduced		157
PK200	Parking Increased		17
PK200	Parking Increased		46
PK200	Parking Increased		48
PK200	Parking Increased		104
PK200	Parking Increased		119
PK200	Parking Increased		144
PK200	Parking Increased		151

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
PK201	Parking Increased Concept 1		79
PK202	Parking Increased Concept 2		3
PK202	Parking Increased Concept 2		130
PK202	Parking Increased Concept 2		153
PK202	Parking Increased Concept 2		155
PK203	Parking Increased Concept 3		2
PK203	Parking Increased Concept 3		3
PK203	Parking Increased Concept 3		77
PK203	Parking Increased Concept 3		107
PK203	Parking Increased Concept 3		119
PK204	Parking Increased Concept 4		3
PK204	Parking Increased Concept 4		145
RM100	Request for materials	Red Road Press	15
RM100	Request for materials		4
RM100	Request for materials		6
RM100	Request for materials		7
RM100	Request for materials		8
RM100	Request for materials		9
RM100	Request for materials		10
RM100	Request for materials		28
RM100	Request for materials		29
RM100	Request for materials		51
RM100	Request for materials		133
TR100	Traffic Improvements		159
TR100	Traffic Improvements	Volcano Out & About	118
TR100	Traffic Improvements		22
TR100	Traffic Improvements		48
TR100	Traffic Improvements		157
TR101	Traffic Improvements Concept 1		90
TR101	Traffic Improvements Concept 1		12
TR101	Traffic Improvements Concept 1		37
TR101	Traffic Improvements Concept 1		52
TR101	Traffic Improvements Concept 1		70
TR101	Traffic Improvements Concept 1		134
TR101	Traffic Improvements Concept 1		135
TR102	Traffic Improvements Concept 2		13
TR102	Traffic Improvements Concept 2		27
TR102	Traffic Improvements Concept 2		31
TR102	Traffic Improvements Concept 2		32
TR102	Traffic Improvements Concept 2		44
TR102	Traffic Improvements Concept 2		52
TR102	Traffic Improvements Concept 2		87

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
TR102	Traffic Improvements Concept 2		134
TR102	Traffic Improvements Concept 2		135
TR102	Traffic Improvements Concept 2		153
TR102	Traffic Improvements Concept 2		155
TR103	Traffic Improvements Concept 3		87
TR103	Traffic Improvements Concept 3		136
TR104	Traffic Improvements Concept 4		37
TR104	Traffic Improvements Concept 4		52
TR104	Traffic Improvements Concept 4		142
TR200	Traffic Increases	Coalition To Protect America's National Parks	76
TR200	Traffic Increases		1
TR201	Traffic Increases Concept 1		3
TR201	Traffic Increases Concept 1		74
TR201	Traffic Increases Concept 1		81
TR201	Traffic Increases Concept 1		119
TR201	Traffic Increases Concept 1		131
TR201	Traffic Increases Concept 1		145
TR201	Traffic Increases Concept 1		155
TR203	Traffic Increases Concept 3		85
TR204	Traffic Increases Concept 4	Community Environmental Education	120
TR204	Traffic Increases Concept 4		70
TR204	Traffic Increases Concept 4		135
TR204	Traffic Increases Concept 4		138
US100	USGS Building	Community Environmental Education	120
US100	USGS Building	EpicLava llc.	122
US100	USGS Building	Historic Hawai'i Foundation	140
US100	USGS Building	Office of Hawaiian Affairs	69
US100	USGS Building	Volcano Art Center	80
US100	USGS Building	Volcano Out & About	118
US100	USGS Building		98
US100	USGS Building		30
US100	USGS Building		90
US100	USGS Building		12
US100	USGS Building		13
US100	USGS Building		21
US100	USGS Building		31
US100	USGS Building		32
US100	USGS Building		33
US100	USGS Building		40

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>US100</b>	USGS Building		44
<b>US100</b>	USGS Building		48
<b>US100</b>	USGS Building		49
<b>US100</b>	USGS Building		54
<b>US100</b>	USGS Building		68
<b>US100</b>	USGS Building		74
<b>US100</b>	USGS Building		78
<b>US100</b>	USGS Building		79
<b>US100</b>	USGS Building		81
<b>US100</b>	USGS Building		82
<b>US100</b>	USGS Building		83
<b>US100</b>	USGS Building		85
<b>US100</b>	USGS Building		86
<b>US100</b>	USGS Building		87
<b>US100</b>	USGS Building		88
<b>US100</b>	USGS Building		92
<b>US100</b>	USGS Building		96
<b>US100</b>	USGS Building		103
<b>US100</b>	USGS Building		105
<b>US100</b>	USGS Building		106
<b>US100</b>	USGS Building		109
<b>US100</b>	USGS Building		112
<b>US100</b>	USGS Building		116
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<b>US100</b>	USGS Building		124
<b>US100</b>	USGS Building		131
<b>US100</b>	USGS Building		132
<b>US100</b>	USGS Building		134
<b>US100</b>	USGS Building		135
<b>US100</b>	USGS Building		138
<b>US100</b>	USGS Building		142
<b>US100</b>	USGS Building		144
<b>US100</b>	USGS Building		155
<b>US100</b>	USGS Building		157
<b>VE100</b>	Visitor Experience		159
<b>VE100</b>	Visitor Experience		108
<b>VE100</b>	Visitor Experience		53
<b>VE100</b>	Visitor Experience		1
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<b>VE100</b>	Visitor Experience		40

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
VE100	Visitor Experience		88
VE100	Visitor Experience		119
VE100	Visitor Experience		142
VE100	Visitor Experience		144
VE100	Visitor Experience		145
VE100	Visitor Experience		151
VE100	Visitor Experience		157
VE101	Visitor Experience Concept 1		30
VE101	Visitor Experience Concept 1		3
VE101	Visitor Experience Concept 1		12
VE101	Visitor Experience Concept 1		18
VE101	Visitor Experience Concept 1		43
VE101	Visitor Experience Concept 1		44
VE101	Visitor Experience Concept 1		59
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VE101	Visitor Experience Concept 1		79
VE101	Visitor Experience Concept 1		86
VE101	Visitor Experience Concept 1		94
VE101	Visitor Experience Concept 1		96
VE101	Visitor Experience Concept 1		99
VE101	Visitor Experience Concept 1		103
VE101	Visitor Experience Concept 1		130
VE101	Visitor Experience Concept 1		134
VE101	Visitor Experience Concept 1		135
VE101	Visitor Experience Concept 1		142
VE101	Visitor Experience Concept 1		144
VE101	Visitor Experience Concept 1		157
VE102	Visitor Experience Concept 2	EpicLava llc.	122
VE102	Visitor Experience Concept 2	Office of Hawaiian Affairs	69
VE102	Visitor Experience Concept 2		1
VE102	Visitor Experience Concept 2		18
VE102	Visitor Experience Concept 2		34
VE102	Visitor Experience Concept 2		39
VE102	Visitor Experience Concept 2		44
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VE102	Visitor Experience Concept 2		96
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VE102	Visitor Experience Concept 2		135
VE102	Visitor Experience Concept 2		138
VE102	Visitor Experience Concept 2		142
VE102	Visitor Experience Concept 2		144

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
VE102	Visitor Experience Concept 2		151
VE102	Visitor Experience Concept 2		155
VE102	Visitor Experience Concept 2		156
VE103	Visitor Experience Concept 3	Volcano Art Center	80
VE103	Visitor Experience Concept 3		2
VE103	Visitor Experience Concept 3		18
VE103	Visitor Experience Concept 3		27
VE103	Visitor Experience Concept 3		33
VE103	Visitor Experience Concept 3		41
VE103	Visitor Experience Concept 3		44
VE103	Visitor Experience Concept 3		54
VE103	Visitor Experience Concept 3		74
VE103	Visitor Experience Concept 3		78
VE103	Visitor Experience Concept 3		85
VE103	Visitor Experience Concept 3		95
VE103	Visitor Experience Concept 3		99
VE103	Visitor Experience Concept 3		103
VE103	Visitor Experience Concept 3		106
VE103	Visitor Experience Concept 3		114
VE103	Visitor Experience Concept 3		124
VE103	Visitor Experience Concept 3		130
VE103	Visitor Experience Concept 3		131
VE103	Visitor Experience Concept 3		135
VE103	Visitor Experience Concept 3		144
VE103	Visitor Experience Concept 3		151
VE103	Visitor Experience Concept 3		155
VE104	Visitor Experience Concept 4	Coalition To Protect America's National Parks	76
VE104	Visitor Experience Concept 4	Historic Hawai'i Foundation	140
VE104	Visitor Experience Concept 4		159
VE104	Visitor Experience Concept 4	Mauka Makai Adventures	97
VE104	Visitor Experience Concept 4		64
VE104	Visitor Experience Concept 4	Volcano Out & About	118
VE104	Visitor Experience Concept 4		30
VE104	Visitor Experience Concept 4		108
VE104	Visitor Experience Concept 4		1
VE104	Visitor Experience Concept 4		13
VE104	Visitor Experience Concept 4		14
VE104	Visitor Experience Concept 4		18
VE104	Visitor Experience Concept 4		27
VE104	Visitor Experience Concept 4		32
VE104	Visitor Experience Concept 4		33

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>VE104</b>	Visitor Experience Concept 4		35
<b>VE104</b>	Visitor Experience Concept 4		44
<b>VE104</b>	Visitor Experience Concept 4		54
<b>VE104</b>	Visitor Experience Concept 4		58
<b>VE104</b>	Visitor Experience Concept 4		70
<b>VE104</b>	Visitor Experience Concept 4		74
<b>VE104</b>	Visitor Experience Concept 4		79
<b>VE104</b>	Visitor Experience Concept 4		81
<b>VE104</b>	Visitor Experience Concept 4		82
<b>VE104</b>	Visitor Experience Concept 4		88
<b>VE104</b>	Visitor Experience Concept 4		96
<b>VE104</b>	Visitor Experience Concept 4		110
<b>VE104</b>	Visitor Experience Concept 4		124
<b>VE104</b>	Visitor Experience Concept 4		130
<b>VE104</b>	Visitor Experience Concept 4		131
<b>VE104</b>	Visitor Experience Concept 4		132
<b>VE104</b>	Visitor Experience Concept 4		142
<b>VE104</b>	Visitor Experience Concept 4		144
<b>VE104</b>	Visitor Experience Concept 4		145
<b>VE104</b>	Visitor Experience Concept 4		155
<b>VI101</b>	Visual Impacts Concept 1	Volcano Out & About	118
<b>VI103</b>	Visual Impacts Concept 3		144
<b>VI104</b>	Visual Impacts Concept 4		145

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**Appendix C**  
**Materials Provided During Civic Engagement**

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## Hawai'i Volcanoes Disaster Recovery – Concept Development Narrative



The impact of the 2018 summit collapse caused profound changes to Kīlauea caldera and Halema'uma'u Crater (right).  
NPS Photo/J.Weil taken from Uēkahuna Bluff.

### SUPERINTENDENT'S MESSAGE

E Aloha,

Hawai'i Volcanoes National Park is pleased to present for your consideration the initial draft design concepts for the proposed Disaster Recovery Project. The intent of this project is to repair and/or replace critical park infrastructure and U.S. Geological Survey-operated facilities damaged during the 2018 eruption and summit collapse of Kīlauea volcano. The project addresses potential future use of the Uēkahuna Bluff area and other park sites. Uēkahuna Bluff is an area of geologic, natural and cultural significance and is regarded as sacred by Native Hawaiians and other groups.

The National Park Service and U.S. Geological Survey are currently evaluating four draft design concepts with additional draft elements common to all concepts. Your feedback is critical at this important step in this evaluation process. In our normal process, we would hold a meeting to hear your input in person. However, due to Covid-19 and following Centers for Disease Control guidelines, the NPS is conducting this essential civic engagement virtually to maintain social distancing mitigations, and greatly values your participation. We are offering several ways for you to provide feedback:

- Visit <https://parkplanning.nps.gov/HAVODisasterRecovery> for an overview of the draft concepts and the draft elements that would be common to all, and to submit your comments
- We have a phone line dedicated to receiving your comments on this project. You can leave a detailed message or request that someone call you back at (808) 460-6212.
- Those who prefer printed copies can also call (808) 460-6212, or email [havo\\_planning@nps.gov](mailto:havo_planning@nps.gov).

Park staff, partners, and volunteers remain committed to fulfilling our kuleana to protect the rich geologic, natural, and cultural heritage, and providing inspirational visitor experiences at Hawai'i Volcanoes National Park.

We appreciate your continued interest in the park and hope that you will continue to stay engaged with the planning process.

Mahalo nui loa,

Rhonda Loh, Acting Superintendent

## INTRODUCTION

The focus of this planning effort is the repair, replacement, removal or relocation of the facilities and functions that were damaged at Uēkahuna Bluff in the park by the 2018 volcanic disaster. The project also addresses continued and potential future use of the area that has important geologic, natural, and cultural significance, and is considered by Native Hawaiians and other groups as a sacred area. Affected facilities include the Reginald T. Okamura (Okamura) building and the adjacent Geochemistry Annex (Annex) building - both operated by the U.S. Geological Survey-Hawaiian Volcano Observatory (HVO), and the historic Jaggar Museum.

The following four draft design concepts are being evaluated and include plans for restoring visitor services and USGS-operated facilities at alternate locations in the summit area of Kīlauea volcano, as well as plans to demolish some facilities at the Uēkahuna Bluff. This planning effort is an opportunity to address other long-standing issues related to traffic, parking congestion, high demand on existing facilities, and resource impacts.

We are taking a comprehensive, long-term approach to recovery planning consistent with recommendations in the park’s 2016 General Management Plan. Not all elements of the concepts would be funded by disaster recovery and it is likely that the final overall concept would be designed and constructed in phases over multiple years as funding allows. The first phase will be focused on those efforts tied directly to replacement of lost facilities and functions.



*Halema'uma'u Crater Before & After – November 28, 2008 (left); August 1, 2018 (right) – USGS Photos*

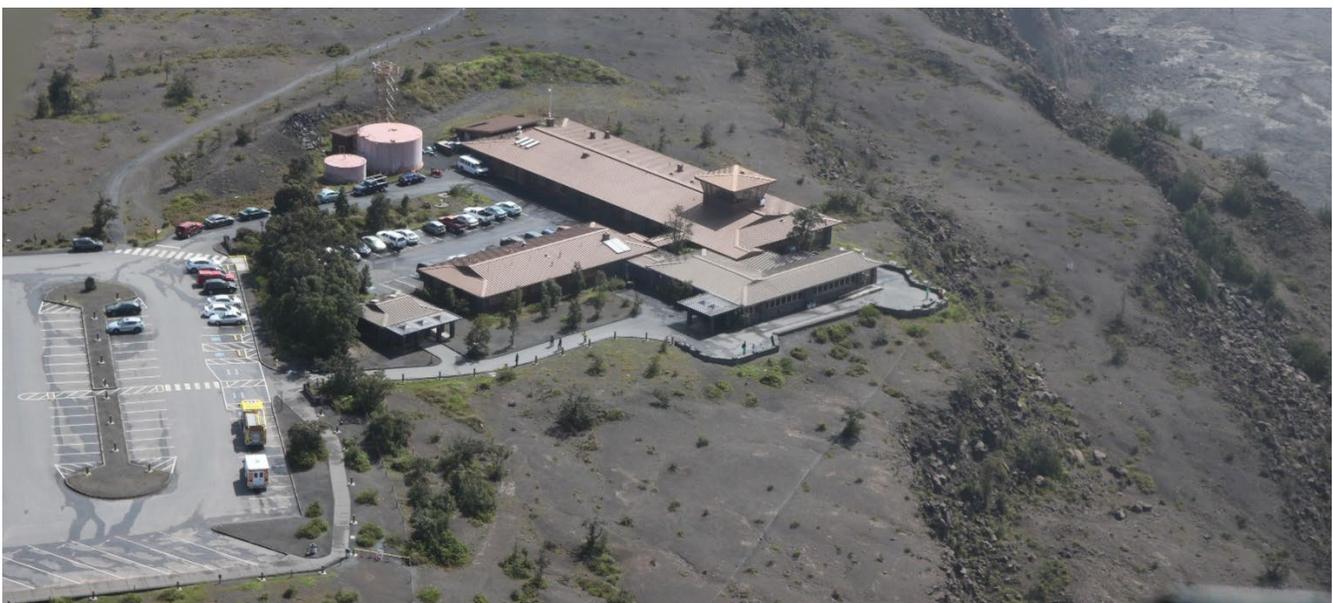


## ASPECTS COMMON TO ALL DRAFT CONCEPTS

All concepts being evaluated would include the following proposed actions. See the matrix at the end of this section for a summary of relevant differences between existing and proposed conditions.

### Uēkahuna Bluff

- Due to damage sustained in the 2018 eruption, the historic Jaggar Museum and non-historic Reginald T. Okamura (Okamura) building would be demolished, and most of the existing footprint would be restored to natural conditions. Some remnant elements from the buildings may be salvaged and incorporated into a viewing shelter located on site.
- The Geochemistry Annex (Annex) building would be repaired for interim use by U.S. Geological Survey-Hawaiian Volcanoes Observatory (HVO) and National Park Service (NPS) administration until the new USGS field station is completed, at which time the Annex may be demolished.
- The existing restrooms would be repaired for continued visitor use.
- The existing paved and walled overlook in front of the restrooms, Annex and Jaggar Museum would be repaired and improved. Improvements would include enlarging the overlook to incorporate some of the footprint of the Jaggar Museum and adding an open-air viewing shelter.
- A second area, previously used by the public as an informal viewing area, would become a formalized overlook, with possible hard surface and perimeter walls, located along Crater Rim Trail south of the public parking area. The existing Crater Rim Trail would be maintained.
- The existing radio tower and radio room will remain. The existing water tanks may be replaced or removed, depending on if the Annex remains long term. In the future and if needed, add visitor parking capacity by constructing a new parking lot on the other side of Crater Rim Drive. This would alleviate severe congestion and resource damage that occurs during summit eruptions. The Jaggar Museum to Nāmakaniipao Trail connection would be re-routed if this parking is constructed.



*Facilities at Uēkahuna Bluff - USGS Photo*

**Kīlauea Visitor Center Area**

- The existing trails around Kīlauea Visitor Center (KVC) would be connected to form a loop trail connecting the visitor center to other amenities and nearby overlooks.
- The existing covered lanai at KVC would be reduced in size to restore the integrity of the historic KVC building. The current outdoor exhibits would be replaced and relocated to a new covered lanai area.
- The existing restrooms next to KVC would be renovated.
- The park entrance road and kiosk would be modified to improve vehicle circulation and reduce congestion.

**Kīlauea Research and Administrative Area**

- USGS Pacific Island Ecosystems Research Center - Kīlauea Field Station (PIERC-KFS) buildings. The majority of staff and functions would move to a new facility in Hilo, HI. The remainder would relocate to a new USGS Field Station in the park, that would house both PIERC-KFS and HVO field operations. (See Concepts 1 through 4 for proposed locations of new USGS Field Station).
- Existing PIERC-KFS occupied buildings (343, 344, 216, 295) would be converted to NPS administrative use.
- Portions of the non-historic NPS office space in the research area would be demolished.

**COMMON TO ALL MATRIX**

<b>Uēkahuna Bluff</b>	<b>Existing</b>	<b>Proposed</b>
Okamura Building (sf) <sup>1</sup>	22,500	0
Jaggar Museum (sf) <sup>1</sup>	3,975	0
Annex Building (sf) <sup>2</sup>	3,800	3,800
Restroom Building (sf)	950	950
Interpretive Overlook (sf) <sup>3,4</sup>	9,700	19,600
Visitor Passenger Vehicle Stalls	72	144
Visitor Large Vehicle Stalls	7	14
NPS/USGS Passenger Vehicle Stalls	23	23
<b>Research Area</b>	<b>Existing</b>	<b>Proposed</b>
PIERC Building (sf) <sup>5</sup>	12,470	12,470
NPS Office Space(sf) <sup>6</sup>	3,312	0
New USGS Field Station <sup>7</sup>	0	12,000

<sup>1</sup> Entire Okamura Building footprint and approximately 900 square feet (sf) of Jaggar Museum footprint would be restored to natural conditions.

<sup>2</sup> The Annex building will be repaired for interim administrative use and may later be demolished.

<sup>3</sup> Existing overlook area measured from aerial imagery and is approximate.

<sup>4</sup> 2,900 sf of overlook expansion would be within footprint of former Jaggar Museum and would include 2,800 sf open air viewing shelter. 7,000 sf of proposed interpretive overlook would be the new formalized overlook connected to the parking lot.

<sup>5</sup> All PIERC-KFS space to be vacated for use by NPS.

<sup>6</sup> Non-historic NPS office space to be demolished.

<sup>7</sup> See concept descriptions for proposed USGS Field Station locations.

---

## CONCEPT DESCRIPTIONS:

The following draft concepts provide options for replacement of park visitor center functions and visitor use capacity lost through damage to Jaggar Museum. They also provide a new USGS Field Station facility to replace the functions and capacity lost by HVO at the Okamura building as well as the PIERC-KFS operations that remain following relocation of the majority of their functions to Hilo. Proposed improvements would maintain the historic character, utilize compatible design styles and materials, leverage existing facilities and to the greatest extent possible, minimize impacts to existing features and functions. These project goals are achieved in a different manner with each of the concepts. See the matrix at the end of this section for a summary of relevant differences between concepts.

### Concept 1

#### Concept Statement:

**Create a consolidated interpretive, education and research campus by relocating facilities and functions formerly at Uēkahuna to an area adjacent to existing primary visitor use areas. Construct a new stand-alone visitor center on the south/caldera side of the Crater Rim Drive to enhance pedestrian connectivity to most visitor facilities and caldera views. The current KVC is repurposed as an education center. USGS functions are located adjacent to the visitor use area. Leverage existing parking and utilities with minor realignment and expansion needed to accommodate replacement facilities and visitor use levels.**

- A new visitor center with a separate restroom building would be constructed on the south side of Crater Rim Drive near the park entrance in a currently forested area, and includes a covered lanai, outdoor exhibits, theater, visitor parking, bus parking, NPS administrative parking, pedestrian circulation, and a new wastewater system.
- A new visitor center would be large enough to accommodate the visitor functions currently provided at KVC and previously provided by Jaggar Museum.
- A new visitor center would allow a single, easy-to-find stop for the interpretation of the park's defining features in a coordinated and consolidated manner.
- New covered picnic tables would be constructed in the existing picnic area adjacent to the 1877 Volcano House.
- Visitor use in the KVC building would be relocated to the new visitor center. The existing KVC building would be repurposed as an education center with existing NPS office and auditorium uses being maintained.
- The existing education center in the NPS administrative area would be repurposed for NPS administrative use.
- A new USGS HVO & PIERC-KFS Field Station, parking and wastewater system would be constructed to the east of the KVC building in a section of previously disturbed forest which is fragmented by utility corridors and an unpaved parking lot.
- An administrative bypass lane, additional fee booth and replacement staff parking would be added to the existing entrance station.
- Crater Rim Drive would be realigned and a roundabout would be constructed to improve traffic flow, safety and wayfinding at the Crater Rim Drive intersection.
- Existing water and communications lines would be utilized with minor relocation and connection spurs.

## Concept 2

### Concept Statement:

**Consolidate visitor use adjacent to existing primary visitor area. Construct a new stand-alone visitor center east of the existing one. The existing KVC is repurposed as an education center. Leverage existing parking and utilities with expansion needed to accommodate replacement facilities and visitor use levels. USGS functions are separated from the main visitor use area at the park but are still in close proximity to park emergency operations.**

- A new visitor center with interior restrooms would be constructed east of KVC and includes a covered lanai, outdoor exhibits, theater, visitor parking, bus parking and pedestrian circulation.
- A new visitor center would be large enough to accommodate visitor functions currently provided by KVC and previously provided by Jaggar Museum
- A new visitor center would allow a single, easy-to-find stop for the interpretation of the park's defining features in a coordinated and consolidated manner.
- New covered picnic tables would be constructed in the existing picnic area adjacent to the 1877 Volcano House.
- Visitor use in the KVC building would be relocated to the new visitor center. The existing KVC building would be repurposed as an education center with existing NPS office and auditorium uses being maintained.
- The existing education center in the NPS administrative area would be repurposed for NPS administrative use.
- A new USGS HVO & PIERC-KFS Field Station, parking and wastewater system would be constructed near the Visitor Emergency Operations Center (VEOC) in a currently forested area.
- An administrative bypass lane, additional fee booth and replacement staff parking would be added to the entrance station.
- Crater Rim Drive would be realigned, and a roundabout would be constructed to improve traffic flow, safety and wayfinding at the Crater Rim Drive intersection.
- Existing water and communications lines would be utilized with minor relocation and connection spurs.

## Concept 3

### Concept Statement:

**Maximize reuse of existing visitor space by repurposing the existing visitor center and auditorium area and constructing an adjacent smaller new visitor center and expanded parking area. Leverage existing parking and utilities with expansion needed to accommodate replacement facilities and visitor use levels. USGS functions are separated from NPS functions and relocated to the former ballfield area, west of the Kilauea Military Camp (KMC) land assignment.**

- A new visitor center addition (separate building) would be constructed on the west side of the KVC in an existing developed landscape and includes a covered lanai and outdoor exhibits along with visitor parking, bus parking and pedestrian circulation. The lanai would connect to visitor parking and the KVC.
- Together, the existing KVC and smaller visitor center addition would accommodate visitor functions currently provided at KVC and previously provided by Jaggar Museum
- The existing KVC lobby would be used for an expanded bookstore and orientation information. Exhibits will be replaced in the new visitor center addition.
- The visitor experience would be segmented into two separate buildings with enhanced wayfinding to guide visitors between areas/buildings.

- A new USGS HVO & PIERC-KFS Field Station and parking would be constructed in the historic former ballfield area, adjacent to the Kilauea Military Camp (KMC) land assignment.
- A new water line, water tank and wastewater system would be constructed adjacent to the new USGS HVO & PIERC-KFS Field Station.
- A new two kiosk entrance station would be constructed to the west of the existing kiosks, which would be demolished. An administrative bypass lane would be added to reduce traffic congestion at the entrance.
- Crater Rim Drive would be realigned to improve vehicular circulation in the KVC area.

#### Concept 4

##### Concept Statement:

**Relocate the functions lost at Uēkahuna to the former ballfield area adjacent to the KMC land assignment. Visitor services currently provided at KVC and formerly provided at Jaggar Museum are combined in a new visitor center at the former ballfield. A new USGS field station is constructed adjacent and west of the new visitor center. Construct new parking and utility infrastructure to support the new facilities. The existing KVC is repurposed to an education center.**

- A new visitor center with a separate restroom building would be constructed in the former historic ballfield area, adjacent to the KMC land assignment, and includes a covered lanai, outdoor exhibits, visitor parking, bus parking, NPS administrative parking and pedestrian circulation.
- A new USGS HVO & PIERC-KFS Field Station and parking would be constructed adjacent to the new visitor center.
- A new shared water line, water tank and wastewater systems would be constructed adjacent to the new visitor center and USGS HVO & PIERC-KFS Field Station.
- Visitor use in the KVC building would be relocated to the new visitor center. The existing KVC building would be repurposed as an education center with existing NPS office and auditorium uses being maintained.
- The existing education center in the NPS administrative area would be repurposed for NPS administrative use.
- New covered picnic tables would be constructed in the existing picnic area adjacent to the 1877 Volcano House.
- An administrative bypass lane and additional fee booth would be added to the park entrance station.
- Crater Rim Drive would be realigned to improve vehicular circulation in the KVC area.

**CONCEPT MATRIX**

<b>Parking Stalls*</b>	<b>Existing</b>	<b>Concept 1</b>	<b>Concept 2</b>	<b>Concept 3</b>	<b>Concept 4</b>
Visitor Passenger Vehicle	123	239	235	228	243
Visitor Large Vehicle/Bus	8	16	16	14	24
NPS Administrative	50	59	34	50	70
USGS Administrative	0	35	35	35	35
<b>Facility Areas (in square feet)</b>	<b>Existing</b>	<b>Concept 1</b>	<b>Concept 2</b>	<b>Concept 3</b>	<b>Concept 4</b>
Visitor Center/Restrooms**	11,845	16,220	16,220	13,870	16,220
Covered Lanai	1,750	13,700	12,200	11,800	12,100
Education Center	3,300	5,800	5,800	3,300	5,800

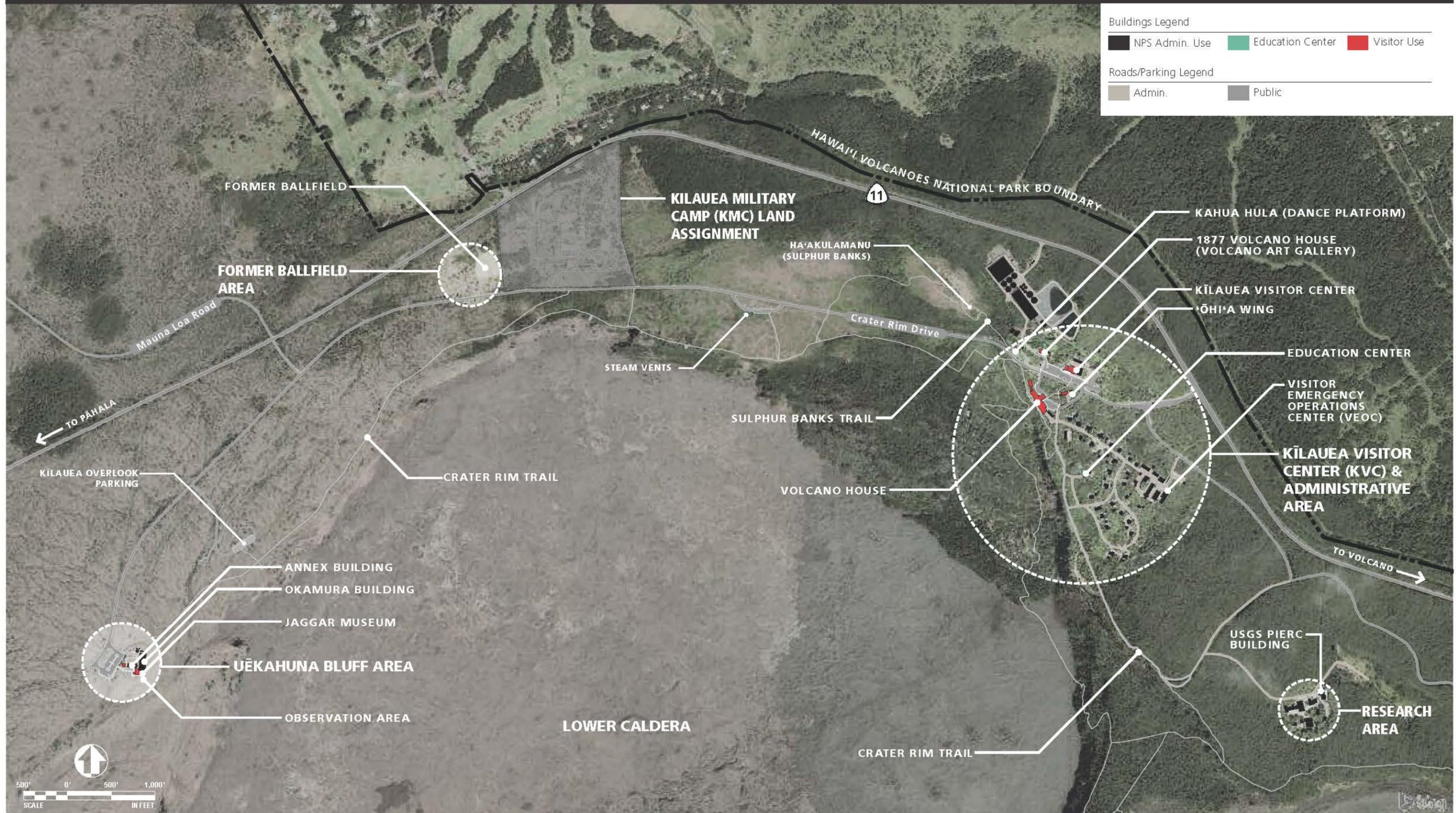
\*Includes parking at KVC Area, VEOC, and Former Ballfield. Does not include parking at Uēkahuna or Research area.

\*\*Existing area includes Jaggar Museum (3,975 sf), KVC (5,800 sf), Uēkahuna restroom (950 sf), and KVC restroom (1,120 sf)

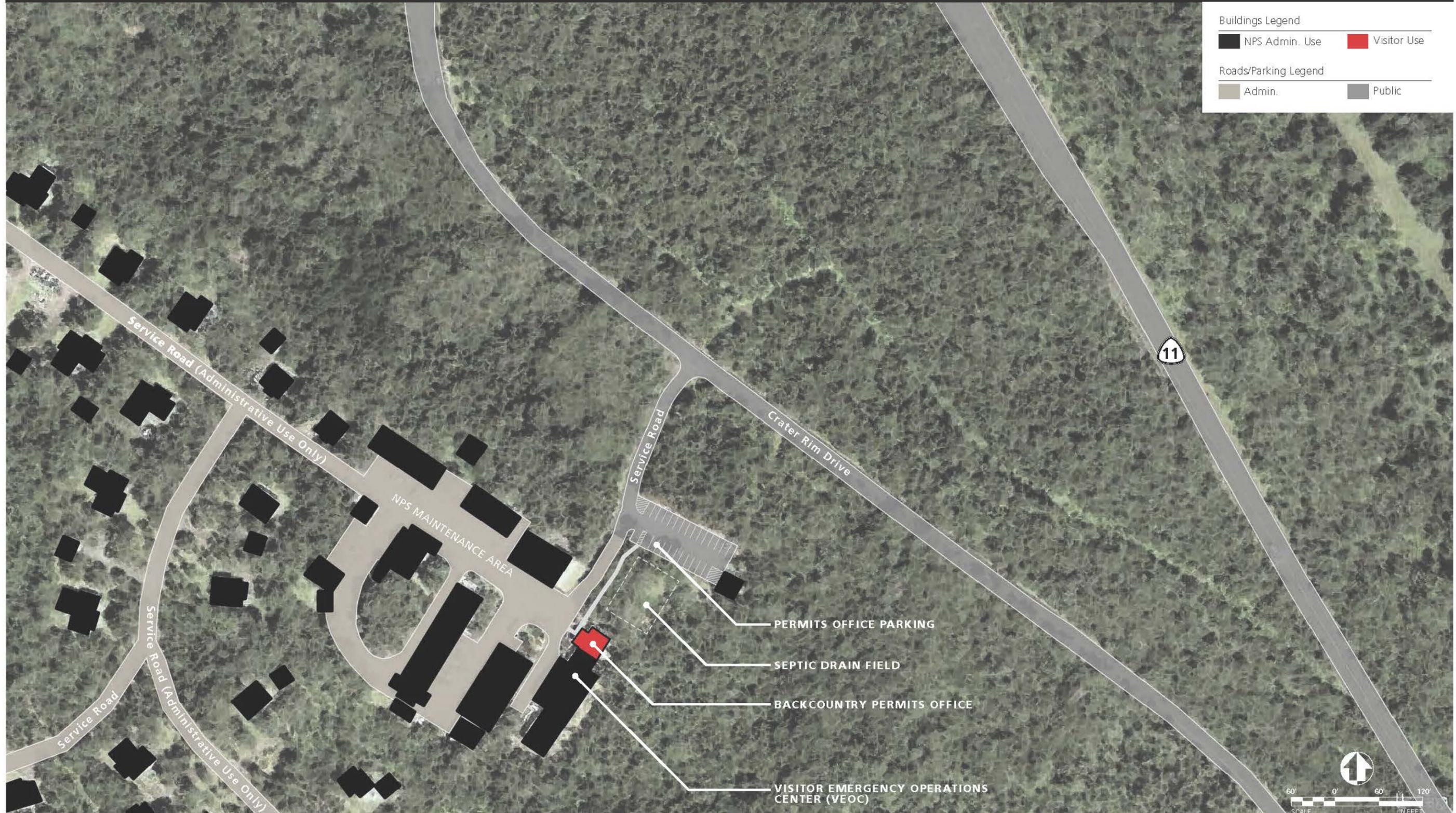
See actions common to all for USGS Facility Areas



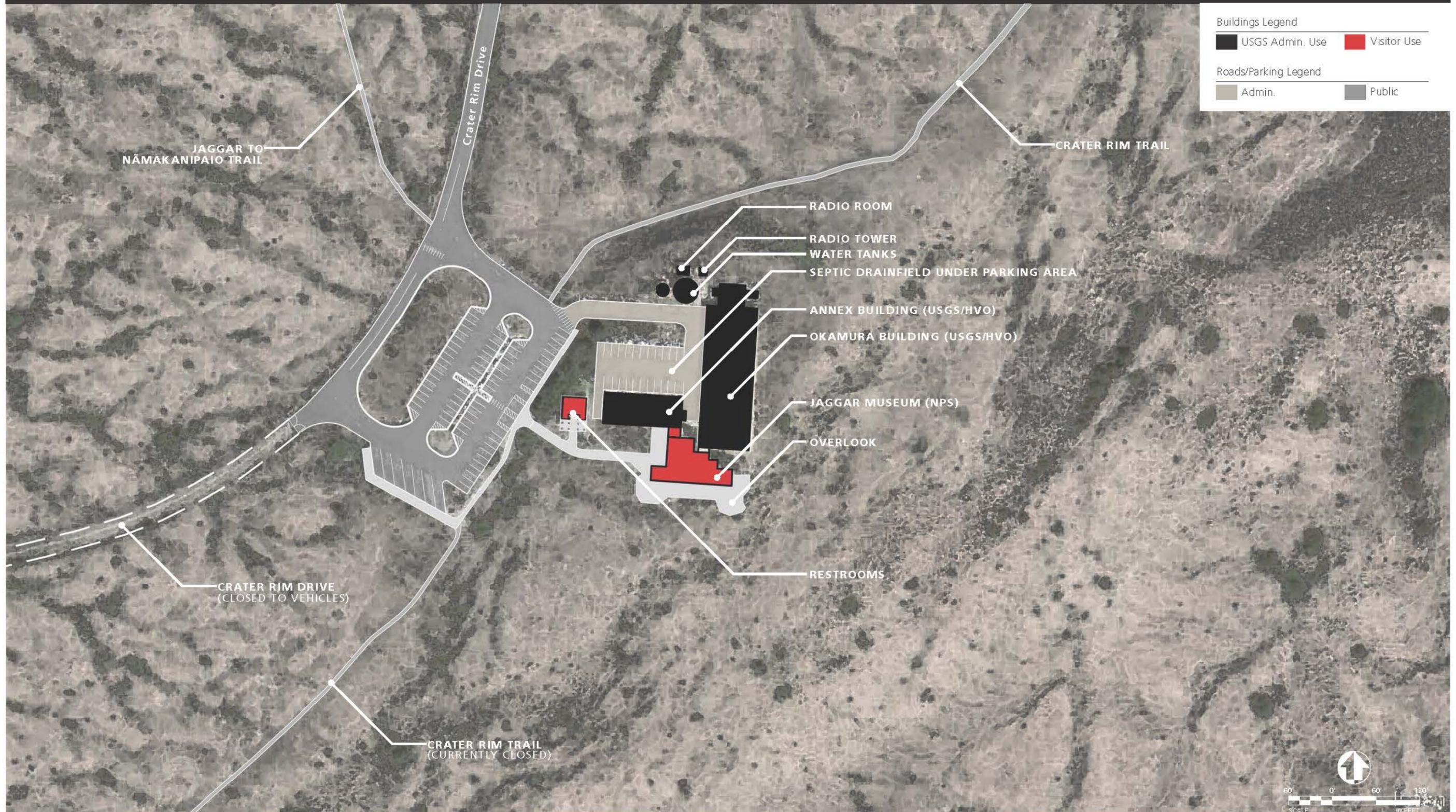
*Uēkahuna Bluff above Halema'uma'u Crater - NPS Photo, Jon Christensen*













- 1 Demolish historic Jaggar Museum (3,975 sf) and non-historic Okamura Building (22,500 sf). Restore a majority of existing footprint to natural conditions.\*
- 2 Repair Annex Building (3,800 sf) for interim use by USGS and NPS until the new USGS field station is completed at which time the annex may be demolished.
- 3 Repair Restrooms (950 sf) for visitor use.
- 4 Repair and expand interpretive overlook.\*
- 5 Construct new open air viewing Shelter (2,800 sf) in former Jaggar Museum site.\*
- 6 Construct new formalized overlook with possible hard surface and perimeter walls along existing trail/viewing area.
- 7 Maintain existing public parking lot with 72 passenger vehicle spaces and 7 bus spaces.
- 8 Construct additional parking lot to double parking capacity in this area (future if needed).

\*Some remnant architectural elements from buildings and overlook may be salvaged and incorporated into new facilities.

#### Buildings Legend

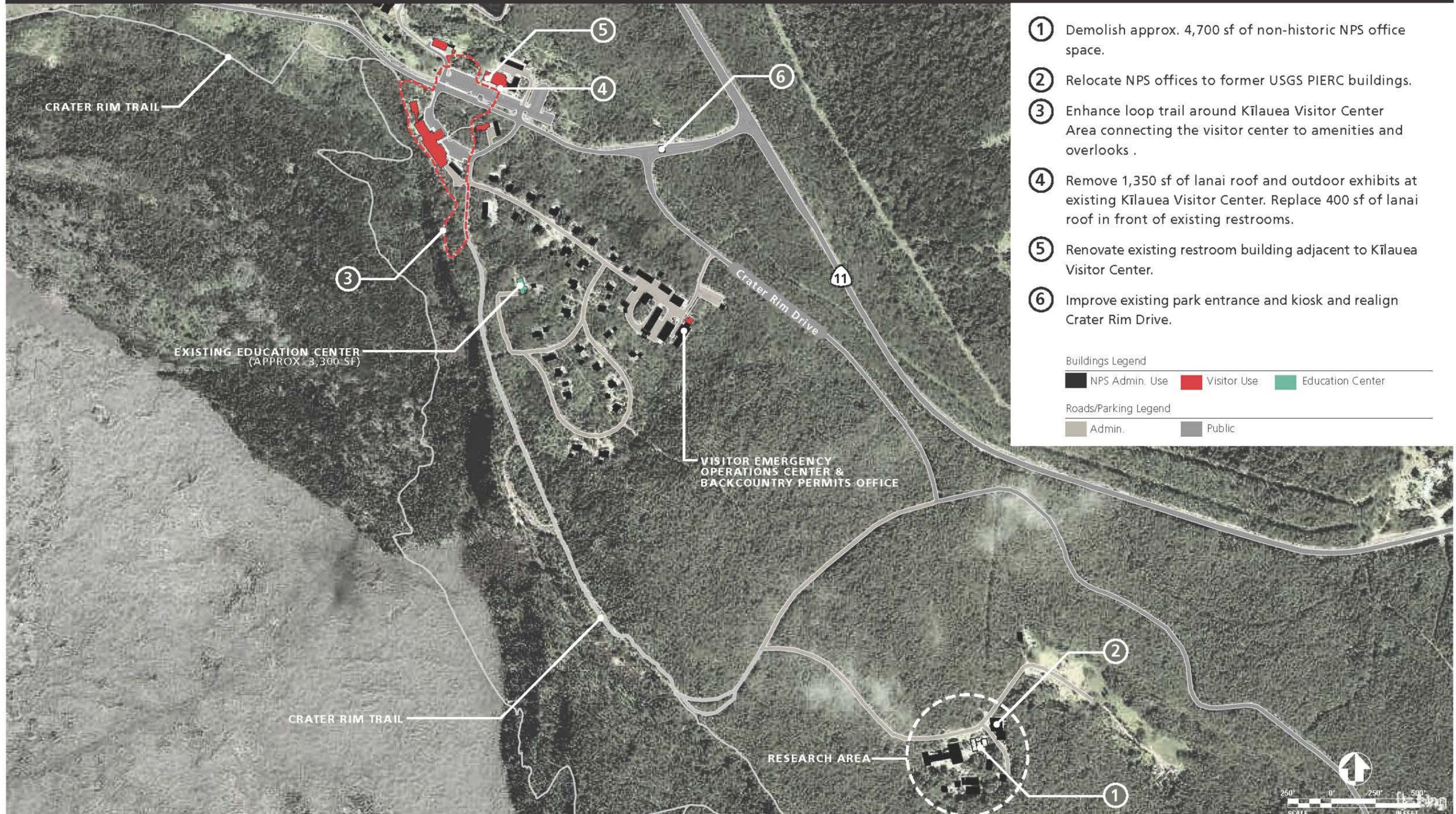
- USGS/NPS Admin. Use
- Interpretive Lanai/Overlook
- Visitor Use

#### Roads/Parking Legend

- Admin.
- Public



# Disaster Recovery - Concept Development Common to All | Kīlauea Visitor Center Area



- ① Demolish approx. 4,700 sf of non-historic NPS office space.
- ② Relocate NPS offices to former USGS PIERC buildings.
- ③ Enhance loop trail around Kīlauea Visitor Center Area connecting the visitor center to amenities and overlooks .
- ④ Remove 1,350 sf of lanai roof and outdoor exhibits at existing Kīlauea Visitor Center. Replace 400 sf of lanai roof in front of existing restrooms.
- ⑤ Renovate existing restroom building adjacent to Kīlauea Visitor Center.
- ⑥ Improve existing park entrance and kiosk and realign Crater Rim Drive.

Buildings Legend

- NPS Admin. Use
- Visitor Use
- Education Center

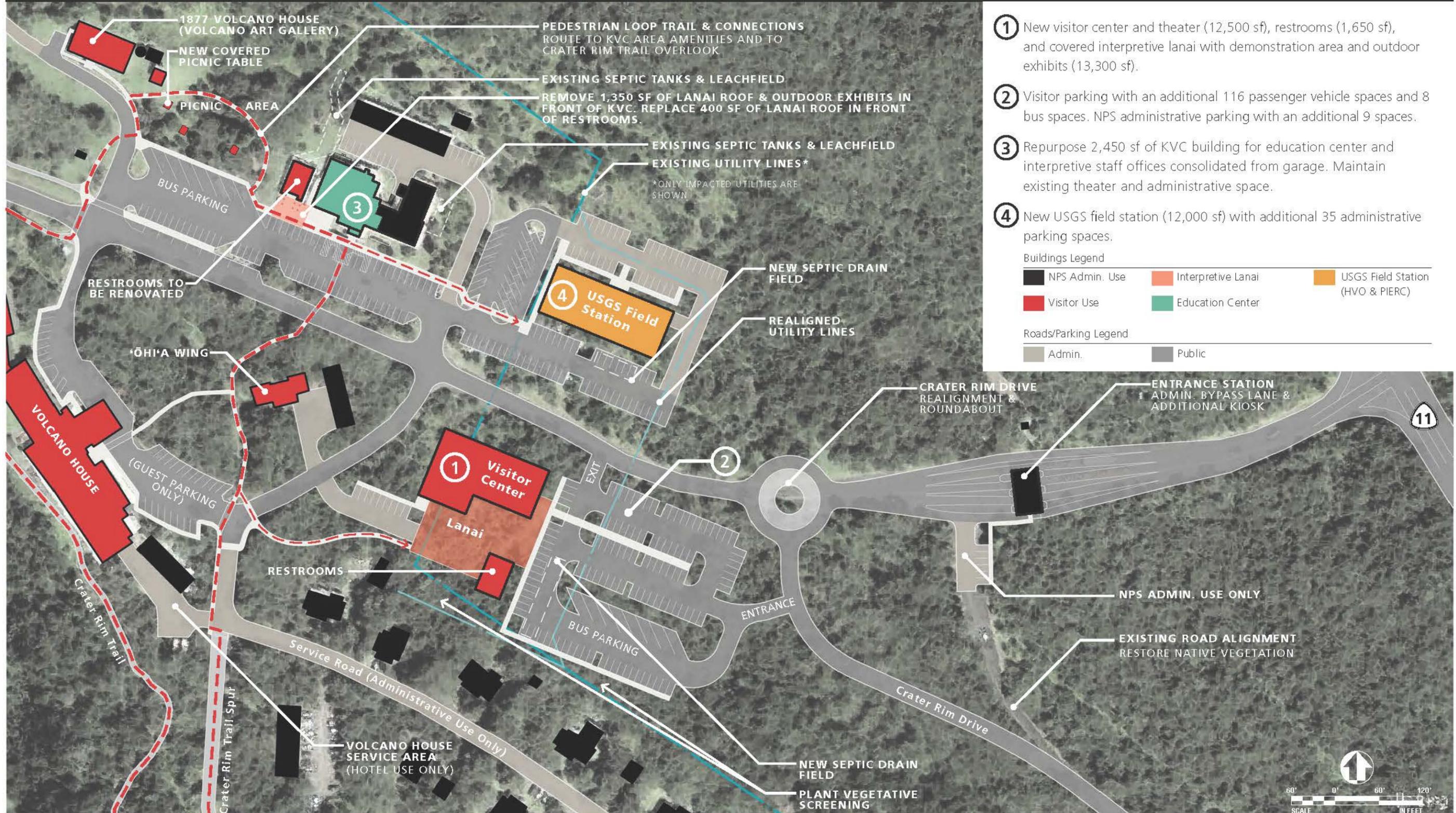
Roads/Parking Legend

- Admin.
- Public



# Disaster Recovery - Concept Development

## Concept 1 | Kīlauea Visitor Center (KVC) Area



# Disaster Recovery - Concept Development

## Concept 2 | Kīlauea Visitor Center (KVC) Area





- ① New USGS field station (12,000 sf), with 5 public passenger vehicle parking spaces and 42 USGS/NPS admin. parking spaces.

Buildings Legend

- NPS Admin. Use
- USGS Field Station (HVO & PIERC)
- Visitor Use

Roads/Parking Legend

- Admin.
- Public

# Disaster Recovery - Concept Development

## Concept 3 | Kīlauea Visitor Center (KVC) Area



- ① Visitor center addition (6,000 sf) with covered interpretive lanai (11,800 sf).
- ② Visitor parking with an additional 105 passenger vehicle spaces and 6 bus spaces.
- ③ Convert exhibit area (2,450 sf) of KVC to a larger orientation space or sales area. Existing offices and theater to remain.

Buildings Legend

<span style="display: inline-block; width: 15px; height: 15px; background-color: black; border: 1px solid black;"></span> NPS Admin. Use	<span style="display: inline-block; width: 15px; height: 15px; background-color: orange; border: 1px solid black;"></span> Interpretive Lanai
<span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></span> Visitor Use	<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></span> USGS Field Station (HVO & PIERC)

Roads/Parking Legend

<span style="display: inline-block; width: 15px; height: 15px; background-color: lightgrey; border: 1px solid black;"></span> Admin.	<span style="display: inline-block; width: 15px; height: 15px; background-color: darkgrey; border: 1px solid black;"></span> Public
--	---



# Disaster Recovery - Concept Development

## Concept 3 | NPS Field Area (adjacent to KMC Land Assignment)



① New USGS field station (12,000 sf) with 35 parking spaces.

Buildings Legend

USGS Field Station  
(HVO & PIERC)

Roads/Parking Legend

Admin.

Public



NEW SEPTIC DRAIN FIELD

NEW WATER TANK

NEW UTILITY LINES

① USGS Field Station

PATH CONNECTION TO KMC

EMERGENCY ACCESS CONNECTION TO KMC ROAD

KILAUEA MILITARY CAMP (KMC) LAND ASSIGNMENT (AUTHORIZED KMC PATRONS ONLY)

USGS ADMIN. USE ONLY

Crater Rim Drive

Crater Rim Trail Spur

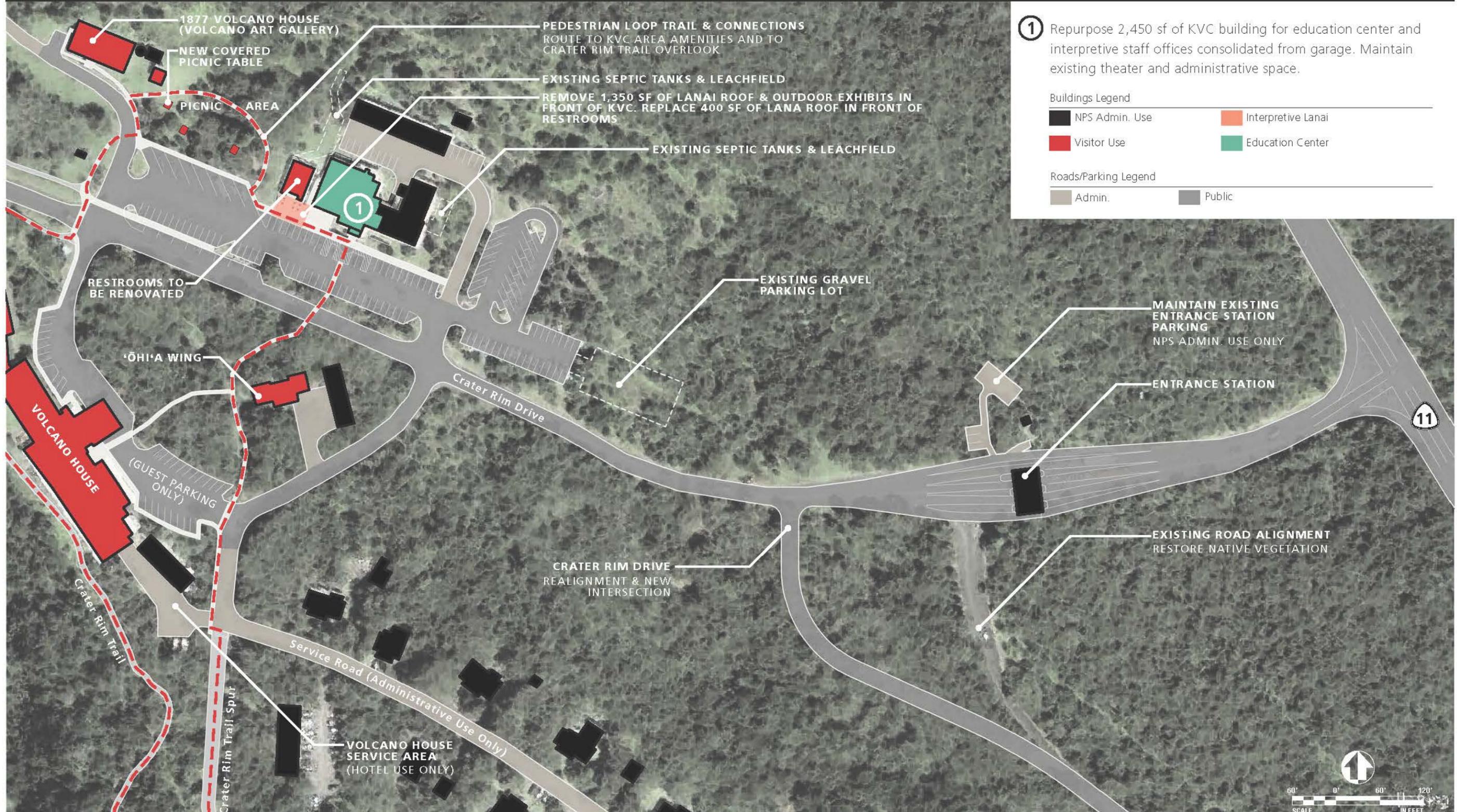
Crater Rim Trail

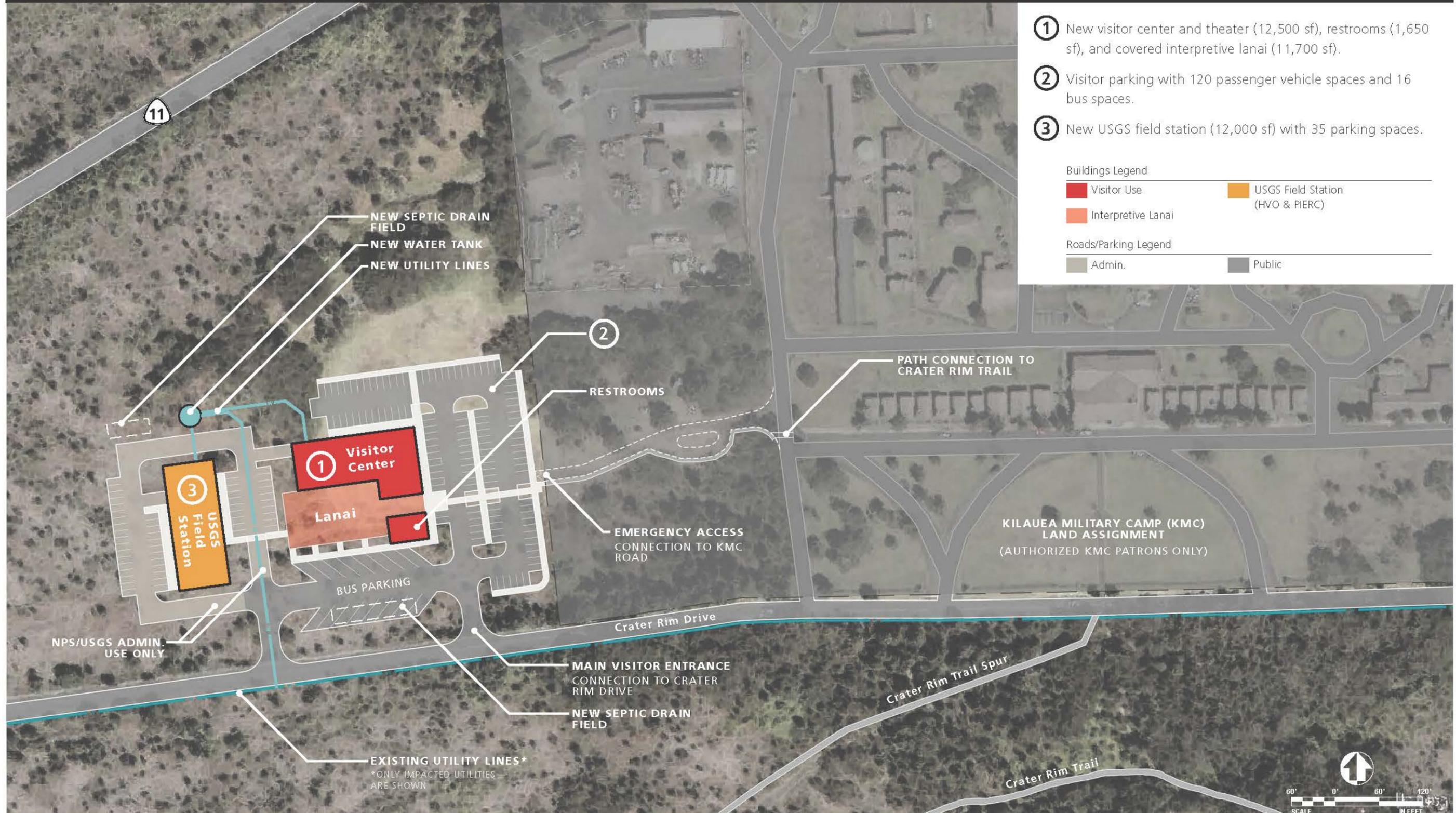
EXISTING UTILITY LINES\*  
\*ONLY IMPACTED UTILITIES ARE SHOWN



# Disaster Recovery - Concept Development

## Concept 4 | Kīlauea Visitor Center (KVC) Area





- ① New visitor center and theater (12,500 sf), restrooms (1,650 sf), and covered interpretive lanai (11,700 sf).
- ② Visitor parking with 120 passenger vehicle spaces and 16 bus spaces.
- ③ New USGS field station (12,000 sf) with 35 parking spaces.





Hawai'i Volcanoes National Park  
ATTN: Disaster Recovery Project  
PO Box 52  
Hawaii National Park, HI 96718

-----  
Official Business  
Penalty for Private Use \$300

Superintendent  
Attn: Disaster Recovery Project  
PO Box 52  
Hawaii National Park, HI 96718-0052

-----  
TO MAIL BACK, FOLD HERE AND TAPE BELOW (NO STAPLES PLEASE)

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.*

**HELP US KEEP OUR MAILING LIST UP-TO-DATE:**

- Please add my name to the mailinglist.
- I prefer to receive mailings via e-mail (please provide your email on the other side of this sheet).
- Please remove my name from the mailinglist.
- The name or address you have is incorrect. Update my contact information (include new name and address in your comments on the other side of this sheet).

You can also update your contact information for the park's mailing list at the following link:  
<http://www.nps.gov/havo/parkmgmt/plan.htm>

Appendix C  
Scoping Summary and  
Comment Analysis Report



National Park Service  
U.S. Department of the Interior

Hawai'i Volcanoes National Park  
May 2022  
INTERNAL PRELIMINARY DRAFT



# Hawai'i Volcanoes Disaster Recovery Project

## Scoping Summary and Comment Analysis Report



Photograph credits: Left – NPS photo by J. Ferracane; Top Right – USGS photo; Bottom Right – USGS photo.

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- Appendix A – Correspondence Index of Organizations
- Appendix B – Correspondence Index by Code
- Appendix C – Materials Provided During Scoping

# 1 INTRODUCTION

Hawai'i Volcanoes National Park (Hawai'i Volcanoes) and the U.S. Geological Survey (USGS) led a civic engagement process from May 15 to June 15, 2020, to seek community input to consider and refine four initial design concepts for the proposed Hawai'i Volcanoes Disaster Recovery Project. A total of 159 pieces of correspondence from 9 states were received during the civic engagement comment period. The National Park Service (NPS) and USGS used the public and agency feedback received to evaluate the design concepts and determine which concept; or variation of concepts, will be evaluated as the proposed action during the National Environmental Policy Act (NEPA) process. The proposed action (summarized in Appendix C) that was presented to the public was the result of this evaluation.

The intent of the project is to repair and/or replace critical park infrastructure and USGS-operated facilities and equipment damaged during the 2018 eruption and summit collapse of Kīlauea volcano. The project addresses potential future use of the Uēkahuna Bluff area and other park sites. Uēkahuna Bluff is an area of geologic, natural, and cultural significance and is regarded as sacred by Native Hawaiians and other groups.

Beginning in May 2018, the park and Kīlauea summit underwent a major change as magma drained from the chamber beneath Halema'uma'u Crater, and the caldera began to collapse, triggering 60,000 earthquakes and clouds of rock and ash that continued until early August. The seismic activity was primarily centered near the crater, and significantly impacted buildings in the immediate vicinity on Uēkahuna Bluff, including Jaggar Museum and the USGS Hawaiian Volcano Observatory (HVO)–operated Reginald T. Okamura facility and equipment, resulting in the closure of the area. The 2018 eruption and caldera collapse were the most destructive eruptive events in Hawai'i in the last two centuries.

The results of an initial post-disaster assessment conducted in October 2018 found that significant investment would be necessary to make Jaggar Museum and the USGS HVO–operated Reginald T. Okamura building safe to occupy and operational. Most importantly, the buildings are surrounded by fault lines and the area continues to subside on the crater side, undermining slope stability at the existing terraces and building foundations.

The focus of this planning effort is the repair, replacement, removal, or relocation of the facilities and functions that were damaged at Uēkahuna Bluff. The proposed action presents potential solutions to the loss of function at Uēkahuna Bluff and current overcrowding at Kīlauea Visitor Center (KVC), ranging from renovation of existing buildings to constructing new facilities elsewhere in the park.

## 1.1 Scoping

To slow the spread of COVID-19, scoping was conducted using as many methods as possible to allow public comment, but without the use of in-person meetings. Comments on the project were accepted starting February 9, 2022, and the comment period ended March 11, 2022. The National Park Service also implemented a dedicated phone line specifically to receive comments, request hard copies of the materials, or request a call back.

The National Park Service and the USGS will incorporate comments made during the scoping period to develop an Environmental Assessment disclosing the potential impacts from the proposed project.

### 1.1.1 Agency Outreach

On February 9, 2022, the National Park Service distributed letters to various agencies to invite agency participation in the civic engagement process. Agencies were encouraged to submit written suggestions, comments, and concerns regarding the project either online at the National Park Service's Planning, Environment and Public Comment (PEPC) website or by U.S. mail to the Office of the Superintendent.

### 1.1.2 Kūpuna Outreach

On February 9, 2022, the National Park Service distributed scoping letters via email and hard copy materials to the Kūpuna consultation group. The National Park Service held a consultation group meeting on February 25, 2022, with a focus on the Disaster Recovery project.

### 1.1.3 News Release and Planning, Environment and Public Comment Website

On February 9, 2022, the National Park Service issued a news release to area wide news organizations and posted project information including the public scoping letter and story map explaining the project to the PEPC website. The news release and PEPC website provided a project overview and invited the public to participate in the civic engagement process. Members of the public were invited to submit comments on the project through the PEPC website, U.S. mail, email, or via the project phone line. The materials that were distributed to the public can be found in Appendix C.

In addition to these outreach efforts, the news release was posted on social media, and the National Park Service posted reminders about the comment period to encourage participation. The Hawai'i Volcanoes Public Affairs Specialist and USGS HVO Scientist-in-Charge were interviewed by several local news outlets about the scope of the project.

## 1.2 Summary of Public Participation During Scoping

Sixty-two pieces of correspondence from nine states were received during the civic engagement comment period. Individuals living in Hawai'i submitted 50 (approximately 80%) of those correspondences. The majority of comments received during this period expressed the following:

- Commenters stated they are excited about the updated facilities for the park and are pleased with how the parks have incorporated public comments so far.
- Commenters also expressed general support for the roundabout.
- Commenters also stated opinions that the roundabout is dangerous because they are not commonly used on the island. There is concern that more accidents will occur, and that the new roundabout will not reduce traffic issues.
- Commenters expressed concerns that the park entrance updates will increase traffic to the park and suggested alternate transportation to the park (including shuttles and bikes) instead of allowing more vehicles and parking.
- Commenters requested making the roads safer for bikes and pedestrians.
- Commenters expressed concern that new buildings, roads, and potential parking will cause a loss of 'ōhi'a trees.
- Commenters requested the reuse of materials of buildings and old building footprints.

- Commenters provided suggestions to create bike paths, electric vehicle chargers, and better trail connections throughout the park.
- Commenters requested a structure to protect visitors from inclement weather at Uēkahuna Bluff.
- Commenters provided alternative solutions for buildings to reduce the footprint and reduce bulldozing of natural spaces.
- Commenters requested better signage for bathrooms, attractions, and building locations.

## 2 THE COMMENT ANALYSIS PROCESS

### 2.1 Definition of Terms

Primary terms used in the document are defined below:

**Correspondence:** A correspondence is the entire document received from the public—including individuals, organizations, government officials, and agency representatives. It can be in the form of a letter, comment card, or PEPC website comment form.

**Comment:** A comment is a portion of the text within a correspondence that addresses a single subject. It could include such information as an expression of support or opposition to a proposed activity, additional data regarding the existing condition, an opinion questioning a matter of policy, or an opinion regarding the adequacy of an analysis.

**Code:** A code is a grouping centered on a common topic or subject matter with which the public is concerned.

**Concern Statement:** Concern statements were developed to summarize the multiple issues represented by the comments.

### 2.2 Guide to this Document

This report is organized as follows:

**Content Analysis Report** – This is the basic report produced from the PEPC website that provides information on the numbers and types of comments received, organized by code.

**Civic Engagement Comment Summary** – This report summarizes the substantive comments received during civic engagement. These comments are organized by codes and further organized into concern statements. Comment text is presented as submitted, which can include spelling errors. This text has not been edited.

**Correspondence Index of Organizations (Appendix A)** – This list identifies the commenters or authors by organization type.

**Index by Code (Appendix B)** – This list identifies the commenters or authors who commented on the listed topics, as identified by the codes used in this analysis.

### 3 CONTENT ANALYSIS

The National Park Service will use public and agency feedback to evaluate the proposed project that will be evaluated as the proposed action during the NEPA process. This report summarizes approximately 185 comments taken from 62 public correspondences received during scoping. Comments were categorized into 38 topics identified by unique codes. For the purpose of this report, all comments relevant to the proposed design concepts were coded.

The distribution of comments by code is provided in **Table 1**.

**TABLE 1: COMMENT DISTRIBUTION BY CODE**

<b>Code</b>	<b>Description</b>	<b>No. of Comments</b>	<b>Percent of all Comments</b>
<b>AL100</b>	Alternative Suggestions	37	20.0
<b>GNC100</b>	General Project Concerns	29	15.7
<b>GNS100</b>	General Project Support	25	13.5
<b>PVT100</b>	Park Entrance, Vehicle Access, and Traffic Flow	22	11.9
<b>NR100</b>	Natural Resource Concerns	19	10.3
<b>OS100</b>	Out of Scope	14	7.6
<b>AT100</b>	Alternative Transportation	8	4.3
<b>CC100</b>	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)	5	2.7
<b>SUS100</b>	Sustainability	5	2.7
<b>AL200</b>	Alternative Uses for Buildings	4	2.2
<b>VE100</b>	Visitor Experience	4	2.2
<b>ALT300</b>	Alternative Trails Suggestions	3	1.6
<b>ED100</b>	Education and Interpretation	3	1.6
<b>PD100</b>	Pedestrian Safety and Access	3	1.6
<b>VIL100</b>	Visual Impacts Concerns And Landscape Preservation	3	1.6
<b>ML100</b>	add or change mailing list	2	1.1
<b>CZ100</b>	Costal Zone Management	1	0.5
<b>FH100</b>	Flood Hazards	1	0.5
<b>PK100</b>	Parking Reduced	1	0.5
<b>PK200</b>	Parking Increased	1	0.5
<b>SAF100</b>	Safety Concerns	1	0.5
<b>TR200</b>	Traffic Increases	1	0.5
<b>VI100</b>	Visual Impacts	1	0.5
<b>VPC100</b>	Visitor Center Access, Parking and Congestion	1	0.5

The majority of correspondences received were from unaffiliated individuals (**Table 2**).

**TABLE 2: CORRESPONDENCE SIGNATURE COUNT BY ORGANIZATION TYPE**

Organization Type	Number of Correspondences
Federal Government	1
Non-Governmental	1
State Government	2
Unaffiliated Individual	58

Table 3 shows the distribution of how correspondences were received.

**TABLE 3: CORRESPONDENCE DISTRIBUTION BY CORRESPONDENCE TYPE**

Type	Number of Correspondences
Web Form	49
Other	5
Letter	5
E-mail	3

With Hawai'i Volcanoes being located in the state of Hawai'i, the majority of correspondence was received from commenters within the state (Table 4)

**TABLE 4: CORRESPONDENCE DISTRIBUTION BY STATE**

State	No. of Correspondences	Percent of all Correspondences
HI	50	80.6%
UN	4	6.5%
CA	2	3.2%
CO	1	1.6%
WA	1	1.6%
AZ	1	1.6%
KS	1	1.6%
IL	1	1.6%
MI	1	1.6%

The majority of correspondences received were from the United States. Two comments were received from Australia and Canada (Table 5).

**TABLE 5: CORRESPONDENCE DISTRIBUTION BY COUNTRY**

Country	No. of Correspondences	Percent of all Correspondences
AUS	1	1.6%
CAN	1	1.6%
USA	60	96.8%

## 4 SCOPING COMMENT SUMMARY

### 4.1 General Alternative Suggestions

#### 4.1.1 Concern Statement: Increase Picnic Spaces

Building picnic spaces for visitors would allow everyone to enjoy this space more.

##### Representative Comment(s)

Correspondence Id: 32 Comment Id: 1033257

Comment Text: Please consider creating a covered picnic area near the Visitor's Center - (or anywhere else that works!) You will make the thousands of school children that visit HVNP every year VERY happy! Teachers too!

#### 4.1.2 Concern Statement: Designated Bike Lanes

A designated biking lane would allow more bike access to the park.

##### Representative Comment(s)

Correspondence Id: 17 Comment Id: 1033218

Comment Text: My one comment is a request to provide designated bike lanes along Crater Rim Drive. I live in Volcano Village and would prefer to bike to the park if lanes were available.

#### 4.1.3 Concern Statement: Alternate Location for USGS Building

Build the new USGS building in alternate location to avoid impacting koa and 'ōhi'a trees.

##### Representative Comment(s)

Correspondence Id: 2 Comment Id: 1033187

Comment Text: The proposed USGS building is placed in the middle of a grove of koa and ohia trees. Ohia trees nearby would likely not survive the construction due to the presence of ROD. An alternative location would be to retrofit existing buildings or demolish old buildings and build a new one in the 'neighborhood' of old buildings between the Volcano House and Emergency Services and along the loop road.

### 4.2 Alternative Uses for Buildings

#### 4.2.1 Concern Statement: Retrofit Existing Buildings

Retrofit existing buildings and repurpose existing areas before building new parking areas and buildings.

##### Representative Comment(s)

Correspondence Id: 2 Comment Id: 1033188

Comment Text: The proposed addition to the visitor center looks good except for the parking issue. While the building is placed in an existing parking lot a significant amount of land is repurposed for a parking lot which is not the ideal way to welcome visitors to a national park. Instead of adding this new building consider retrofitting existing buildings between the KVC area

and the Volcano House to meet the need for additional interpretation space. Again, you could utilize the other buildings already in the park such as the old education center before constructing new buildings.

### **4.3 Alternative Trails Suggestions**

#### **4.3.1 Concern Statement: Ideas to Improve Trails**

Integrate trails into the visitor center and make them accessible for all visitors.

##### **Representative Comment(s)**

Correspondence Id: 4 Comment Id: 1033194

Comment Text: I think it is good. I would like to see more integration with trail access from the visitor center to keep cars at that lot while visiting Sulphur banks, crater rim trail,

Correspondence Id: 41 Comment Id: 1033272

Comment Text: I'd love to see more trails become handicapped accessible where possible.

### **4.4 Alternative Transportation**

#### **4.4.1 Concern Statement: Ideas to Improve Alternative Transportation**

Improve access to the park by including alternative transportation such as shuttle buses, off-site parking, and bike lanes.

##### **Representative Comment(s)**

Correspondence Id: 18 Comment Id: 1033220

Comment Text: I hope the new recovery plan offers an opportunity to build back better and provide safer and more equitable streets. The new roundabout and reoriented roadways should accommodate bike users and serve as a catalyst project for improving access for all the major roads throughout the park. NPS could also promote a 'park and pedal' concept where visitors are encouraged to leave their cars at the visitor center and bike to the park's many bicycle accessible attractions. Biking is a healthier option than driving and also produces a much smaller carbon footprint. This reconstruction project offers a perfect opportunity to address the safety and equity disparities in the park's transportation network. Please consider evaluating bicycle infrastructure improvements in the Environmental Assessment for community feedback.

Correspondence Id: 2 Comment Id: 1033189

Comment Text: Please consider other alternatives for parking such as off site parking with shuttles, encouraging other means of visitation rather than families in single cars. If the addition of the building requires that much additional parking do not build the building.

Correspondence Id: 46 Comment Id: 1033283

Comment Text: The only aspect not included in this plan that I and others put forward in the previous public comment on future park plans, is the need for shuttle buses including a new parking garage by the visitor center.

Correspondence Id: 29 Comment Id: 1033246

Comment Text: I would also encourage focusing more on additional parking and possibly a simple transit system to cut down on the amount of traffic when the lava is flowing.

## 4.5 Cultural Concerns

### 4.5.1 Concern Statement: Protect Sacred Spaces

The parks needs to be treated with respect, since it is a scared place for Native Hawaiians.

#### Representative Comment(s)

Correspondence Id: 41 Comment Id: 1033270

Comment Text: Hawaii Volcanoes National Park is a treasure to be cherished now and for future generations. Planning for the recovery must above all include and prioritize safety for the indigenous species....and for areas scared to the Hawaiian people, then for staff and visitors.

Correspondence Id: 23 Comment Id: 1033229

Comment Text: Building the new HVO in a place that has no impact to our native forest. All of these options must not damage any forest. The park is sacred to us. I've seen the park say they are going to remove 9 Ohia trees for a parking lot and ended up taking down more like 20. That is not acceptable. All of these listed here has to have the least if not no impact to our native forest.

The ball park makes the most sense since it's a open field and already a disturbed area. The others seem to have a significant impact on forested areas of the park.

### 4.6 Concern Statement: Project Cost Concerns

The roundabout is a waste of money.

#### Representative Comment(s)

Correspondence Id: 10 Comment Id: 1033208

Comment Text: The roundabout near the front entrance seems like a huge waste of time and money and will probably increase accidents as people just have problems driving on roundabouts!

## 4.7 Education and Interpretation

### 4.7.1 Concern Statement: Education and Interpretation

There is a need for maps and educational information throughout the park.

#### Representative Comment(s)

Correspondence Id: 47 Comment Id: 1033289

Comment Text: 1. At Uekahuna the plans aren't detailed enough to know what signage or interpretation space will be like. It would be very helpful to new and returning visitors especially those who do not stop at the visitor center to have interpretive maps and other information to replace what people looked at in Jaggar Museum (as space allows). Timelines, aerial photos, the story of the eruption and explanations of what happened and geology are needed. These will be vital since the presence of interpretive staff or volunteers may not be what it was before.

## 4.8 General Project Support

### 4.8.1 Concern Statement: General Project Support

The community appreciates the professionalism and outreach to the community.

#### Representative Comment(s)

Correspondence Id: 27 Comment Id: 1033241

Comment Text: I voted on the initial proposals. After reviewing the one selected I think a very good job was done in the design/layout and keeping the park looking like there is minimal change along with nice aesthetics of the design so that it blends into the existing landscape. I'm also very impressed with the rendering capability of being able to slide the photos one way or the other to view the impact of the design to the landscape. It was very helpful.

Correspondence ID: 14 Comment ID: 1033214

Comment Text: I am very impressed and pleased with how you have proceeded with the planning of this project. Having had the opportunity to submit suggestions about the project at an earlier time, I feel that our combined suggestions have been heard and that we are in agreement in so many areas; however, your insights and judgement have taken my expectations to a higher level. Mahalo for the professionalism, cultural and environmental sensitivity, and Aloha you have brought to the planning this project. While I know that the details these plans are still to be worked out and are never carved in stone, I am excited by the possibilities and look forward to seeing our Volcanoes National Park take on the stature it has always deserved. Maika'i loa!

## 4.9 Natural Resource Concerns

### 4.9.1 Concern Statement: Expansion Impacts 'Ōhi'a

'Ōhi'a trees should not be removed to expand facilities.

#### Representative Comment(s)

Correspondence Id: 37 Comment Id: 1033265

Comment Text: Thank you for allowing me to comment on the expansion of parking. My understanding is that the larger lot will allow for double the parking spots and will also accommodate 15 tour busses. My concern is over tourism and that the parking area will be built on Old Ohia growth. "Rapid Ohia Death (*Ceratocystis fimbriata*\*) was identified on Hawaii Island in 2014. The fungus attacks and can quickly kill ohia trees (*Metrosideros polymorpha*). Ohia is endemic to Hawaii and comprises approximately 80% of Hawaii's native forests." (Dlnlr Hawaii) with concerns about fungus spreading through our Ohia trees, I think it's imperative to protect healthy trees.

Correspondence Id: 42 Comment Id: 1033273

Comment Text: While I support restoration of existing infrastructure I do not support the expansion of facilities. I especially oppose the expansion of motor vehicle parking and the cutting down of Ohia trees including the environment surrounding such trees.

### 4.9.2 Concern Statement: Use native plants

Native vegetation should be used to offset native vegetation removed for new buildings.

**Representative Comment(s)**

Correspondence Id: 47 Comment Id:

Comment Text: When projects such as these are being planned when possible please incorporate ways to fund the replacement of vegetation and native plants displaced in construction areas.

**4.10 Pedestrian Safety and Access****4.10.1 Concern Statement: Safe Access for Pedestrians**

Safe areas for pedestrian crossings should be included within the project area.

**Representative Comment(s)**

Correspondence Id: 53 Comment Id: 1034386

Comment Text: A walking trail alongside the entrance for pedestrian visitors might be useful to reduce incidents at the roundabout, or clearly painted areas for them to safely cross.

**4.11 Parking Increased****4.11.1 Concern Statement: More Parking Space**

Include more inclusive parking areas for elderly and disabled visitors at Uēkahuna bluff.

**Representative Comment(s)**

Correspondence Id: 6 Comment Id: 1033198

Comment Text: If any of the old buildings are demolished it would be good if there would be more parking space made available where lava can be seen from - older people and people with disabilities may not be able to walk from the KMC parking lot (I know I wasn't).

**4.12 Park Entrance, Vehicle Access, and Traffic Flow****4.12.1 Concern Statement: Roundabouts Cause Confusion and Congestion**

Adding a roundabout to the front entrance will cause confusion and congestion for visitors.

**Representative Comment(s)**

Correspondence Id: 2 Comment Id: 1033190

Comment Text: The proposed entrance changes also appear to be unnecessary. While there is some congestion at the gate at times this proposal would not improve that except for park administration who would benefit from the pass-through lane. The traffic circle would likely create higher amounts of confusion for visitors who already seem to have a hard time figuring out how to go straight to get to the visitor center. The proposal describes improving safety, but I would like to see data on how many accidents/injuries there have been with the current pattern before investing in a significant project to change something that is working fine. If you do go ahead with these changes please consider allowing annual card pass holders use the pass through lane as well to help alleviate additional congestion at the entrance gate.

Correspondence Id: 29 Comment Id: 1033245

Comment Text: What is described so far sounds fine except for the roundabout. Please do not install a roundabout. They are confusing, dangerous, and totally unnecessary.

#### **4.12.2 Concern Statement: Roundabouts will Improve Safety**

Adding a roundabout to the front entrance will improve safety for visitors and reduce traffic.

Correspondence Id: 52 Comment Id: 1034381

Comment Text: Entrance Gate: I love the roundabout! Looks great, flows nicely, and makes the intersection so much easier to navigate. I also LOVE the designated pull out while exiting. Great observation, there are always vehicles pulled over at that exact spot. I also love the staff parking area, although I think it should be a little larger to be prepared for shift changes and for additional staff to anticipate continued increases in visitation.

Correspondence Id: 47 Comment Id: 1033288

Comment Text: The roundabout and proposed changes to and around the entrance station will be safer for all who enter the park. It will make access smoother and less time will be spent in lines and figuring out where to go. I would strongly hope that this portion of the plan can be built first.

### **4.13 Sustainability**

#### **4.13.1 Concern Statement: Sustainability**

The project should incorporate sustainable practices into the development.

##### **Representative Comment(s)**

Correspondence Id: 24 Comment Id: 1033233

Comment Text: Does the plan include charging facilities for electric vehicles for the public as well as staff? Given that there is a push for the State of Hawaii to move in this direction, and that many visitors to HVNP drive over from the Kona side for a day visit, charging stations will be needed, especially as rental car companies switch their fleets to EVs. HVNP and it's affiliates will, I assume, be making the switch away from imported fossil fuels in its vehicles, where practical.

### **4.14 Visitor Experience**

#### **4.14.1 Concern Statement: Increase facilities for visitors**

Include more facilities such as bathrooms, covered viewing areas, and picnic areas for visitors.

##### **Representative Comment(s)**

Correspondence ID: 13 Comment ID: 1033213

Comment Text: It would be important to have a large structure of a roof without walls constructed at Uēkahuna Bluff overlook to protect visitors during inclement weather. Without Jagger Museum available, there would otherwise be no protection at all for visitors in case of rain. Thank you for your consideration.

Correspondence ID: 9 Comment ID: 1033203

Comment Text: The list of projects includes demolition of Jagger Museum, but there seems no corresponding project to build a replacement museum. Please replace it; it was an invaluable learning experience. Not everyone visiting the Park is primarily interested in buying souvenirs at Visitor Center.

Correspondence ID: 52 Comment ID: 1034378

Comment Text: Our current picnic area between the restrooms and the art gallery is extremely popular. I often have trouble finding a table. With the growing park visitation and increase in parking this will only increase, we need to consider expanding this service and be prepared with more outdoor picnic areas around the visitor center. The area in front of the art gallery before the hula platform is suitable for more tables. I also recommend converting the forest area behind the new visitor center. This would be a great spot if it was made similar to our existing picnic area. Another issue for visitors is there is no where to picnic/eat if the weather is wet. Either pay money at the hotel, eat in the car, or leave the park after you spent all the time driving up here and paying to enter. There needs to be a covered picnic area in highly visited areas of the park (around the visitor center and jagger overlook). Perhaps tables in the 'additional outdoor covered area'; of the new visitor center or in the area behind the new visitor center? The outdoor interpretative lanai at the current/old visitor center might also be a great location for picnic tables, especially if it will host school groups. If the weather is wet there will be a great place for students to have lunch while on their field trip and this would also serve the general public.

Correspondence ID: 16 Comment ID: 1033216

Comment Text: The only comments I have on the Disaster Recovery Project are with respect to the KMC area. I do like the idea of new restrooms and a visitor center at KMC. Hikers on Crater Rim Trail pass KMC, but there is no signage indicating where the restrooms are at this point in time and that they are for the public.

## 4.15 Visual Impacts

### 4.15.1 Concern Statement: Visual Impacts

Additional building developments will have a visual impact for this project.

#### Representative Comment(s)

Correspondence Id: 56 Comment Id: 1036454

Comment Text: I fully agree with all of the Park's proposed actions to address the purpose and needs of the Disaster Relief Recovery Project, except for the proposed location of the new USGS field station in the historic KMC ball field. The visual impact of new or modified facilities on Park visitor is justified or even mitigated because they will be used by visitors. However, a field station for USGS (HVO and PIERC), with an inevitably large building and parking lot, would greatly add to the visual impact of this proposed project.

### 4.15.2 Concern Statement: Visual Impacts and Landscape Preservation

Revegetation with native plants should be used in new landscaping.

**Representative Comment(s)**

Correspondence Id: 52 Comment Id: 1034374

Comment Text: USGS Field Station - Great! Mahalo nui for keeping the ball park! Please remember to use native plants in the landscaping around the building.

Correspondence Id: 52 Comment Id: 1034379

Comment Text: I would LOVE for there to be a diverse native plant selection in the landscaping around the new and old visitor center as well as the jagger overlook that features some uncommon, rare, and even endangered plants. This expands education opportunities at the visitor center especially for school groups and those with disabilities since they cannot usually access trails and areas where these plants can be seen in the wild, if they are visible in the wild at all. Especially for the Ola'a unit of the National Park which is not open to the public. This also provides a great service to guests visiting the park for a single day or less. The parking area at the summit of Haleakala National Park does a wonderful job of featuring the Ahinahina (silversword). Perhaps having landscaping directly adjacent to the walls of the building between the structure and the sidewalks. For the visitor center: *Lobelia hypoleuca*, *Trematolobelia wimmeri*, *Pritchardia beccariana*, *Clermontia* spp, *Cyanea* spp, *Astelia menziesiana*, *Freycinetia arborea*, *Pittosporum* spp. For the Jagger Overlook: *Pleomele hawaiiensis*, *Wiliwili?*, *Argemone glauca*, *Pittosporum* spp, *Portulaca sclerocarpa*, *Alphitonia ponderosa*, *Santalum paniculatum*, *Wikstroemia* spp, *Silene*.

**Appendix A**  
**Correspondence Index of Organizations**

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**Correspondence Index of Organizations**

<b>Org. Type</b>	<b>Organization Name</b>	<b>Correspondence ID</b>	<b>Code</b>	<b>Description</b>
<b>F</b>	EPA	62	AE100	Baseline Conditions
		62	AL100	Alternative Suggestions
		62	AQ100	Air Quality
		62	CS100	Consultation
		62	EJ100	Environmental Justice
		62	NR100	Natural Resource Concerns
		62	PN100	Purpose and Need
		62	SUS100	Sustainability
<b>L</b>	Halau O Kekuhi	55	AL100	Alternative Suggestions
		55	ALT300	Alternative Trails Suggestions
		55	NR100	Natural Resource Concerns
<b>S</b>	State of Hawai'i Office of Planning and Sustainable Development	54	CZ100	Costal Zone Management
<b>I</b>	Hawai'i Department of Land and Natural Resources	60	FH100	Flood Hazards
		61	GNS100	General Project Support
<b>I</b>	Hawai'i State Senate	26	SUS100	Sustainability
<b>I</b>	International Archaeology LLC	31	GNC100	General Project Concerns
		31	GNS100	General Project Support
		31	OS100	Out of Scope
		31	PD100	Pedestrian Safety and Access
		31	VE100	Visitor Experience
<b>I</b>	Kūpuna Advisory	14	GNS100	General Project Support

**Appendix B**  
**Correspondence Index by Code**

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**Correspondence Index by Code**

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>AE100</b>	Baseline Conditions	EPA	62
<b>AL100</b>	Alternative Suggestions	EPA	62
<b>AL100</b>	Alternative Suggestions	Halau O Kekuhi	55
<b>AL100</b>	Alternative Suggestions	Visitor	13
<b>AL100</b>	Alternative Suggestions		2
<b>AL100</b>	Alternative Suggestions		6
<b>AL100</b>	Alternative Suggestions		10
<b>AL100</b>	Alternative Suggestions		11
<b>AL100</b>	Alternative Suggestions		15
<b>AL100</b>	Alternative Suggestions		17
<b>AL100</b>	Alternative Suggestions		25
<b>AL100</b>	Alternative Suggestions		28
<b>AL100</b>	Alternative Suggestions		29
<b>AL100</b>	Alternative Suggestions		30
<b>AL100</b>	Alternative Suggestions		32
<b>AL100</b>	Alternative Suggestions		34
<b>AL100</b>	Alternative Suggestions		35
<b>AL100</b>	Alternative Suggestions		40
<b>AL100</b>	Alternative Suggestions		44
<b>AL100</b>	Alternative Suggestions		47
<b>AL100</b>	Alternative Suggestions		50
<b>AL100</b>	Alternative Suggestions		51
<b>AL100</b>	Alternative Suggestions		52
<b>AL100</b>	Alternative Suggestions		56
<b>AL100</b>	Alternative Suggestions		57
<b>AL200</b>	Alternative Uses for Buildings		2
<b>AL200</b>	Alternative Uses for Buildings		52
<b>ALT300</b>	Alternative Trails Suggestions	Halau O Kekuhi	55
<b>ALT300</b>	Alternative Trails Suggestions		4
<b>ALT300</b>	Alternative Trails Suggestions		41
<b>AQ100</b>	Air Quality	EPA	62
<b>AT100</b>	Alternative Transportation		2
<b>AT100</b>	Alternative Transportation		17
<b>AT100</b>	Alternative Transportation		29
<b>AT100</b>	Alternative Transportation		46
<b>AT100</b>	Alternative Transportation		47
<b>AT100</b>	Alternative Transportation		53
<b>AT100</b>	Alternative Transportation		57
<b>CC100</b>	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)		23
<b>CC100</b>	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)		41

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>CC100</b>	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)		50
<b>CC100</b>	Cultural Concerns (Hawaii Specific, Archeological Will Go Under Sensitive Resources)		51
<b>CO100</b>	Project Cost Concerns		10
<b>CO100</b>	Project Cost Concerns		46
<b>CS100</b>	Consultation	EPA	62
<b>CZ100</b>	Coastal Zone Management	State of Hawai'i Office of Planning and Sustainable Development	54
<b>ED100</b>	Education and Interpretation		30
<b>ED100</b>	Education and Interpretation		46
<b>ED100</b>	Education and Interpretation		47
<b>ED100</b>	Education and Interpretation		50
<b>ED100</b>	Education and Interpretation		53
<b>ED100</b>	Education and Interpretation		58
<b>EJ100</b>	Environmental Justice	EPA	62
<b>FH100</b>	Flood Hazards	Hawai'i Department of Land and Natural Resources	60
<b>GNC100</b>	General Project Concerns	International Archaeology LLC	31
<b>GNC100</b>	General Project Concerns	None	49
<b>GNC100</b>	General Project Concerns	Self	19
<b>GNC100</b>	General Project Concerns		2
<b>GNC100</b>	General Project Concerns		4
<b>GNC100</b>	General Project Concerns		12
<b>GNC100</b>	General Project Concerns		24
<b>GNC100</b>	General Project Concerns		30
<b>GNC100</b>	General Project Concerns		39
<b>GNC100</b>	General Project Concerns		43
<b>GNC100</b>	General Project Concerns		45
<b>GNC100</b>	General Project Concerns		46
<b>GNC100</b>	General Project Concerns		50
<b>GNC100</b>	General Project Concerns		51
<b>GNC100</b>	General Project Concerns		52
<b>GNC100</b>	General Project Concerns		57
<b>GNS100</b>	General Project Support	Hawai'i Department of Land and Natural Resources	61
<b>GNS100</b>	General Project Support	International Archaeology LLC	31
<b>GNS100</b>	General Project Support	Kūpuna Advisory	14
<b>GNS100</b>	General Project Support		3
<b>GNS100</b>	General Project Support		5
<b>GNS100</b>	General Project Support		6
<b>GNS100</b>	General Project Support		7
<b>GNS100</b>	General Project Support		8
<b>GNS100</b>	General Project Support		21
<b>GNS100</b>	General Project Support		22

<b>Code</b>	<b>Description</b>	<b>Organization</b>	<b>ID</b>
<b>GNS100</b>	General Project Support		25
<b>GNS100</b>	General Project Support		27
<b>GNS100</b>	General Project Support		34
<b>GNS100</b>	General Project Support		36
<b>GNS100</b>	General Project Support		44
<b>GNS100</b>	General Project Support		46
<b>GNS100</b>	General Project Support		51
<b>GNS100</b>	General Project Support		52
<b>GNS100</b>	General Project Support		56
<b>ML100</b>	add or change mailing list		18
<b>ML100</b>	add or change mailing list		45
<b>NR100</b>	Natural Resource Concerns	EPA	62
<b>NR100</b>	Natural Resource Concerns	Halau O Kekuhi	55
<b>NR100</b>	Natural Resource Concerns	Unaffiliated	16
<b>NR100</b>	Natural Resource Concerns		2
<b>NR100</b>	Natural Resource Concerns		18
<b>NR100</b>	Natural Resource Concerns		23
<b>NR100</b>	Natural Resource Concerns		33
<b>NR100</b>	Natural Resource Concerns		37
<b>NR100</b>	Natural Resource Concerns		38
<b>NR100</b>	Natural Resource Concerns		42
<b>NR100</b>	Natural Resource Concerns		47
<b>NR100</b>	Natural Resource Concerns		50
<b>NR100</b>	Natural Resource Concerns		51
<b>NR100</b>	Natural Resource Concerns		53
<b>NR100</b>	Natural Resource Concerns		56
<b>NR100</b>	Natural Resource Concerns		57
<b>OS100</b>	Out of Scope	International Archaeology LLC	31
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**Appendix C**  
**Materials Provided During Scoping**

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# Hawai'i Volcanoes National Park | Disaster Recovery Project

*NPS Photo/J.Weir*

**National Park Service February 2022**

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## Project Overview

The focus of the Disaster Recovery Project is the repair, replacement, removal or relocation of the facilities and functions that were damaged at Uēkahuna by the 2018 eruption. The project also addresses continued and potential future use of the area that has important geologic, natural, and cultural significance, and is considered by Native Hawaiians and other groups as a sacred area. This presentation provides an overview of the proposed facilities and site improvements.

NPS will be accepting public comments from **February 9, 2022** to **March 11, 2022**. Comments can be submitted through the Planning, Environment, and Public Comment (PEPC) website at the link below. Additional information on the project components and a full list of actions are available on the PEPC site.

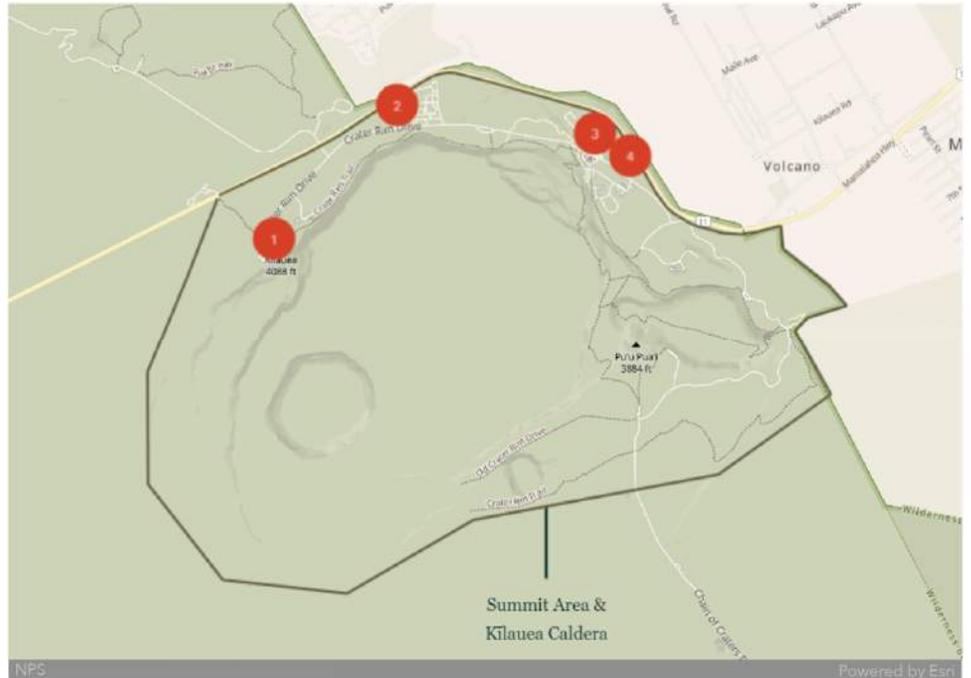
[www.parkplanning.nps.gov/HAVODisasterRecovery](http://www.parkplanning.nps.gov/HAVODisasterRecovery)

See the "**Ways to Comment**" section at the end of this document for more details on how you can submit comments.



The elements of the Disaster Recovery Project all occur within the Summit Area of Hawai'i Volcanoes National Park and include:

1. Demolishing the damaged facilities and repairing visitor use amenities at Uēkahuna
2. Replacing the HVO research facilities with a new field station next to the Kilauea Military Camp (KMC)
3. Replacing the visitor center function with a new building next to the Kilauea Visitor Center (KVC)
4. Realigning Crater Rim Drive at the park entrance to improve visitor safety



USGS Photo - Halema'uma'u crater Before & After – November 28, 2008 (left); August 1, 2018 (right)



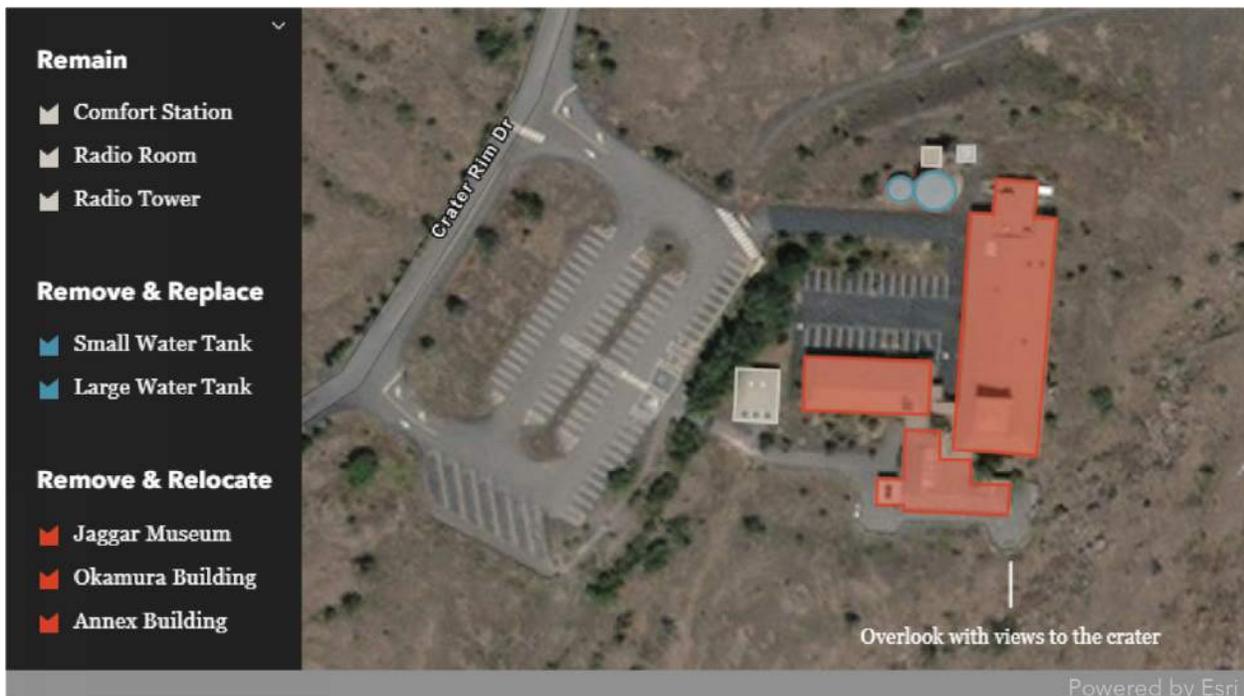
# Uēkahuna



NPS Photo/J.Wei - Panoramic view from Uēkahuna looking west towards former Jaggar Museum site (Okamura building on the right)

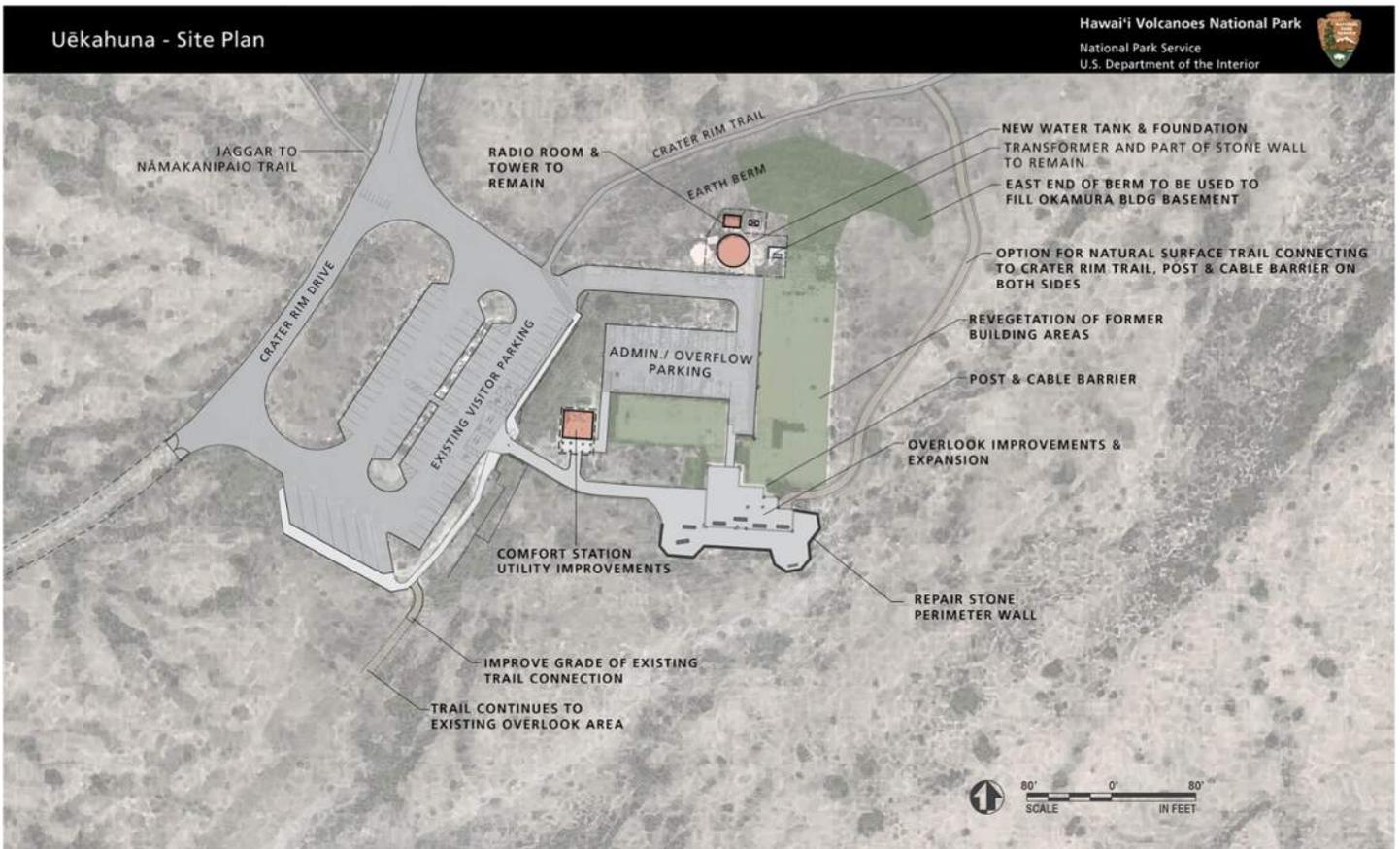
The facilities affected by the 2018 event include the Reginald T. Okamura (Okamura) building and the adjacent Geochemistry Annex (Annex) building - both operated by the U.S. Geological Survey-Hawaiian Volcano Observatory (HVO) as research facilities, and the historic Jaggar Museum - operated by NPS as a visitor center.

These facilities would be removed and the amount of infrastructure at the bluff would be reduced. The remaining visitor amenities and utilities would be repaired and improved.





Existing Facilities at Uēkahuna

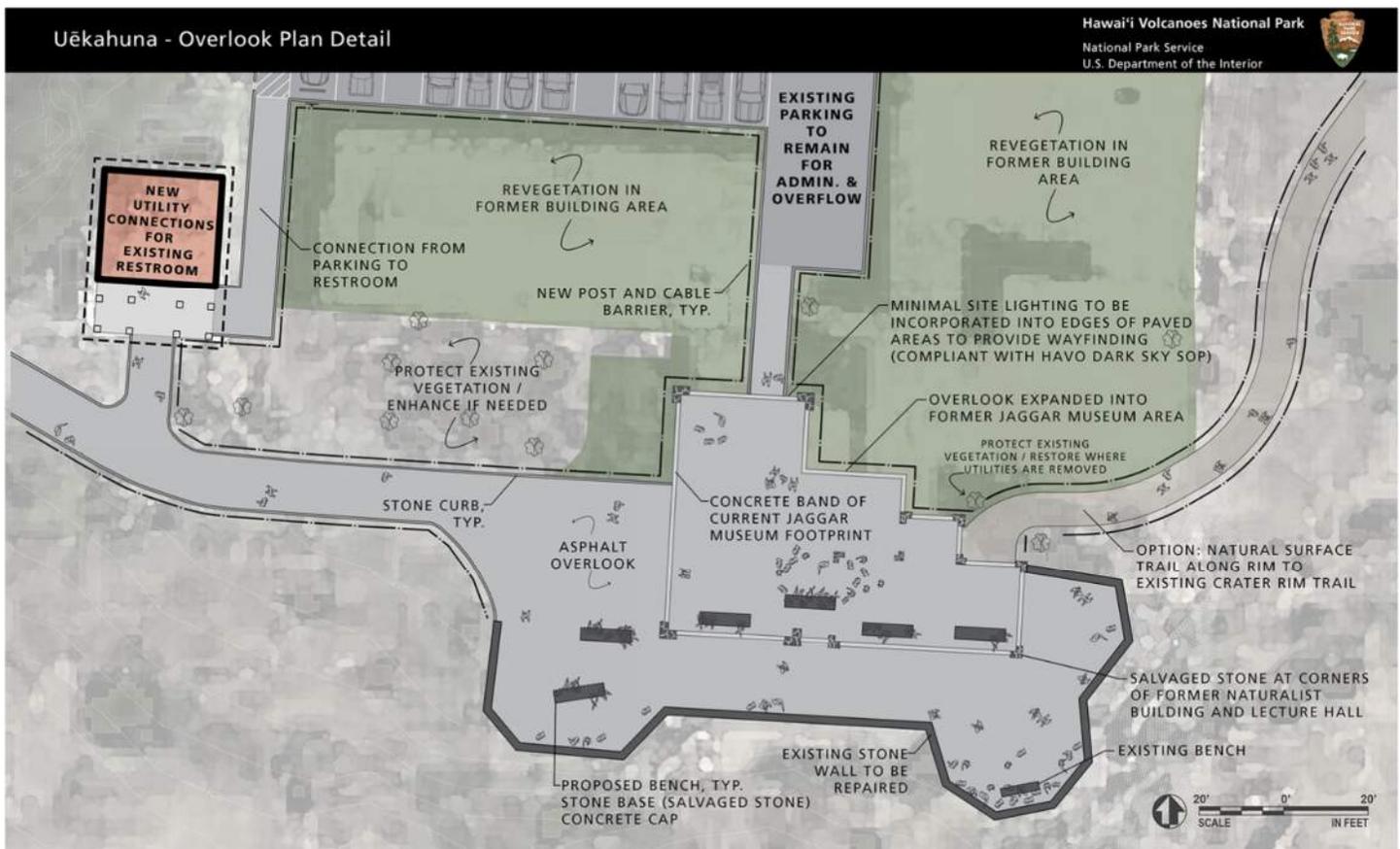


Site Plan



### Project Elements:

- Remove Okamura building, Geochemistry Annex building, and Jaggar Museum
- Revegetate majority of building footprints with native plants
- Improve utility connections to existing comfort station
- Replace deteriorated water tank
- Repair and improve overlook
- Repair overlook stone perimeter wall
- Construct natural surface trail to connect to Crater Rim Trail
- Install new post and cable barrier around visitor use areas



Plan Detail of Overlook

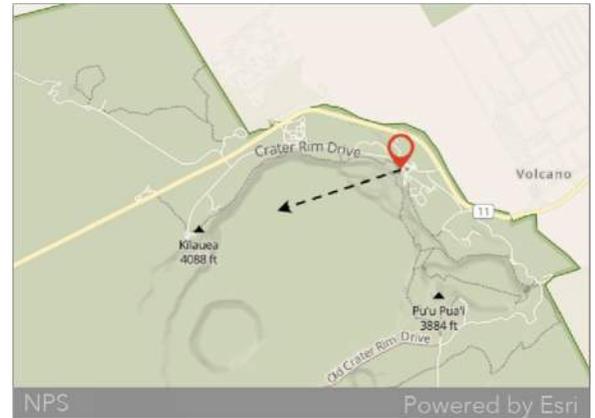
### Overlook Repair & Improvements

- Incorporate historical reference to the Jaggar Museum, with building footprint delineated on the ground plane with stone salvaged from the building
- Retain and repair the overlook wall
- Expand the overlook area into the Jaggar Museum footprint
- Add large benches to serve as both seating and the opportunity for elevated viewing; incorporate salvaged stone from the Jaggar Museum
- Use post and cable barrier to delineate the limits of the overlook area



### View from Volcano House Overlook

The before and after images below show how the view of Uēkahuna bluff is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After



### View from Crater Rim Trail

The before and after images below show how the view of Uēkahuna is anticipated to change under proposed conditions.



Photo location and view direction



Before



After



## USGS Field Station



The USGS research facilities would be relocated to a site adjacent to the Kilauea Military Camp (KMC). The new building would be nestled in among an existing grove of trees, between the KMC and an open grass area. This open area includes a historic ball field that becomes overflow parking during peak visitation.



*Tree grove at proposed field station site, viewed from existing gravel drive (open, ball field area in the background on the left)*



### Site Plan

Due to the compact site, the building is two stories high, with on grade parking wrapped around the north and east sides of the building. The building and parking area were carefully located to minimize loss of existing koa and 'ōhi'a trees on site. Most of the parking and loading area is directly adjacent to the KMC building service yard.

### Project Elements

- Minimize physical and visual impact to adjacent ball field
- Minimize impact to existing trees and use existing trees to help new building blend into the landscape
- Build modern research facility that is compatible with the architectural character of other park buildings



## Building Exterior

View from Access Road



Oversized window of the conference room on second floor (center), covered walkway and main entrance (right)

View from Entry



The form of the building is derived from a prototypical gable building that is split into two halves – one side for administrative offices, and the other side for the research laboratories and lab support functions.



### View from Kilauea Military Camp

The before and after images below show how the view is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After



# Visitor Center

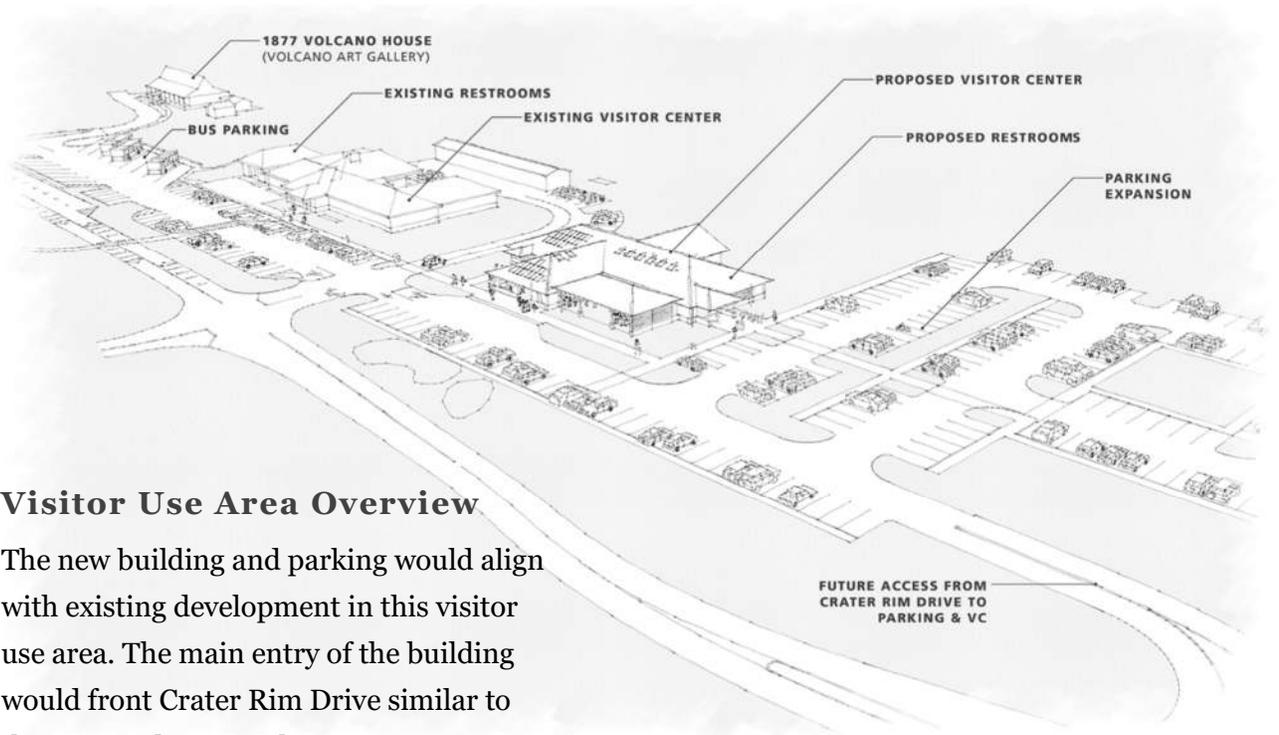


The new visitor center building to replace the loss of the Jaggar Museum would be located next to the existing KVC/headquarters building and near other visitor destinations. The existing building currently serves as the park headquarters. A portion of the building is also used for a bookstore and visitor center, and the auditorium is used for visitor orientation. Upon construction of the new visitor center, the KVC would continue to serve as the park headquarters. The visitor use portion would be adaptively reused to provide a space for indoor park programs, special events, and K-12 educational programming.

The proposed development would use a portion of existing visitor parking and forested area with the building closest to the KVC and expanded parking around the east and south sides.



*Existing parking at KVC and proposed location for new building, view from entrance drive on Crater Rim Drive*



### Visitor Use Area Overview

The new building and parking would align with existing development in this visitor use area. The main entry of the building would front Crater Rim Drive similar to the KVC and 1877 Volcano House.



Site Plan

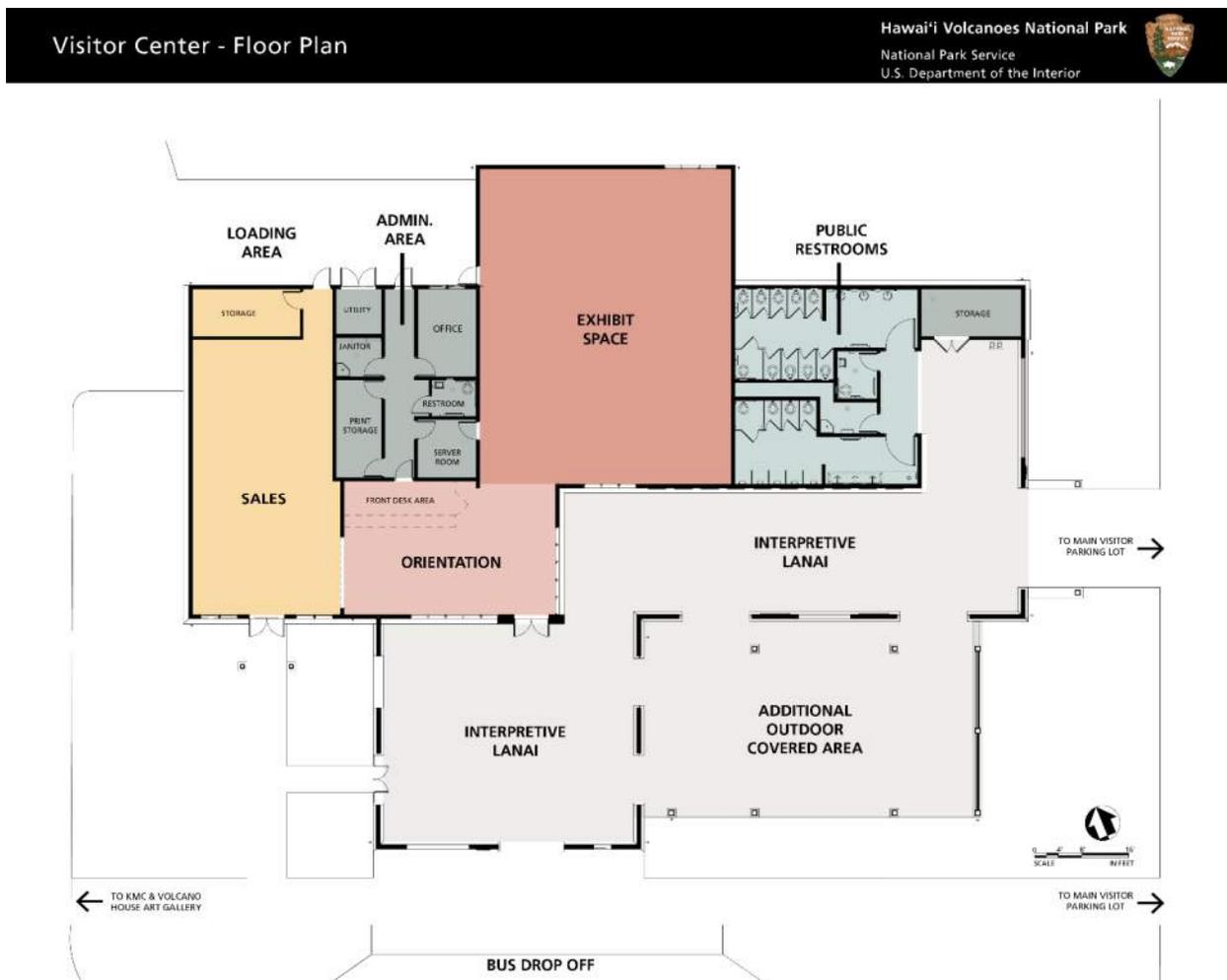


## Project Elements

- Build new visitor center building that is compatible with surrounding historic landscape, locate building near KVC/headquarters building
- Expand visitor parking
- Provide covered outdoor area for orientation, exhibits, and gathering space
- Minimize impacts to site resources as much as possible

## Visitor Center Floor Plan

The interpretive lanai is intended to act as an outdoor extension of the visitor center where visitors can get the information necessary for planning their visit and learn about the park resource without having to enter the building. This allows for a smaller indoor space as well as orientation and interpretation that is available 24/7. This outdoor area would also serve as covered programmatic space for ranger programs and cultural demonstrations.



Floor Plan



## Building Exterior

View of Front Entry



Sales area entrance can be seen on the left, main entrance in the middle, and access to restrooms on the far right

View of Entry from Visitor Parking Expansion



Additional outdoor covered area on the left, access to restrooms to the right



## View from Crater Rim Drive

(at intersection)

The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After



### View from Crater Rim Drive

(looking toward park entrance)

The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After



## Park Entrance



Increases in visitation over the past decade and changes to circulation due to past eruptions have led to traffic congestion problems that pose collision hazards for motorists and pedestrians, starting at the turn onto the park entrance roadway from State Highway 11 and continuing through the entrance station to the main visitor center area. The entrance station is located on Crater Rim Drive (CRD), approximately 500' from the intersection with State Highway 11.



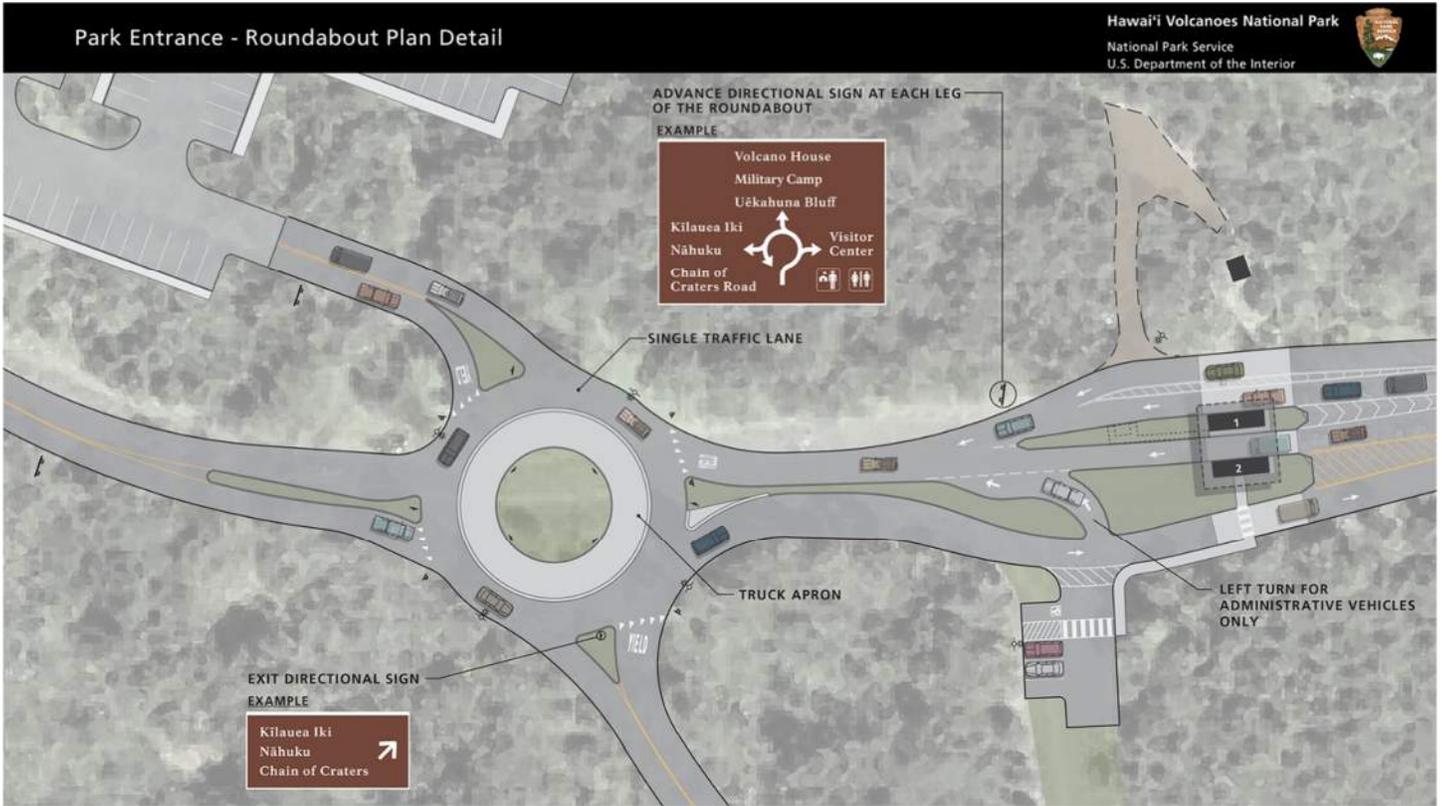
*Existing conditions along Crater Rim Drive. The park road is lined with dense forest vegetation.*



Site Plan

## Project Elements

- Relocate CRD intersection and convert to roundabout
- Realign CRD from roundabout toward Chain of Craters. Follow old CRD alignment as much as possible
- Add (1) entrance lane as an administrative bypass
- Add formal exit pull-off area
- Relocate staff parking within existing road footprint - (1) accessible stall and (3) standard stalls
- Add accessible route from staff parking to entrance station
- Separate exit lane from entrance station
- Remove existing section of CRD and revegetate with native plants



Plan Detail of Roundabout Intersection

## Entrance Road

View Toward Entrance Station



Proposed formal pull-off area on the left and proposed administrative bypass lane on the right



## Roundabout Intersection

View Toward Entrance Station



Road to Chain of Craters on the right and road to new visitor center on the left



### View from Roundabout

The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



Photo location and view direction



Before



After

Park Entrance



## Ways to Comment

It is important that we hear from you!

We will be accepting comments from

**February 9, 2022 to March 11, 2022.**

### Comment Online

Submit your comments via our Planning, Environment, and Public Comment (PEPC) website using the link below. You will also find additional information on the project components and a full list of actions.

<https://parkplanning.nps.gov/HAVODisasterRecovery>



### Comment by Phone

Call us. We have a phone line dedicated to receiving your comments on this project. You can leave a detailed message or request that someone call you back.

**808.460.6212**

### Attend a Virtual Meeting

We will be hosting two virtual public meetings on **February 24, 2022** from **12:00PM-1:00PM HST** and **6:00PM-7:00PM HST**. The virtual meetings will provide an opportunity for the public to learn more about the project, have discussions with park staff, and provide comments. There will be a presentation at the top of the hour of each meeting. Use the links below to join the meetings online or join by phone using the toll-free number and meeting ID.

#### **February 24, 2022 12:00PM-1:00PM HST**

Join the online meeting:

<https://swca.zoom.us/j/91430664015>

Join by phone:

(888) 475-4499 US Toll-free

Meeting ID: 914 3066 4015

#### **February 24, 2022 6:00PM-7:00PM HST**

Join the online meeting:

<https://swca.zoom.us/j/97252271515>

Join by phone:

(888) 475-4499 US Toll-free

Meeting ID: 972 5227 1515

Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.



# Mahalo!



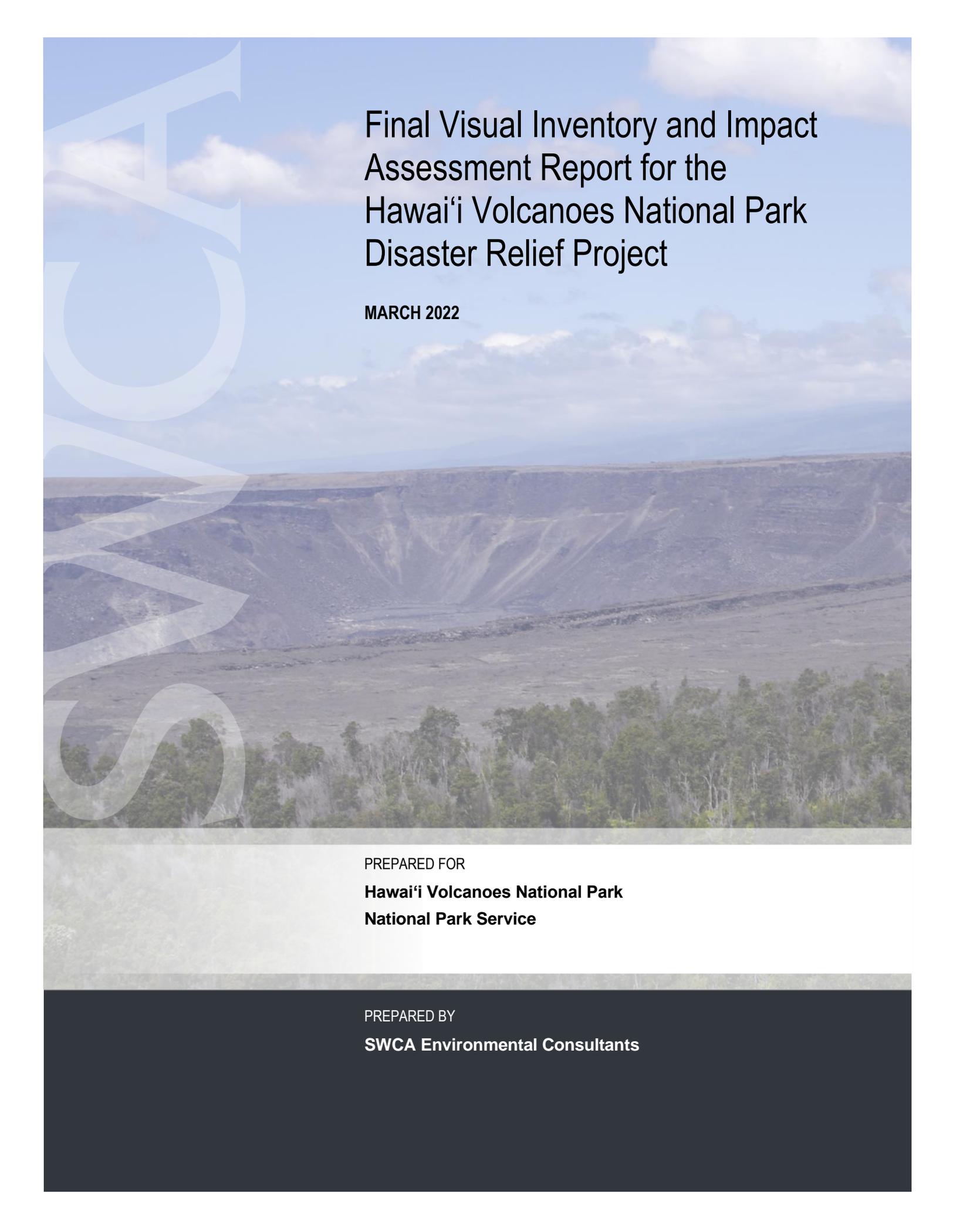
*NPS Photo/J.Wei - Full moon over Halema'uma'u crater, views of eruption during a clear night*

Visit the park website to learn more about Hawai'i Volcanoes National Park  
<https://www.nps.gov/havo/index.htm>

## Appendix D

# Final Visual Inventory and Impact Assessment Report for the Hawai'i Volcanoes National Park Disaster Relief Project





# Final Visual Inventory and Impact Assessment Report for the Hawai'i Volcanoes National Park Disaster Relief Project

MARCH 2022

PREPARED FOR

**Hawai'i Volcanoes National Park  
National Park Service**

PREPARED BY

**SWCA Environmental Consultants**



**FINAL VISUAL INVENTORY AND  
IMPACT ASSESSMENT REPORT FOR THE  
HAWAI'I VOLCANOES NATIONAL PARK  
DISASTER RELIEF PROJECT**

Prepared for

**Hawai'i Volcanoes National Park**  
1 Crater Rim Drive  
Hawaii National Park, Hawai'i 96718  
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Prepared by

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SWCA Project No. 32899-008

March 2022



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# 1 EXECUTIVE SUMMARY

Based on damage to park facilities at Hawai'i Volcanoes National Park (Hawai'i Volcanoes) from the 2018 volcanic activity and associated earthquakes, the Hawai'i Volcanoes National Park Disaster Relief Project (Project) involves the improvement, replacement, or removal of park facilities. The Project has three component areas: (1) replacement visitor center and road improvements near the park entrance, (2) redesign of the facilities on Uēkahuna Bluff area including the removal of structures, and (3) new U.S. Geological Survey (USGS) field station adjacent to the historic ball field near Kilauea Military Camp (KMC).

The visual resource inventory and impact assessment was completed using an updated process developed by the National Park Service titled *2021 Draft National Park Service Visual Impact Assessment Methodology and Guidelines*. These methods focused on seven key observation points (KOPs), or viewpoints, to assess (1) relative change in a view from the development of the Project and the potential impacts on the visual landscape, (2) the effect on the viewer experience considering different user groups, (3) the impact to park interpretive themes and the stories communicated to visitors, and (4) the overall impact to park resources and visitors.

In summary, the Project would increase visitor interpretive opportunities both at the Kīlauea Visitor Center (KVC) and on Uēkahuna Bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. The removal of structures on Uēkahuna Bluff would result in beneficial impacts on views, including those across Kīlauea Crater, as well as implementing guidance from the 2016 Hawai'i Volcanoes General Management Plan (GMP) for the area. The addition of the replacement visitor center would expand the area viewed as modified within the park's Visitor Services Zone, leading to a more recreation-focused landscape within the kauhale (integrated campus), but this would be counterbalanced by the additional interpretive opportunities resulting in low adverse impacts. Proposed transportation improvements near the park entrance station, including the construction of a traffic circle, new wayfinding signage, and entrance road to the KVC, would facilitate increased opportunities to explore the park initially and decreased wait times during volcanic events, but since Project would introduce transportation features into a mostly natural setting shortly after passing the park entrance station, moderate adverse impacts would occur in this area. The proposed USGS field station would impact the historic setting adjacent to KMC, introducing a more modern building into a view dominated by historic structures, but would occur in an area with limited existing interpretive opportunities resulting in low adverse impacts. The application of mitigation measures during the design of the Project facilitated these reduced impacts, including limiting the height of proposed buildings, choosing building materials and colors to match existing park facilities, increasing site interpretive opportunities, maintaining and expanding native landscape plantings, and retaining enough of the existing berm on Uēkahuna Bluff to screen views of the Project. Overall, the Project would further the park's mission as well as meet management zone and site-specific guidance from the GMP.

# 2 INTRODUCTION

Hawai'i Volcanoes was established by the U.S. Congress in 1916 for the purpose of protecting, studying, and providing access to Kīlauea and Mauna Loa in addition to perpetuating endemic Hawaiian ecosystems and traditional Hawaiian culture connected to these landscapes. In 2018, increased volcanic activity and associated earthquakes led to damage to park facilities, including those located on the edge of Kīlauea Crater and near Halema'uma'u Crater on Uēkahuna Bluff. The Project involves the improvement, replacement, or removal of park facilities after the 2018 volcanic disaster.

### 3 PROJECT BACKGROUND

The Project has three components: (1) the replacement visitor center as well as a series of road improvements near the park entrance, (2) redesign of the Uēkahuna Bluff area including removal of structures and redesigning the scenic overlooks, and (3) a new USGS field station adjacent to the historic ball field near KMC.

#### 3.1 Project Design Visual Characteristics

The proposed development and redesign of the three areas vary in regard to their character, proposed elements, and potential key sources of visual contrast. The following descriptions have been separated by Project component area:

**Park Entrance/KVC:** Due to the closing of the Jaggar Museum, there is increasing visitation at the KVC, leading to crowding and potential decreasing visitor experience. The proposed design includes a replacement visitor center (5,900 square feet [sf]), new restroom facility (1,130 sf), covered lanai (7,500 sf), and expanded parking (229 visitor parking stalls, 16 bus parking stalls, and 22 staff parking stalls). The height of the replacement visitor center at its highest point would be approximately 24 feet along the main roof ridgeline. The long ridgelines and triangular forms in the roofline are similar to the existing KVC. By using similar materials to the existing KVC, including lava rock and fiber cement siding (mimicking wood siding), the potential visual contrast introduced by the replacement visitor center would be reduced. In addition to the new structure and expanded parking lot, there are proposed road improvements along Crater Rim Drive near the park entrance station. These road improvements include a new traffic circle as well as the realignment of the park entrance road, a new entrance from Crater Rim Drive to access the KVC area, a new staff parking lot near the park entrance, and the installation of new signage. Anticipated key sources of visual contrast in the design are associated with (1) “opening up” of views from the construction of the new traffic circle close to the park entrance station, (2) modifying the existing character of the park entrance area through road expansion, (3) the scale of the proposed replacement visitor center potentially dominating the character created by the existing KVC, and (4) final selection of building materials (roofing, siding, paint color, etc.) to maintain the visual character of the KVC area.

**Redesign of Uēkahuna Bluff:** As mentioned previously, the Jaggar Museum has been closed since the 2018 volcanic activity. The proposed design removes the Jaggar Museum, USGS Hawaiian Volcano Observatory (HVO) building, Geochemistry Annex building, and existing water tanks with the goal of restoring native vegetation in these previously disturbed areas. Other existing structures, including the restroom building and radio tower, as well as the parking area, are to remain in the updated design. A scenic overlook is proposed in the same footprint as the former Jaggar Museum overlook. A replacement water tank is also proposed to provide water to the existing restroom building; it could be visually screened through retaining some of the berm north of the existing water tanks.

The overall design proposal focuses on limiting new disturbance both from a physical footprint standpoint as well as limiting vertical elements in the design. The proposed new overlook is not elevated but instead was designed to be low profile and blend with the existing setting. Anticipated key sources of visual contrast in the design are associated with the (1) rock wall surrounding the former Jaggar Overlook, (2) proposed replacement water tank and redesign of the berm, and (3) restoration of previously disturbed areas, including the footprint of the former Jaggar Museum and HVO.

**New USGS Field Station:** As described for the Uēkahuna Bluff area, the existing USGS field station (HVO) will be demolished with the plan that some scientific instruments will remain but with field

operations moving to a new location near KMC. The proposed location for the new USGS field station is adjacent to the historic ball field. The proposed design includes a new two-story field station, pump house, water tank, and a parking area (approximately 35 parking stalls). The height of the proposed field station along its split-gable roofline is 38 feet. The materials for the building were chosen to match other structures in the park, including the use of a rock foundation, earth-tone fiber cement siding (mimicking wood siding), and a metal roof. Anticipated key sources of visual contrast in the design are associated with (1) visibility from Crater Rim Drive with the new proposed building potentially being the first structure visible as visitors return from Uēkahuna Bluff, (2) modifications to the historic setting in KMC through the introduction of potentially incompatible built elements, and (3) removal of existing vegetation surrounding the proposed USGS field station potentially opening up views from cabins and other use areas in KMC.

## **3.2 Visual Context**

The entirety of the park is in the Hawaiian High Island Ecoregion (Nature Conservancy 2018) which is composed of many micro-climate zones depending on elevation and orientation to typical wind directions. The proposed Project component areas are at an elevation of approximately 4,000 feet and include both Kīlauea Crater, with its expanding caldera, and the dense forest surrounding the KVC. The rain shadow produced by Mauna Loa and the effect of long-term volcanic activity on Kīlauea creates two distinctive vegetative zones in the study area even though Project component areas are located less than 2 miles apart.

The wet forest composed of mostly 'ōhi'a lehua, koa, and hapu'u adjacent to the KVC forms a dense canopy where buildings are "cut out" of the forest, forming mostly enclosed landscape settings. Within this KVC area, there are multiple historic structures including the Volcano Art Center (former 1877 Volcano House, relocated to its current location in 1921), the current Volcano House (built in 1941), and the 'Ōhi'a Wing (former 1932 administration building). Terrain is generally flat to rolling except closer to the edge of Kīlauea Crater, where multiple benches have been formed by volcanic activity with steep drop-offs between each bench.

The dry forest on Uēkahuna Bluff contains scattered 'ōhi'a lehua, grasses, and other vegetation that is primarily located in low points or depressions in the landscape formed by undulating and cracking lava flows. These cracking, settling lava flows form the edge of the crater rim with a steep drop into Kīlauea Crater and then into Halema'uma'u Crater, where the crater floor lies approximately 1,500 feet below Uēkahuna Bluff. Due to the limited vegetation in the area and rolling terrain, views are generally unobstructed across the caldera. Uēkahuna Bluff is a sacred site for some Native Hawaiians and continues to be the site for Native Hawaiian rituals and cultural practices.

The KMC is located at the edge of the wet forest area along Crater Rim Drive and includes areas of turfgrass and ornamental landscaping. The camp is a 54-acre U.S. Army-operated historic recreation complex that was established in 1916 on park land and over time was developed to have 90 rooms for overnight accommodations as well as a variety of other supporting amenities. Similar to the KVC area, the terrain is flat to rolling except near the edge of Kīlauea Crater. Beyond the boundary of KMC, the dense adjacent vegetation forms a mostly enclosed landscape setting. The KMC complex is not open to the general public; access is allowed only for authorized patrons. The area has a developed recreation character (cabins, open spaces, and sports facilities) that is unique in the park compared to the more common natural-lands recreation focus throughout the park.

### **3.3 Area of Visual Effect**

The area of visual effect (AVE) defines the geographic extent of the analysis area for this Project's inventory and impact assessment. The AVE was identified based on a viewshed analysis run from the proposed Project components to identify the total area that may have visibility of the Project. Due to the presence of dense vegetation, especially in proximity to the KVC and KMC, the results of the bare-earth viewshed have limited effectiveness and were supplemented by multiple site visits. The AVE was determined to encompass the area within 3 miles of Project components, which corresponds to the boundary between the middle ground (0.5–3 miles) and background (more than 3 miles) visual distance zones.

Within the AVE, seven KOPs (or viewpoints) were identified through coordination with Hawai'i Volcanoes staff to assess the effect of the construction, operation, and maintenance of the Project. The following KOPs are further described in Section 5.2 and are depicted on Figure 1:

- **KOP 1: Park Entrance Road** – Located where the Project may change the experience after passing the park entrance station along a densely vegetated road corridor.
- **KOP 2: Kilauea Visitor Center Entrance** – View of the current entrance to the KVC parking lot where the replacement visitor center and parking lot would be visible adjacent to the existing KVC.
- **KOP 3: Crater Rim Trail** – View up the trail where proposed modifications on Uēkahuna Bluff would be visible, including the replacement water tank and redesigned berm.
- **KOP 4: Volcano House Overlook** – Located at a popular scenic overlook behind the historic Volcano House (hotel) with views across the caldera toward the proposed modifications on Uēkahuna Bluff from a middle ground perspective.
- **KOP 5: Crater Rim Drive West of Kilauea Visitor Center** – Located where motorists and hikers would have their first view of the developed area adjacent to the KVC, including the Project, as they return from the Steam Vents area and approach the KVC.
- **KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field** – View from the road where the proposed USGS field station could be visible through gaps in the existing vegetation as motorists drive toward the KVC.
- **KOP 7: Kilauea Military Camp** – View from the KMC entrance area, adjacent to the front office and front row of cabins, toward the proposed USGS field station.

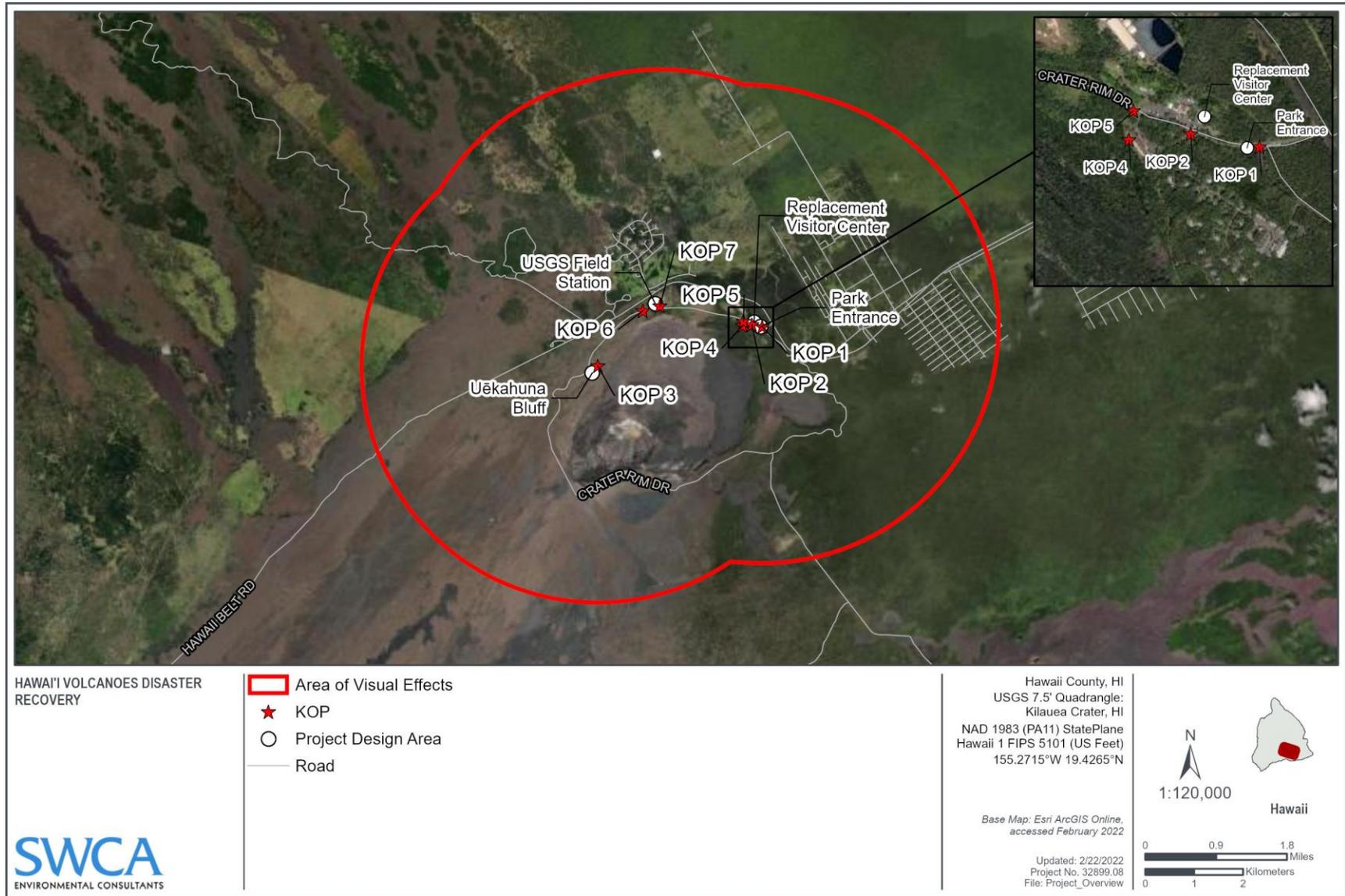


Figure 1. Project Overview Map

## **4 REGULATORY FRAMEWORK**

Visual resource policies from relevant National Park Service documents were gathered to form a baseline for the visual resource study and are described below.

### **4.1 National Park Service Organic Act**

The National Park Service Organic Act of 1916 directs the National Park Service “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (National Park Service 2021a).

### **4.2 National Park Service Visual Impact Assessment Methodology and Guidelines**

An updated process has been developed by the National Park Service to address visual resource inventory and impact procedures titled *2021 Draft National Park Service Visual Impact Assessment Methodology and Guidelines* (National Park Service 2021b). These methods were developed to make the process understandable for a wider audience, inform park management, and enhance collaboration with stakeholders. The first goal of these methods is to evaluate the relative change in a view from development of a project (or other activity) and the potential impacts on the visual landscape. These changes are evaluated from selected viewing locations or KOPs, which form the basis for the subsequent inventory and analysis. In addition to the level of visual change (or contrast) introduced by a project, these methods analyze the effect on viewer experience, National Park Service interpretive opportunities, and on overall park visual resources. More detail on the inventory and impact assessment methodologies for this Project are described in Sections 5.1 and 6.1 respectively.

### **4.3 Hawai'i Volcanoes National Park General Management Plan**

The GMP (National Park Service 2016) was developed prior to the most recent major volcanic activity, which occurred in 2018. The GMP established four management zones (Park Support Zone, Transitional/Semi-Primitive Zone, Visitor Services Zone, and Wild/Primitive Zone) based on the general level of management direction including the types of activities and facilities that are appropriate in each management zone.

The proposed Project elements associated with the KVC, entrance area, and Uēkahuna Bluff would be located within the Visitor Services Zone, which is managed primarily for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. Specific Visitor Experience/Scenic Resource direction for this zone from the GMP is described below (National Park Service 2016):

- **Overall Conditions:** This zone is the primary visitor use zone. Visitor opportunities, experiences, and services are emphasized with high levels of access to features, resources, and personal services. This zone has capacity for a large number of park visitors and is an access point for park experiences and opportunities. There is high probability of contact with rangers, park staff, and other visitors. Commercial services and concession facilities are readily available in conjunction with the park mission.

- **Types of Visitor Activities:** This zone supports a wide range of visitor activities, opportunities, and services with easy access to recreation, education, and interpretation programming. Activities are available to visitors of all abilities and can include large groups. Typical activities include ranger-led programs, biking, hiking, picnicking, scenic driving, sightseeing, star gazing, camping and overnight stays, lava viewing, birding, educational and stewardship programs, cultural demonstrations, special events, and commercial visitor services activities.
- **Interpretation and Education Programming:** Visitors have opportunities to connect with the meanings and themes of the park. A wide variety of interpretive methods provide connections between the meanings and values of the resource being highlighted. This zone provides orientation and intensive interpretation that is programmatically accessible with a wide range of media and facilities to support diverse visitor needs. The focus is placed on interpreting, protecting, and preserving geologic, biologic, and cultural resources and emphasizing specific stories or themes.
- **Encounters with Other Visitors:** A high level of encounters with other visitors is expected, but concentrations of visitors are managed. Visitors can expect congested experiences during peak visitation hours. A wide range of group sizes, ages, and diverse populations may be accommodated.
- **Safe Visitor Access to Volcanic Events:** This zone supports the highest level of visitor access that provides safe viewing. Access to volcanic events for visitors is made available as quickly as possible with an appropriate level of visitor orientation. This zone also supports the highest level of operational support.

The proposed USGS field station would be located within the Park Support Zone (note: KMC is not open to general public), which is managed primarily to support park operations and maintenance, including the operational needs of park partners. Access for visitors is primarily for limited visitor services (such as backcountry permitting), orientation, and organized meetings or events. Specific Visitor Experience/Scenic Resource direction for this zone from the GMP is described below (National Park Service 2016):

- **Overall Conditions:** This zone is managed for limited visitor access to services such as permitting, organized meetings or events, and limited orientation.
- **Types of Visitor Activities:** This zone supports very limited visitor activities and use.
- **Interpretation and Education Programming:** Interpretive and education programming in this zone occurs primarily in specific facilities designated for this purpose such as the Visitor Emergency Operations Center and the Education Center.
- **Encounters with Other Visitors:** A low level of encounters with other visitors is expected. Encounters are primarily around facilities and services that do provide some visitor support (e.g., permitting offices).
- **Safe Visitor Access to Volcanic Events:** Visitor access that provides safe viewing for visitors could be accommodated in this zone.

Additionally, site specific management guidance is provided in the GMP for (1) the KVC and surrounding area and (2) Jaggar Museum and HVO.

(1) The KVC and surrounding areas are part of an integrated campus, or *kauhale*, that includes the KVC, 'Ōhi'a Wing, Volcano Art Center, Volcano House, pā hula (place reserved for hula dancing), and other buildings within the vision of the entire campus to improve visitor services. The priority would be to keep

development within the existing footprints, but modest expansion may be necessary to achieve the overall vision and to accommodate walkways, improve circulation, and reduce conflicts between vehicles and visitors. Specifically for the KVC, the GMP suggests increasing parking and expanding the covered lanai space to address increased visitor use.

(2) The GMP identifies three options if the Jaggar Museum and HVO were significantly damaged or destroyed during volcanic activity (National Park Service 2016):

- Repair or rebuild the Jaggar Museum and HVO in the current location to the greatest extent possible. Keeping the facilities on the edge of Kīlauea Caldera and in close proximity to Halema'uma'u Crater continues the link between science and visitor interpretation that has been instrumental at Hawai'i Volcanoes. Both buildings also have their own cultural significance with the site.
- Explore alternative locations, preferably inside the park and off the crater edge and Uēkahuna Bluff but still within Kīlauea Caldera, to maintain continuity for the historic visitor experience and scientific operations as much as possible.
- Remove all facilities from the edge of Kīlauea Caldera, and specifically Uēkahuna Bluff, restore the site as a sacred place to Native Hawaiians, and strive to rebuild the functions provided by Jaggar Museum and HVO in a less culturally sensitive location, outside the park. The park and USGS would maintain the minimum amount of instrumentation and infrastructure necessary for monitoring volcanic activity, but offices and other components of HVO would be relocated outside the park. The visitor exhibits provided by Jaggar Museum would preferably be relocated to other buildings within the park, but could be combined with a new HVO facility, depending on location and proximity to the park.

The GMP also provides specific Scenic Resources mitigation measures as follows:

- Where appropriate, use facilities such as boardwalks and fences to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints.
- Design, site, and construct facilities to minimize adverse effects on natural and cultural resources and visual intrusion.
- Provide vegetative screening, where appropriate.
- Implement vegetation management, which could include selective clearing to manage or improve important viewpoints and viewsheds while minimizing impacts to native vegetation and wildlife habitat.

## **5 INVENTORY**

The inventory of visual resources, based on the new draft National Park Service visual impact assessment methods and guidelines document, focuses on the seven KOP locations identified in Section 3.3. The following section first outlines the methodology to inventory existing visual resources from the KOP locations with subsequent subsections documenting (1) the existing conditions from each KOP, (2) viewer groups and their sensitivity to changes in their viewshed, and (3) how these locations fit within overall National Park Service management.

## **5.1 Methodology**

From each KOP location, a series of data were collected to identify the qualities and condition of the existing landscape and the viewer groups associated with those locations. To inventory the existing landscape, a *View Inventory Form* was completed describing the (1) existing landscape character, (2) visual elements (form, line, color, and texture), and (3) the spatial composition of the view. These forms provide the basis for the existing landscape description, focusing on the dominant landscape character type, integrity, variety, view type, key landscape features, and the style of built features.

In addition to the existing landscape, knowing the types of viewers who visit and use each KOP area is key to understanding their visual expectations and overall sensitivity to changes in the viewshed. The first inventory component is the type of viewer (casual eye, critical observer, or repeat local observer). Casual eye viewers expect to see a scenic landscape but often have little prior knowledge about the location and depend on and enjoy interpretation to gain information. Critical observers have special knowledge that contributes to their interpretation of the view (e.g., photographers, painters, bird watchers, etc.); authenticity of the place may be an important item for these viewers. Repeat local observers include park staff, partners, and commercial use authorization holders, as well as visitors whose connection to the landscape is generational with a considerable concern for changes in the landscape. The overall sensitivity to changes in these views are based on the user group, number of visitors, duration of view, and the specific activities occurring at each location. Seasonal variation was also considered, including increased visitation during volcanic events and in the winter and spring seasons.

The final component in the visual inventory is the National Park Service interest as it relates to how these KOP locations fit within the larger park-wide management themes. Through coordination with park staff, each KOP and viewed landscape was assessed based on its (1) importance, (2) uniqueness, and (3) commitment of National Park Service funds and staff time needed to accommodate and enhance viewer experience. By inventorying these components, the effect on the park and its management can be assessed in consideration of the visual change proposed by the Project and the viewer's response to that change.

## **5.2 Existing Landscape**

Key information from the *View Inventory Forms* completed for each KOP location, included in Appendix A, is summarized in Table 1.

**Table 1. Key Observation Point Existing Landscape**

<b>KOP Number</b>	<b>Landscape Character</b>	<b>Visual Elements</b>	<b>Spatial Composition</b>
<b>KOP 1: Park Entrance Road</b>	The character adjacent to the park entrance road is mostly natural except for the park entrance station, roadway, signage, and distribution power line crossing over the road. The dense forest surrounding the road forms an enclosed, narrow corridor. The repeating vegetation types and patterns create a simple setting leading to the KVC. The park entrance station is made of lava rock with a tall metal roof accompanied by typical National Park Service wood and metal signage along the road.	The park entrance station has a blocky, angular form contrasting with the dense, rounded form associated with the adjacent forest canopy. Vertical and angular lines are present in the park entrance station and signage with curving lines created along the roadway as it turns toward the KVC. A wide range of greens are present in the vegetation with gray and brown being the predominant colors of human modifications in this setting (signage and park entrance station).	The view is well balanced and in scale, as the built elements do not dominate the natural setting. The park entrance station is located in the middle of the roadway (creating symmetrical balance) and none of the built elements are taller than the adjacent forest. The roadway corridor (and park entrance station) are the primary focal points in the setting. The continuity of the setting is generally unified except for the park entrance station and roadway, which have carved a path through the forest. The entrance area is ordered with minimal modifications except for the facilities to support the park entrance, which follow the roadway.
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	The landscape adjacent to this KOP has been modified by the presence of the existing KVC, parking lot, entrance road, and other park infrastructure. The dense forest surrounding this KOP location creates an enclosed setting. The area's natural developed character has a low level of landscape diversity as each building in the kauhale (integrated campus) is within a separate cleared area with partial vegetative screening between structures. The dominant materials used in the KVC are lava rock and wood with a shingle roof displaying distinctive pyramidal roof forms.	The KVC has a blocky, angular form which contrasts with the dense rounded form generated by the adjacent forest. Vertical lines occur in the signage and light posts with the KVC introducing horizontal and angular lines. The KVC is constructed of dark colored lava rock, dark brown siding, and a brown roof. The adjacent vegetation is composed of a range of greens with a uniform, medium texture. Rough textures are found in the KVC, including the vertical form of the building's chimney and pyramidal roof forms.	The KVC and adjacent forest are in visual balance and of appropriate scale since the forest vegetation is taller than any built structure. The KVC attracts attention in the setting and is a focal point in the landscape as the large opening in the forest interrupts the continuity of the surrounding forest setting. The KVC area is ordered and designed, including ornamental landscape plantings and large parking areas.

<b>KOP Number</b>	<b>Landscape Character</b>	<b>Visual Elements</b>	<b>Spatial Composition</b>
<b>KOP 3: Crater Rim Trail</b>	The landscape setting is largely natural appearing except for the presence of structures on the bluff including the HVO, Jaggar Museum, and restrooms, which have modified the highest portion of the bluff. The overall setting is diverse with panoramic views of Kīlauea and Halema'uma'u Craters and Mauna Loa. Vegetation adjacent to the KOP is composed of short, scattered shrubs and grasses. The structures are made of lava rock and wood with metal roofs. The existing HVO has a taller observation tower that rises above the other single-story structures. The existing water tanks are screened from view by a berm.	The existing structures with their blocky, angular form are located adjacent to the deep, eroding Kīlauea and Halema'uma'u Craters defined by its flat, level benches. Mauna Loa rises above this landscape with its massive shape. The existing structures include vertical, diagonal, and horizontal lines, which contrast with the curving line of the trail and horizontal, undulating lines evident along the crater rim. Scattered green and tan vegetation occur within a field of dark-colored lava rock. The structures and trail introduce dark browns, reds, and grays into the landscape. The general texture in this landscape is medium due to scattered vegetation and variable rock sizes with coarser textures found in the structures and descending the rough, broken crater walls.	The presence of the structures on the bluff, including the taller HVO, are out of balance and scale with the massive, natural landscape. Kīlauea and Halema'uma'u Craters are the primary focal point in the setting with the structures introducing multiple additional focal points. Mauna Loa, due to its massive size, also attracts attention from this location. The existing structures on the bluff interrupt the natural continuity of the landscape. There are common design elements among the structures, but due to their different designs and architectural styles, they do not form an organized or regular composition in the setting.
<b>KOP 4: Volcano House Overlook</b>	The landscape setting as viewed across Kīlauea Crater is mostly natural and intact with the presence of the Jaggar Museum and HVO being the primary modifications viewed. These panoramic views have a high level of landscape diversity with views of the expanding crater, vegetated intermediate benches, and Mauna Loa rising above the landscape in the background. The geometric form of the existing structures on the bluff contrast with natural horizontal and angular lines present in the landscape.	The existing landscape is defined by the eroding Kīlauea Crater with flat, level benches descending along steep slopes down to the crater floor. The massive slopes of Mauna Loa rise above the landscape, contrasting with the blocky, angular form present in existing structures. Horizontal and undulating lines are evident in the crater rim down the layers of eroding rocks, repeating in the butt edge formed between the vegetation on the intermediate bench and the distant, stark lava flows. Vegetation in view includes a mix greens and grays (dead trees). Lava rocks introduce a range of colors from dark gray to brown with areas of brighter, red lava. Textures range from the rough, broken crater walls to the fine, smooth texture of Mauna Loa.	The setting is well balanced, displaying the active nature of the landscape with limited visible landscape modifications. Due to the massive scale of the natural landscape, the structures are visible but do not disturb the harmonious balance and scale of the setting. There are three main focal points in the view, with the first two (Kīlauea Crater and Mauna Loa) appearing largely intact with the modifications on Uēkahuna Bluff, third focal point, attracting additional attention since the existing structures are located on the highest point on the crater wall. While these structures interrupt the natural continuity of the landscape, the viewing distance diminishes their visual dominance, allowing the natural landscape to appear unified and organized. From this distance, the variety of architecture used for the buildings is not evident and their presence appears organized, with their effect limited to the bluff area.

<b>KOP Number</b>	<b>Landscape Character</b>	<b>Visual Elements</b>	<b>Spatial Composition</b>
<b>KOP 5: Crater Rim Drive west of Kilauea Visitor Center</b>	The setting adjacent to this KOP has been modified by the existing KVC, Volcano Art Center, Volcano House, parking lots, entrance road, and other park infrastructure, creating a natural developed character. The dense forest surrounding this KOP location forms an enclosed landscape setting with focal features (e.g., KVC and Volcano Art Center) attracting attention within the setting. Due to the varying architectural styles, a more diverse landscape is present in this view compared to KOP 2, where the other structures are not visible. The dominant materials used in these structures are lava rock and wood (stained red or brown) with the KVC displaying a shingle roof with distinctive pyramidal roof forms whereas the Volcano Art Center has a tall, metal gable roof.	The KVC and Volcano Art Center have blocky, angular forms that contrast with the dense rounded form generated by the adjacent forest. Vertical lines occur in the signage and light posts with the KVC and Volcano Art Center introducing horizontal and angular lines. The KVC is constructed of dark colored lava rock, dark brown siding, and a brown roof. The Volcano Art Center (former Volcano House) has red-stained wood siding with a gray, metal roof. The adjacent vegetation is composed of a range of greens with a uniform, medium texture. Rough textures are found in the KVC and Volcano Art Center, including the vertical form of the buildings' chimneys, pyramidal roof form (KVC), and tall, gable roofline (Volcano Art Center).	The KVC, Volcano Art Center, and adjacent forest are in visual balance and of appropriate scale since the forest vegetation is taller than any built structure. The KVC and Volcano Art Center attract attention in the setting and are focal points in the landscape as the large openings in the forest interrupt the continuity of the surrounding forest setting. The kahuale is ordered and designed, including ornamental landscape plantings and large parking areas.
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	The setting is mostly natural where Crater Rim Drive travels through a dense 'ōhi'a lehua and koa forest. There are intermittent openings in the forest with views of the historic ball field adjacent to KMC. The setting is uniform with the dense forest and roadway creating a repeating theme along this stretch of Crater Rim Drive. The forest forms enclosed views along the road except where intermittent openings in the forest create short-duration framed views. There are limited structures in view with the asphalt road and wooden powerline poles being the primary visible built elements. There are glimpses of structures in the KMC complex, where light colored building features contrast with the forest's natural green, brown, and tan colors, but the forms of the structures are not apparent.	The level, geometric roadway crosses flat terrain where tall trees form a dense rounded canopy on either side of the road. Horizontal lines are formed by the roadway with vertical lines in the tree trunks and powerline poles. The forest canopy is defined by its curving lines and tall, rounded form adjacent to the road. Vegetation introduces a wide range of greens with a gray roadway and brown powerline poles as the primary built features in the setting. The forest creates a mostly uniform texture, which partially conceals the powerline poles along the roadway. The road surface and meadow, visible through the forest openings, are finer textured and smoother in comparison.	With similar forest canopies on either side of the road, as well as the narrow road shoulders and concealed powerline poles, the setting appears balanced and in scale with the natural setting. Views are focused along the roadway with those views being the primary focal point. Glimpses of forest openings along Crater Rim Drive attract the eye but are short in duration, occur infrequently, and are mostly of recreation sites (or their access roads). As motorists travel between the Uēkahuna Bluff and KMC, the setting is unified and connected by the 'ōhi'a lehua and koa forest, which becomes more dense approaching KMC. With the roadway and adjacent powerline poles following the same alignment, development in view appears organized and focused along this corridor.

KOP Number	Landscape Character	Visual Elements	Spatial Composition
<b>KOP 7: Kilauea Military Camp</b>	The setting is mostly natural appearing, with a large clearing containing KMC and support structures forming a natural developed character. The view type is a loose, enclosed view with the dense forest surrounding the camp focusing views inwards. Due to the cohesive blend of the older and modern buildings within KMC, a simple, cultural landscape character is formed. The front office is constructed of wood siding with a metal gable roof and lava rock chimneys in a country art deco style. The cabins are constructed of similar materials but are of a simpler, geometric design with metal, gable roofs.	The KMC front office and cabins have a blocky, angular forms, which contrast with the dense rounded form generated by the adjacent forest. Vertical lines occur in signage with the KMC cabins introducing horizontal and angular lines and lava rock curbs forming curving lines along the road. The KMC cabins are constructed of light brown siding, dark brown trim, dark lava rock chimneys, and a brown metal roof. The adjacent vegetation is composed of a range of greens with a uniform, medium texture. Rough textures are introduced by the KMC cabins through their triangular, vertical forms, including the form of the chimneys and gable roof lines.	The KMC and adjacent forest are in visual balance and of appropriate scale since the forest vegetation is taller than any built structure. The curving driveways at the entrance of KMC focus views inward toward the front row of cabins and the art deco style front office building. Along the edge of KMC, views include forest openings and a glimpse of the historic ball field. The KMC and supporting facilities form a large opening in the forest, interrupting the continuity of the surrounding forest setting. Additionally, the varying architectural styles in KMC partially interrupt the continuity of the setting, but through the use of common materials, the structures appear unified. The KMC has an orderly design, including ornamental plantings and several curving entrance roads. The cabins are also constructed in rows, further organizing the built elements within this setting.

### 5.3 Viewer Groups and Sensitivity

Different viewer groups, and their sensitivity to changes in their view, were analyzed from each KOP to understand how viewers would respond to the introduction of the Project. Due to the accessibility of each KOP location and the range of visitors to the park, every KOP would have casual eye, critical observers, and repeat local observer viewers (as defined in Section 5.1) with their different visual and experience expectations. Table 2 describes these user groups by KOP and their relationship to the existing landscape setting. To provide a more complete picture related to the sensitivity of views from these KOPs, Table 3 describes the viewer groups from Table 2 and considers the number of visitors, duration of their visit, and the activities occurring at each viewpoint.

**Table 2. Key Observation Point Viewer Groups**

KOP Number	Casual Eye	Critical Observer	Repeat Local Observer
<b>KOP 1: Park Entrance Road</b>	First impression for casual eye observers after passing the park entrance station is of a dense, forested entrance road approaching the KVC. Limited development and vegetation clearing conceal views of KVC and further along, of Kilauea Crater. These viewers are typically focused on wayfinding and reading the map provided by the ranger at the park entrance station.	The vegetation along the roadway ('ōhi'a lehua, koa, and hapu'u) are typical vegetation types and form an intact landscape setting along the roadway, which would likely be apparent to critical observers.	Experience is similar to the description for critical observers as both viewer type groups would traverse the area between the park entrance station, KVC, and overlooks further along Crater Rim Drive.

<b>KOP Number</b>	<b>Casual Eye</b>	<b>Critical Observer</b>	<b>Repeat Local Observer</b>
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	Park visitors enter the parking lot with views of both the existing KVC and associated parking lot. There are limited interpretive opportunities until visitors enter the KVC where Hawai'i Volcanoes is further explained, including its historic, cultural, and natural elements. Casual eye observers would likely stop at the KVC to learn more about the park before continuing on.	Similar to the entrance area, the native vegetation used in the landscaping provides these viewer groups the appropriate setting for the area. These viewers are also likely to stop at the KVC to find locations where they can experience the park according to their special interest (e.g., photographic viewpoints, birding trails, historic structures).	Experience is similar to the description for critical observers but due to visitation occurring over a longer timeframe, proposed changes introduced in this setting would be highly visible and more noticeable compared to first time or non-local viewer groups.
<b>KOP 3: Crater Rim Trail</b>	Casual eye observers have likely stopped at other viewpoints along Kīlauea Crater, with interpretive signage, to better understand the sacredness of the landscape as well as the level of change that occurs during each major volcanic period.	Geologists, photographers, and other critical observers are likely to understand how much this landscape has changed as a result of the 2018 volcanic activity. They are likely to understand the importance of this landscape to some Native Hawaiians, especially for those who visited the KVC or those interested in Hawaiian culture.	The sacredness of the setting is understood and may include conducting Native Hawaiian practices along the edge of Kīlauea Crater. The presence of the USGS field station and former Jaggar Museum have modified this sacred area's natural character. Changes to the setting from past volcanic eruptions are also likely to be known through visitation over many years.
<b>KOP 4: Volcano House Overlook</b>	A typical visitor to this location is a first-time visitor as it offers the first view of the caldera after leaving the KVC. Existing interpretive signage at the overlook is key to understanding the view and importance of the view for casual eye observers.	Views from inside the historic hotel, from the perspective of guests, would be long in duration as visitors would have time to survey the landscape through their room's windows. The historical association of this location may attract additional attention from history-focused critical observers.	Visited often by repeat local observers, including those staying or dining at the Volcano House. These viewers may venture on further along Kīlauea Crater to take in the view at Wahinekapu (Steaming Bluff), the Kīlauea Overlook, or on Uēkahuna Bluff.
<b>KOP 5: Crater Rim Drive West of Kīlauea Visitor Center</b>	First view of the KVC and the other buildings comprising the kauhale (integrated campus) after returning from visiting Wahinekapu (Steaming Bluff) and other overlooks along Crater Rim Drive. This area includes views of the historic Volcano House and Volcano Art Center. Casual eye observers would be returning to a familiar place before continuing to explore more of the park.	The vegetation along the roadway (mostly 'ōhi'a lehua and koa) is composed of typical vegetation types and forms an intact landscape setting along the roadway, which would be apparent to critical observers. This vegetation also partially screens views of structures in the kauhale.	Experience is similar to the description for critical observers as both viewer type groups traverse the area between the overlooks along Crater Rim Drive and the KVC.
<b>KOP 6: Crater Rim Drive toward Kīlauea Military Camp and Historic Ball Field</b>	Views as visitors return from Uēkahuna Bluff and drive toward the KVC. The KMC is not yet visible so there are limited landscape modifications visible from this location beyond the roadway and powerline poles. Casual eye observers would be focused on the road and would, in general, not be affected by landscape modifications unless they begin to dominate the setting.	The vegetation types along the roadway (mostly 'ōhi'a lehua and koa) are typical for this area and form an intact landscape setting along the roadway, which would be apparent to critical observers. The vegetation also mostly screens views of structures associated with KMC. Modifications in this setting would be more apparent to critical observers than casual eye observers.	Experience is similar to the description for critical observers as both viewer type groups traverse the area between the overlooks along Crater Rim Drive and KMC. Repeat local observers would notice modifications along the roadway especially if visible through large openings in the forest.

KOP Number	Casual Eye	Critical Observer	Repeat Local Observer
<b>KOP 7: Kilauea Military Camp</b>	Casual observers visiting KMC would have views of this historic camp near Kilauea Crater. Modifications located within or adjacent to the camp would have limited effect on casual eye observers, as these viewers would likely not recognize which structures are historic and non-historic within the wide range of architectural styles and eras which comprise KMC.	History and military history focused visitors would recognize the intact historic setting of KMC and notice non-historic structures if they are visible from the camp, potentially diminishing the historic character of KMC.	As they visit KMC with family and friends over the years, changes to this historic area and adjacent areas would be highly noticeable to repeat local observers. Introduction of incongruent landscape features visible from the camp could reduce the intactness of the historic setting associated with KMC and experiences of frequent visitors.

**Table 3. Key Observation Point Sensitivity**

KOP Number	Viewer Groups	Number of Viewers	Duration	Activities
<b>KOP 1: Park Entrance Road</b>	Casual eye, critical observer, repeat local observer	High number of visitors since this is the main entrance to the park, very high during volcanic events	Short duration as motorists move through this setting to access other areas	Scenic driving
<b>KOP 2: Kilauea Visitor Center Entrance</b>	Casual eye, critical observer, repeat local observer	High number of visitors, starting point for other park activities, very high during volcanic events	Short to moderate duration with new park visitors likely spending more time to orient themselves to the park	Park orientation, using park facilities, interpretive experiences with National Park Service rangers
<b>KOP 3: Crater Rim Trail</b>	Casual eye, critical observer, repeat local observer	Moderate to high number of visitors, very high during volcanic events	Short to moderate duration depending on the visitor group. Casual eye viewers may spend a few minutes with critical/local observers spending more time analyzing the landscape	Lava viewing (during volcanic events), scenic viewing, landscape photography, hiking
<b>KOP 4: Volcano House Overlook</b>	Casual eye, critical observer, repeat local observer	Moderate to high number of visitors, very high during volcanic events	Short to moderate duration views while hotel guests with caldera view rooms would experience long duration views	Lava viewing (during volcanic events), scenic viewing, hotel guests, landscape photography
<b>KOP 5: Crater Rim Drive West of Kilauea Visitor Center</b>	Casual eye, critical observer, repeat local observer	High number of visitors travel this road between Wahinekapu (Steaming Bluff) area and the KVC. Moderate to high number of visitors hike the adjacent trail, which connects the KVC and Volcano House to the Crater Rim Trail	Short duration as motorists approach KVC; moderate duration for hikers on the trail	Scenic driving, hiking, landscape photography
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	Casual eye, critical observer, repeat local observer	High number of visitors travel this road between Uēkahuna Bluff and KMC	Short duration as motorists approach KMC	Scenic driving

KOP Number	Viewer Groups	Number of Viewers	Duration	Activities
<b>KOP 7: Kilauea Military Camp</b>	Casual eye, critical observer, repeat local observer	Low number of visitors, moderate number of authorized patrons, increased during winter season, holidays, and volcanic events	Short to moderate duration for active recreation groups with camp guests experiencing long duration views	Camp guests (authorized patrons), active recreation, parking for lava viewing (during volcanic events)

## 5.4 National Park Service Interest

From a park-wide perspective the KVC, entrance area, and Uēkahuna Bluff areas are included in the Visitor Services Zone as described in the GMP (National Park Service 2016), which is primarily managed for a high level of visitor use, access, and interpretation with a wide range of media and facilities to support diverse visitor needs. The proposed USGS field station, since it is located adjacent to KMC, would be within the Park Support Zone, which is managed to support park operations and maintenance, including operational needs of park partners such as KMC and USGS. Both zones were intended to focus built elements within the park into these “higher density” zones to allow other zones to retain a more natural setting. Regarding visitor use and interpretive opportunities, the Visitor Services Zone seeks to provide a high level of interpretive programs to support a high level of visitation. These areas are highly important to the park’s purpose to protect, study, and provide access to Kilauea and Mauna Loa in addition to perpetuating endemic Hawaiian ecosystems and traditional Hawaiian culture connected to these landscapes through associated interpretive themes and allocation of park resources. This differs for the Park Support Zone, which has limited visitor activities with a low level of encounters with other visitors. Both zones seek to provide safe visitor access during volcanic events with high levels of use during these periods, especially within the Visitor Services Zone supported by parking facilities and other infrastructure contained in the Park Support Zone (e.g., KMC). Table 4 describes National Park Service interest, by KOP, through assessing the viewpoint’s importance (value of the viewed landscape), uniqueness (one-of-a-kind viewing opportunity or cultural, historic, or scientific significance), and National Park Service commitment to spending funds or committing staff time to enhance the viewer’s experience.

**Table 4. National Park Service Interest by Key Observation Point**

KOP Number	Importance	Uniqueness	Commitment
<b>KOP 1: Park Entrance Road</b>	The entrance road, defined by its densely vegetated corridor, leads to the KVC and sets up additional experiences in the park. There are no specific interpretive opportunities in the area except for the map/brochure visitors are given at the park entrance station, which provides some geographic, biological, and historic context for the park.	Since all visitors entering this unit of the park would drive this road segment, it is a unique first impression for most park visitors. Road corridors through dense forests occur in other locations in Hawai'i Volcanoes, including Crater Rim Drive between this turnoff near the park entrance and Nāhuku (Thurston Lava Tube).	In addition to the rangers stationed at the park entrance station, park managers commit to maintaining the roadway character through vegetation maintenance and limiting modifications along this corridor.

<b>KOP Number</b>	<b>Importance</b>	<b>Uniqueness</b>	<b>Commitment</b>
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	While views of the KVC are not highly important for park interpretation, the high level of visitation and historic structures in the kauhale (integrated campus) makes this area important to the park's purpose. Modifications in this area have a high probability of affecting park experience (positive or negative) as this is typically the first stop for visitors.	Due to the closure of the Jaggar Museum, the KVC is unique as it is the only visitor center in the park. There is a small museum, an outdoor lanai for 24/7 information, and several ranger-led activities that begin at the KVC, providing unique opportunities to experience the park's natural and cultural settings.	Being the core of the Visitor Services Zone, the National Park Service is highly committed to maintaining the character of the KVC area to support increasing visitation. There are typically multiple rangers providing visitor information and interpretation inside and outside of the KVC.
<b>KOP 3: Crater Rim Trail</b>	Uēkahuna Bluff is a highly important area and is considered a sacred site by some Native Hawaiians. The 2018 volcanic activity damaged the structures on the bluff, providing the National Park Service an opportunity to create a more natural setting in this area. Uēkahuna Bluff is highly important for future interpretive opportunities for the park. The area is also nesting habitat for the threatened, endemic nēnē (Hawaiian goose).	Being the high point on Kīlauea Crater, this area is highly unique and is a focal point for views throughout this portion of the park. Additionally, during volcanic events, this area is heavily visited, as it provides one of the closest and most elevated views of the crater and night-glow from the volcano.	The removal of infrastructure in this area was identified as an option in the 2016 GMP as well as providing opportunities for less impactful recreation. During volcanic events, Hawai'i Volcanoes commits large amounts of resources to provide safe opportunities to visit this area and see the night-glow from the volcano. Prior to this Project, park managers have repaired Crater Rim Trail connecting Uēkahuna Bluff to the Kīlauea Overlook, displaying the continuing commitment of resources to this area.
<b>KOP 4: Volcano House Overlook</b>	This site, adjacent to the historic Volcano House, was the original location of the first volcano observatory in the United States before structures were built on Uēkahuna Bluff. Today these views are prized by Volcano House guests and visitors to the park, who often have their first view of Kīlauea Crater from this location.	There are several other locations with similar views across the caldera including Kūpina'i Pali (Waldron Ledge), Keanakāko'i Crater, Wahinekapu (Steaming Bluff), and the Kīlauea Overlook. Due to the accessibility of this location, the long-duration views from the hotel, and the historic context of these views, this viewpoint is unique within the park.	The National Park Service has interpretive signage at the overlook which introduce Pele and the scientific study of the volcanoes (first volcano observatory in the United States). Due to the importance of views across the caldera and especially during volcanic events, park managers have a high level of commitment to protecting views from this and other locations along Kīlauea Crater.
<b>KOP 5: Crater Rim Drive west of Kīlauea Visitor Center</b>	Views from this location are important for the park as this viewpoint is located along Crater Rim Drive between the former Volcano House (current Volcano Art Center) and the present-day Volcano House as well as being located on a side trail connecting to Crater Rim Trail. The high level of visitation to this area combined with the presence of historic structures makes this area highly important to the park's purpose. Modifications in this area have a high probability of affecting park experience (positive or negative) as this area is typically one of the first stops for visitors.	After visiting the KVC, this area offers multiple unique opportunities including touring the historic Volcano Art Center, accessing Crater Rim Trail, and becoming better acquainted with the park through review of interpretive signage. For guests of the Volcano House, this corridor provides access to the KVC and Crater Rim Trail without the need for a vehicle.	With its administrative area located in the core of the Visitor Services Zone, the National Park Service is highly committed to maintaining the character of the KVC area to support increasing visitation. There are typically multiple rangers providing visitor information and interpretation inside and outside of the KVC. Additionally, the presence of multiple interpretive signs, sculptures, and the historic Volcano Art Center (former Volcano House) increases the importance of maintaining the area's natural, historic developed character.

<b>KOP Number</b>	<b>Importance</b>	<b>Uniqueness</b>	<b>Commitment</b>
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	Views along Crater Rim Drive are important for the park, with the road corridor displaying a highly intact character with limited visible human-made modifications. Motorists traverse this setting between Uēkahuna Bluff and the KVC, passing by the historic KMC and the historic ball field. There are no specific interpretive opportunities along the road, since KMC is available only to authorized patrons, with visitors scanning the landscape for signs to provide direction to additional recreation areas and overlooks.	The drive between Uēkahuna Bluff and the KVC is unique within the park as the road provides access to multiple overlooks with views into Kilauea Crater. As most development in the park is focused in the KVC area and National Park Service administrative area, the screening of views by existing vegetation toward KMC maintains the uniqueness of this undeveloped-appearing corridor along the north side of Kilauea Crater.	Through vegetation management along this section of road, views toward KMC have remained screened, which maintains the natural-appearing landscape character of this area. There are typically no rangers or specific visitor services in this area, except during volcanic events when rangers may be directing traffic or protecting specific park resources. This area (Crater Rim Drive) is one of the most visited corridors in the park and provides access to several unique, interpretive opportunities.
<b>KOP 7: Kilauea Military Camp</b>	The historic KMC is important as it provides a range of recreation opportunities and lodging for active and retired military members as well as their families. High levels of visitation (especially during holidays and volcanic events) to this historic setting makes this area important to the park's purpose to support different park partners while providing opportunities for increased visitation.	Other than the Volcano House, KMC represents the only other lodging opportunity in the park for authorized patrons. The long historic use of the camp is unique and was established soon after the creation of Hawai'i Volcanoes. Additionally, a side trail connects the camp to the Crater Rim Trail, providing connectivity to several overlooks and the KVC.	Park managers are highly committed to working with their partners to provide a range of experiences for visitors and support their partners' operational needs. There are limited interpretive opportunities at KMC, but during volcanic events, the historic ball field is used as an overflow parking area with rangers providing safe access across Crater Rim Drive to the Crater Rim Trail.

## 6 IMPACTS

The assessment of impacts on visual resources, based on the new draft National Park Service visual impact assessment manual, uses the same seven KOP locations identified in Section 3.3 and described in Section 5. This section first outlines the methodology used to assess impacts on visual resources with following subsections documenting the visual change proposed from each KOP, effects on viewer experience and National Park Service management associated with each KOP, and the overall impacts to park visual resources.

### 6.1 Methodology

The assessment of impacts, as described in the new National Park Service visual impact assessment methods and guidelines document (National Park Service 2021b), involves a team of evaluators who form conclusions, especially when assessing the visual change proposed from each KOP. A five-member team, consisting of National Park Service specialists, including an archeologist, and the third-party visual resource planner, conducted an on-site evaluation of visual change from each KOP location on January 3, 2022. To support the analysis and depict the proposed changes within the view from each KOP, visual simulations were developed from the KOP locations and are included in Appendix B. To assess impacts from each KOP associated with the visual change proposed by the Project, team members reviewed the visual simulations on-site before editing the draft Visual Change Evaluation Form. This form assesses (1) project compatibility with existing landscape character, (2) contrast of visual elements (form, line, color, texture), and (3) contrast with spatial composition and patterns. The final element on the worksheet is the assessment of an overall impact level (adverse; no effect; beneficial with a scale of high, moderate, low) incorporating the above information with additional consideration of differing lighting conditions,

changes due to seasonality, and other variable factors that may affect the evaluation. After each team member reviewed the draft form, the team discussed the results to reach a consensus for each factor, including the impact level for the final version of the form. Note, the assessment only considered what can be seen in the simulations completed from each KOP. The location of each KOP and the distance zones radiating out from the KOP location (foreground [0–0.5 mile] and middle ground [0.5–3 miles]) are included on Figures 2 to 8.

The second component of the visual assessment was determining the impact of the Project on viewer experience and National Park Service management. The assessment of impacts on viewer experience focused on how a change in landscape character, visual elements, and spatial composition would affect viewer visual experience based on different viewer groups and associated sensitivity to these changes. After assessing the impact on each user group, a summary conclusion was identified, balancing the different user groups and the effect of seasonal variation and other variable factors (e.g., increased visitation during volcanic events). To evaluate impacts to National Park Service management, the value of the view from each KOP was assessed as it relates to the park's interpretive themes and stories the park wishes to communicate to its visitors. This includes potential changes to existing interpretive features, compatibility with existing interpretive themes, potential for the Project to be a new interpretive opportunity for the park, and whether the Project would create a distraction in the views being interpreted especially from prominent viewpoints.

The final component of the assessment was determining the overall impact to park visual resources. A summary table of impacts first summarizes the conclusions from each KOP, using the previous two analysis components, and then considers the effect of the Project on the park and visitors as a whole. While this evaluation relies on the KOP analysis, the focus of the analysis is on compatibility of the Project with the Hawai'i Volcanoes GMP and long-term vision for the park.

## **6.2 Visual Change**

Key information from the Visual Change Evaluation Forms completed for each KOP location, included in Appendix C, are summarized in Table 5.



Figure 2. KOP 1 – Park Entrance Road: Location Map



Figure 3. KOP 2 – Kilauea Visitor Center Entrance: Location Map

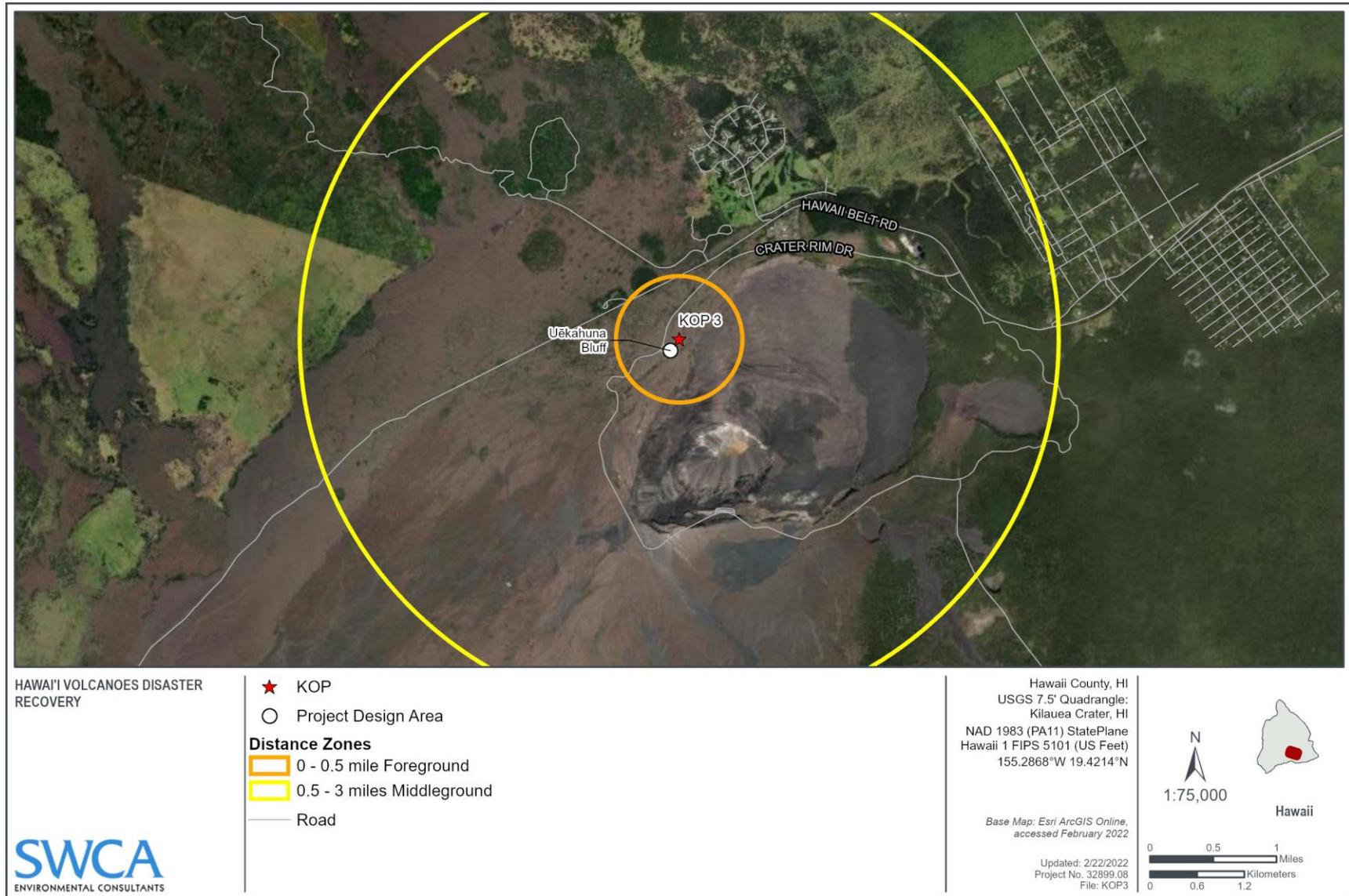


Figure 4. KOP 3 – Crater Rim Trail: Location Map



Figure 5. KOP 4 – Volcano House Overlook: Location Map



Figure 6. KOP 5 – Crater Rim Drive West of Kilauea Visitor Center: Location Map

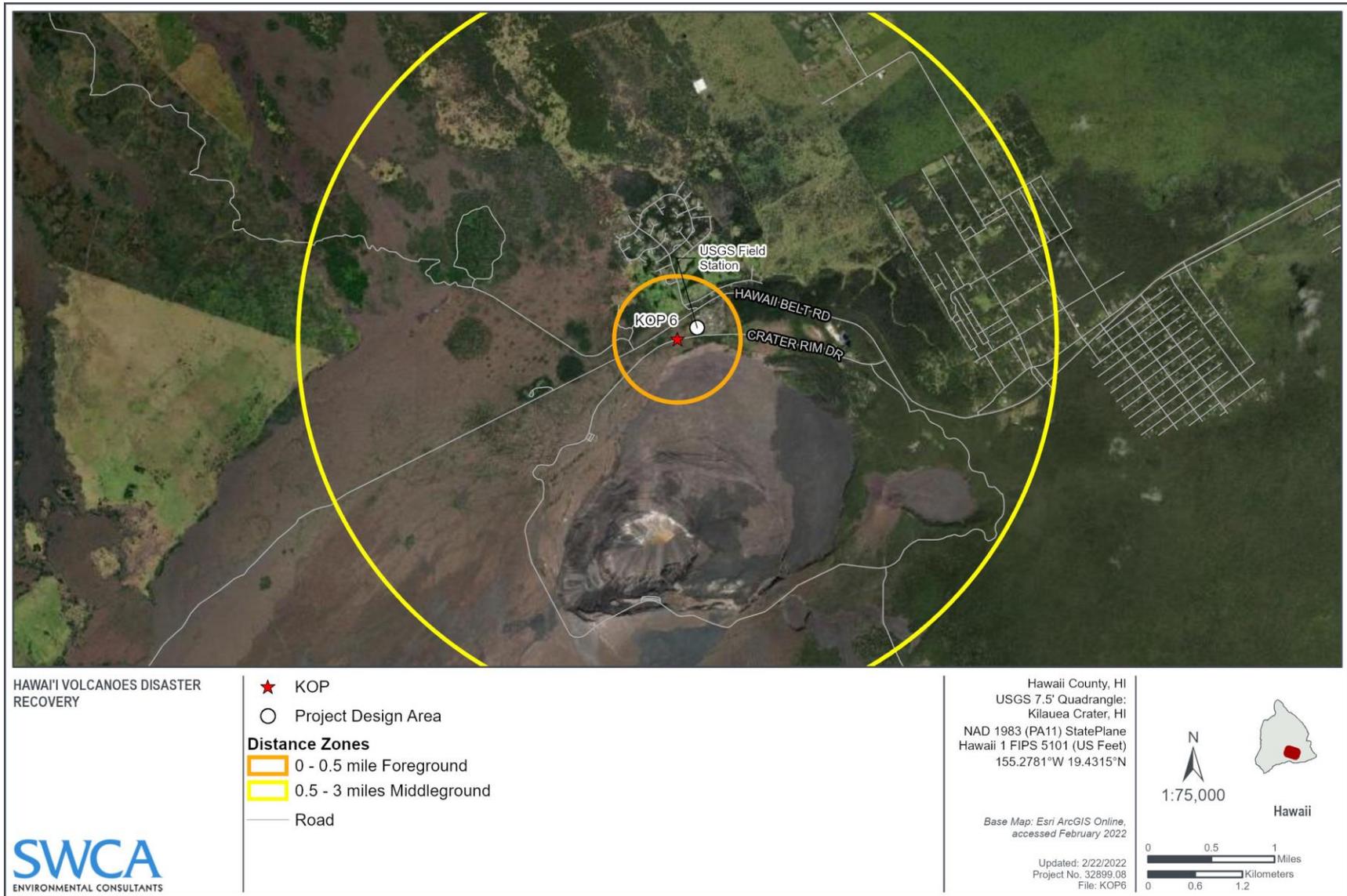


Figure 7. KOP 6 – Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field: Location Map



Figure 8. KOP 7 – Kilauea Military Camp: Location Map

**Table 5. Key Observation Point Visual Change**

KOP Number	Compatibility with Landscape Character	Contrast with Visual Elements	Contrast with Spatial Composition	Additional/ Variable Factors	Overall Effect on Scenic Quality
<b>KOP 1: Park Entrance Road</b>	<p>The Project would be partially compatible with the existing landscape character. The addition of a new lane, a traffic circle, and additional signage would begin to transform the existing natural character to a more transportation-focused character. Vegetation clearing proposed from the new entrance to the replacement visitor center and traffic circle would create a clearing in a dense forest, modifying the existing vegetation patterns. The proposed plantings in the center of the traffic circle would begin to repeat those patterns to help connect the adjacent forest settings. Views toward the existing KVC and replacement visitor center would be opened, leading to potential views of these buildings and associated parking lots immediately after passing the park entrance station.</p>	<p>The rounded forms of the dense forest canopy would be split where the new entrance road to the replacement visitor center is proposed. Splitting the forest in view would also result in coarser textures where the continuous form of the forest would be interrupted. The simple curving roadway would be replaced by a series of curving roads emanating from a round, traffic circle. The proposed signage would introduce additional vertical lines into the landscape. The Project would mostly repeat colors present in the existing landscape with the addition of more gray asphalt and concrete in view associated with the proposed road improvements. Motion along the additional roadways would further contrast with the existing setting.</p>	<p>The proposed transportation improvements would partially disrupt the existing, simple, balanced view as more transportation features would be in view (e.g., pavement, signs, striping, etc.). These features would be out of the scale with the existing setting and appear larger than those elements currently in view. The addition of the road directly accessing the KVC would create a new focal point from this location, adjacent to the park's entrance. The continuity and existing patterns within this landscape would be interrupted as an additional corridor would be cut through the forest compared to the simple, continuous roadway present in the existing landscape.</p>	<p>Long-term vegetation management would facilitate maintaining a natural, forest setting as well as providing opportunities to screen views of the replacement visitor center and other project elements.</p>	<p>Moderate adverse impacts are anticipated on views from this location as the Project would begin to transform the setting into a more transportation-focused character including a new traffic circle and entrance road to the KVC, requiring vegetation clearing within a dense forest setting. The continuity and existing patterns within this landscape would be interrupted and views toward the existing KVC and replacement visitor center would be opened creating a new focal point. The character of driving along a densely vegetated corridor between the park entrance station and the KVC would be interrupted as a result of the Project. To further reduce these impacts, the planting of native vegetation within medians and along the roadside would visually break up expanses of pavement to blend with the natural setting and minimize the visual width of entry into the park.</p>

KOP Number	Compatibility with Landscape Character	Contrast with Visual Elements	Contrast with Spatial Composition	Additional/ Variable Factors	Overall Effect on Scenic Quality
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	<p>The Project would be partially compatible with the natural developed character type found in the existing setting. As a result of the Project, the area viewed as modified would be expanded to include the replacement visitor center and parking lot. The architectural style of the replacement visitor center would be similar to the existing KVC. The lava rock and fiber cement siding (mimicking wood siding) would be very compatible with the existing KVC but the solar panels are not consistent with the existing KVC. It is important to note while the existing KVC does not have solar panels, there are solar panels on the KVC garage and restroom building, therefore the Project would introduce elements that are mostly compatible with the existing setting.</p>	<p>The blocky form of the replacement visitor center would mimic the existing KVC but would introduce another large building into view. The lines introduced by the solar panels would attract additional attention as they differ from those found on the existing KVC. The colors proposed would mimic those in the existing KVC including the selected roof color, which matches the existing KVC. Coarse textures found in the replacement visitor center would be similar to the existing KVC including pyramidal roof forms.</p>	<p>The addition of the replacement visitor center would partially disrupt the existing balance of the landscape which would begin to tilt toward recreation development instead of a balanced recreation/natural composition. This is mostly due to the introduction of a new building, which would create a new focal point from this location. By keeping the building height below the treetops and maintaining vegetation screening in front of the building, the apparent scale of the Project would be reduced and continuity of the surrounding forest setting would be mostly maintained.</p>	<p>Maintaining existing vegetation, as well as planting additional plants between Crater Rim Drive and the replacement visitor center, would reduce the physical presence of the building including the proposed solar panels by partially screening views, similar to how the existing KVC is screened.</p>	<p>Moderate adverse impacts are anticipated on views from this location, as the Project would expand the area viewed as modified, leading to a more recreation-focused landscape compared to the existing recreation/natural setting. Additionally, the solar panels would be noticeably different than the existing KVC, introducing more variety in the setting. The planting of additional native vegetation in the road medians would further screen views of the solar panels, reducing their effect on scenic quality.</p>

KOP Number	Compatibility with Landscape Character	Contrast with Visual Elements	Contrast with Spatial Composition	Additional/ Variable Factors	Overall Effect on Scenic Quality
<b>KOP 3: Crater Rim Trail</b>	<p>The Project would be compatible with the existing landscape character. The removal of the HVO, Geochemistry Annex building, and Jaggar Museum on the bluff would result in a more natural-appearing landscape, allowing the natural elements of the landscape to dominate. Through redesign of the existing berm, the existing restroom building would be visible but the replacement water tank would be screened from view. The remaining structures would be grouped away from the edge of Kīlauea Crater, improving compatibility with the existing landscape character.</p>	<p>The removal of the blocky forms associated with the existing buildings would reduce contrast with the natural setting. By screening the view of the cylindrical form of the replacement water tank, which would appear more industrial in the setting, contrast with the natural setting would be further reduced. The angular lines in the existing restroom building would repeat angular lines in the existing landscape. Removal of the HVO and Jaggar Museum would reduce the extent of incompatible coarse-textured elements in view.</p>	<p>In general, the Project would bring the setting more into balance and increase landscape continuity through the removal of the HVO and Jaggar Museum, which created a discordant landscape. Removal of these structures would also bring development more into scale with the natural setting. While the existing restroom building may be visible from this location, the removal of three dominant structures on the bluff would allow the landscape to be the main focal point in the setting.</p>	<p>Removal of the HVO and Jaggar Museum would reduce the extent of skylined structures in view as the existing restroom building would be backdropped by existing vegetation. Views may be partially impeded by rain and clouds during heavy storms or other weather events.</p>	<p>Moderate beneficial impacts are anticipated on views from Crater Rim Trail as the Project would be compatible with the natural landscape character. The Project would improve scenic quality through the removal of the HVO and Jaggar Museum and through retaining some of the existing berm to screen views of the replacement water tank. If visible, this feature would attract attention, with the utilitarian-appearing water tank being incompatible with natural setting. To reduce impacts where the replacement water tank could be visible from other locations, the tank would be painted a darker color to match the setting allowing it to blend with the natural landscape. Additional mitigation consisting of planting more vegetation along the berm, to further screen views of the Project, would result in greater beneficial impacts.</p>
<b>KOP 4: Volcano House Overlook</b>	<p>The Project would be compatible with the existing landscape character as it would remove incompatible, geometric landscape features on Uēkahuna Bluff (e.g., Jaggar Museum and HVO). Through thoughtful design of the proposed overlook, including the use of natural materials (lava rock and wood) and limiting the height of the facility, the Project would result in beneficial impacts on landscape character.</p>	<p>The low-profile design of the proposed overlook would introduce weak to no contrast on views from 2 miles away at the Volcano House Overlook. Therefore, high beneficial impacts on the existing visual elements are anticipated. The use of diffuse, low temperature lighting directed downward at the overlook would result in minimal impacts from this location considering other lighting sources in the area (e.g., vehicle headlights, flashlights, and lighting around the Volcano House).</p>	<p>By removing the existing structures on the bluff and designing the Project to visually blend with the setting, the spatial composition of this view would be improved. This includes reducing the scale of built elements in the view as well as removing geometric features on Uēkahuna Bluff (a landscape focal point).</p>	<p>Atmospheric conditions sometimes limit visibility across the caldera (approximately 2 miles away).</p>	<p>High beneficial impacts are anticipated on views from the Volcano House Overlook as the Project would remove incompatible landscape features on a high point, construct an overlook repeating the landscape's existing visual elements and materials, and establish a more visually intact setting adjacent to Kīlauea Crater.</p>

KOP Number	Compatibility with Landscape Character	Contrast with Visual Elements	Contrast with Spatial Composition	Additional/ Variable Factors	Overall Effect on Scenic Quality
<b>KOP 5: Crater Rim Drive West of Kilauea Visitor Center</b>	The Project would be very compatible with the existing landscape character as viewed from this location. The portion of the replacement visitor center visible from this location, mostly the structure's roof, mimics the existing KVC, including the color of the proposed roof, allowing it to blend with the existing setting. The natural developed character of the landscape, and landscape diversity, would be minimally impacted.	Since the replacement visitor center mimics the existing KVC, as well as being partially screened by vegetation, it would introduce a weak level of contrast with the existing landscape. The building's blocky form and angular rooflines minimally contrast with the existing setting including the existing KVC. The roof color is similar to the existing KVC and other adjacent structures. The geometric form of the roof's solar panels would be apparent but would not attract attention from this location.	The addition of the replacement visitor center would have a minimal effect on the balance and patterns within the existing setting. Since the scale of the proposed structure is similar to the existing KVC, it would extend the focal point associated with the existing KVC but would not distract views from this location. Similarity, the continuity of the landscape would be minimally affected, as the Project would appear within existing openings in the forest as viewed from this location.	The parking area between the viewpoint and the replacement visitor center is often very busy (as shown in the simulation), therefore views of the replacement visitor center would typically be partially screened from view by vehicles.	Low adverse impacts are anticipated on views from Crater Rim Drive west of the KVC as the Project would attract attention but would not be prominent in the setting. This is based on the design of the replacement visitor center mimicking the existing KVC to the extent possible while also maintaining vegetation between the viewpoint and the proposed building to reduce its apparent size in the view.
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	The Project would be screened from view by the dense forest adjacent to Crater Rim Drive. Two simulation overlays were completed, confirming the Project would not be visible in the larger openings along the roadway. Based on this level of screening, the Project would be compatible with the existing landscape character.	Since views of the proposed USGS field station would be screened, the Project would introduce no visual contrast with the existing setting. If there are portions of the USGS field station visible in small gaps in the forest, the dark colors proposed for the building would blend into the forest setting.	The Project would not affect the landscape's spatial composition as the proposed USGS field station would be screened from view.	Maintaining the dense forest adjacent to Crater Rim Drive is key to avoiding future impacts on views from this location.	No effects are anticipated on views from Crater Rim Drive toward the proposed USGS field station since the Project would not be visible in the large openings in the forest. Where potentially visible in small openings, the Project would not attract attention from the roadway.

KOP Number	Compatibility with Landscape Character	Contrast with Visual Elements	Contrast with Spatial Composition	Additional/ Variable Factors	Overall Effect on Scenic Quality
<p><b>KOP 7: Kilauea Military Camp</b></p>	<p>The proposed USGS field station would be partially compatible with the existing landscape character. There are several eras of buildings visible from this location, including those associated with the historic KMC as well as a maintenance facility with a large warehouse. The more modern split-gable roof design proposed would be incompatible with the historic KMC buildings. Since the Project would be partially screened from view, and the presence of the existing maintenance facility (partially screened) has already modified this setting, the Project would appear more compatible with the existing landscape character.</p>	<p>The blocky, pyramidal form of the proposed USGS field station, partially obscured by existing vegetation, would contrast with the existing structures in view. The diagonal rooflines would introduce weak contrast with the existing landscape setting. The coarser textures associated with the split gable roofline would moderately contrast with the simpler gable rooflines present on KMC's historic structures.</p>	<p>The presence of the proposed USGS field station in this view would partially disrupt the visual balance, continuity, and existing patterns in the landscape. By maintaining existing vegetation in front of and behind the proposed building, these effects would be reduced as the continuity of the forest setting would be maintained. The proposed building would be taller than most of the existing structures in the KMC area but based on the level of vegetative screening, the structure would attract attention but would not create a new focal point in the setting.</p>	<p>Maintaining existing vegetation in front and behind the proposed USGS field station is key to avoiding additional impacts on views from this location and the historic setting adjacent to KMC.</p>	<p>Moderate adverse impacts are anticipated on views from this location as the Project would partially interrupt the continuity of the landscape and introduce a more modern building into a view dominated by historic structures. The split gable roof and height of the building would attract attention and would be prominent as viewed from KMC. To further reduce impacts, planting additional native vegetation around the proposed field station would more fully screen views of the Project reducing its physical presence in view.</p>

## 6.3 Impacts to Viewers and National Park Service Interpretation

In addition to the level of contrast (visual change) introduced by the Project, this assessment seeks to identify the impact on viewer experience and its effect on National Park Service management of these views. This section first describes the impact the visual change would have on the experience from each KOP and then considers the effect the visual change would have on park interpretive themes as well as management and resource allocation within Hawai'i Volcanoes.

### 6.3.1 Viewers

Through consideration of the results from Table 5, Table 6 summarizes how those changes introduced by the Project could affect the visual experience for different viewer groups at each KOP. This assessment included the consideration of how different user groups would react to changes proposed in the viewshed, including the casual eye, critical observer, and repeat local observer viewers (as described in Table 2) as well as their sensitivity to change (as described in Table 3).

**Table 6. Key Observation Point Impacts on Viewers**

KOP Number	Summary of Impacts on Viewers
<b>KOP 1: Park Entrance Road</b>	As the first impression after passing the park entrance station, casual eye observers would have additional signage and options to explore the park initially, compared to the existing setting where visitors would drive along an enclosed corridor, building anticipation of reaching the KVC. These effects on the experience of entering the park would be more apparent to repeat visitors, including critical observers and repeat local observers, as they would have prior knowledge of this forested corridor. There are a high number of visitors to this location, as it is the main entrance into the park, and during volcanic events the additional entrance lanes would shorten wait times at the park entrance station. In general, views from this area would be short in duration but have the opportunity to establish future expectations within the park. By preserving vegetation to the extent possible, as well as planting native vegetation within the center of the traffic circle, medians, and along the roadside to break up of expanses of pavement and minimize the visual width of entry into the park, the continuity of the forest would be partially maintained.
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	The introduction of the replacement visitor center would provide all viewer types more interpretive opportunities, which is especially important for the casual eye and critical observer viewer groups. Since many of these viewers have not visited the park previously, they may have limited knowledge of the KVC area prior to the Project. The proposed building would be of similar design as the existing KVC but would be slightly larger in scale and would expand the area viewed as developed. For repeat local observers entering the parking lot, the replacement visitor center would be co-dominant with the existing KVC leading to the area having a more developed recreation-focused character. By maintaining vegetation along Crater Rim Drive and behind the new building, as well as the planting native plants within the replacement visitor center parking lot, islands, and entrance area, the physical presence of the building would be reduced, bringing it more in scale with the existing KVC and the surrounding forest.
<b>KOP 3: Crater Rim Trail</b>	The experience for most viewer types would be improved through redesign of the area on Uēkahuna Bluff, including the removal of the HVO and Jaggar Museum. By returning the area to a more natural character, the Project would allow visitors of all types to spend more time focusing on the landscape, geologic processes, and cultural significance of the setting. By retaining enough of the existing berm to screen views of the replacement water tank, the Project would support the natural setting and improve the recreation experience especially for critical eye observers and repeat local observers. The anticipation of hiking up the trail to visit the top of Uēkahuna Bluff would be improved as the setting would appear more natural without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation and cultural experience. For many repeat local observers, especially those with a generational connection to the land, the presence and visibility of any structures on Uēkahuna Bluff would be seen as an impact on this culturally important landscape.

<b>KOP Number</b>	<b>Summary of Impacts on Viewers</b>
<b>KOP 4: Volcano House Overlook</b>	The experience for all viewer types would be improved through the implementation of the Project as the view across Kilauea Crater would become more visually intact. For casual eye observers, this would include observing a landscape with fewer human-made modifications, allowing for a potentially more vivid experience aided by interpretive signage and other National Park Service materials. Critical observers, including those staying at the Volcano House with longer duration views as well as history-focused park visitors, would experience a less modified setting similar to those prior to the construction of modern facilities on Uēkahuna Bluff. Impacts on views for repeat local observers would be similar but through the partial removal of built elements on the bluff, beneficial effects on views toward this culturally important landscape are anticipated.
<b>KOP 5: Crater Rim Drive West of Kilauea Visitor Center</b>	As visitors return from the overlooks along Crater Rim Drive, the view of the kauhale (integrated campus) would be minimally modified by the Project since the replacement visitor center was designed to repeat the design characteristics of the existing KVC and would be partially screened from view. Casual eye observers visiting this location would likely not notice the addition of the Project due to the weak level of visual contrast and since the replacement visitor center would facilitate increased recreation and interpretive opportunities. This would lead to a more developed character, which this viewer group may expect adjacent to a visitor center in a national park. For critical eye observers and repeat local observers, the addition of the replacement visitor center would begin to shift this landscape toward a more recreation development-focused setting, instead of the existing balanced recreation/natural composition, which is more directly visible from KOP 2. In addition to views from the roadway, this KOP also represents views from the adjacent trail that connects the KVC and Volcano House to the Crater Rim Trail as well as representing the historic setting adjacent to the Volcano Art Center. The addition of the replacement visitor center would minimally affect the historic setting as viewed from this location, as the Project would not dominate the historic character of this area and would visually blend with the existing KVC. By maintaining the native vegetation between Crater Rim Drive and the buildings (mostly 'ōhi'a lehua and koa), the continuity of this setting would be maintained for the high number of visitors who travel this corridor. This is especially important for critical observers and repeat local observers for whom changes to the native forest and historic setting would be apparent.
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	Since views of the proposed USGS field station would be screened by existing vegetation, where there are larger openings in the forest, there would be limited impacts on viewers and their experience driving Crater Rim Drive. If there are small gaps within the dense forest canopy along the road, the dark colors proposed for the USGS field station would blend into the setting and would not attract attention from the roadway as the form of the building would not be visible. By maintaining the native vegetation along Crater Rim Drive (mostly 'ōhi'a lehua and koa), the continuity of this setting would be maintained for the high number of visitors who travel between Uēkahuna Bluff and the KVC. This is especially important for critical observers and repeat local observers for whom changes to the native forest would be apparent.
<b>KOP 7: Kilauea Military Camp</b>	The different viewer groups would be affected in different ways by the proposed USGS field station through the expansion of development adjacent to the historic KMC. Casual observers would view the proposed USGS field station, located outside of the portion of KMC with an orderly design, as not being directly associated with KMC. Given this, there would be limited impacts on their experience visiting KMC especially if visiting later in the day to park for lava viewing along the crater rim. History and military history focused visitors (critical observers) may recognize the introduction of non-historic structures adjacent to KMC, especially near the historic ball field, which could diminish the overall historic character for these visitors. Repeat local observers would notice the change to the setting through visiting KMC over the years. The Project would be noticeable to these viewers and the introduction of incongruent landscape features would begin to reduce the intactness of the adjacent historic setting but since the proposed USGS field station would not be readily visible from many locations in KMC, there would be limited impacts on the experience of walking the grounds.

### **6.3.2 National Park Service Interpretation**

In addition to the impacts on viewer experience, Table 7 summarizes the effect of potential impacts on park interpretive themes and the stories communicated to visitors. This includes the importance of the view, uniqueness of the view, and commitment by the National Park Service to the viewpoint and its viewshed. If the proposed changes in the view would reduce the value for interpretation, there may be reduced use of those facilities, necessitating potential alternative interpretive programs or locations.

**Table 7. Key Observation Point Impacts on National Park Service Interpretation**

<b>KOP Number</b>	<b>Summary of Impacts on National Park Service</b>
<b>KOP 1: Park Entrance Road</b>	Opening up of views along the densely vegetated entrance road corridor would have a minor impact on experiences for park visitors as there are no specific experiences or interpretive opportunities at this location. If the replacement visitor center or existing KVC would be visible from this location, the anticipation of traveling along the densely vegetated corridor would be reduced as the destination would be visible shortly after passing the park entrance station. Opportunities to drive along a dense, forested corridor would continue to occur in other locations in the park such as Crater Rim Drive between the turnoff near this location and Nāhuku (Thurston Lava Tube). Through signage and other design considerations (statues, plantings, etc.), the park could initiate interpretive opportunities sooner in the park and reduce impacts on National Park Service values from the increased level of development near the park entrance station.
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	Since the closure of the Jaggar Museum on Uēkahuna Bluff, the existing KVC is the only visitor center in the park, leading to crowding and potential decreased quality of visitor experiences as a result. The construction of the proposed replacement visitor center would demonstrate the park managers' commitment to this area as it would facilitate additional interpretive opportunities, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors. Through the thoughtful design of the replacement visitor center, the recreation/historic character of the kauhale (integrated campus) would be mostly maintained and potentially improved for some visitors through increased educational and wayfinding opportunities. A larger area would be disturbed as a result of the replacement visitor center, and associated parking lot, but would occur within the core of the Visitor Services Zone identified in the 2016 GMP as a place to support a high level of visitor use, access, and interpretation.
<b>KOP 3: Crater Rim Trail</b>	The removal of infrastructure on Uēkahuna Bluff was identified in the 2016 GMP as an option if the HVO and Jaggar Museum were damaged. By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area. This area is a focal point for views throughout this portion of the park, including views from KOP 4. This area is highly visited during volcanic events as it has one of the closest and most elevated views of the crater and night-glow from the volcano. The Project is part of park managers' commitment to increasing natural recreation opportunities on the bluff, adding onto the recent repairs to Crater Rim Trail, continued maintenance of the area after the 2018 volcanic activity, and presence of multiple rangers especially during volcanic events. Additional interpretive opportunities including signage, ranger-led hikes, or updates to the National Park Service app could further educate visitors on the importance of the area and traditional Hawaiian culture. Additionally, the reduction of infrastructure on the bluff would likely make the area more attractive for native birds to nest, furthering the park mission to perpetuate endemic Hawaiian ecosystems.
<b>KOP 4: Volcano House Overlook</b>	Through the partial removal of structures on Uēkahuna Bluff, the National Park Service is further committing to the importance of the setting adjacent to Kīlauea Crater, including views from this and the other overlooks toward the bluff. Views specifically from the Volcano House Overlook are often the first views of the crater for visitors and the location affords long-duration views of the landscape, including those from caldera-view rooms (a unique opportunity in the park). During volcanic events, there is increased visitation to both the overlook and the Volcano House, increasing the importance of this view to the overall park purpose to protect, study, and provide access to Kīlauea as well as to educate visitors on traditional Hawaiian culture. Due to the potential increased visitation at this location and improvements within the viewshed, the interpretive signage could be updated to provide additional information regarding Native Hawaiian culture as well as the importance of this viewshed, facilitating increased visitation time at this location.
<b>KOP 5: Crater Rim Drive West of Kīlauea Visitor Center</b>	The proposed modifications to the kauhale would facilitate increased opportunities for interpretation, elevating the importance of this location to further park interpretive themes. Through the thoughtful design of the replacement visitor center, including limiting the height of the building, mimicking the design of the existing KVC, and maintaining existing vegetation to the extent possible, the recreation/historic character of the area would be maintained and improved through increased opportunities to educate and guide visitors, including those walking around the kauhale. The unique character of this area would be preserved as well as maintaining the opportunity to access the visitor center, Crater Rim Trail, Volcano House, and Volcano Art Center without the need for a vehicle. This area is often the first place visited after the visitor center, setting up additional opportunities for site interpretation as part of the Project (e.g., signs, sculptures, additions to National Park Service app, additional native plantings, etc.) to continue to further park interpretive themes and stories.

<b>KOP Number</b>	<b>Summary of Impacts on National Park Service</b>
<b>KOP 6: Crater Rim Drive toward Kilauea Military Camp and Historic Ball Field</b>	Since the proposed USGS field station would be screened from view in the larger openings in the forest along Crater Rim Drive, and if visible through small gaps in the forest would not attract attention, the Project would not impact the intact setting along the road. Other than a small existing distribution power line, the highly visited natural-appearing landscape from Uēkahuna Bluff to KMC would continue to support park interpretive themes, including those associated with perpetuating endemic Hawaiian ecosystems. This includes maintaining an intact, native forest setting for visitors when they are not in highly developed areas such as the KVC area. Since there is no active site interpretation that occurs in this area, the maintenance of this vegetation indirectly supports interpretive themes for this unique drive along the north side of an active volcano.
<b>KOP 7: Kilauea Military Camp</b>	Most recreation experiences, and the limited park interpretive themes at KMC, would be minimally affected by the introduction of the USGS field station as its presence would not limit these opportunities. As previously described, history and military history focused visitors may view the introduction of non-historic structures adjacent to KMC as an impact on the overall historic character of the area. During volcanic events, when the area is used as an overflow parking area, the presence of the USGS field station may increase interpretive opportunities and ability for USGS staff to interact with the public. This strengthens the mission for the Park Support Zone to work with National Park Service partners to provide a range of experiences for visitors. The increase in traffic and vehicles located adjacent to KMC may be distracting and draw attention toward the west side of camp, including the historic ball field. This additional attention affords the National Park Service an opportunity to increase interpretive themes in KMC, at the proposed USGS field station, and adjacent to the historic ball field, to educate the public on this evolving historic landscape.

## 6.4 Overall Impact to Park Resources and Visitors

Table 8 summarizes the results from Tables 5, 6, and 7 to consider the overall effect of the Project on each KOP and to assess the overall effect on the park and visitors. The description after the table explains how the proposed visual change, impacts on viewer experience, and effects on National Park Service management of the views would impact Hawai'i Volcanoes and its visitors as a whole. This includes compatibility of the Project with the Hawai'i Volcanoes GMP and long-term vision for the park

**Table 8. Key Observation Point Summary of Impacts**

<b>KOP Number</b>	<b>Overall Effect on KOP</b>
<b>KOP 1: Park Entrance Road</b>	The proposed transportation improvements near the park entrance station would result in moderate adverse impacts on landscape character, as the Project would be incompatible with the existing setting through the introduction of more transportation features into a mostly natural setting. Vegetation clearing proposed to accommodate the traffic circle and new entrance to the KVC would interrupt the existing continuity of the forest and introduce a new focal point after passing the park entrance station. The first impression of driving Crater Rim Drive and approaching the KVC, compared to the existing setting, would be modified as the densely vegetated road corridor would be more open. There would be more opportunities to explore the park initially, as a result of additional signage to reduce confusion and safer traffic flow facilitated by the construction of the traffic circle, and during volcanic events there would be shorter wait times to enter the park, as the Project would include more entrance lanes. The experience of driving along a densely vegetated corridor would occur in other portions of the park, including the section of Crater Rim Drive between the turnoff near this location and Nāhuku (Thurston Lava Tube). Based on these potential opportunities to increase interpretive opportunities sooner in the park through entrance signage as well as mitigation to preserve vegetation to the extent possible and plant native vegetation within the center of the traffic circle, the Project would result in moderate adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. To further reduce these impacts, the planting of native vegetation within medians and along the roadside would visually break up expanses of pavement to blend with the natural setting and minimize the visual width of entry into the park.

KOP Number	Overall Effect on KOP
<b>KOP 2: Kīlauea Visitor Center Entrance</b>	<p>From a visual contrast perspective, the replacement visitor center would result in moderate adverse impacts as the Project would be co-dominant with the existing KVC and expand the area viewed as modified leading to a more recreation-focused landscape compared to the existing recreation/natural setting. For most viewer types, this would be counterbalanced with the additional interpretive opportunities afforded by the replacement visitor center with enhanced 24/7 interpretive and trip planning information. Additionally, the design of the replacement visitor center mimics the elements found in the existing KVC. Through maintaining vegetation along Crater Rim Drive and behind the new building, as well as the planting native plants within the replacement visitor center parking lot, medians, and entrance, the physical presence of the building, including the proposed solar panels, would be reduced, bringing it more in scale with the existing KVC and the surrounding forest. From a National Park Service management perspective, the replacement visitor center would further the purpose of the Visitor Services Zone to support a high level of visitor use, access, and interpretation. Through thoughtful design of the replacement visitor center (e.g., choosing appropriate building roof materials to match the existing buildings, including roof color, and planting additional vegetation to screen views) and additional interpretive opportunities, increasing the importance of this location to further park interpretive themes and the stories communicated to visitors, the Project would result in low adverse impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.</p>
<b>KOP 3: Crater Rim Trail</b>	<p>The redesign of the facilities on Uēkahuna Bluff would be compatible with the existing landscape character. The removal of the HVO and Jaggar Museum as well as retaining some of the existing berm, to screen views toward the replacement water tank, the Project would improve scenic quality. If visible, the water tank would attract attention with the utilitarian-appearing feature being incompatible with the natural setting. To reduce impacts where the replacement water tank could be visible from other locations, the tank would be painted a darker color to match the setting, allowing it to blend with the natural landscape. Through the removal of existing structures and retaining some of the existing berm to screen views of the Project, the experience for most viewer types would be improved by returning the area to a more natural-appearing character, allowing visitors to focus on the landscape, including its cultural significance. The experience of hiking the trail from the Kīlauea Overlook to Uēkahuna Bluff would be improved, without buildings obscuring the view, allowing the panoramic views from the high point to appear more suddenly, resulting in a more profound recreation experience. For many repeat local observers, especially those with a generational connection to the land, the presence and visibility of any structures on Uēkahuna Bluff would be seen as an impact on this culturally important landscape. The removal of infrastructure on Uēkahuna Bluff was identified in the 2016 GMP as an option to relocate these facilities to a less impactful location. By creating a more natural, intact setting on the bluff, park interpretive themes would be more clearly communicated to reflect the sacredness of the area. This area is a focal point for views throughout this portion of the park, including views from KOP 4. Additional interpretive opportunities, including signage, ranger-led hikes, or updates to the National Park Service app could further educate visitors on the importance of the area and traditional Hawaiian culture. The Project would result in moderate beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management. The planting of additional native plants on the redesigned berm would further screen views of the Project and allow Project components to blend with the natural setting, resulting in additional beneficial impacts.</p>
<b>KOP 4: Volcano House Overlook</b>	<p>The removal of most structures on Uēkahuna Bluff, as viewed from this location, would reduce the extent of incompatible landscape features in the viewshed. The proposed overlook would use natural materials (lava rock and wood), be low profile in design, and would be constructed to blend with the setting's existing form, line, color, and texture to minimize their impact from this viewpoint approximately 2 miles away. The experience for all viewer types would be improved as a result of the Project, with casual eye observers having views with fewer human-made modifications, critical observers viewing a less modified setting similar to those prior to the construction of modern facilities on Uēkahuna Bluff, and repeat local observers, especially those with a generational connection to the land, having views of a more intact culturally important landscape. Through the partial removal of structures on Uēkahuna Bluff, the National Park Service is further committing to the importance of the setting adjacent to Kīlauea Crater, including views from this and the other overlooks toward the bluff. Due to the potential increased visitation and landscape improvements within the viewshed, the interpretive signage could be updated to provide additional information regarding Hawaiian culture to support the overall park purpose to educate visitors on traditional Hawaiian culture in addition to protecting, studying, and providing access to Kīlauea. These would further affirm importance of this viewshed to the park and would facilitate increased visitation time at this location. The Project would result in high beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.</p>

KOP Number	Overall Effect on KOP
<b>KOP 5: Crater Rim Drive West of Kīlauea Visitor Center</b>	<p>Since the replacement visitor center would be partially screened from view and the design would mimic the existing KVC, the Project would attract attention but would not be prominent in the setting as viewed from this location. Some viewer types would likely not notice the addition of the Project, especially first-time visitors or casual eye observers who may anticipate a more developed character adjacent to a visitor center in a national park. For critical eye observers and repeat local observers, the addition of the replacement visitor center would begin to shift this landscape toward a more recreation development-focused character, instead of the existing balanced recreation/natural composition, which is more directly visible from KOP 2. The historic setting of the area would be minimally impacted as the Project would not dominate the historic character of this area and would visually blend with the existing KVC. As described for KOP 2, maintaining native vegetation between Crater Rim Drive and the buildings (mostly 'ohi'a and koa), would maintain the visual continuity of this setting for the high number of visitors who travel this corridor. The intactness of vegetation along this corridor is especially important for critical observers and repeat local observers. From a National Park Service management perspective, the replacement visitor center would facilitate increased visitor interpretive opportunities. This area is often the first place visited after the visitor center leading to an opportunity to expand outdoor interpretive opportunities. Based on the thoughtful design of the replacement visitor center including using existing and proposed vegetation to screen views, choosing appropriate building materials to match the existing buildings, including roof color, increasing opportunities for site interpretive experiences, and furthering the purpose of the Visitor Services Zone to support high level of visitor use, the Project would result in low beneficial impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.</p>
<b>KOP 6: Crater Rim Drive toward Kīlauea Military Camp and Historic Ball Field</b>	<p>Views of the proposed USGS field station would be screened from view in the large openings in the forest along Crater Rim Drive and if visible in small gaps in the forest, the Project would not attract attention from roadway as the dark colors proposed for the building would blend into the forest setting. Two simulation overlays were completed, confirming the Project would not be visible in the larger openings along the roadway. Since views would be screened, there would be limited impacts on viewers and their experience driving Crater Rim Drive. Other than a small existing distribution power line, the highly visited natural appearing landscape from Uēkahuna Bluff to KMC would continue to support park interpretive themes, including those associated with perpetuating endemic Hawaiian ecosystems. Preservation of the native vegetation along Crater Rim Drive and adjacent to the proposed USGS field station, especially the koa trees on the southwest corner of the proposed building, are essential to maintain this intact corridor and indirectly support interpretive themes for this unique drive along the north side of an active volcano. The Project would result in neutral impacts when considering its overall effects on landscape character, viewer experience, and National Park Service management.</p>
<b>KOP 7: Kīlauea Military Camp</b>	<p>The proposed USGS field station would be partially compatible with the existing landscape character, as there are existing structures from different eras, including the historic KMC cabins as well as a maintenance facility with a large warehouse. The Project would interrupt the continuity of the landscape and introduce a more modern building into a view dominated by historic structures. Specifically, the split-gable roof and height of the building would attract attention and would be prominent as viewed from KMC. Existing vegetation would partially screen views of the proposed building. Casual observers would likely view the proposed USGS field station as being outside of the portion of KMC with an orderly design and if visiting later in the day, such as for parking for lava viewing, would have limited impacts on their experience. History and military history focused visitors, as well as repeat local observers, may view the Project as an incongruent landscape feature, which could begin to reduce the intactness of the historic setting, but since the proposed USGS field station would not be readily visible from many locations in KMC, there would be limited impacts on the experience of walking the grounds. Since there are limited existing interpretive opportunities at KMC, the Project would have minimal impacts on those park values and themes. During volcanic events, when the area is used as an overflow parking area, the presence of the USGS field station may increase interpretive opportunities and ability for USGS staff to interact with the public, resulting in potential beneficial impacts. This strengthens the mission for the Park Support Zone to work with National Park Service partners to provide a range of experiences for visitors. This additional attention affords the National Park Service an opportunity to increase interpretive themes in KMC, at the proposed USGS field station, and adjacent to the historic ball field, to educate the public on this evolving historic landscape. Based on these potential opportunities to increase interpretive opportunities and through minor modifications to the proposed USGS field station design to better blend with the existing setting, including planting of additional native vegetation to further screen views, the Project would result in low adverse effects when considering its overall effects on landscape character, viewer experience, and National Park Service management.</p>

In general, the Project would increase visitor interpretive opportunities both at the KVC and on Uēkahuna Bluff as well as provide an experience more in tune with the area's natural, cultural, and historic character. By removing most of the structures on Uēkahuna Bluff, not only are views from that area more natural appearing but views from around the Kīlauea Crater toward the bluff would appear more visually

intact. In addition, the Project would implement the GMP's option to remove infrastructure on the bluff if the Jaggar Museum and HVO were significantly damaged or destroyed during volcanic activity.

The addition of the replacement visitor center would expand the area viewed as modified within the Visitor Services Zone, leading to a more recreation-focused landscape within the kauhale (integrated campus), but this would be counterbalanced with the additional interpretive opportunities, especially considering the removal of the Jaggar Museum.

The proposed USGS field station would impact the historic setting adjacent to KMC, introducing a more modern building into a view dominated by historic structures, but would occur in an area with minimal existing interpretive opportunities. The addition of the proposed USGS field station may provide an opportunity to expand cooperation with National Park Service partners including USGS, especially during volcanic events when the historic ball field is used as overflow parking.

Overall, the Project would further the park's mission as well as meet management zone- and site-specific guidance from the GMP. Specifically, this includes the following GMP elements (with relevant Project component[s] in parentheses):

- **Park Purpose**
  - Maintain vegetation, especially along intact roadway corridors and highly sensitive landscapes, to provide visitors opportunities to see endemic Hawaiian ecosystems (all project elements).
  - Provide interpretive opportunities and themes to perpetuate traditional Hawaiian culture through landscapes they are connected to (all project elements).
- **Visitor Services Zone Guidance**
  - Increase capacity for a larger number of park visitors through expansion of the park entrance area and number of entry lanes (park entrance).
  - Facilitate a higher level of visitor use, access, and interpretation in the Visitor Services Zone through the construction of the Project (replacement visitor center).
  - Provide orientation and intensive interpretation that is programmatically accessible with a wide range of media and facilities to support diverse visitor needs (replacement visitor center).
  - Opportunity to connect with the meanings and themes of the park, including preservation of cultural resources through the removal of structures in a culturally important landscape (Uēkahuna Bluff).
  - Provide safe access to volcanic events, with an appropriate level of visitor orientation, which is enhanced by the more natural setting proposed by the Project (Uēkahuna Bluff).
- **Park Support Zone Guidance**
  - Opportunity for National Park Service partners, including the USGS, to provide a range of experiences for visitors, especially during volcanic events when the historic ball field is used as an overflow parking area (proposed USGS field station)
- **Site-specific Guidance**
  - KVC and Surrounding Area: The GMP places a priority on keeping development within existing footprints but states a modest expansion may be necessary to achieve the overall vision and accommodate conflicts between vehicles and visitors. Additionally, the GMP suggests increasing parking and expanding the covered lanai space to address visitor use. The replacement visitor center would follow through on the GMP's vision for the kauhale (integrated campus).

- Jaggar Museum and HVO: The GMP identified three options if the Jaggar Museum and HVO were significantly damaged or destroyed during volcanic activity. The Project would mostly align with the second option of finding a new location for those facilities inside the park but off the crater edge and Uēkahuna Bluff. The proposed replacement visitor center and USGS field station would be constructed adjacent to the existing KVC and KMC respectively, both located away from the crater edge and Uēkahuna Bluff. Additionally, the Project would include removing three buildings, restoring their footprints, and planting native plants to initiate restoration of the site as identified in the third option.

## **7 MITIGATION**

To reduce contrast (visual change) introduced by the Project, minimize effects on viewer experience, and limit impacts on National Park Service management, the following potential mitigation measures were identified:

- Reduce the height of proposed structures to the extent possible to decrease their visibility (and level of visual dominance) from viewpoints and to blend with the existing setting.
- Choose building materials, paint, stain, and other color treatments to match existing park structures and the natural, existing setting to minimize their visual intrusion and adverse effects on natural and cultural resources including the selection of the replacement visitor center roof color to match adjacent structures.
- Introduce additional site interpretation opportunities (e.g., signs, ranger led activities, or additions to National Park Service app) to describe historic, cultural, or natural elements modified by the Project. For example, this could include describing the cultural importance of Uēkahuna Bluff, the construction of structures on the bluff, and the subsequent removal of most of these structures to return the area to a more natural condition after the 2018 volcanic activity.
- Maintain, or expand, landscape plantings adjacent to the replacement visitor center and USGS field station including selective clearing of mature 'ōhi'a lehua and koa during construction to maintain existing vegetative screening.
- Maintain, or expand, landscape plantings along Crater Rim Drive to minimize visibility of structures proposed by the Project. Additional plantings within the proposed traffic circle, in medians, and along the roadside would visually break up expanses of pavement to blend with the natural setting, minimize visibility of the traffic circle, minimize the visual width of entry into the park, and minimize visibility of the Project within historic districts.
- Maintain enough of the redesigned berm to reduce the visibility of the replacement water tank on Uēkahuna Bluff as viewed from the Crater Rim Trail.
- Expand landscape plantings on and adjacent to the redesigned berm to further screen views of the replacement water tank.
- Choose a paint color for the replacement water tank on Uēkahuna Bluff to allow it to blend with the natural setting.

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## **Appendix A**

### **View Inventory Forms**



VIEW INVENTORY FORM

KOP Viewpoint: #1: Park Entrance Road \_\_\_\_\_

Date: 7/13/2021

Recorder: Kevin Rauhe \_\_\_\_\_

Time: \_\_\_\_\_

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape's character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
Existing Character Type(s):	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: Other than the park entrance station, roadway, signage, and overhead lines, the entrance road is mostly a natural setting											
Landscape Diversity	Uniform	Simple	Diverse	Complex							
Notes: Repeating vegetation types ('ōhi'a lehua, koa, and hapu'u) and patterns occur in proximity to this viewpoint											
View type	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: Narrow enclosed corridor along the roadway											
<b>What are the dominant materials and style of built elements?</b> Lava rock and metal roof in park entrance station with a tall roof line; typical National Park Service wood and metal signage											
<b>Other factors:</b>											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Roadway											
Park entrance station											
Overhead power/communication lines											
Signage and barriers											
VISUAL ELEMENTS											
Describe the existing view's visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
FORM:	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The park entrance station has a blocky, angular form; the forest canopy creates a dense, rounded form split by the roadway											
LINE:	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Vertical and angular lines in park entrance station, curving lines in roadway, vertical lines in signage											
COLOR:	Red		Green		White		Gray				
	Orange		Yellow		Blue		Black				
	Brown										
Notes: Range of greens in vegetation, gray roadway, park entrance station has a range of grays from dark lava rock to light gray roof, brown											
TEXTURE:	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: Forest canopy forms a uniform medium texture, whereas the park entrance station introduces rough textures due to its blocky, vertical form											

## VIEW INVENTORY FORM

<b>SPATIAL COMPOSITION COMPONENTS</b>				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: With the park entrance station in the middle of the roadway, the view is well balanced, creating an overall symmetrical view				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: None of the built elements are taller than the trees, which brings them into balance with the natural setting				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: The dense forest and roadway direct focus along the curvilinear roadway and toward the park entrance station				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The landscape is generally unified, except for the park entrance station and roadway, which have carved a path through the forest				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: Since there are minimal elements in view, except for facilities to support the park entrance that follow the roadway, the overall view is organized with those elements				
NOTES:				

<b>OBSERVER POSITION</b>	<b>DISTANCE ZONES</b>
<input type="checkbox"/> Looking up	Foreground: Views are limited due to the dense forest, which parallels the road from the entrance past this location to the KVC
X Eye level	Middle ground: Not applicable due to dense forest screening views
<input type="checkbox"/> Looking down	Background: Not applicable due to dense forest screening views

VIEW INVENTORY FORM



View west from park entrance road toward the KVC and proposed road re-alignment and traffic circle



View east from park entrance road toward the entrance station, turn to Chain of Craters Road, and Highway 11

VIEW INVENTORY FORM

**KOP Viewpoint:** #2: Kīlauea Visitor Center Entrance \_\_\_\_\_ **Date:** 7/13/2021

**Recorder:** Kevin Rauhe \_\_\_\_\_ **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape's character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: While the setting is generally natural appearing, the presence of the visitor center and other structures in the area evoke a natural developed type.											
<b>Landscape Diversity</b>	Uniform	Simple	Diverse	Complex							
Notes: This natural, developed landscape has a common character in the viewshed, with the visitor center and parking lot being the primary elements visible from this location, creating a landscape with simple diversity.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: The overall setting presents an enclosed view type due to the dense forest surrounding the KVC and associated parking lot.											
<b>What are the dominant materials and style of built elements?</b> The visitor center is made of lava rock and wood, with a long ridge broken up by a series of pyramidal roof forms.											
<b>Other factors:</b>											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Existing visitor center											
Roadway											
Parking lot											
Signage and light posts											
VISUAL ELEMENTS											
Describe the existing view's visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The visitor center has a blocky, angular form; the forest canopy creates a dense, rounded form surrounding the KVC and parking lot.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Vertical, horizontal, and angular lines in the visitor center, vertical lines in signage and light posts.											
<b>COLOR:</b>	Red		Green		White		Gray				
	Orange		Yellow		Blue		Black				
	Brown										
Notes: Range of greens in vegetation; gray roadway; the KVC is made of dark lava rock, dark brown siding, and a brown roof.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: Forest canopy forms a uniform medium texture whereas the visitor center introduces rough textures due to its blocky, vertical form including the form of the chimneys and pyramidal roof forms.											

## VIEW INVENTORY FORM

<b>SPATIAL COMPOSITION COMPONENTS</b>				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The visitor center and parking lot have similar overstory vegetation as the adjacent forest, creating a balanced setting.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: None of the built elements are taller than the trees, which helps bring the structures into balance with the natural setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: The form of the visitor center attracts your attention and is the focal point in this setting.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The visitor center and parking lot creates a large opening in the forest that interrupts the continuity of the surrounding forest setting. While not visible from this location, there are multiple historic structures in the visitor center area that create a historic character that is more apparent in other locations.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: The visitor center area is ordered and clearly designed, including ornamental landscape plantings and large parking areas.				
NOTES:				

<b>OBSERVER POSITION</b>	<b>DISTANCE ZONES</b>
<input type="checkbox"/> Looking up	Foreground: Views are limited due to the dense forest that surrounds the visitor center area
X Eye level	Middle ground: Not applicable due to dense forest screening views
<input type="checkbox"/> Looking down	Background: Not applicable due to dense forest screening views

VIEW INVENTORY FORM



View north toward the existing KVC and parking lot



View northwest toward the existing KVC parking lot and proposed replacement visitor center

VIEW INVENTORY FORM

**KOP Viewpoint:** #3: Crater Rim Trail **Date:** 7/13/2021

**Recorder:** Kevin Rauhe **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape's character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: The setting is largely natural appearing except for the presence of the structures, including the HVO, Geochemistry Annex building, and Jaggar Museum, which have modified this setting.											
<b>Landscape Diversity</b>	Uniform		Simple		Diverse			Complex			
Notes: Largely natural setting with Kilauea Crater and Mauna Loa visible as well as the existing structures on the bluff.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: Due to the lack of tall vegetation adjacent to the crater, the views are open and panoramic.											
<b>What are the dominant materials and style of built elements?</b> The structures are made of lava rock and wood with a metal roof. The existing HVO includes a tall observation tower, which rises above the other single-story structures. Existing water tanks are screened by a berm. A steel lattice radio tower is located adjacent to the other structures.											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
<b>Element</b>	<b>Dominance</b>			<b>Contrib.</b>		<b>Element</b>	<b>Dominance</b>			<b>Contrib.</b>	
	L	M	H	+	–		L	M	H	+	–
Jaggar Museum						Fence posts and barrier					
Hawaiian Volcano Observatory (HVO)						Radio tower					
Water tanks											
VISUAL ELEMENTS											
Describe the existing view's visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The existing structures have a blocky, angular form. The adjacent setting is defined by the eroding crater with flat level benches and Mauna Loa rising above the landscape with its massive shape.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Vertical, horizontal, and angular lines in the existing structures; vertical lines in the radio tower and fence posts; curving line of the trail. Horizontal and undulating lines are evident along the crater rim and down the layers of eroding rocks. Mauna Loa has long, angular lines meeting at the summit.											
<b>COLOR:</b>	Red		Green			White		Gray			
	Orange		Yellow			Blue		Black			
	Brown										
Notes: Scattered green/tan vegetation; gray trail; gray/brown exposed soil and lava rock; existing structures have dark lava rock, dark brown siding, and red or brown roofs. Views across the crater include dense green vegetation contrasting with the adjacent gray/brown lava rock.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: The general texture is medium due to the scattered vegetation and variable rock sizes throughout the areas of exposed soil/rock. The existing structures including the radio tower introduce rougher textures into the setting. Adjacent scenery includes rough, broken crater walls and the fine, smooth texture of Mauna Loa.											

## VIEW INVENTORY FORM

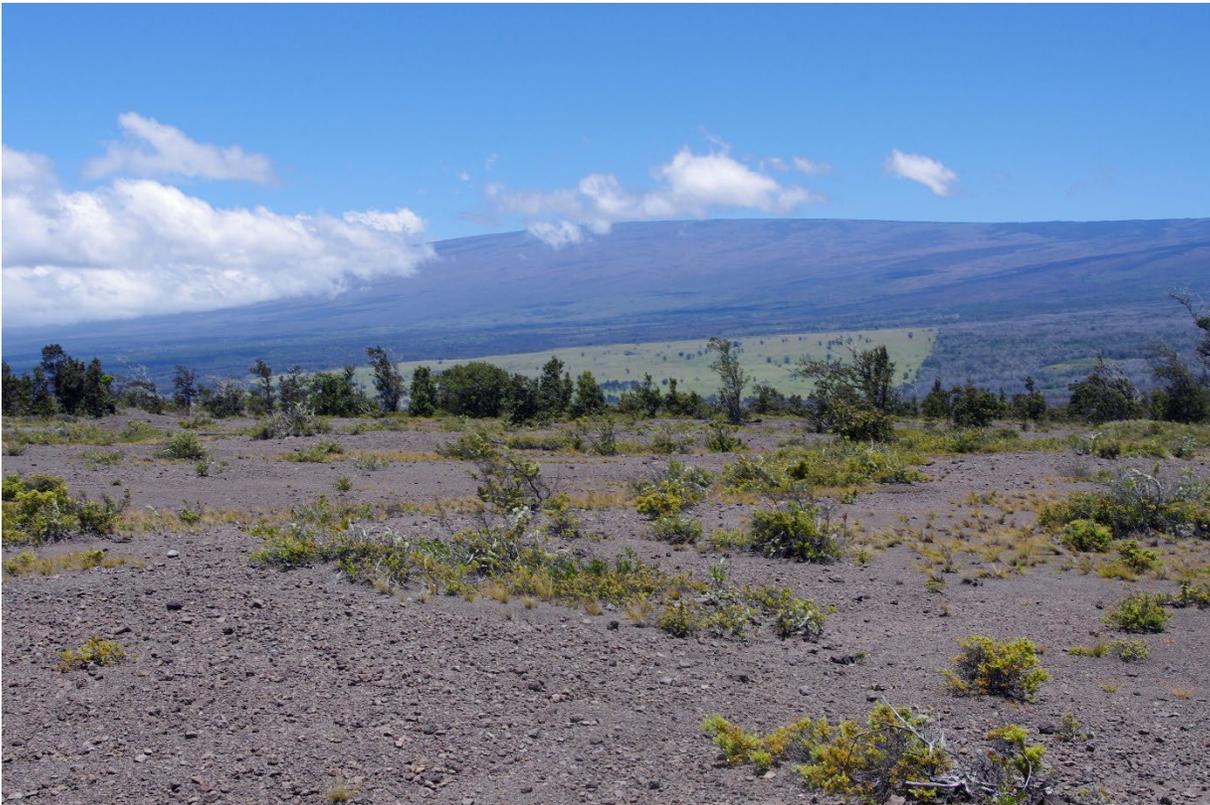
<b>SPATIAL COMPOSITION COMPONENTS</b>				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The presence of these large buildings in a largely natural setting is out of balance.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: Due to the panoramic setting and limited existing vegetation, the scale of the existing structures does not fit within the natural setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: There are multiple focal points in this setting with Kīlauea Crater being the most dominant. The existing structures on the bluff and Mauna Loa also attract attention in the setting.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The existing structures on the bluff interrupt the natural continuity of the landscape.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: The variety of structures (HVO, Geochemistry Annex, Jaggar Museum, water tanks, radio tower, and restrooms) have some common design elements but through differing designs, do not form an organized or regular composition in the setting.				
NOTES:				

<b>OBSERVER POSITION</b>	<b>DISTANCE ZONES</b>
<input checked="" type="checkbox"/> Looking up	Foreground: Views are focused on the existing structures and of the edge of the caldera
<input checked="" type="checkbox"/> Eye level	Middle ground: Views across the caldera and toward the lower slopes of Mauna Loa
<input type="checkbox"/> Looking down	Background: Distant views to Mauna Loa and surrounding areas (depending on atmospheric conditions)

VIEW INVENTORY FORM

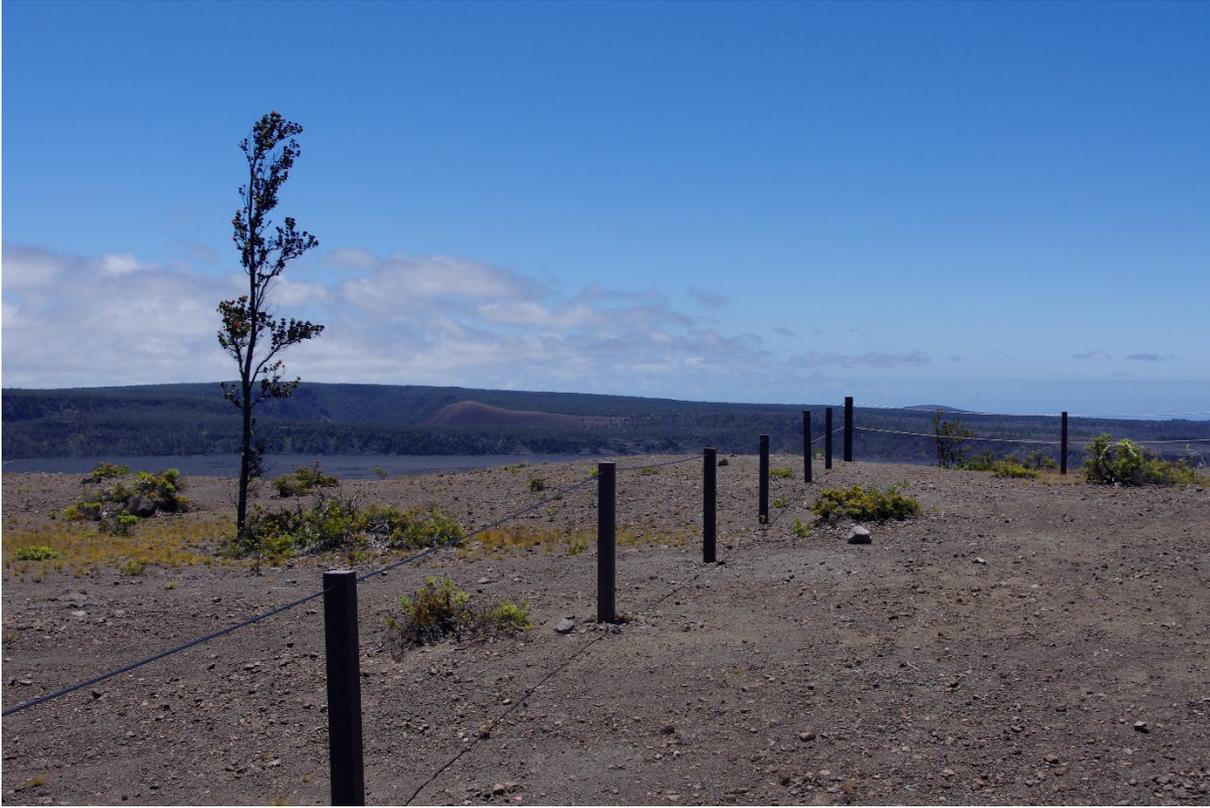


View southwest from Crater Rim Trail toward the existing Jaggar Museum and HVO visible on Uēkahuna Bluff



View west from Crater Rim Trail toward Mauna Loa

VIEW INVENTORY FORM



View southeast from Crater Rim Trail across Kīlauea Crater

VIEW INVENTORY FORM

**KOP Viewpoint: #4: Volcano House Overlook** **Date: 8/2/2021**

**Recorder: Kevin Rauhe** **Time: \_\_\_\_\_**

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape's character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: Generally intact natural setting except for the presence of the Jaggar Museum and HVO on the bluff, which have modified the setting.											
<b>Landscape Diversity</b>	Uniform		Simple		Diverse			Complex			
Notes: Natural setting with views of Kīlauea Crater, including the intermediate vegetated bench, and Mauna Loa rising above the landscape in the background. The geometric existing structures on the bluff contrast with the natural, horizontal and angular lines.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: Due to the lack of tall vegetation adjacent to this viewpoint, views are unobstructed and panoramic over the intermediate bench toward Kīlauea Crater, Uēkahuna Bluff, and Mauna Loa.											
<b>What are the dominant materials and style of built elements?</b> The structures are made of lava rock and wood with a metal roof. The existing HVO building includes a tall observation tower that rises above the other, single-story structures. An existing lava rock wall and steel interpretive sign are located directly adjacent to this viewpoint.											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Jaggar Museum	█				█	Lava rock wall (immediate foreground)	█				█
Hawaiian Volcano Observatory (HVO)		█			█	Radio tower	█				█
Water tanks	█				█						█
VISUAL ELEMENTS											
Describe the existing view's visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The existing landscape is defined by the eroding crater with flat, level benches descending along steep slopes down to the crater floor. Mauna Loa rises above the landscape in the background with its massive shape. Existing structures on the bluff have a blocky, angular form.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Horizontal and undulating lines are evident from the crater rim down the layers of eroding rocks, including the intermediate benches. A similar undulating line forms a butt edge between the vegetation on the intermediate bench and the stark lava flows. In the background, Mauna Loa has long, angular lines meeting at the summit. The structures on the bluff create horizontal and angular lines in the landscape.											
<b>COLOR:</b>	Red		Green			White		Gray			
	Orange		Yellow			Blue		Black			
	Brown										
Notes: Vegetation on the intermediate bench includes a mix of greens and grays. The lava rocks on the crater walls and floors include a range of colors from dark gray to brown with areas of brighter, red lava. Scattered dark green vegetation is visible on the crater rim and distant crater wall.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: There is a range of textures from rough, broken crater walls to the medium-textured forest on the intermediate bench and the fine, smooth texture of Mauna Loa. Stippled vegetation occurs along the distant crater wall and rim.											

VIEW INVENTORY FORM

SPATIAL COMPOSITION COMPONENTS				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The natural setting is well balanced and displays the active nature of this landscape, forming a harmonious composition with limited visible landscape modifications. The structures on the bluff attract attention but do not disturb the balance formed by the natural setting.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: Similar to balance, the setting is harmonious as the structures are visible but due to the massive scale of the natural landscape, the natural elements dominate the setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: This distant viewpoint has three main focal points. The first two (Kīlauea Crater and Mauna Loa) are largely intact and appear natural from this location. The other main focal point is Uēkahuna Bluff, which is the highpoint on the crater wall. The existing structures on the bluff attract attention because they are sited at this focal point in the landscape.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The existing structures on the bluff interrupt the natural continuity of the landscape but due to the distance, their visual dominance in the setting diminishes, allowing the natural setting to appear unified.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: From this distance, the variety of structures on the bluff appear similar due to their common form and colors. Since they are located in the same area, their presence appears organized and their effect on the setting limited to the bluff area.				
NOTES:				

OBSERVER POSITION	DISTANCE ZONES
<input checked="" type="checkbox"/> Looking up	Foreground: Views of the caldera edge and vegetated intermediate bench
<input checked="" type="checkbox"/> Eye level	Middle ground: Views across the caldera toward Uēkahuna Bluff and the eroding crater floor
<input type="checkbox"/> Looking down	Background: Distant views of Mauna Loa and surrounding areas (depending on atmospheric conditions)

VIEW INVENTORY FORM



**View west toward Uēkahuna Bluff with the existing Jaggar Museum and HVO visible on the bluff**



**View southwest across Kīlauea Crater and toward Halema'uma'u Crater**

VIEW INVENTORY FORM

KOP Viewpoint: #5 – Crater Rim Drive West of Kīlauea Visitor Center

Date: 10/14/2021

Recorder: Kevin Rauhe

Time:

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape’s character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: While the setting is generally natural appearing, the presence of the visitor center, turfgrass, and other structures in the area evoke a natural developed character type.											
<b>Landscape Diversity</b>	Uniform	Simple	Diverse	Complex							
Notes: This natural, developed landscape has a diverse character due to the varying architectural styles in the visitor center, Volcano Art Center, and other structures visible from this location, which are accompanied by parking areas, trails, and ornamental landscape plantings.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: The overall setting presents an enclosed view type due to the dense forest surrounding the visitor center, Volcano Art Center, and current Volcano House (not visible from this location), with those structures attracting attention and becoming features within the view.											
<b>What are the dominant materials and style of built elements?</b> The visitor center is made of lava rock, wood, with a long ridge broken up by a series of pyramidal roof forms. Volcano Art Center is made of wood siding stained red and a gray roof with a tall, gable roof line.											
<b>Other factors:</b>											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Existing visitor center						Volcano Art Center (former Volcano House)					
Roadway											
Parking lot											
Signage and light posts											
VISUAL ELEMENTS											
Describe the existing view’s visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The visitor center and Volcano Art Center have a blocky, angular form; forest canopy creates a dense rounded form surrounding these structures and parking lot.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Vertical, horizontal, and angular lines in the visitor center and Volcano Art Center, vertical lines in signage and light posts											
<b>COLOR:</b>	Red		Green		White		Gray				
	Orange		Yellow		Blue		Black				
	Brown										
Notes: Range of greens in vegetation; gray roadway; the visitor center is made up of dark lava rock, dark brown siding, and a brown roof; Volcano Art Center is made of red-stained wood siding and a gray roof.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: Forest canopy forms a uniform medium texture whereas the visitor center and Volcano Art Center introduce rough textures due to their blocky, vertical form, including the form of the chimneys and pyramidal roof forms.											

## VIEW INVENTORY FORM

<b>SPATIAL COMPOSITION COMPONENTS</b>				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The visitor center, Volcano Art Center, and parking lots contain similar overstory vegetation as the adjacent forest, creating a balanced setting.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: None of the built elements are taller than the trees, which helps bring the structures into balance with the natural setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: The form of the visitor center and Volcano Art Center attract your attention and are the focal points in this setting.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The visitor center, Volcano Art Center, Volcano House (not visible from this location), and parking lots create large openings in the forest that interrupt the continuity of the surrounding forest setting. Since many of these structures within the kauhale (integrated campus) are historic, this area evokes a historic character that is more apparent here than in other locations within the kauhale.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: The visitor center area, Volcano Art Center, and current Volcano House areas are ordered and designed, including ornamental landscape plantings and large parking areas.				
NOTES:				

<b>OBSERVER POSITION</b>	<b>DISTANCE ZONES</b>
<input type="checkbox"/> Looking up	Foreground: Views are limited due to the dense forest that surrounds the visitor center area with views most open along Crater Rim Drive
X Eye level	Middle ground: Not applicable due to dense forest screening views
<input type="checkbox"/> Looking down	Background: Not applicable due to dense forest screening views

VIEW INVENTORY FORM



View west from trail adjacent to Crater Rim Drive toward existing KVC and interpretive signage



View northwest from trail adjacent to Crater Rim Drive toward the Volcano Art Center (former Volcano House)

VIEW INVENTORY FORM

**KOP Viewpoint:** #6 – Crater Rim Drive toward KMC and historic ball field \_\_\_\_\_ **Date:** 11/18/2021

**Recorder:** Kevin Rauhe \_\_\_\_\_ **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape’s character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: The setting is mostly natural along a densely forested roadway with limited visible existing modifications except for the powerline and roadway. There are intermittent openings in the forest with views toward the historic ball field adjacent to KMC.											
<b>Landscape Diversity</b>	Uniform		Simple		Diverse		Complex				
Notes: This natural landscape has uniform landscape diversity as the dense forest and roadway create a repeating theme along this stretch of Crater Rim Drive. There are limited views of developed areas, until closer to KMC, where the landscape becomes more diverse.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: The enclosed setting through an ‘ōhi‘a/koa forest focuses views along the roadway, with the linear corridor becoming the setting’s primary feature. Intermittent openings in the forest introduce short duration framed views of the historic ball field and surrounding areas.											
<b>What are the dominant materials and style of built elements?</b> There are limited structures in view with the asphalt road and wooden power line poles being the primary visible built elements. Glimpses of structures associated with KMC appear where white, or other light-colored, features contrast with the forest’s natural green, brown, and tan colors. These views occur infrequently along the road.											
<b>Other factors:</b>											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Powerline						Historic ball field					
Roadway						KMC maintenance buildings					
VISUAL ELEMENTS											
Describe the existing view’s visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The terrain in this area is flat to slightly rolling with a level, geometric roadway cut through the forest, which is defined by its dense, rounded forms on either side of the road.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Horizontal lines are formed by the roadway with vertical lines in the tree trunks and powerline poles. The forest canopy creates curving lines in the setting.											
<b>COLOR:</b>	Red		Green		White		Gray				
	Orange		Yellow		Blue		Black				
	Brown										
Notes: Range of greens in vegetation; gray roadway (yellow and white striping); brown powerline poles.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: The forest canopy forms a mostly uniform medium texture that partially conceals the powerline poles along the roadway. The road surface and meadow, visible through the forest openings, are finer textured and smoother in comparison.											

VIEW INVENTORY FORM

SPATIAL COMPOSITION COMPONENTS				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: With similar forest canopies on either side of the road and the lack of additional features in view, the setting appears balanced from this location.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The roadway has narrow shoulders, and the powerline poles are partially concealed by vegetation, which creates a setting where built features are balanced in scale with the natural setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: Views are focused along the roadway with that being the primary focal point. Glimpses of openings in the forest attract the eye while driving Crater Rim Drive but are short in duration and occur infrequently.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: As motorists travel between the Uēkahuna Bluff and KMC, the setting is unified and connected by the 'ōhi'a/koa forest, which becomes more dense approaching KMC. There are intermittent views along the road through forest openings but these are brief and mostly are of recreation sites (or their access roads) along Crater Rim Drive.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: With the roadway and adjacent powerline poles following the same right-of-way corridor, development in view appears organized and focused along this corridor.				
NOTES:				

OBSERVER POSITION	DISTANCE ZONES
<input type="checkbox"/> Looking up	Foreground: Intermittent views of the existing historic ball field and potentially of the proposed USGS field station through the dense 'ōhi'a/koa forest
X Eye level	Middle ground: Not applicable due to dense forest screening views
<input type="checkbox"/> Looking down	Background: Not applicable due to dense forest screening views

VIEW INVENTORY FORM



**View north northwest from Crater Rim Drive toward the historic ball field near KMC**



**View northwest from Crater Rim Drive toward the historic ball field near KMC**

VIEW INVENTORY FORM

KOP Viewpoint: #7 – Kilauea Military Camp \_\_\_\_\_

Date: 10/14/2021 \_\_\_\_\_

Recorder: Kevin Rauhe \_\_\_\_\_

Time: \_\_\_\_\_

**INSTRUCTIONS.** Describe the existing visual qualities of the view: its landscape character, visual elements, and spatial patterns. Circle terms that fit for each component and provide notes to explain key details.

LANDSCAPE CHARACTER											
Describe the existing landscape's character. Consider the character type, diversity and the dominance and contribution of the existing landscape elements to the visual quality of the view. Circle as many terms as needed and add notes to help describe the view											
<b>Existing Character Type(s):</b>	Natural	Pastoral	Agricultural	Rural	Suburban	Urban	Industrial				
Notes: The setting adjacent to KMC is mostly natural-appearing ('ōhi'a and koa trees) with a large clearing containing KMC and supporting structures, evoking a natural developed character type.											
<b>Landscape Diversity</b>	Uniform	Simple	Diverse	Complex							
Notes: This natural, developed cultural landscape has a simple character focused on the cohesive blend of the older and modern buildings within KMC.											
<b>View type</b>	Panorama	Enclosed	Focal	Feature	Framed	Canopy					
Notes: The overall setting is a loosely, enclosed view type due to the dense forest surrounding KMC focusing views inward toward the camp.											
<b>What are the dominant materials and style of built elements?</b> Near this photo point, simple wooden cabins with metal gable roofs and lava rock chimneys. The front office is constructed of similar materials with a country art deco style. Lava rock curbs along curving roadways.											
<b>Other factors:</b>											
Landscape Features											
Refer to the Field Guide to identify the most prominent features in the landscape. Rate their dominance (L – present but inconspicuous, M – for evident, and H – for very conspicuous) and whether the contribution to landscape quality is negative (–) or positive (+).											
Element	Dominance			Contrib.		Element	Dominance			Contrib.	
	L	M	H	+	–		L	M	H	+	–
Kilauea Military Camp cabins and office											
Roadway											
Signage											
Distribution powerline											
VISUAL ELEMENTS											
Describe the existing view's visual elements of form, line, color and texture. If available, use a photograph to annotate the most prominent visual elements as shown on the field guide. Refer to the field guide for additional descriptive vocabulary.											
<b>FORM:</b>	Blocky	Angular	Sloping	Circular	Rolling	Rounded	Flat	Pyramidal			
Notes: The cabins and front office have a blocky, angular form; forest canopy creates a dense, rounded form surrounding KMC and parking lot.											
<b>LINE:</b>	Vertical	Horizontal	Angular	Curving	Irregular	Broken	Sinuous	Undulating			
Notes: Vertical, horizontal, and angular lines in the cabins, vertical lines in signage, curving line in lava rock curb and roadway.											
<b>COLOR:</b>	Red		Green		White		Gray				
	Orange		Yellow		Blue		Black				
	Brown										
Notes: Range of greens in vegetation; gray roadway; cabins are made of light brown siding, dark brown wood trim, dark lava rock chimneys, and a brown roof.											
<b>TEXTURE:</b>	Smooth	Rough	Medium	Fine	Coarse	Patchy	Stippled	Uniform			
Notes: Forest canopy forms a uniform medium texture, whereas the cabins introduce rough textures due to their triangular, vertical form including the form of the chimneys and gable roof lines.											

## VIEW INVENTORY FORM

<b>SPATIAL COMPOSITION COMPONENTS</b>				
Describe the aspects of existing view's spatial composition and patterns (i.e., balance, scale, continuity). If available, use a photograph to annotate the existing focal points, visual balance and coherence of the view, as well as the other spatial pattern elements.				
<b>BALANCE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: The KMC and parking areas have similar overstory vegetation as the adjacent forest, creating a balanced setting.				
<b>SCALE:</b>	Harmonious	Balanced	Discordant	Chaotic
NOTES: None of the built elements are taller than the trees, which helps bring the structures into balance with the natural setting.				
<b>FOCAL POINTS:</b>	None	Minimal	Moderate	Strong
NOTES: The curving driveways at the entrance of KMC focus attention inwardly toward the front row of cabins and the art deco style front office building. Along the edge of KMC, views include forest openings, a glimpse of the historic ball field, and partial views of the KMC maintenance area.				
<b>CONTINUITY:</b>	Unified/Connected	Interrupted	Fragmented	Chaotic
NOTES: The KMC and supporting facilities create a large opening in the forest, which interrupts the continuity of the surrounding forest setting. The varying architecture through the different eras of construction in the KMC partially interrupts the continuity of the KMC setting but their common materials provide important unifying elements.				
<b>PATTERN:</b>	Random	Organized	Regular	Formal
NOTES: The KMC is ordered and displays a cohesive blend of the older and modern buildings including ornamental landscape plantings and several curving entrance roads. The cabins are constructed in formal rows, further organizing the built elements within this setting.				
NOTES:				

<b>OBSERVER POSITION</b>	<b>DISTANCE ZONES</b>
<input type="checkbox"/> Looking up	Foreground: Views are limited due to the dense forest that surrounds the KMC
X Eye level	Middle ground: Not applicable due to dense forest screening views
<input type="checkbox"/> Looking down	Background: Not applicable due to dense forest screening views

VIEW INVENTORY FORM



View northwest from KMC entrance road toward the proposed USGS field station site



View north from KMC entrance road toward the existing historic cabins

VIEW INVENTORY FORM



View northeast from KMC entrance road toward the KMC front office building

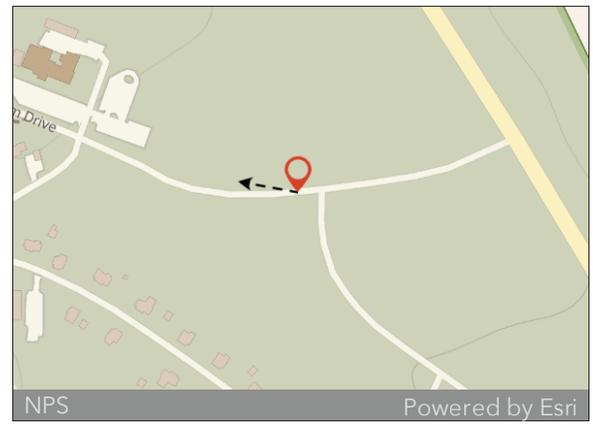


**Appendix B**  
**Visual Simulations**



## KOP 1: Park Entrance Road

The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



*Photo location and view direction*



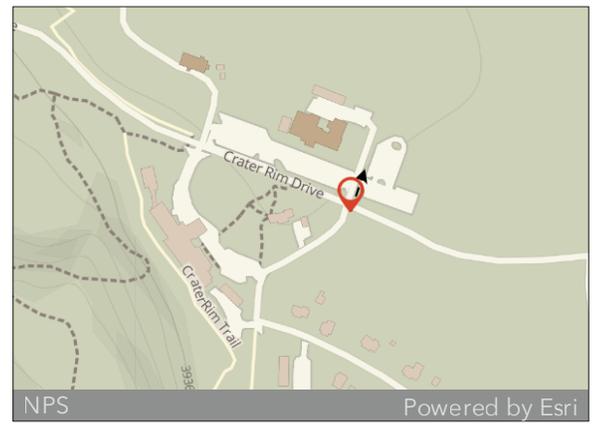
Before



After

## KOP 2: Kīlauea Visitor Center Entrance

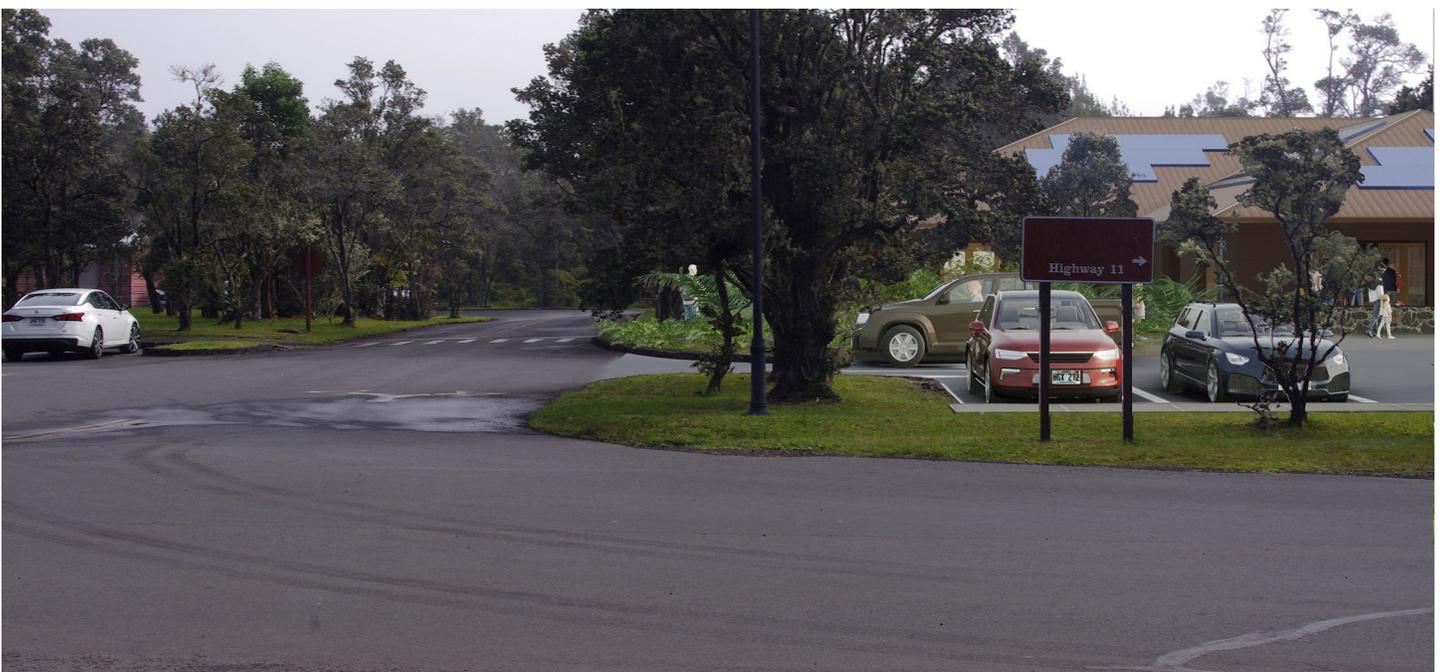
The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After

### KOP 3: Crater Rim Trail

The before and after images below show how the view of Uēkahuna bluff is anticipated to change under proposed conditions.



*Photo location and view direction*



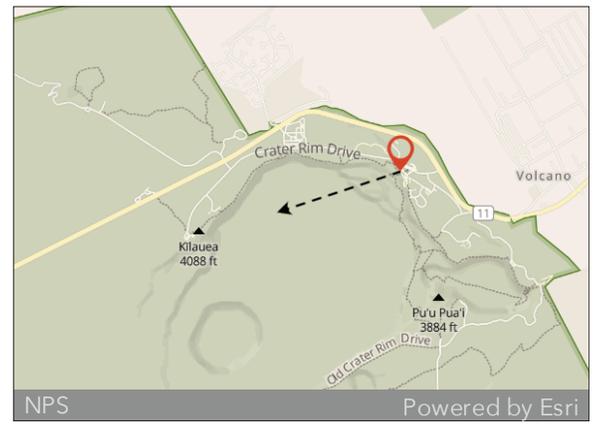
Before



After

## KOP 4: Volcano House Overlook

The before and after images below show how the view of Uēkahuna bluff is anticipated to change under proposed conditions.



*Photo location and view direction*



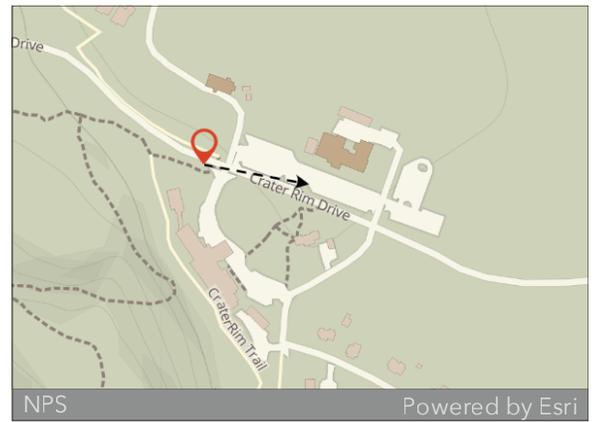
Before



After

## KOP 5: Crater Rim Drive west of Kīlauea Visitor Center

The before and after images below show how the view along Crater Rim Drive is anticipated to change under proposed conditions.



*Photo location and view direction*



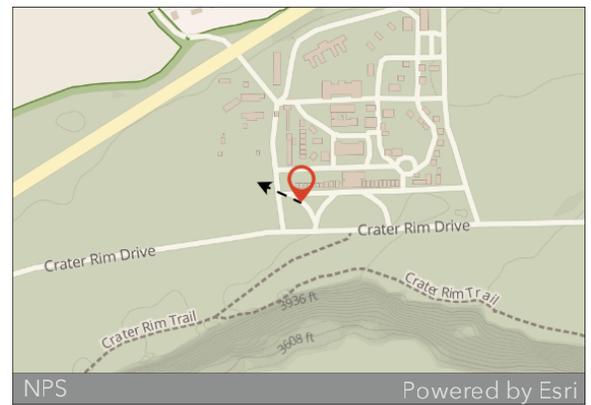
Before



After

## KOP 7: Kilauea Military Camp

The before and after images below show how the view is anticipated to change under proposed conditions.



*Photo location and view direction*



Before



After

## **Appendix C**

### **Visual Change Evaluation Forms**



# CONSENSUS VISUAL CHANGE RECORD

**KOP/Viewpoint:** #1: Park Entrance Road \_\_\_\_\_

**Date:** 2/8/2022 \_\_\_\_\_

**Evaluator:** Kevin Rauhe \_\_\_\_\_

**Time:** \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

COMPATIBILITY WITH LANDSCAPE CHARACTER										
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.										
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The modifications proposed near the park entrance would begin to transform the natural character of the existing setting to a more transportation-focused setting with extra lanes, a traffic circle, and additional signage.										
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change						
Notes: The Project would result in creating a clearing along a dense forested corridor, which would be incompatible with the existing repeating vegetation types and patterns. Landscape plantings in the center of the traffic circle would begin to repeat those patterns and help connect the adjacent forest settings.										
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The park does not currently have any traffic circles and large clearings for transportation infrastructure along Crater Rim Drive, therefore the Project would generally be incompatible with existing built features in the area. Note, there is a traffic circle and paved half circles at KMC.										
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell						
Notes: Planting materials, paving, signage, and other site features proposed would be compatible with materials present in other portions of the park.										
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N										
If so – describe: Views toward the existing KVC and replacement visitor center could be opened, leading to potential views of these buildings and associated parking lots after passing the park entrance station.										
<b>Other considerations:</b>										
OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial
CONTRAST OF VISUAL ELEMENTS										
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.										
<b>Project form contrast:</b>	None	Weak	Moderate	Strong						
Describe: The rounded forms of the dense forest canopy would be split where the new entrance road to the KVC is proposed. The simple curving roadway would be replaced by a series of curving roads emanating from a round traffic circle.										
<b>Project line contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> Breaks horizon Additional vertical lines associated with signage would be added as well as more curving lines from the proposed road improvements.										
<b>Project color contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The Project would mostly repeat colors present in the existing landscape with the addition of more gray asphalt and concrete in view associated with the proposed road improvements.										
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong						
Describe: The uniform, medium texture associated with the forest canopy on either side of the road would be split, resulting in coarser textures where the continuous form would be interrupted.										
<b>Other considerations:</b> <input checked="" type="checkbox"/> motion, <input checked="" type="checkbox"/> lights Motion along the additional roadways would further contrast with the existing setting, including at night when there is limited lighting in the park (i.e., vehicle headlights).										
OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial
CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS										

Assess the <b>contrast</b> of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,																				
<b>Visual Balance:</b>	Supports or Enhances			No effect			Somewhat disrupts			Substantially disrupts										
Notes: With the additional roads proposed by the Project, the simple balanced existing view would be partially disrupted by vegetation clearing along these proposed corridors and more transportation features in view (e.g., signs, striping, etc.). Using similar curbstone materials will help the visual balance.																				
<b>Scale (size):</b>	Substantially smaller			Somewhat smaller			Comparable			Somewhat larger										
Notes: With the addition of the traffic circle, additional roads, and other improvements, the Project would be out of scale with the existing setting and would appear somewhat larger than those elements currently in view.																				
<b>Focal points:</b>	No effect			Somewhat distracts			Creates new focal point			Creates new dominant FP										
Notes: The addition of a new route to directly access the existing and proposed KVC, with its corridor of cleared vegetation, would create a new focal point from this location adjacent to the park entrance.																				
<b>Continuity:</b>	no disruption			Noticeable but minor			Substantial													
Notes: The continuity of this landscape would be interrupted as an additional corridor would be cut through the forest compared to the simple, continuous roadway present in the existing landscape.																				
<b>Pattern:</b>	Enhances			No effect			Somewhat disrupts			Substantially disrupts										
Notes: fits within existing patterns      somewhat consistent with patterns      completely inconsistent with patterns																				
<b>Location in view:</b>	Periphery/Edge Left			Off center – left			Center			Off center right										
Notes: The traffic circle would be on left side with the new roadway and potential views of the KVC and parking lot off center right.																				
<b>Other considerations:</b>																				
<b>OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS</b>																				
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial										
<b>OVERALL EFFECT.</b> Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?																				
<b>OVERALL EFFECT ON SCENIC QUALITY</b>																				
<b>Adverse:</b>	<b>High</b>			<b>Moderate</b>			<b>Low</b>			<b>No Effect</b>	<b>Low</b>			<b>Moderate</b>			<b>High</b>			: Beneficial
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	
<b>VARIABLE FACTORS</b>																				
<b>Lighting</b>	Not applicable (N/A)																			
<b>Atmospheric conditions</b>	N/A																			
<b>Distance/backdrop</b>	The proposed changes at the park entrance and proposed KVC would occur within the foreground distance zone (0–0.5 mile).																			
<b>Viewing position</b>	Views would occur from a level viewing position.																			
<b>Backdrop</b>	By maintaining existing vegetation wherever possible, Project elements would appear backdropped, limiting their extent of visual dominance on these views.																			
<b>View limiting factors – topography, vegetation etc.</b>	Long-term vegetation management would facilitate maintaining a natural forest setting as well as providing opportunities to screen views of the replacement visitor center and other project elements.																			
<b>Other</b>	N/A																			

CONSENSUS VISUAL CHANGE RECORD

**KOP/Viewpoint:** #2: Kīlauea Visitor Center Entrance \_\_\_\_\_ **Date:** 2/8/2022 \_\_\_\_\_

**Evaluator:** Kevin Rauhe \_\_\_\_\_ **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

COMPATIBILITY WITH LANDSCAPE CHARACTER										
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.										
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The replacement visitor center would generally be compatible with the natural developed character type found in the existing setting except the area viewed as modified would be expanded to include the new building and parking lot.										
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change						
Notes: The replacement visitor center would minimally add to landscape diversity as the architectural style is similar to the existing KVC. Even though the project would repeat the simple landscape diversity current present in this location (e.g., visitor center and parking lot), it would expand the area viewed as modified within the setting.										
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: Since the replacement visitor center mostly mimics the design of the existing KVC, the project design is very compatible.										
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell						
Notes: The lava rock and fiber cement siding would be very compatible with the existing KVC. The solar panels are not consistent with the existing KVC and introduce features somewhat incompatible with the existing landscape setting, although there are solar panels on the KVC restrooms and the garage building behind KVC. The selected roof color is similar to those two adjacent buildings, making the replacement visitor center more compatible with those existing structures.										
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N										
If so – describe:										
<b>Other considerations:</b>										
OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER										
<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	<b>: Beneficial</b>

CONTRAST OF VISUAL ELEMENTS										
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.										
<b>Project form contrast:</b>	None	Weak	Moderate	Strong						
Describe: The blocky form of the replacement visitor center would mimic the existing KVC but would introduce another large building into view.										
<b>Project line contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> Breaks horizon The lines introduced by the solar panels would attract additional attention as they are more visible than the others found in the existing KVC area.										
<b>Project color contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The replacement visitor center would generally mimic colors found in the existing KVC.										
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong						
Describe: The coarse textures introduced by the project are similar to the existing KVC including pyramidal roof forms.										
<b>Other considerations:</b> <input type="checkbox"/> motion, <input checked="" type="checkbox"/> lights Proposed lighting for the replacement visitor center and parking area would be consistent with the lighting currently present at the existing KVC.										
OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS										
<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	<b>: Beneficial</b>

CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS																				
Assess the <b>contrast</b> of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,																				
<b>Visual Balance:</b>	Supports or Enhances			No effect		Somewhat disrupts		Substantially disrupts												
Notes: The balance of the landscape would be disrupted through the addition of the replacement visitor center, which would begin to tilt the balance toward recreation development instead of a balanced recreation/natural composition.																				
<b>Scale (size):</b>	Substantially smaller		Somewhat smaller		Comparable		Somewhat larger		Substantially larger											
Notes: The expansion of the KVC area, as a result of the project, would expand the area viewed as modified from this location. By keeping the structure height below the tree tops and maintaining vegetation screening, the apparent scale of the project would be reduced.																				
<b>Focal points:</b>	No effect			Somewhat distracts		Creates new focal point		Creates new dominant FP												
Notes: The addition of the replacement visitor center would add a second focal point while entering the parking lot. These features would be co-dominant in the setting.																				
<b>Continuity:</b>	no disruption			Noticeable but minor		Substantial														
Notes: Since about half of the project would occur within already cleared areas, the general continuity of the surrounding forest would be partially interrupted with the areas of removed forest becoming noticeable.																				
<b>Pattern:</b>	Enhances			No effect		Somewhat disrupts		Substantially disrupts												
Notes: fits within existing patterns <b>somewhat consistent with patterns</b> completely inconsistent with patterns																				
<b>Location in view:</b>	Periphery/Edge Left		Off center – left		Center		Off center right		Periphery/edge Right											
Notes: The project would be located on the right edge of the view with the adjacent existing KVC located on the left edge of the view.																				
<b>Other considerations:</b> Spatially, the design is very similar to how circulation currently works and the location of the building is line with the other building.																				
OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS																				
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial										
<b>OVERALL EFFECT.</b> Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?																				
OVERALL EFFECT ON SCENIC QUALITY																				
<b>Adverse:</b>	<b>High</b>			<b>Moderate</b>			<b>Low</b>			<b>No Effect</b>	<b>Low</b>			<b>Moderate</b>			<b>High</b>			: Beneficial
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	
VARIABLE FACTORS																				
<b>Lighting</b>	N/A																			
<b>Atmospheric conditions</b>	N/A																			
<b>Distance/backdrop</b>	The replacement visitor center would be visible within the foreground distance zone (0–0.5 mile).																			
<b>Viewing position</b>	Views would occur from a level viewing position.																			
<b>Backdrop</b>	By maintaining existing vegetation behind the replacement visitor center, it appears backdropped against the forest setting.																			
<b>View limiting factors – topography, vegetation etc.</b>	Maintaining existing vegetation, as well as planting additional plants between Crater Rim Drive and the replacement visitor center, would reduce the physical presence of the building by partially screening views similar to the existing KVC. This could include additional plantings to screen views of the solar panels proposed on the roof of the replacement visitor center.																			
<b>Other</b>	N/A																			

## CONSENSUS VISUAL CHANGE RECORD

**KOP/Viewpoint:** #3: Crater Rim Trail \_\_\_\_\_

**Date:** 2/8/2022 \_\_\_\_\_

**Evaluator:** Kevin Rauhe \_\_\_\_\_

**Time:** \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

COMPATIBILITY WITH LANDSCAPE CHARACTER										
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.										
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The removal of the HVO, Geochemistry Annex building, and Jaggar Museum would result in a more natural-appearing landscape. The redesigned berm would open up views of the existing restroom building, but its design is very compatible with the natural setting. Native plant revegetation will also occur and topography will be restored to how it looked prior to the buildings being constructed.										
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change						
Notes: Through removal of three buildings on the bluff, the landscape would appear less diverse. The existing and proposed features would appear grouped, away from the edge of Kilauea Crater.										
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: Removing the buildings restores much of the natural character of the area. The design of the replacement water tank would be incompatible with the natural setting but would be screened by the redesigned berm. The existing restroom would be visible, but its architectural style matches the design aesthetic of the park.										
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell						
Notes: Through the removal of the HVO, Geochemistry Annex, and Jaggar Museum, incompatible materials would be removed within this view. If visible, the replacement water tank, with its metal exterior, would appear incompatible with the natural setting mostly composed of rock and vegetation (wood).										
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N										
If so – describe:										
<b>Other considerations:</b> Painting the water tank a color that blends with the existing setting and increasing vegetation at the end of the berm would increase landscape compatibility of the Project. In addition, next time HVO staff paints the radio tower, they should use a color similar to the water tank (the replacement tank color, not existing color).										
OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	<b>: Beneficial</b>
CONTRAST OF VISUAL ELEMENTS										
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.										
<b>Project form contrast:</b>	None	Weak	Moderate	Strong						
Describe: The existing, blocky structures would be mostly removed by the Project, reducing contrast. The cylindrical form of the water tank would be screened from view by the redesigned berm with a portion of the blocky, existing restroom building being visible.										
<b>Project line contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> Breaks horizon The angular lines in the existing restroom building would repeat those angular lines in the existing landscape.										
<b>Project color contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The colors of the existing restroom building blend with the natural setting and in other locations, where the replacement water tank could be visible, it will be painted a darker, natural color to bring it into balance with the landscape.										
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong						
Describe: Removal of the HVO, Geochemistry Annex, and Jaggar Museum would greatly reduce the extent of incompatible coarse-textured elements in view, with only the existing radio tower and portion of the existing restroom building being visible from this location.										

**Other considerations:**  motion,  lights Effect of diffuse lighting along proposed overlooks would be minor considering other lighting sources in the area (e.g., vehicle headlights, flashlights, and at the existing restroom building). Lights currently are found in parking lot and along the trail to the overlook.

**OVERALL CONTRAST OF THE PROJECT'S VISUAL ELEMENTS**

<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial
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**CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS**

Assess the **contrast** of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,

<b>Visual Balance:</b>	Supports or Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: The Project would bring the setting more into balance through the removal of the HVO, Geochemistry Annex, and Jaggar Museum, which created a discordant landscape. Through redesign of the existing berm, the replacement water tank would be screened from view.

<b>Scale (size):</b>	Substantially smaller	Somewhat smaller	Comparable	Somewhat larger	Substantially larger
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Notes: The removal of structures, especially the two-story HVO, would bring development on the bluff more in scale with the natural setting.

<b>Focal points:</b>	No effect	Somewhat distracts	Creates new focal point	Creates new dominant FP
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Notes: While the existing restroom building may be visible from this location, the removal of three dominant structures on the bluff would allow the landscape to be the main focal point in the setting.

<b>Continuity:</b>	no disruption	Noticeable but minor	Substantial	
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Notes: The removal of structures on the bluff would help unify the landscape, resulting in increased continuity that was interrupted by the large structures in view. The design of existing restroom building is more in tune with the natural setting.

<b>Pattern:</b>	Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: fits within existing patterns **somewhat consistent with patterns** completely inconsistent with patterns

<b>Location in view:</b>	Periphery/Edge Left	Off center – left	Center	Off center right	Periphery/edge Right
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Notes: The removal of structures would occur in the center of the view.

**Other considerations:**

**OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS**

<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial
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**OVERALL EFFECT.** Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

**OVERALL EFFECT ON SCENIC QUALITY**

Adverse:	High			Moderate			Low			No Effect	Low			Moderate			High			: Beneficial
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	

**VARIABLE FACTORS**

<b>Lighting</b>	N/A
<b>Atmospheric conditions</b>	Views may be partially impeded by rain and clouds during heavy storms or other weather events.
<b>Distance/backdrop</b>	The proposed changes on Uēkahuna Bluff would occur within the foreground distance zone (0–0.5 mile).
<b>Viewing position</b>	The slightly inferior (looking up) view from this location would limit visibility of the proposed overlooks as any surface disturbance would be obstructed from view.
<b>Backdrop</b>	Removal of the HVO, Geochemistry Annex, and Jaggar Museum would reduce the extent of skylined structures in view as the existing restroom building would be backdropped by existing vegetation.
<b>View limiting factors – topography, vegetation etc.</b>	The existing berm would be shortened to fill in the foundations of structures on the bluff planned to be removed as a part of this Project, but would be kept enough to screen the water tank. The replacement water tank would be visible from other locations, but if colored appropriately, will not attract attention. To further reduce impacts on scenic quality, revegetation of 'ōhi'a trees or shrubs along the top and edge of the berm would screen views of the water tank from other locations on the bluff.
<b>Other</b>	N/A

CONSENSUS VISUAL CHANGE RECORD

KOP/Viewpoint: #4: Volcano House Overlook \_\_\_\_\_

Date: 2/8/2022 \_\_\_\_\_

Evaluator: Kevin Rauhe \_\_\_\_\_

Time: \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

COMPATIBILITY WITH LANDSCAPE CHARACTER				
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.				
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell
Notes: The removal of existing structures on Uēkahuna Bluff by the Project would improve the integrity of the area’s natural character through minimizing visibility of human-made modifications across Kīlauea Crater.				
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change
Notes: Similarly, the removal of the structures would eliminate incompatible geometric features on the bluff that conflicted with views toward Kīlauea Crater and Mauna Loa.				
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell
Notes: Through design of the project to blend with the existing terrain and the removal the two-story HVO, the project design would be compatible with the existing landscape character.				
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell
Notes: The use of lava rock and wood to construct the overlook on the bluff would be compatible with the existing landscape character as it would repeat the natural materials present in the setting.				
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N				
If so – describe:				
<b>Other considerations:</b>				
OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER				
<b>Adverse:</b>	Very High	High	Moderate	Low
			<b>No Effect</b>	Low
			Moderate	High
			Very High	<b>: Beneficial</b>

CONTRAST OF VISUAL ELEMENTS				
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.				
<b>Project form contrast:</b>	None	Weak	Moderate	Strong
Describe: The project would remove structures where the blocky form was incompatible with the existing setting. The low-lying form of the proposed overlook would blend with the existing setting.				
<b>Project line contrast:</b>	None	Weak	Moderate	Strong
Describe: <input type="checkbox"/> Breaks horizon The project would include removing structures on the bluff that had introduced incompatible lines in the landscape. The horizontal lines associated with the proposed overlook would blend with the existing setting.				
<b>Project color contrast:</b>	None	Weak	Moderate	Strong
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The project would remove structures that had a created weak color contrast with the existing setting from this distance. The natural materials proposed for the overlook would blend with the existing setting.				
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong
Describe: The project would remove structures that had introduced coarse-textured structures on the bluff. The texture of the proposed overlook would blend with the existing setting if they would follow existing contours and not include vertical elements.				
<b>Other considerations:</b> <input type="checkbox"/> motion, <input checked="" type="checkbox"/> lights Effect of diffuse lighting along proposed overlook would be minor considering other lighting sources in the area (e.g., vehicle headlights, flashlights, and lighting around the Volcano House) and lights would be amber and downward directed, so unlikely to be very visible from this location.				
OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS				

<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	<b>: Beneficial</b>
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**CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS**

Assess the **contrast** of the project’s spatial patterns such as continuity scale and balance with the existing view’s spatial patterns. Consider the project’s visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,

<b>Visual Balance:</b>	Supports or Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: By removing the structures on the bluff and designing the project to blend with the setting, the existing harmonious balanced landscape would be maintained and improved.

<b>Scale (size):</b>	Substantially smaller	Somewhat smaller	Comparable	Somewhat larger	Substantially larger
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Notes: Since the proposed facilities would be smaller in footprint and in height than the existing structures, the project would reduce the extent of landscape modifications in the view, creating a more harmonious setting.

<b>Focal points:</b>	No effect	Somewhat distracts	Creates new focal point	Creates new dominant FP
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Notes: By removing one of the focal points in the landscape (visible structures on the Uēkahuna Bluff), views will now focus on the two natural focal points in the landscape (Kīlauea Crater and Mauna Loa). A positive effect—people would view the whole natural landscape.

<b>Continuity:</b>	no disruption	Noticeable but minor	Substantial	
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Notes: The natural continuity of the landscape would be improved by the removal of structures and through thoughtful design of the proposed overlook.

<b>Pattern:</b>	Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: **fits within existing patterns** somewhat consistent with patterns completely inconsistent with patterns

<b>Location in view:</b>	Periphery/Edge Left	Off center – left	Center	Off center right	Periphery/edge Right
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Notes: Both the proposed overlook and removed structures are located on Uēkahuna Bluff, a high point, which attracts additional attention in the viewshed. By limiting disturbance at this focal point, the overall setting will appear more natural.

**Other considerations:**

**OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS**

<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	<b>: Beneficial</b>
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**OVERALL EFFECT.** Considering the project’s visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

**OVERALL EFFECT ON SCENIC QUALITY**

Adverse:	High			Moderate			Low			No Effect	Low			Moderate			High			: Beneficial
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	

**VARIABLE FACTORS**

<b>Lighting</b>	N/A
<b>Atmospheric conditions</b>	Views across the caldera are often impeded by rain and clouds, which limit visibility of Uēkahuna Bluff. When clouds are located between the bluff and Mauna Loa, the existing radio tower is more visually apparent as it appears skylined without the complex backdropping of Mauna Loa to allow its lattice design to blend in with the natural setting.
<b>Distance/backdrop</b>	Views of Uēkahuna Bluff occur from approximately 2 miles away (middle ground) backdropped against the distant Mauna Loa.
<b>Viewing position</b>	The level to slightly inferior (looking up) view from this location would further limit visibility of the proposed overlook as any surface disturbance would be obstructed from view.
<b>Backdrop</b>	The removed structures and proposed overlooks are backdropped by the massive form of Mauna Loa.
<b>View limiting factors – topography, vegetation etc.</b>	N/A
<b>Other</b>	Project will restore the natural view, and the summit is culturally significant, so returning to a more natural state is highly beneficial to the cultural landscape.

**CONSENSUS VISUAL CHANGE RECORD**

**KOP/Viewpoint:** #5 – Crater Rim Drive West of Kīlauea Visitor Center \_\_\_\_\_ **Date:** 2/8/2022 \_\_\_\_\_

**Evaluator:** Kevin Rauhe \_\_\_\_\_ **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

<b>COMPATIBILITY WITH LANDSCAPE CHARACTER</b>										
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.										
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The portion of the replacement visitor center visible from this location mimics the existing KVC, maintaining the natural developed character type of this area.										
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change						
Notes: The replacement visitor center would minimally add to landscape diversity viewed from this location as the architectural style is similar to the existing KVC and would not introduce incompatible features.										
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell						
Notes: The sloping roofline of the replacement visitor center mimics the roof design of the existing KVC, which is the main proposed component visible from this area.										
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell						
Notes: The color of the proposed roof is similar to the existing KVC, with its natural color blending with the existing setting.										
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N										
If so – describe:										
<b>Other considerations:</b>										
<b>OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER</b>										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial

<b>CONTRAST OF VISUAL ELEMENTS</b>										
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.										
<b>Project form contrast:</b>	None	Weak	Moderate	Strong						
Describe: The blocky form of the replacement visitor center would be similar to the existing KVC and other structures visible from this location. The geometric form of the solar panels may be apparent but does not attract attention from this location.										
<b>Project line contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> Breaks horizon The angular rooflines mimic those found in the existing KVC and other structures visible from this location.										
<b>Project color contrast:</b>	None	Weak	Moderate	Strong						
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The roof color is similar to the existing KVC with its natural hue matching adjacent structures.										
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong						
Describe: The rough textures introduced by the existing KVC are repeated in the replacement visitor center except the new structure would not include additional vertical protrusions (e.g., chimneys).										
<b>Other considerations:</b> <input type="checkbox"/> motion, <input checked="" type="checkbox"/> lights Proposed lighting for the replacement visitor center and parking area would be consistent with the lighting currently present at the existing KVC.										
<b>OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS</b>										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial

**CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS**

Assess the <b>contrast</b> of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,										
<b>Visual Balance:</b>	Supports or Enhances			No effect			Somewhat disrupts		Substantially disrupts	
Notes: The introduction of the replacement visitor center would have minimal effect on the balance of this landscape, as the building would blend with the existing forest and existing KVC.										
<b>Scale (size):</b>	Substantially smaller			Somewhat smaller			Comparable		Somewhat larger	
Notes: Since the replacement visitor center would be shorter than the existing trees and is partially screened from view, the scale of the project is comparable to the existing setting and structures.										
<b>Focal points:</b>	No effect			Somewhat distracts			Creates new focal point		Creates new dominant FP	
Notes: The addition of the replacement visitor center would extend the focal point associated with the existing KVC but would minimally distract views from this location.										
<b>Continuity:</b>	no disruption			Noticeable but minor			Substantial			
Notes: Since the replacement visitor center would be partially screened from view, it would minimally affect the landscape's continuity. The existing clearings would be expanded to contain the expanded parking lot, but this would not be visible from this location.										
<b>Pattern:</b>	Enhances			No effect			Somewhat disrupts		Substantially disrupts	
Notes: fits within existing patterns                      somewhat consistent with patterns                      completely inconsistent with patterns										
<b>Location in view:</b>	Periphery/Edge Left			Off center – left			Center		Off center right	
Notes: The project would be located in the center part of the view adjacent to the existing KVC.										
<b>Other considerations:</b>										
<b>OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS</b>										
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial

**OVERALL EFFECT.** Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

<b>OVERALL EFFECT ON SCENIC QUALITY</b>																					
<b>Adverse:</b>	High			Moderate			Low			No Effect	Low			Moderate			High			: Beneficial	
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-		
<b>VARIABLE FACTORS</b>																					
<b>Lighting</b>	There could be more lighting evident, but the lights will be amber and downward directed, so should not attract much attention.																				
<b>Atmospheric conditions</b>	N/A																				
<b>Distance/backdrop</b>	The replacement visitor center would be visible within the foreground distance zone (0–0.5 mile).																				
<b>Viewing position</b>	Views would occur from a level viewing position.																				
<b>Backdrop</b>	By maintaining existing vegetation behind the replacement visitor center, it appears backdropped against the forest setting.																				
<b>View limiting factors – topography, vegetation etc.</b>	The parking area between the viewpoint and the replacement visitor center is often very busy (as shown in the simulation), therefore views of the replacement visitor center would typically be partially screened from view by vehicles.																				
<b>Other</b>	N/A																				

**CONSENSUS VISUAL CHANGE RECORD**

**KOP/Viewpoint:** #6 – Crater Rim Drive toward KMC and historic ball field \_\_\_\_\_ **Date:** 2/8/2022 \_\_\_\_\_

**Evaluator:** Kevin Rauhe \_\_\_\_\_ **Time:** \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

<b>COMPATIBILITY WITH LANDSCAPE CHARACTER</b>										
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.										
<b>Compatibility with Landscape Character</b>	Not at all compatible		Somewhat compatible		Very compatible		Can’t really tell			
Notes: Since the dense forest would screen the proposed USGS field station from view, the project would appear compatible with the existing landscape character. Two simulation overlays, from different locations, were completed, confirming the project would not be visible in the larger openings along the roadway.										
<b>Compatibility with Landscape Diversity</b>	Not compatible		Somewhat compatible		Compatible		Little change			
Notes: The uniform landscape diversity, defined by the dense forest and roadway, would not be impacted by the project since the proposed USGS field station would be screened from view.										
<b>Project Design/Style</b>	Not at all compatible		Somewhat compatible		Very compatible		Can’t really tell			
Notes: The dense forest would screen views of the proposed USGS field station and its design.										
<b>Project materials</b>	Not at all compatible		Somewhat compatible		Very Compatible		Can’t really tell			
Notes: If there are small gaps within the dense forest canopy along the road, the dark colors proposed for the USGS field station would not attract attention from the roadway.										
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N										
If so – describe:										
<b>Other considerations:</b>										
<b>OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER</b>										
<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	: <b>Beneficial</b>

<b>CONTRAST OF VISUAL ELEMENTS</b>										
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.										
<b>Project form contrast:</b>	None		Weak		Moderate		Strong			
Describe: The form of the proposed USGS field station would not be visible from this location.										
<b>Project line contrast:</b>	None		Weak		Moderate		Strong			
Describe: <input type="checkbox"/> Breaks horizon Since the proposed USGS field station would be screened from view, lines associated with the building would not be visible.										
<b>Project color contrast:</b>	None		Weak		Moderate		Strong			
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The dark colors proposed for the USGS field station would blend with the forest setting even if there are small gaps in the forest where glimpses of a piece of the station may occur.										
<b>Project texture contrast:</b>	None		Weak		Moderate		Strong			
Describe: Since the proposed USGS field station would not be visible from this location, textures would not be apparent.										
<b>Other considerations:</b> <input type="checkbox"/> motion, <input type="checkbox"/> lights										
<b>OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS</b>										
<b>Adverse:</b>	Very High	High	Moderate	Low	<b>No Effect</b>	Low	Moderate	High	Very High	: <b>Beneficial</b>

**CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS**

Assess the **contrast** of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,

<b>Visual Balance:</b>	Supports or Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: The project would not modify the landscape's visual balance since the USGS field station would be screened from view.

<b>Scale (size):</b>	Substantially smaller	Somewhat smaller	Comparable	Somewhat larger	Substantially larger
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Notes: With views of the proposed USGS field station screened by vegetation, the scale of the project would be comparable to the existing setting.

<b>Focal points:</b>	No effect	Somewhat distracts	Creates new focal point	Creates new dominant FP
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Notes: Since the proposed USGS field station would be screened by vegetation, it would not modify existing focal points in the landscape.

<b>Continuity:</b>	no disruption	Noticeable but minor	Substantial	
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Notes: The continuity of the landscape would remain intact as the proposed USGS field station would not be visible.

<b>Pattern:</b>	Enhances	No effect	Somewhat disrupts	Substantially disrupts
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Notes: fits within existing patterns                      somewhat consistent with patterns                      completely inconsistent with patterns

<b>Location in view:</b>	Periphery/Edge Left	Off center – left	Center	Off center right	Periphery/edge Right
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Notes: If visible, the project would appear off center—left as viewed from a driver's perspective.

**Other considerations:**

**OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS**

<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial
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**OVERALL EFFECT.** Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

**OVERALL EFFECT ON SCENIC QUALITY**

<b>Adverse:</b>	<b>High</b>			<b>Moderate</b>			<b>Low</b>			<b>No Effect</b>	<b>Low</b>			<b>Moderate</b>			<b>High</b>			<b>: Beneficial</b>
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	

**VARIABLE FACTORS**

<b>Lighting</b>	N/A
<b>Atmospheric conditions</b>	N/A
<b>Distance/backdrop</b>	The proposed USGS field station would be located within the foreground distance zone (0–0.5 mile).
<b>Viewing position</b>	Views would occur from a level viewing position.
<b>Backdrop</b>	N/A
<b>View limiting factors – topography, vegetation etc.</b>	The dense forest adjacent to Crater Rim Drive would screen views of the proposed USGS field station. Maintaining this level of vegetation screening over the long term is essential to avoid impacts in the future from this location.
<b>Other</b>	N/A

CONSENSUS VISUAL CHANGE RECORD

KOP/Viewpoint: #7 – Kilauea Military Camp \_\_\_\_\_

Date: 2/8/2022 \_\_\_\_\_

Evaluator: Kevin Rauhe \_\_\_\_\_

Time: \_\_\_\_\_

**INSTRUCTIONS.** Then assess the details of the potential effects on scenic quality. The effect on scenic quality is influenced by three factors: **Compatibility** with existing landscape character, **contrast** of the project’s visual elements with the existing landscape and the **compatibility** of the project with the spatial patterns and composition of the existing landscape. First, assess each component according and provide a brief explanation for your choice. Then use the scale to evaluate the effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?

COMPATIBILITY WITH LANDSCAPE CHARACTER				
Assess the <b>compatibility</b> (e.g., fit, intactness) of the <b>project’s character</b> with the existing landscape character. Consider if the project seems appropriate for the landscape character; if any existing landscape elements might be affected; and if the landscape character actually might change.				
<b>Compatibility with Landscape Character</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell
Notes: The proposed field station would generally be compatible with the existing setting as there are several eras of existing buildings, including a large maintenance facility, adjacent to the proposed field station. The more modern design of the field station would be somewhat compatible with the existing structures and setting.				
<b>Compatibility with Landscape Diversity</b>	Not compatible	Somewhat compatible	Compatible	Little change
Notes: By not removing additional vegetation in front of, behind, and adjacent to the field station, the diversity of landscape features would be mostly maintained. The introduction of the split-gable roof of the field station would introduce features not currently in the landscape but that are found on other buildings in the park.				
<b>Project Design/Style</b>	Not at all compatible	Somewhat compatible	Very compatible	Can’t really tell
Notes: The modern design of the field station would be incompatible with the historic KMC but since there is an existing maintenance facility with a large warehouse in view (partially screened), and the field station would be partially screened from view, its effect would be reduced to being somewhat compatible with the setting. The low, lava rock wall would be similar to other lava rock walls and columns in the park.				
<b>Project materials</b>	Not at all compatible	Somewhat compatible	Very Compatible	Can’t really tell
Notes: The use of fiber cement siding, with texture to mimic wood, will be painted brown to match other buildings in HAVO. The proposed lava rock foundation and wall matches the typical dark-colored lava rock used on other park buildings.				
<b>Would any existing landscape features be affected such as removed, concealed or damaged in some way?</b> <input type="checkbox"/> Y <input checked="" type="checkbox"/> N				
If so – describe:				
<b>Other considerations:</b>				
OVERALL COMPATIBILITY OF PROJECT WITH EXISTING LANDSCAPE CHARACTER				
<b>Adverse:</b>	Very High	High	Moderate	Low
			<b>No Effect</b>	Low
			Moderate	High
			Very High	<b>: Beneficial</b>

CONTRAST OF VISUAL ELEMENTS				
Assess the <b>contrast</b> of the <b>project’s visual elements</b> (i.e., form, line, color and texture) with the existing view’s visual elements. Consider how visually prominent the project will be through the introduction of, bold lines, forms & textures, intense colors, and contrasting motions or bright or flashing lights.				
<b>Project form contrast:</b>	None	Weak	Moderate	Strong
Describe: The blocky, pyramidal form of the USGS field station from this viewpoint would contrast with the existing structures in KMC. By maintaining existing vegetation around the proposed field station, the form is somewhat obscured limiting the level of contrast.				
<b>Project line contrast:</b>	None	Weak	Moderate	Strong
Describe: <input type="checkbox"/> Breaks horizon The diagonal split-gable roof lines would be noticeable from this viewpoint, as the more modern architecture contrasts with the existing historic structures.				
<b>Project color contrast:</b>	None	Weak	Moderate	Strong
Describe: <input type="checkbox"/> unpleasant contrast/colors clash, <input type="checkbox"/> pleasing color contrast The dark siding, dark foundation rock, and lava rock wall blend with the setting.				
<b>Project texture contrast:</b>	None	Weak	Moderate	Strong
Describe: The coarser texture of the split gable roofline contrasts with the nearby historic structures, which have more simple gable rooflines.				
<b>Other considerations:</b> <input type="checkbox"/> motion, <input checked="" type="checkbox"/> lights    The effect of diffuse lighting around the proposed USGS field station would be consistent with the existing lighting in KMC.				
OVERALL CONTRAST OF THE PROJECT’S VISUAL ELEMENTS				
<b>Adverse:</b>	Very High	High	Moderate	Low
			<b>No Effect</b>	Low
			Moderate	High
			Very High	<b>: Beneficial</b>

CONTRAST WITH SPATIAL COMPOSITION AND PATTERNS																				
Assess the <b>contrast</b> of the project's spatial patterns such as continuity scale and balance with the existing view's spatial patterns. Consider the project's visual relation to changes to the visual balance, scale of other elements, location in the view and spatial relationship to focal points, continuity/coherence of the view, as well as the other spatial pattern elements,																				
<b>Visual Balance:</b>	Supports or Enhances			No effect		Somewhat disrupts		Substantially disrupts												
Notes: Since there are several eras of buildings in the KMC, the introduction of the USGS field station may disrupt the visual balance created by the historic structures in the KMC. Since existing vegetation would obscure views of the more modern field station, these effects would be reduced to "somewhat disrupts."																				
<b>Scale (size):</b>	Substantially smaller		Somewhat smaller		Comparable		Somewhat larger		Substantially larger											
Notes: The height of the proposed USGS field station would make it taller than most of the existing structures in KMC and more similar in scale to the maintenance facilities (mostly screened from view). The existing vegetation, screening views of the Project, would reduce the apparent scale of the field station and therefore reduce its visual influence on KMC.																				
<b>Focal points:</b>	No effect			Somewhat distracts		Creates new focal point		Creates new dominant FP												
Notes: Along the western edge of the KMC, the presence of the USGS field station would begin to draw attention, but since the existing vegetation would partially obscure its form, it would not create a new focal point in the landscape.																				
<b>Continuity:</b>	no disruption			Noticeable but minor		Substantial														
Notes: The field station would be noticeable but also partially screened by vegetation as well as being backdropped by existing vegetation. By maintaining the continuous forest setting from this viewpoint, the field station would begin to blend with the setting.																				
<b>Pattern:</b>	Enhances			No effect		Somewhat disrupts		Substantially disrupts												
Notes: fits within existing patterns <b>somewhat consistent with patterns</b> completely inconsistent with patterns																				
<b>Location in view:</b>	Periphery/Edge Left		Off center – left		Center		Off center right		Periphery/edge Right											
Notes: The proposed USGS field station would be located in the center part of the view from this area. Through maintaining existing vegetation in the area, the visible extent of modifications proposed by the Project are reduced.																				
<b>Other considerations:</b>																				
OVERALL COMPATIBILITY OF PROJECT WITH SPATIAL COMPOSITION AND PATTERNS																				
<b>Adverse:</b>	Very High	High	Moderate	Low	No Effect	Low	Moderate	High	Very High	: Beneficial										
<b>OVERALL EFFECT.</b> Considering the project's visual effects described above, assess the visual effect to scenic quality as a whole. It is not expected that this is simply the sum of the above ratings, but will require thoughtful consideration and judgement. Use this scale to evaluate the overall effect: (1.) Is the effect Adverse or Beneficial, or is there No Effect? (2.) Is the effect Low, Moderate or High?																				
OVERALL EFFECT ON SCENIC QUALITY																				
<b>Adverse:</b>	<b>High</b>			<b>Moderate</b>			<b>Low</b>			<b>No Effect</b>	<b>Low</b>			<b>Moderate</b>			<b>High</b>			: Beneficial
	+	...	-	+	...	-	+	...	-		+	...	-	+	...	-	+	...	-	
VARIABLE FACTORS																				
<b>Lighting</b>	N/A																			
<b>Atmospheric conditions</b>	N/A																			
<b>Distance/backdrop</b>	The proposed USGS field station would be visible within the foreground distance zone (0–0.5 mile).																			
<b>Viewing position</b>	Views would occur from a level viewing position.																			
<b>Backdrop</b>	By maintaining existing vegetation behind the proposed USGS field station, it appears backdropped against the forest setting.																			
<b>View limiting factors – topography, vegetation etc.</b>	Maintaining existing vegetation in front of the proposed USGS field station would partially screen views of the structures and associated infrastructure.																			
<b>Other</b>	Having contrast between this building and the others in KMC is good to provide that delineation. The building's impact will be mitigated by using brown colors for walls, darker rock color, keeping the building below the treetops, and planting vegetation as needed to help screen the building.																			

Appendix E  
Programmatic Agreement



DRAFT PROGRAMMATIC AGREEMENT  
AMONG THE  
NATIONAL PARK SERVICE HAWAI'I VOLCANOES NATIONAL PARK; U.S.  
GEOLOGICAL SURVEY; HAWAI'I STATE HISTORIC PRESERVATION OFFICER;  
AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION;  
REGARDING  
Disaster Recovery at Hawai'i Volcanoes National Park Post-2018

WHEREAS, in May 2018, the Hawai'i Volcanoes National Park (HAVO), administered by the National Park Service (NPS), and Kīlauea summit underwent a major change as magma drained from the chamber beneath Halema'uma'u crater, and the caldera began to collapse, triggering 60,000 earthquakes and clouds of rock and ash that did not cease until early August. Strong seismic activity continued through the summer and was primarily centered on the crater and significantly damage buildings in the immediate vicinity on Uēkahuna Bluff, including Jaggar Museum (an NPS visitor center) and the Reginald T. Okamura (Okamura) Building and the adjacent Geochemistry Annex (Annex) building (both operated by the U.S. Geological Survey [USGS] Hawaiian Volcano Observatory [HVO] as research facilities), resulting in the current closure of the area; and

WHEREAS, the NPS proposes to address the damage to visitor and scientific facilities through the relocation of services and the demolition of damaged structures, which constitutes an undertaking subject to the requirements of Section 106 of the National Historic Preservation Act (NHPA) (54 United States Code 306108); and

WHEREAS, the elements of the project, which will all occur within the summit area of Hawai'i Volcanoes National Park, include 1) demolishing the damage facilities (the Jaggar Museum, the Okamura building and the Annex building), installing an unimproved trail section along the caldera edge from the viewing platform to the north to connect back to the paved Crater Rim Trail just before the triangulation marker which will require removing an eight foot section of the non-historic 1986 viewing platform wall addition, and repairing visitor use amenities at Uēkahuna, 2) replacing the HVO research facilities with a new field station adjacent to the historic ball field at the Kilauea Military Camp (KMC), 3) replacing the visitor center function with a new building next to the Kīlauea Visitor Center (KVC), 4) realigning Crater Rim Drive (CRD) at the park entrance to follow a previous (pre-1963) alignment to improve visitor safety, with the addition of a new access road to the proposed new visitor center and the introduction of a roundabout, and 5); deconstructing the following three buildings in the Resources Management (RM) complex: building 217 - the Vegetation Management office (built post-1978), building 321 - the turtle office (built post 1988), and B322 Resource Management Administration office (built post 1988); and

WHEREAS, the NPS and the USGS are each responsible for actions as part of the disaster recovery effort, with the USGS responsible for funding and building the new HVO field station and the NPS responsible for funding and building/deconstructing the remainder of the project, and the USGS and the NPS agree that the NPS will be the lead agency for purposes of Section 106; and

WHEREAS, the NPS has determined that the undertaking may have an adverse effect on historic properties, including the Kīlauea summit area; the Crater Rim Historic District, the KMC Historic District; and the Kīlauea Administration and Employee Housing Historic District, TMK: (3) 9-9001:001 Kapāpala, Ka‘ū, Hawai‘i; and

WHEREAS, the NPS has consulted with the Hawai‘i State Historic Preservation Officer (SHPO) to identify the area of potential effects (APE) and historic properties within the APE (Appendix A); and

WHEREAS, the NPS has invited the Advisory Council on Historic Preservation (ACHP) to participate in the development of this Agreement, and the ACHP has agreed to participate; and

WHEREAS, the NPS has invited the Historic Hawai‘i Foundation (HHF) to participate in the development of this Agreement, and HHF has agreed to participate as a Concurring Party; and

WHEREAS, the NPS sent the Office of Hawaiian Affairs (OHA) information on the proposed project in May 2020, but no response was received. An OHA representative has attended many of the regularly occurring Kūpuna group meetings disclosed in Appendix B, Number 7; and

WHEREAS, the NPS sent letters to additional Native Hawaiian Organizations (NHOs) on the U.S. Department of the Interior (DOI) List of Native Hawaiian Organizations, Native Hawaiian individuals, and the HAVO Kūpuna group, providing information on the proposed project in May 2020. The Kūpuna group consists of NHOs, Native Hawaiian individuals, and select individuals with institutional knowledge of Hawai‘i Volcanoes National Park. The NPS continues to engage the HAVO Kūpuna group regarding this undertaking during regularly occurring consultation meetings; and

WHEREAS, the NPS informed the general public through a document distributed in May 2020 that presented the actions and alternatives to be considered. The public also had an opportunity to comment on this Agreement through a posting on the NPS’ Planning, Environment and Public Comment (PEPC) website during the period of July 1 through July 31, 2022; and

WHEREAS, maps of the APE are provided in Appendix A. The APE includes park entry points, where the road will be widened and a vehicle calming feature introduced on CRD between the current entrance off of Highway 11 and the KVC parking area (17.78 acres); a portion of the Kīlauea Administration and Employee Housing Historic District (approximately 1.94 acres); the KMC ball field (1.56 acres) and its access point; the summit area of Jaggar Museum with its associated buildings—the Annex building and the newer Okamura building adjacent to the existing comfort station (approximately 2.4 acres of disturbance with buffer); and, finally, the Resources Management area (approximately 0.36 acres). The total area of the APE is ~ 24.04 acres; and

WHEREAS, the NPS has determined that it is appropriate to develop a Programmatic Agreement (Agreement) in accordance with 36 Code of Federal Regulations (CFR) § 800.14(b), including 800.14(b)(1)(ii), which recognizes that a Programmatic Agreement may be used when effects on historic properties cannot be fully determined prior to approval of an undertaking; and

NOW, THEREFORE, the NPS, USGS, SHPO, and ACHP mutually agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

## STIPULATIONS

The NPS and USGS shall ensure that the following measures are carried out:

### CONSULTING PARTIES

In accordance with 36 CFR § 800.3(c) (3), should the NPS receive written requests of individuals and organizations to participate as Consulting Parties during the term of this Agreement, the NPS shall consider each request and, in consultation with the SHPO, identify additional Consulting Parties.

The NPS will provide the Consulting Parties with the address and contact information for the individual/office within the NPS that will receive comments under this Agreement.

The NPS will maintain a list of Consulting Party contacts and will provide this list to the SHPO and other Consulting Parties upon request and in its annual reporting under this Agreement.

### MEASURES TO AVOID, MINIMIZE, OR MITIGATE ADVERSE EFFECTS ON HISTORIC PROPERTIES

The NPS will perform the following measures to avoid, minimize, and mitigate adverse effects on historic properties.

#### I. Research and Documentation

##### A. National Registers of Historic Places

The NPS shall complete the following National Register of Historic Places (National Register) nominations:

- i. An updated Crater Rim Historic District nomination, to incorporate historic resources identified in the 2006 Crater Rim Historic District Cultural Landscape Inventory (CLI) report, the 2009 Hawai'i Register of Historic Places listed Crater Rim Drive Historic District, and the 2007 Crater Rim Drive Historic District National Register nomination, and to reflect changed conditions as a result of the 2018 eruption and the Disaster Recovery project, including an evaluation of the park's RM complex, and any changes subsequent to the original drafting of the CLI and National Register Nomination;
- ii. *A Kīlauea Administrative and Employee Housing Historic District* nomination, based primarily on the Cultural Landscape Inventory report prepared in 2006. The nomination will reflect changes to the conditions of the district as a result of the Disaster Recovery project.

1. The preparation of these two nominations will begin upon execution of this Agreement and shall be conducted by or under the supervision of individuals who meet the Secretary of the Interior's (SOI) Professional Qualifications Standards for history or architectural history (36 CFR § 61).
  2. Within 5 years of the execution of this Agreement, the NPS shall provide copies of each draft nomination to the SHPO, ACHP, and the Consulting Parties for a 30-calendar day review and comment period, subject to restrictions on sensitive information in accordance with NHPA Section 304.
- B. The NPS shall take all comments into consideration, finalize the revised nominations, and submit the nominations for listing on the National Register of Historic Places in accordance with 36 CFR § 60 within six months of receiving comments on the first draft. Traditional Cultural Properties

The NPS shall conduct a Traditional Cultural Property (TCP) study to document the ethnographic significance of HAVO, including the Kīlauea Summit and Caldera. The documentation shall focus on Pelehonuamea and her physical representations within the park.

- i. The TCP study shall result in a report.
  1. The TCP study will employ best practices in ethnographic research guided by NPS Director's Order-28, National Register Bulletin 38, and the Hawai'i State Ethnographic Inventory Guidelines where applicable.
  2. The TCP study methods will be developed in cooperation with Native Hawaiian individuals and NHOs, including the HAVO Kūpuna group, and the SHPO. NPS will begin developing methods upon the execution of this Agreement and shall provide a draft of the proposed methods within 30 days of the execution of this Agreement for a 30-calendar day review and comment period to all of the Consulting Parties and the Native Hawaiian participants. Should parties disagree on the proposed methods, the NPS shall take into consideration comments received, distribute revised proposed methods, and provide all above parties an additional 30-calendar day review and comment period.
  3. Following the review and comment period, the NPS will begin developing the TCP study report and shall provide copies of the draft TCP study report to the SHPO, ACHP, and all of the Consulting Parties within two years and six months of the execution of the Agreement for a 60-calendar day review and comment period.
  4. The NPS shall take all comments into consideration, discussing with the Consulting Parties as needed, and finalize the TCP study report within 120 calendar days of the Consulting Parties review and comment period.
  5. The NPS shall provide copies of the final TCP study report to all of the Consulting parties upon request.
- ii. Following the finalization of the TCP study report, NPS will begin preparing a draft NRHP nomination for all TCPs identified within HAVO based on the TCP study report findings.

1. The NPS shall provide copies of the draft nomination to the SHPO, ACHP, and all Consulting Parties within 3 years of the finalization of the TCP study report for a 60- calendar day review and comment period, subject to restrictions on sensitive information in accordance with NHPA Section 304.
2. The NPS shall take all comments into consideration, discussing with the consulting parties as needed, and finalize the nomination within a 120-calendar day period.
3. Upon completion of the nomination, the NPS shall submit the nomination to the for listing on the National Register of Historic Places in accordance with 36 CFR § 60.

C. Historic American Landscape Survey

Upon execution of this agreement, the NPS will begin documenting the existing landscape at the Kīlauea summit, including buildings and structures that will be removed from the summit area. This documentation will be included in a Historic American Landscapes Survey (HALS) documentation package that will meet NPS HALS documentation requirements. The details of the history of landscape change, including building changes and the viewing platform at the summit, will be covered in the HALS documentation.

- 1 The NPS will provide a copy of the completed HALS documentation package to the Consulting Parties within 15 months of the execution of this agreement for a 30-calendar day review and comment period.
- 2 The NPS will take into account any comments provided by the Consulting Parties within the review and comment period. NPS shall finalize the HALS documentation package within 18 months of the execution of this agreement will submit it to the Regional NPS Heritage Documentation Programs (HDP). The NPS shall provide copies of the final HALS documentation package to the Consulting Parties upon request.
- 3 The NPS shall not initiate demolition of infrastructure at the Kīlauea summit until the HDP accepts the HALS documentation package by the HDP and provide copies of the acceptance letter to the Consulting Parties. Additionally, copies of the written acceptance and final HALS documentation shall be provided to SHPD via HICRIS Project Number 2021PR00143.

II. Project Review and Design Standards

A. Design Standards for New Construction

In keeping with the intent of the SOI's Standards for Rehabilitation (36 CFR § 67.7), the NPS and USGS shall ensure that new construction in historic districts is differentiated from old construction and is compatible in massing, size, scale, and architectural features to protect the historic integrity of the district and its environment. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic district and its environment would be unimpaired.

The NPS and USGS shall ensure that new construction and building design elements are guided by the draft design documents that have been created for this project (will be included Appendix D of this PA when complete). This may include the façade of mortared stone

building elements, horizontal wooden siding, wood-framed windows, and double-hung casement windows. The reuse of on-site (from within HAVO) and similar building elements is to be encouraged. Appendix C includes the material sample boards that reflect the materials chosen for the design standards.

## B. Project Design Review

1. For the new construction, the NPS and USGS provided 60% design plans to the Consulting Parties on January 28, 2022. The NPS and USGS provided 90% design plans to the Consulting Parties on June 10, 2022. Consulting Parties had a 14-calendar day review and comment period for both the 60% and the 90% design plans. The material sample boards were provided to the Consulting parties for review on May 17th, 2022.
2. The NPS and USGS shall take all comments into consideration in finalizing the design plans. If the NPS and/or USGS make substantive changes from the 90% design plans in finalizing the design, the NPS will provide the final design plans to all Consulting Parties for an additional 14-calendar day review and comment period and take into consideration any major comments about substantive changes in finalizing the design.
3. The NPS and USGS shall take all comments from the final review and comment period into consideration when finalizing the design and will notify the Consulting Parties if there are substantive changes during construction such as those that effect siting, footprint, massing, materials, and other major components of design including substantive architectural detailing or substantive landscape changes.

## C. Salvage and Reuse of Historic Materials

The NPS and USGS shall ensure that, to the extent that it is feasible to do so, decorative stone removed from the summit buildings will be used in new construction of the overlook area and the replacement Visitor Center. The reuse of materials shall be identified in the design documents provided to Consulting Parties.

The NPS shall ensure that some of the existing berm material at the summit area is used to fill the Okamura Building site for the top several feet of fill. The crater end of the berm is to be used for approximately 1,200 cubic yards up to the location of the existing Radio Building and tower. A portion of the berm will remain to minimize the visibility of the water tank, Radio Building, and tower from various locations. The remaining portion of needed fill will come from sources found within the park that were left over from previous projects. The reuse of material shall be identified in the design documents provided to the Consulting Parties.

The NPS shall ensure that the proposal to expand the viewing platform at the summit area will include the footprint of the former Jaggar Museum. The expanded overlook platform surface will be asphalt, and there will be a one-foot-wide band of concrete to represent the former outline of the Jaggar Museum footprint.

#### D. Preservation and Adaptive Reuse of Historic Buildings

The NPS shall ensure that the 1941 Kīlauea Visitor Center Building remains an active facility throughout the construction period. Use of the building will continue, as the auditorium will remain a vital part of the proposed new facilities. Protection of the older building has been considered through the following action: the original space around this and any new buildings will have vegetated islands as a buffer to create a separation between the landscape and the proposed parking areas. Also, any alternate use or rehabilitation of this building will be subject to a future separate NHPA Section 106 consultation.

#### E. Deconstruction of Three Non-historic Temporary Buildings in the Resource Management Complex

The following three non-historic buildings in the Resources Management complex: building 217 - the Vegetation Management office (built post-1978), building 321 - the Turtle Program office (built post 1988), and B322 Resources Management Administration office (built post 1988) are proposed to be deconstructed. The Resources Management complex will be assessed for National Register eligibility in the Crater Rim Historic District National Register update. If the nomination, after review by the consulting parties, shows buildings 217 Vegetation Management Office, building 321 Turtle Program office and B322 Resources Management Administration office in the Resources Management area to be ineligible on their own or as non-contributing features of the larger complex, the deconstruction can continue without further Section 106 review. If the nomination shows that the buildings or the larger complex are eligible, further consultation would be required.

### **UNANTICIPATED DISCOVERIES OR OTHER ACTIONS THAT ARE RELATED TO NEW CONSTRUCTION ACTIVITIES**

#### I. Monitoring of Ground Disturbing Activities

- A. The NPS and USGS shall include the following provisions in construction permits for the treatment of unanticipated archeological discoveries, including human remains, during deconstruction, excavation, new construction, or other ground-disturbing activities within the APE.

“In the event that a previously unidentified archeological resource(s) is discovered during project activities, construction personnel shall immediately halt all ground-disturbing activities in the area of the resource(s) and in the surrounding area (within 50 meters) where further subsurface remains can reasonably be expected to occur, and they shall immediately notify the NPS.

A qualified Archeological Monitor will be available for approved work at the various construction sites, including, but not limited to, the Uēkahuna Bluff area, the designated location adjacent to the existing Kīlauea Visitor Center, the design construction site adjacent to Kilauea Military Camp; and the construction site associated with the changes to the Crater Rim Drive entry, including the realignment, widening, creation of a spur road into the new parking area and a

roundabout as approved. NPS shall conduct archeological monitoring as needed for ground disturbing activities in these areas including, but not limited, to the following:

- Revegetation
- Soil preparation
- Utility installation
- Foundation excavation and filling (Okamura Building)
- Road/parking/site flatwork grading and subgrade preparation
- Construction staging areas yet to be determined. (These locations are to be primarily on previously disturbed lands and will likely be within existing parking areas.)”

## II. Post Construction Reports

All projects will have an archaeological monitoring report that will be completed within 90 calendar days of the completion of all construction activity requiring archaeological monitoring. The NPS shall ensure that an archaeological monitoring report is prepared for each project. The NPS will submit a copy of each report to the SHPO for its library.

## III. Inadvertent Discoveries

In the event that human remains, funerary objects, sacred objects, and/or objects of cultural patrimony are encountered during the course of activities associated with the undertaking, the NPS shall ensure that they are treated with respect and in a manner consistent with the provisions of the Native American Graves Protection and Repatriation Act (25 USC 3001).

## DURATION

This Agreement will expire (10) years from the date of its execution. Prior to such time, the NPS may consult with the other Signatories to reconsider the terms of the Agreement and amend it in accordance with Stipulation VII below.

## MONITORING AND REPORTING

Each year following the execution of this Agreement until it expires or is terminated, the NPS shall provide all parties to this Agreement a summary report describing work undertaken pursuant to its terms. Such report shall be provided no later than the 30<sup>th</sup> of each June and shall include the status of NPS and USGS design and construction projects, the status of implementation of stipulations, any scheduling changes proposed, any problems encountered, any disputes and objections received in the NPS’s and/or USGS’s efforts to carry out the terms of this Agreement, and any amendments proposed or executed. NPS will use electronic submission measures such as e-mail and to SHPD via HICRIS to the project number 2021PR00143 when possible.

## DISPUTE RESOLUTION

Should any Signatory or Concurring Party to this Agreement object at any time to any actions proposed or the manner in which the terms of this Agreement are implemented, the NPS and USGS (as applicable) shall consult with such party to resolve the objection. The NPS will notify the other Consulting Parties of the objection and invite them to participate in consultation with the objecting party and the NPS and/or USGS to resolve the objection. If the NPS and/or USGS determines that such objection cannot be resolved, the NPS will:

1. Forward all documentation relevant to the dispute, including the NPS's proposed resolution, to the ACHP. The ACHP shall provide the NPS with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the NPS shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories and Concurring Parties, and provide them with a copy of this written response. The NPS will then proceed according to its final decision.
2. If the ACHP does not provide its advice regarding the dispute within the thirty (30)-day time period, the NPS may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the NPS shall prepare a written response that takes into account any timely comments regarding the dispute from the Signatories and Concurring Parties to the Agreement and provide them and the ACHP with a copy of such written response.
3. The NPS's responsibility to carry out all other actions subject to the terms of this Agreement that are not the subject of the dispute remain unchanged.

## AMENDMENTS

This Agreement may be amended when such an amendment is agreed to in writing by all Signatories. The amendment will be effective on the date a copy signed by all of the Signatories is filed with the ACHP.

1. Any Signatory to this Agreement may request that it be amended by informing the NPS in writing of the reason for the request and the proposed amendment language, whereupon the NPS shall inform the other Signatories and Concurring Parties to the Agreement and request their views concerning the proposed amendment. The amendment will be effective on the date a copy signed by all Signatories to the Agreement is filed with the ACHP. The NPS will notify all Concurring Parties of the amendment execution.
2. If any Signatory to this Agreement determines that the terms will not or cannot be carried out, that party shall initiate consultation with the NPS and other Signatories to develop an amendment pursuant to previous paragraph. If within 30 calendar days (or another time period agreed upon by all Signatories to the Agreement) an amendment cannot be reached, any Signatory may terminate the Agreement upon written notification to the other Signatories. The NPS will notify all Concurring Parties of termination.

3. In the event this Agreement is terminated, and prior to work continuing on the Project, the NPS must either (a) execute a Programmatic Agreement or Memorandum of Agreement pursuant to 36 CFR § 800.6(c)(8) or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. NPS will notify all Signatories and Concurring Parties to this Agreement as to the course of action it will pursue.

## TERMINATION

If any signatory to this Agreement determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VIII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the Agreement upon written notification to the other signatories.

Once the Agreement is terminated, and prior to work continuing on the undertaking, the NPS must either (a) execute a Memorandum of Agreement pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 § CFR 800.7. The NPS shall notify the signatories as to the course of action it will pursue.

## ANTI-DEFICIENCY ACT

All actions taken by the NPS in accordance with this Agreement are subject to the availability of appropriated funds, and nothing in this Agreement shall be interpreted as constituting a violation of the Anti-Deficiency Act (31 USC 1341). The NPS will make reasonable and good faith efforts to secure the necessary funds to implement this Agreement in its entirety. If compliance with the Anti-Deficiency Act alters or impairs the NPS's ability to implement the stipulations of this Agreement, the NPS will consult in accordance with the amendment and termination procedures found in Stipulations VIII and IX of this agreement.

This Agreement shall become effective on the date the last signatory signs. Execution of this Agreement by the NPS, USGS, SHPO, and the ACHP and implementation of its terms evidence that the NPS has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

**SIGNATORIES:**

**Hawai'i Volcanoes National Park**

**Date**

**[insert Park superintendent name and title]**

**Hawai'i State Deputy Historic Preservation Officer**

**Date**

**[insert name and title]**

**Advisory Council on Historic Preservation:**

**Date**

**[insert name and title]**

**United States Geological Survey**

**Date**

**[insert name and title]**

**CONCURRING PARTIES:**

**Historic Hawai'i Foundation**

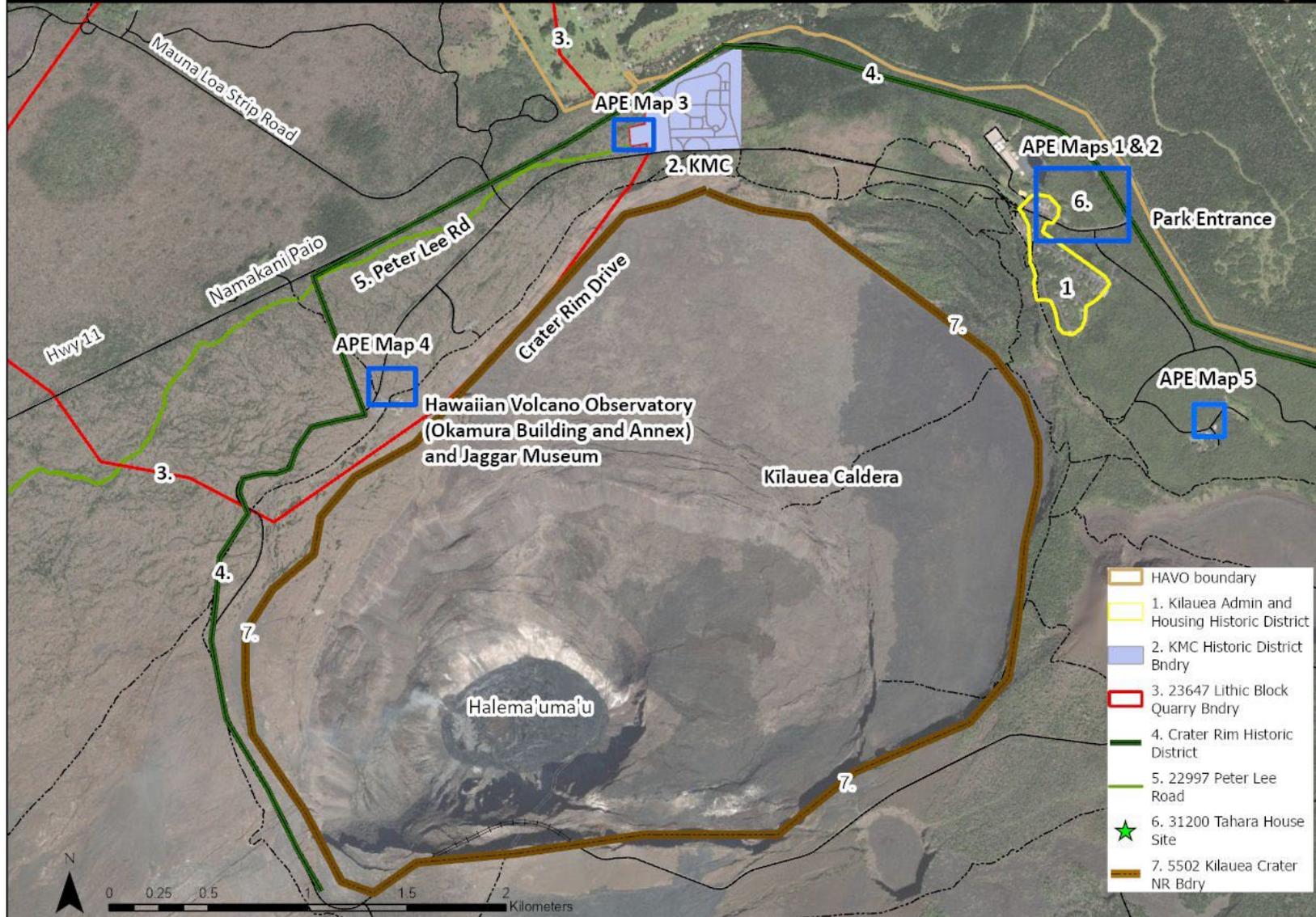
**Date**

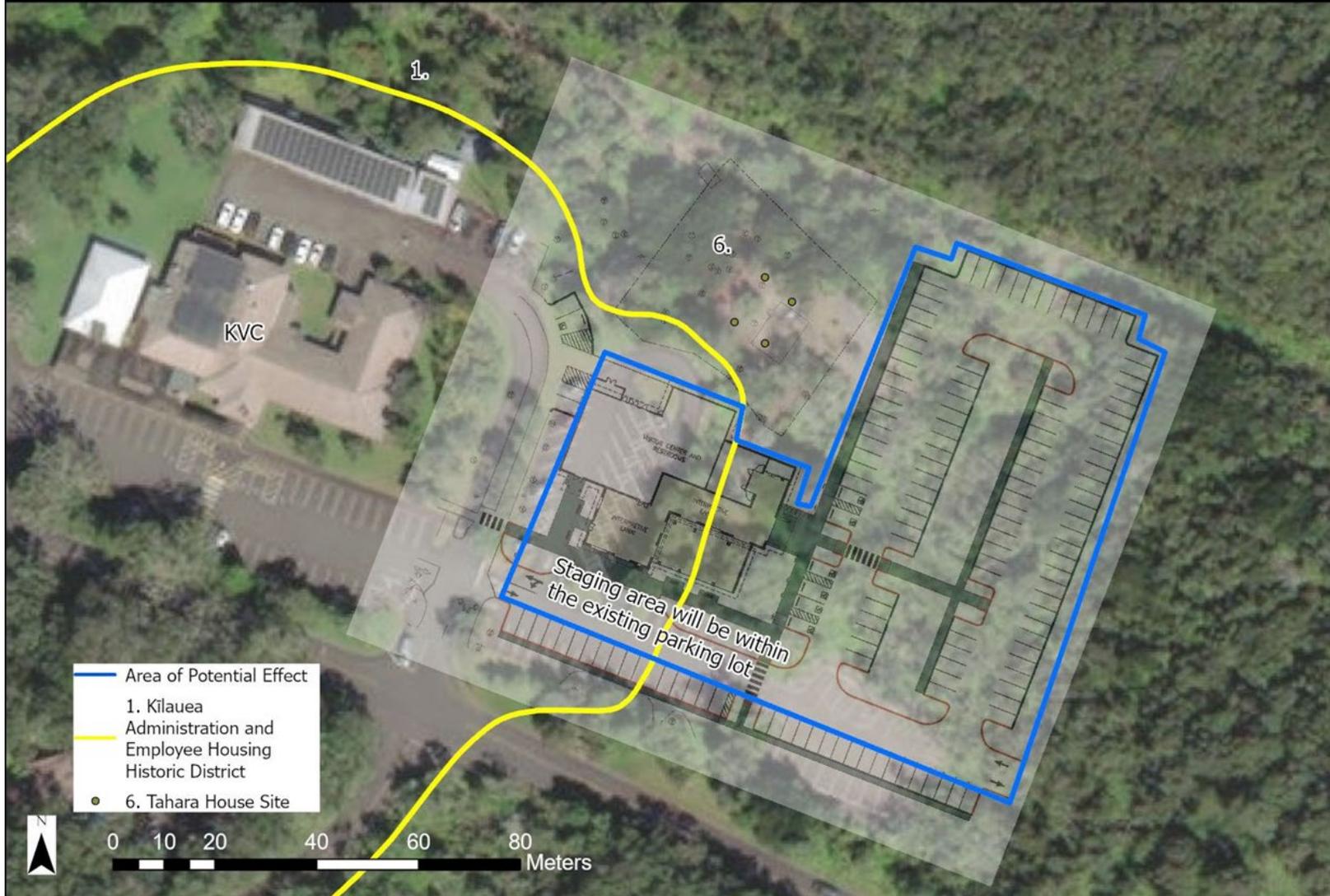
**[insert name and title]**

## **Appendix A**

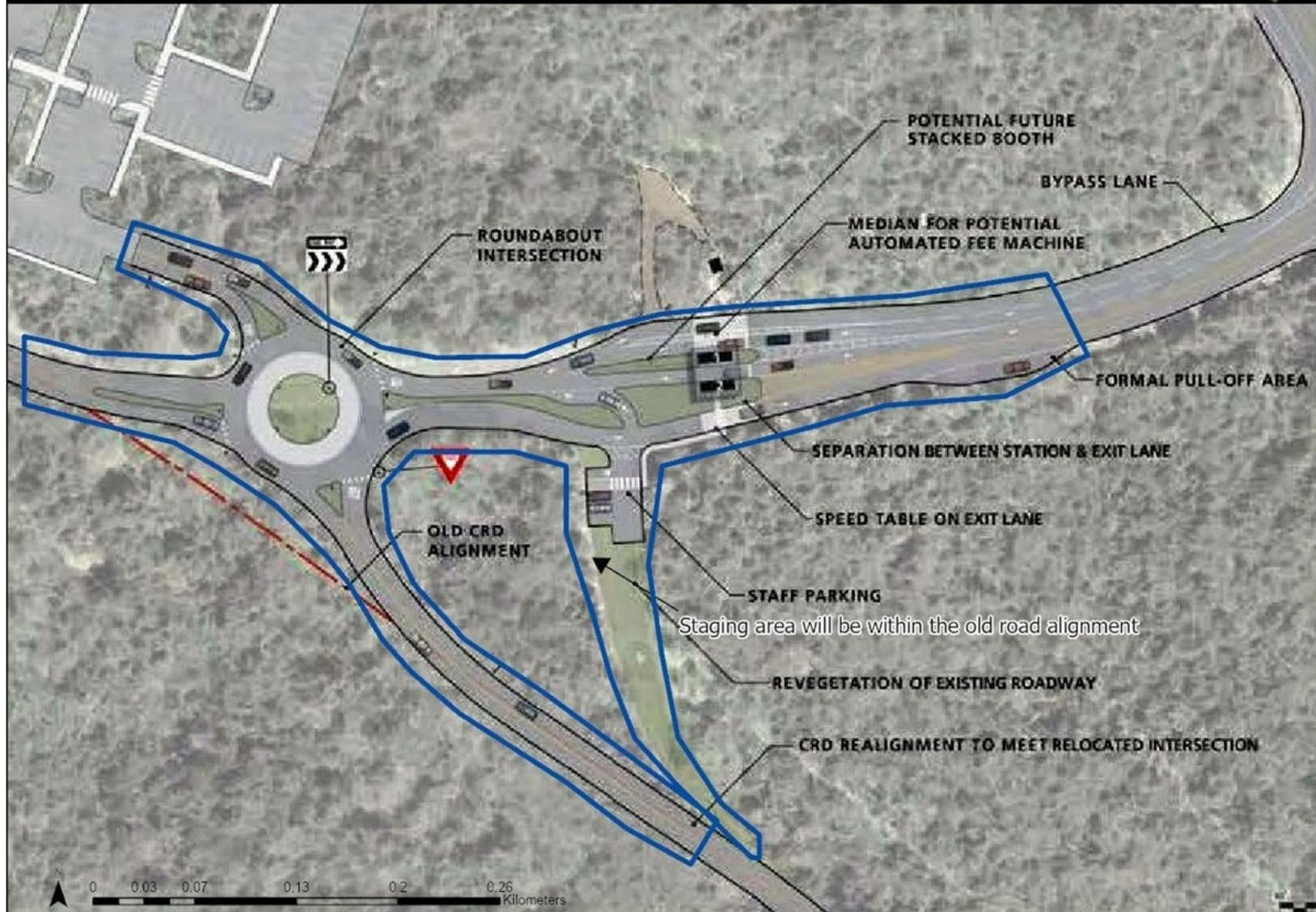
### **Area of Potential Effect Maps**

Hawai'i Volcanoes National Park, Disaster Recovery Project, Area of Potential Effect overview map,  
 TMK: (3) 9-9001:001 Kapāpala, Ka'ū, Hawai'i

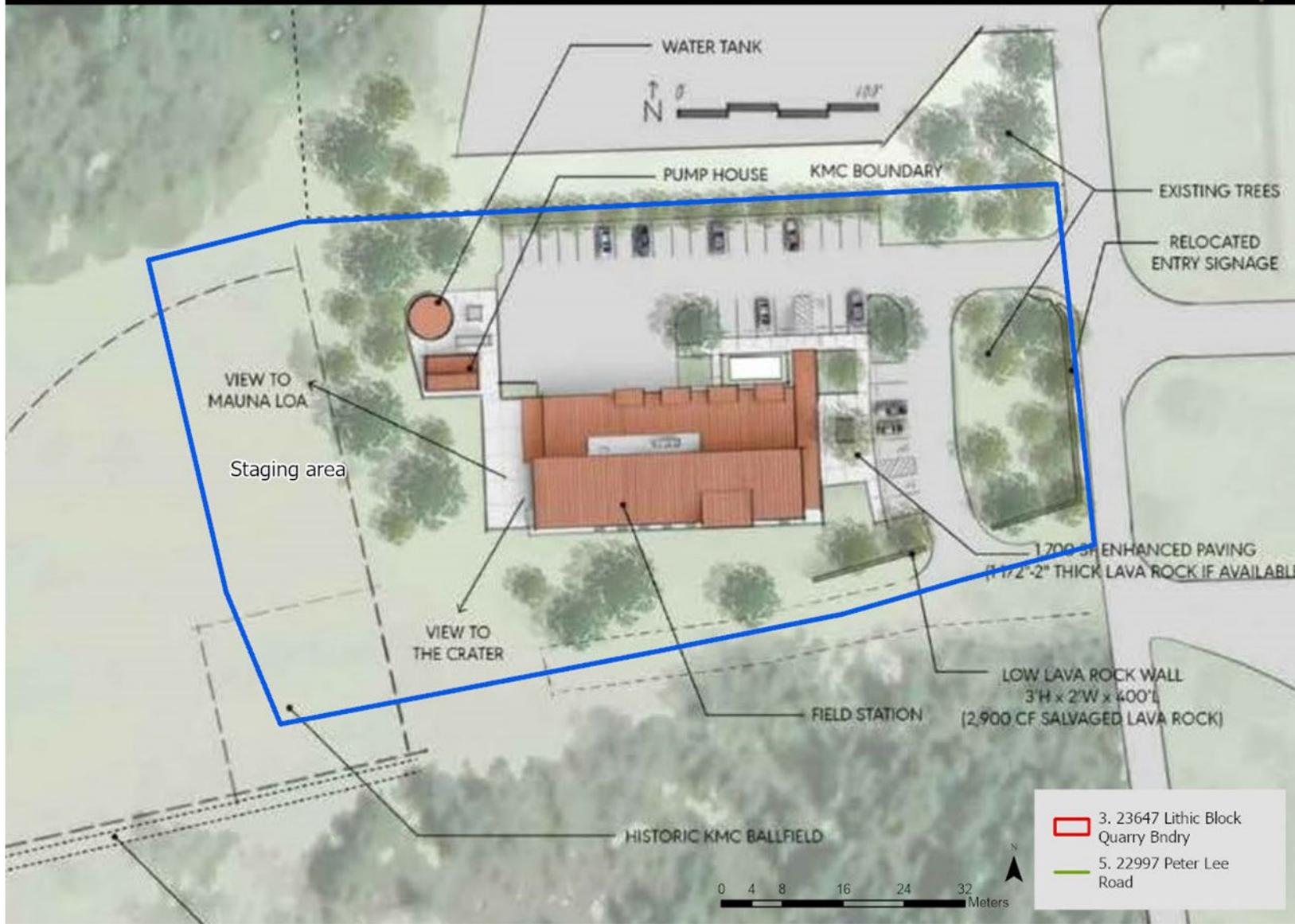




Hawai'i Volcanoes National Park, Disaster Recovery Project, Area of Potential Effect, Map 2, APE outlined in blue, 17.78 acres, Crater Rim Drive realignment. TMK: (3) 9-9001:001 Kapāpala, Ka'ū, Hawai'i



Hawai'i Volcanoes National Park, Disaster Recovery Project, Area of Potential Effect, Map 3, APE outlined in blue, 1.56 acres, new USGS facility near the Kilauea Military Camp ballfield. TMK: (3) 9-9001:001 Kapāpala, Ka'ū, Hawai'i.







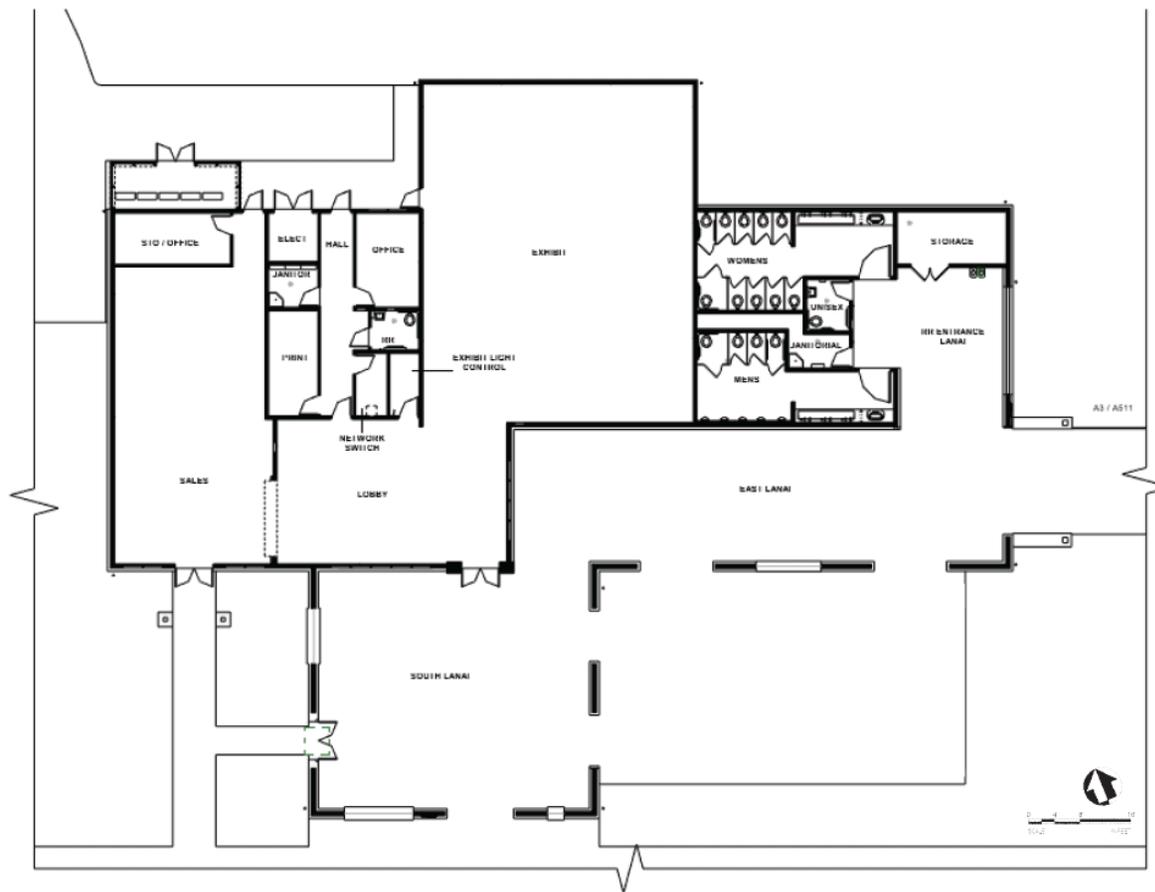
**Appendix B**  
**Consultation List**

1. Civic Engagement – May 15 – June 15, 2020; Summary document completed July 2020
2. HAVO to SHPD Hawaii – May 2020
3. HAVO second letter to SHPD Hawaii – September 15, 2020
4. HAVO and SHPD Hawaii (phone call) - October 15, 2020
5. SHPD Hawaii – October 14, 2020 (rec'd response written) NPS follow up on this letter December 2020)
6. Hawai'i Volcanoes NP (HAVO) and Kūpuna Consultation Group (NHO's and interested parties) – November 11, 2020 (discussed the issue of the architectural elements at the summit buildings and received one suggestion from one Kūpuna to bury in place the lower floor of the Okamura Building).
7. HAVO and Kūpuna Consultation Group, (includes on a regular basis an attendee from the Office of Hawaiian Affairs), 11/12/2020, the park provided an update to the park's Kūpuna consultation group regarding Disaster Recovery planning, 12/20/2020 the park provided information regarding Disaster Recovery project and went over the preliminary mitigation list (no comments from consultation individuals), 2/12/21 the park discussed the Disaster Recovery project and exhibit planning for the new Visitor Center, 4/9/21 Disaster Recovery project was discussed and mitigations for the project were discussed including the TCP, 8/13/21, new Visitor Center exhibit discussed, 9/30/21 new Visitor Center exhibit discussed and TCP, 11/19/21 TCP presentation, 1/14/22 TCP discussed, 2/25/2022, Disaster Recovery project discussed, 5/7/21, TCP discussed, 5/13/22 discussed Disaster Recovery project
8. HAVO - consulting with NPS – (December 17, 2020) Pacific West Region staff on HABS/HALS documentation as mitigation.
9. HAVO – January consulting with SHPD, Historic Hawaii Foundation, ACHP and NTHP – re project, APE and proposed Mitigations.
10. HAVO – TEAMS consultation on the following dates with individuals identified. All meetings were recorded. Recordings are on file with NPS. Participants varied but included the following: HI-SHPD, Historic Hawai'i Foundation, Advisory Council for Historic Preservation, USGS -HVO, (Contractors: Architects Hawaii Ltd, OTAK, MASSON), NPS-DSC, NPS-PWR, NPS-HAVO:
  - April 8, 2021 – topic(s) - Presentation by Brian Heitman (Denver Service Center Project Manager) and Rhonda Loh (Superintendent at Hawai'i Volcanoes National Park) on the concepts as developed between May 2020 and April 2021.
    - Cultural resources within the APE
    - Mitigation Table of Cultural resources and effects
    - Programmatic Agreement Process
  - April 21,2021 – USGS, Martin Smith and Architect on Contract presented Draft building design for group.
    - NPS when through the Mitigation Table and presented each cultural resource identified on the table.
    - Programmatic Agreement Process
  - May 12, 2021 – Continuation of Mitigation Table items.
  - June 02, 2021 – PWR presented information on HALS work in general and more specifically the discussion focused on the summit area HALS work to be carried out before buildings are removed.
    - HHF discussion to include design elements for all new construction within

the specific documented historic districts within the summit area.

- Contractor for NPS – OTAK presented ideas on buildings at the summit and for KVC to the group.
  - June 23, 2021 – Discussion of Traditional Cultural Properties with NPS-PWR Jason Lyon (Cultural Anthropologist).
  - No meetings between July 6 and August 17.
  - August 18, 2021 – Continued discussion on the Traditional Cultural Properties focused on Pelehonuamea.
  - September 8, 2021 - Justin DeSantis NPS-DSC presented preliminary plans for the road realignment and roundabout near entrance station.
  - September 29, 2021, consultation meeting with HHF, SHPD, USGS, ACHP and park staff to discuss mitigations to be included in the PA.
  - November 4, 2021, letters sent to HHF, SHPD, USGS, and ACHP with the draft PA for review, comments due by December 3, 2021.
  - November 10, consultation meeting with HHF, SHPD, ACHP, OTAK, Glen Mason and NPS including Sarah Killinger, PWR Regional 106 Coordinator. Topics covered include status update on TCP discussion with Kupuna and discussion of preliminary comments for the draft PA.
  - November 10, 2021, Laura Carter-Schuster retired. Summer Roper Todd will be acting CRM lead and Section 106 coordinator for the next 4 months (November, 2021-February 2022).
  - December 7, 2021, consultation meeting with HHF, SHPD, OTAK. ACHP could not attend. The meeting included an update on the TCP presentation to the park's Kūpuna Consultation Group, a discussion of the Draft PA comments, and OTAK be presented the latest Schematic Designs for the building demo and changes at Uēkahuna, the designs for the new Visitor Center, and the Crater Rim Drive realignment design.
  - January 12, 2022, Consultation meeting with HHF, SHPD, OTAK. ACHP could not attend. The meeting included a schematic design presentation from USGS of the new HVO facility that will be built near the KMC ballfield. There was also a status check on the draft PA comments. SHPD has provided comments and NPS is waiting to hear from HHF and ACHP. The park agreed to send 60 % Draft Design Documents out to the consulting parties of the road realignment, the USGS building, the new Visitor Center and the changes at the Bluff. This was determined to be the last meeting unless it was decided in the future that more would be needed.
11. February 26, 2022, 60% draft Design Documents sent out to SHPD, ACHP, USGS and HHF for review and comment.
  12. March 31st, 2022 the second draft of the PA was sent to SHPD, ACHP, USGS, and HHF for review and comment
  13. May 17th, 2022, the material sample boards were sent SHPD, ACHP, USGS and HHF for comment and review
  14. June 6th, 2022, SHPD responded that the material sample boards are acceptable and they have no further comments.
  15. June 10th, 2022, the 90% draft Design Documents were sent to SHPD, ACHP, USGS, and HHF for comment and review.

**Appendix C**  
**Material Boards**



**MASON**

**FLOOR PLAN**  
 HAVO DISASTER RECOVERY - NEW FACILITIES  
 HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
 May 2022



**MASON**

**EXTERIOR ELEVATION**  
HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
May 2022



CORRUGATED METAL ROOF



STAINED SOFFIT



PAINTED TRIM  
MATCH PARK STANDARD



LAVA STONE BASE



PAINTED CEMENT BOARD  
MATCH PARK STANDARD



**MASON**

**EXTERIOR MATERIALS**

HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
May 2022



CEILING TILE



WALL COLOR



JANITORIAL CLOSET WALL



EXPOSED CONCRETE FLOOR FINISH

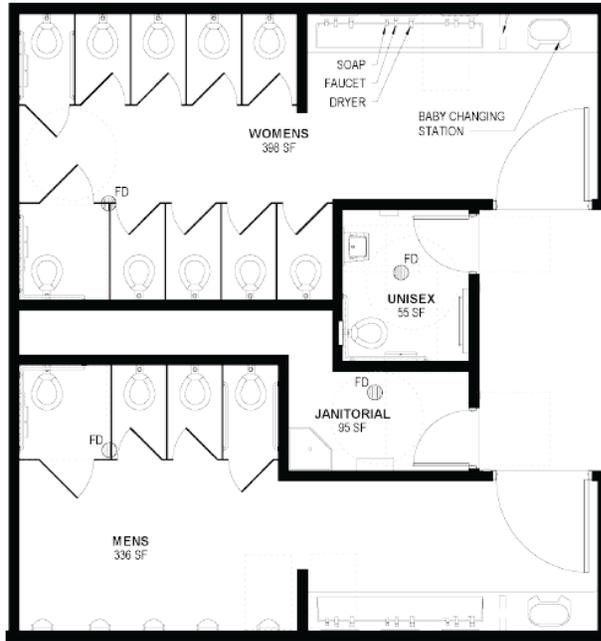
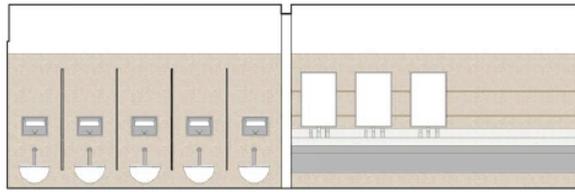


MASON

**INTERIOR MATERIALS**

HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
May 2022



## AER-DEC™ Specifications



	Sloan® Soap Dispenser	BASYS® Faucet	Sloan® Hand Dryer	AirBein™
<b>SIZE</b>	Width: 2.00 inches (50.8 mm) Depth: 4.40 inches (111 mm) Height: 4.50 inches (114.3 mm)	Width: 2.00 inches (50.8 mm) Depth: 6.50 inches (165.1 mm) Height: 6.50 inches (165.1 mm) Measurements shown are for BASYS MID	Width: 3.00 inches (76.2 mm) Depth: 6.51 inches (165.4 mm) Height: 5.62 inches (142.7 mm)	30 inches, 60 inches, 90 inches, 120 inches or custom
<b>COLOR</b>	Chrome	Chrome	Chrome	100+ Corian® colors
<b>MATERIAL</b>	Zinc	Zinc	Zinc	DuPont™ Corian® or Quartz
<b>DETAILS</b>	<ul style="list-style-type: none"> <li>• One piece construction</li> <li>• Active Infrared sensor</li> <li>• Easy loading disposable soap refills</li> <li>• Low soap level indicator</li> <li>• Foam soap refill of 1,000 mL</li> <li>• Dispenses 1.2 mL of pre-measured soap</li> <li>• 120 VAC prep-in</li> </ul>	<ul style="list-style-type: none"> <li>• All serviceable components above deck</li> <li>• Active Infrared sensor (optional capacitive sensing)</li> <li>• Supply strainer serviceable from above deck</li> <li>• Single hole installation</li> <li>• Adjustable time-outs</li> <li>• Mechanical mixing, integral tapout, optional</li> <li>• Faucet can be configured to add solar and/or LCD display</li> <li>• One touch service</li> <li>• Gold plated electrical contacts</li> <li>• Choice of battery, solar harvesting, or plug-in AC adapter</li> </ul>	<ul style="list-style-type: none"> <li>• Active Infrared sensor</li> <li>• Adjustable speed and sound suppression air delivery system for quietest operation 6/ dB - 75 dB</li> <li>• HEPA Air Filter removes 99% of bacteria at 0.3 microns</li> <li>• Uses less energy than conventional hand dryers</li> <li>• 95% cost savings over paper towel use</li> <li>• Eliminates paper towel maintenance and waste</li> <li>• Hets qualify for several LEED® v4 credits</li> <li>• 1440 watts / 110 volts / 13 amps</li> <li>• Plug in or hard wired</li> </ul>	<ul style="list-style-type: none"> <li>• Built in air dam technology</li> <li>• Highly functional ergonomic hand washing basin</li> <li>• A monolithic console</li> <li>• Surface, sleeve, or floating mount</li> <li>• Corian® available in 100+ colors</li> <li>• Available in Quartz (Siessona® or DuPont™ Zodiaq®)</li> <li>• Eliminates back splash and splatters</li> <li>• Built into your design or built around it</li> <li>• Easy installation</li> <li>• ADA compliant if properly installed</li> </ul>

**WARRANTY** 3 year warranty for the AER-DEC™ Integrated Sink (limited - see sloanvalve.com for details)

For more information about AER-DEC, please visit [sloanvalve.com/aer-dec](http://sloanvalve.com/aer-dec) or call 800.982.5859.



**MASON**

## RESTROOMS & INTEGRATED SINK

HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
May 2022



GLASS TILE ACCENT



SOLID SURFACE WALL



CORIAN SOLID SURFACE  
COUNTER TOP



EPOXY FLOORING



TOILET PARTITION

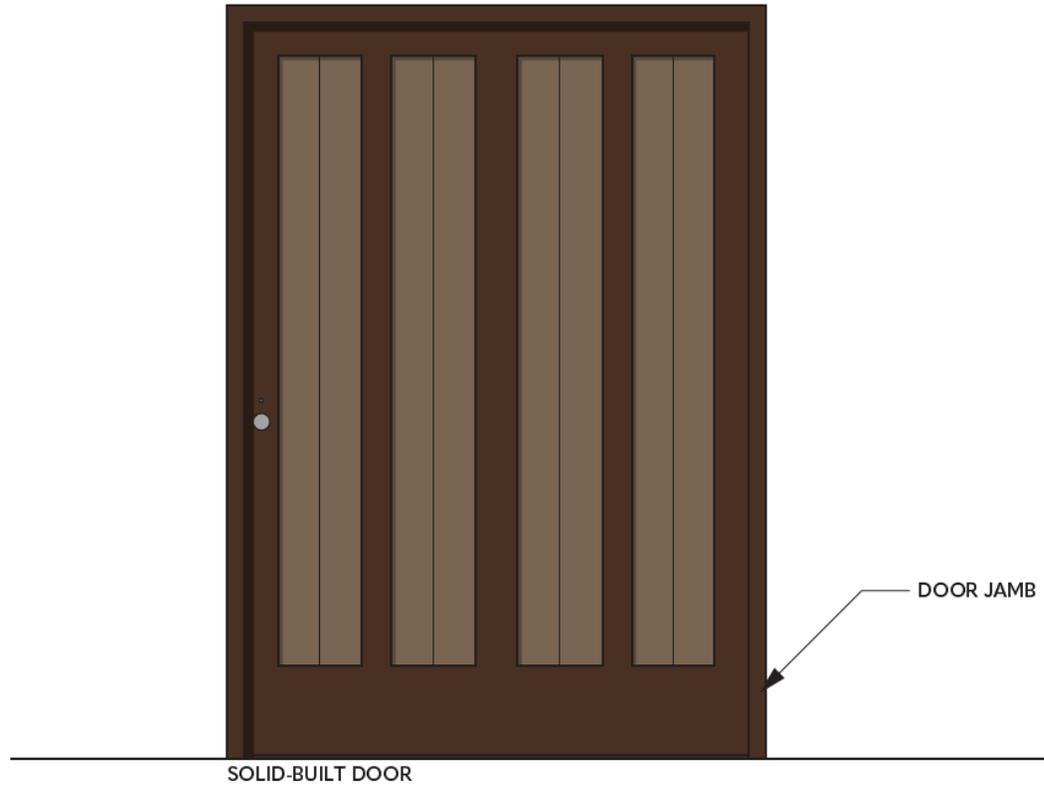


MASON

**INTERIOR MATERIALS - RESTROOMS**

HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671

Prepared by MASON  
May 2022



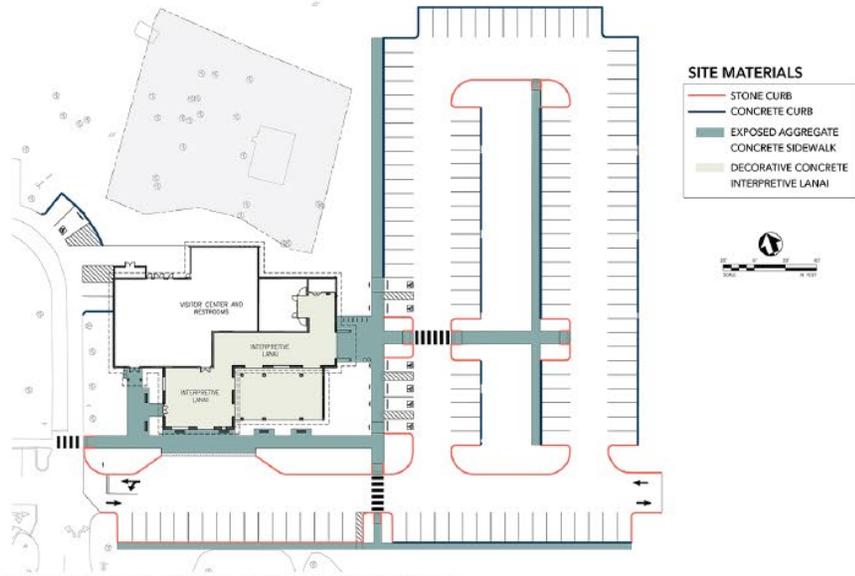
**MASON**

**SOLID GATE DESIGN**

HAVO DISASTER RECOVERY - NEW FACILITIES  
HAWAII VOLCANOES NATIONAL PARK, HI 9671



Prepared by MASON  
May 2022



PROPOSED LOCATIONS FOR CURBING AND PEDESTRIAN PAVEMENT



SIDEWALKS - EXPOSED AGGREGATE CONCRETE  
MATCH TEXTURE OF EXISTING PAVEMENT ON SITE



CURB - STONE

CURB STONE WILL BE SALVAGED TO BE REUSED ON SITE, ANY NEW CURB STONE WILL MATCH EXISTING



CURB - CONCRETE

CURBS FURTHER FROM FACILITIES WILL BE CONCRETE AND MATCH EXISTING CONCRETE CURB ON SITE IN TEXTURE, COLOR, AND USE OF SECTIONS WITH MORTAR JOINTS



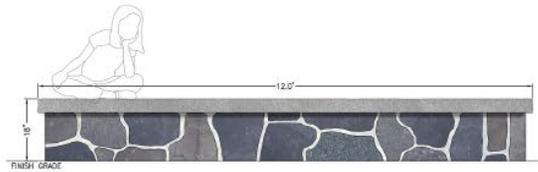
INTERPRETIVE LANAI - CONCRETE

DECORATIVE CONCRETE WITH FINE TEXTURE SUCH AS PITTED OR SALT FINISH

**EXTERIOR MATERIALS - HARDSCAPE | VISITOR CENTER**

HAVO DISASTER RECOVERY  
HAWAII VOLCANOES NATIONAL PARK

MAY 2022



**BENCH BASE - STONE**  
 USING STONE SALVAGED FROM THE JAGGAR MUSEUM



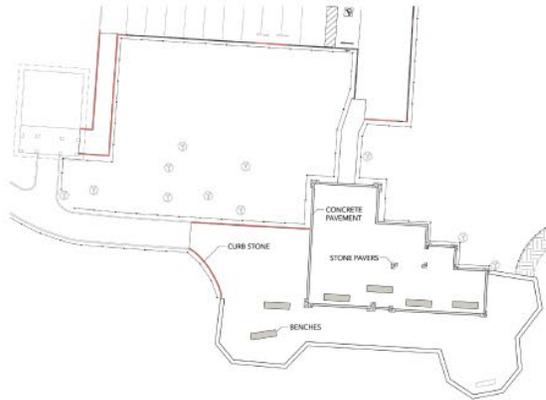
**PAVERS - STONE**  
 USING STONE SALVAGED FROM THE JAGGAR MUSEUM  
 SMOOTHER STONES WOULD BE USED FOR PAVERS TO PROVIDE AN ACCESSIBLE SURFACE WITH VERTICAL CHANGES IN SURFACE LEVEL NO GREATER AN 1/4"



STONE BENCHES AND PAVERS WILL MATCH PATTERN OF JAGGAR MUSEUM



**BENCH CAP - CONCRETE**  
 BENCHES WILL HAVE A CONCRETE CAP, WITH A LIGHT TO MEDIUM SANDBLASTED FINISH



**CONCRETE PAVEMENT - EXPOSED AGGREGATE CONCRETE**  
 FOOTPRINT OF JAGGAR MUSEUM WILL MATCH EXISTING PEDESTRIAN PAVEMENT ON SITE



**CURB - STONE**  
 CURB STONE WILL BE SALVAGED TO BE REUSED ON SITE

**EXTERIOR MATERIALS - HARDSCAPE | UĒKAHUNA VISITOR USE FACILITIES**

HAVO DISASTER RECOVERY  
 HAWAII VOLCANOES NATIONAL PARK

MAY 2022



TRUCK APRON - STAMPED CONCRETE



**CURB - STONE**  
CURB STONE WILL BE SALVAGED TO BE REUSED ON SITE



Tamarock Masonry - Hawai'i

*Example of color only*

STAMPED CONCRETE - COLOR  
DARK GRAY INTEGRAL COLOR WITH BROWNS USED FOR  
ACCENT AND SEALANT COLOR



Tamarock Masonry - Hawai'i

*Example of texture only*

STAMPED CONCRETE - TEXTURE  
STAMPED TEXTURE USING A COMBINATION OF STAMPS TO  
AVOID THE APPEARANCE OF A REPEATING PATTERN



**CURB - CONCRETE**  
MATCH EXISTING CONCRETE CURB ON SITE IN TEXTURE, COLOR, AND USE  
OF SECTIONS WITH MORTAR JOINTS

## EXTERIOR MATERIALS - HARDSCAPE | ENTRANCE

HAVO DISASTER RECOVERY  
HAWAI'I VOLCANOES NATIONAL PARK

MAY 2022

MBCI BATTENLOK HS WITH PENCIL RIBS  
MBCI SLATE FINISH



STANDING SEAM  
METAL ROOF

ARCADIA  
ALUMINUM FINIS  
DURANAR COCOA BEAN



VERTICAL  
FINS

ARCADIA  
ALUMINUM MULLIONS  
ANODIZED BLACK AB-8



WINDOW  
MULLIONS

SOLARBAN 90 (2) ACUTY-  
S-62 10/20  
53% T  
.29 UV  
.23 SHGC



GLAZING

JAMES HARDIE  
HARDIE PLANK SIDING  
IN SELECT CEDARMILL



BOARD AND BATTEN  
SIDING

BENJAMIN MOORE  
VAN BUREN BROWN  
HC-70

LAVA ROCK  
STONE VENEER



LAVA ROCK WALL

METALWORKS  
ALUMINUM PANEL  
OAK GRAIN PATTERN

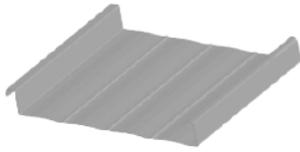


WOOD GRAIN  
SOFFIT



STANDING SEAM  
METAL ROOF

ROOF PROFILE  
MBCI BATTENLOK HS WITH PENCIL RIBS



MBCI  
TUNDRA FINISH



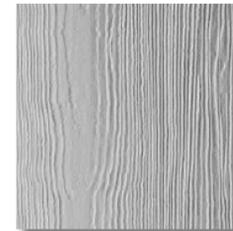
VERTICAL  
FINS

ARCADIA  
ALUMINUM FINS  
DURANAR COCOA BEAN



BOARD AND BATTEN  
SIDING

WOOD GRAIN TEXTURE

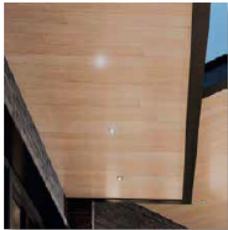


FINISH PAINT  
BENJAMIN MOORE  
VAN BUREN BROWN HC-70



WOOD GRAIN  
SOFFIT

ARMSTRONG METALWORKS  
LINEAR SYNCHRO  
STANDARD CEILING PLANKS  
SMOOTH TEXTURE



FINISH COLOR  
GINGER



GLAZING &  
WINDOW MULLIONS

ARCADIA VITRO  
ALUMINUM MULLIONS SOLARRAN 90 (2) ACUITY + ACUITY  
ANODIZED BLACK AB-8 53% VLT  
.29 UV  
.23 SHGC



LAVA ROCK WALL

STONE COLOR & TYPE: MOSTLY BLACK AND GRAY WITH SURFACE BLACK PAHOEHOE MIXED IN  
STONE TEXTURE: VARIABLE FROM SMOOTH TO VARYING POROSITY  
STONE SIZE: VARIOUS SIZES  
MORTAR COLOR & TEXTURE: USE PARK MORTAR RECIPE  
MORTAR JOINTS: RECESSED JOINTS (RAKED OR CONCAVE) APPROX. 1/4 INCH





OHIA ENTRY POSTS  
SALVAGED FROM EXISTING  
TREES ON PROJECT SITE



OHIA ENTRY POSTS  
SALVAGED FROM EXISTING  
TREES ON PROJECT SITE







