

**CRATER RIM DRIVE REHABILITATION
ENVIRONMENTAL ASSESSMENT**

MAY 2010

**HAWAII VOLCANOES NATIONAL PARK
HAWAII**

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GLOSSARY OF TERMS USED IN THIS DOCUMENT

Affected Environment: Existing natural, cultural, and social conditions of an area that are subject to change, both directly and indirectly, as a result of a proposed human action.

Alternatives: Sets of management elements and actions that represent a range of options for how, or whether to proceed with a proposed project.

Archeological Resources: Any material remains or physical evidence of past human life or activities, including the record of the effects of human activities on the environment.

Barrier Stones: Naturally shaped boulders placed along roadway and/or roadside parking locations to define an area or make an area inaccessible.

Chip Seal: A pavement surface treatment that combines asphalt and coarse particulate material (aggregate). It is constructed by laying down asphalt and then embedding it with the aggregate material.

Crown/Crowning: The slope of a road surface to the outside to provide for proper drainage.

Cultural Resources: Cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places and as archeological resources, historic structures, cultural landscapes, ethnographic resources, and museum objects for NPS management purposes.

Culvert: A structure placed under a roadway to assist with drainage and runoff. Most often they are pipes or the road has been designed to form an arch/tunnel/channel for water.

Curbstones: Stones that form a curb.

Environmental Assessment (EA): A concise public document prepared in compliance with NEPA, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to the human and natural environment. It is used to determine whether to prepare an environmental impact statement or a finding of no significant impact.

Environmentally Preferred Alternative: The environmentally preferred alternative is the alternative within the range of alternatives presented that best promotes the goals of the National Environmental Policy Act (NEPA).

Federal Highway Administration (FHWA): Part of the U.S. Department of Transportation, FHWA provides financial and technical support to construct, improve, and preserve America's highways. This project is part of the Federal Lands Highways Program Park Roads and Roadways Program, which provides funding and technical assistance for park roads.

Federal Highway Station Numbers: Station numbers are the identification markers utilized by FHWA and their engineers in designing the project. This project takes place between stations 750 and 601. There is approximately 100 feet of distance between each station. On the map and throughout the document station numbers are often referenced along with the commonly used park name for that area of the road.

Finding of No Significant Impact (FONSI): The public document describing the decision made on selecting the “Preferred Alternative” in an environmental assessment. See “Environmental Assessment.”

Foreslope: Slope needed to grade/transition the edge of the road shoulder to the existing landscape.

Geotechnical Survey: Investigation conducted to obtain information on the physical properties of soil, earth, and/or rock underlying or adjacent to the site of proposed action. For this project investigation methods included boring, test pits, and ground-penetrating radar.

Headwall: A headwall is a supporting structure constructed at the end of a drainage structure such as a culvert.

Mitigation: Activities/actions taken to avoid or minimize an impact (adverse or otherwise), rectify the impact, or compensate for the impact.

National Environmental Policy Act (NEPA): The federal act that establishes environmental policy for the nation. It provides an interdisciplinary framework for federal agencies to prevent environmental damage and contains procedures to ensure that federal agency decision makers take environmental factors into account.

National Historic Preservation Act (NHPA) & Section 106: A 1966 law requiring federal agencies to consider the effects of their undertakings/actions on historic properties (resources that have been determined eligible or are listed on the National Register of Historic Places). The NHPA also requires that the State Historic Preservation Office (SHPO), and as necessary, the Advisory Council on Historic Preservation (Council), be provided a reasonable opportunity to review and comment on these actions. Section 106 is the NHPA section that describes the process for considering effects.

National Park Service Management Policies: The publication *Management Policies 2006* is the “basic Service-wide policy document of the National Park Service (NPS) (NPS 2006a).

National Park Service Organic Act: In 1916, the National Park Service Organic Act established the National Park Service in order to “promote and regulate use of parks...” and defined the purpose of the national parks as “to conserve the scenery and natural and historic objects and wild life therein and to provide for the enjoyment of the same in a manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This law provides overall guidance for the management of Hawaii Volcanoes National Park.

No Action Alternative: The alternative in a plan that proposes to continue current management direction. The environmental effects resulting from taking no action are compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Non-Native Species: Species of plants or wildlife that are not native to a particular area and often interfere with natural biological systems.

Preferred Alternative: The Preferred Alternative is the alternative within the range of alternatives presented in an EA that the agency believes would best fulfill the purpose and need of the proposed action. While the preferred alternative is a different concept from the environmentally preferable alternative, they may also be one and the same for some environmental assessments.

Pullout: An area along the road designed by past projects (formal) or created opportunistically by use (informal) that is used by vehicles and bicycles to move out of the travel lane.

Pulverize/Pulverizing: Pulverizing is the process of breaking apart existing roadway asphalt into an aggregate (similar to creating mulch from a tree), sometimes blending the recycled aggregate with new aggregate, and reusing it as subgrade for newly laid asphalt. Pulverizing is a cost effective and environmentally friendly way to reconstruct existing pavement. This process eliminates the expensive and environmentally damaging excavation and trucking of the existing asphalt, and it creates a stronger base.

Rehabilitation: Defined by the Federal Highways Program Park Roads and Roadways program to mean work undertaken to extend the service life or enhance the safety of an existing road/roadway. Rehabilitation work generally occurs within the existing roadway (travel lanes and shoulders) and may include some widening in that area. Rehabilitation focuses on materials and work necessary to improve the structural adequacy of the road, including: Materials and/or other work necessary to return an existing roadway including resurfacing, excavating and replacing failed base or subgrades, improving drainage, minor realigning, and flattening curves.

Road Corridor: Includes travel lanes, shoulders, ditches, and slopes designed to transition to the existing landscape. The existing landscape is generally the place unaltered by road construction and marks the end of the roadway prism.

Road/Roadway: In this EA road/roadway is the portion of a road, including shoulders, intended for vehicular use. The shoulders are not intended for regular vehicular use, but are intended to provide vehicles room for error and ability to recover from that error.

Roadbed: A roadbed is the graded portion of a highway, contained within the top and side slopes of the road, prepared as a foundation for the pavement structure and shoulder.

Seepage Pit: An underground structure that disposes of storm water by dissipating it into the ground.

State Historic Preservation Officer (SHPO): An authority that reviews proposed actions for their effect on historic properties and resources. They will also advise the agency as to whether they think the action should happen, and if so, what mitigation is necessary.

Shoulder: A shoulder is the area or surface running parallel to the travel way, and may or may not be constructed of the same material as the travel way. At Hawaii Volcanoes existing shoulders vary in width, grade, and material composition. Shoulders are generally viewed as a safety feature – allowing for a disabled vehicle to move out of the traffic in the travel way (recoverable). Some existing shoulders are considered recoverable, while others not. This EA is proposing to standardize the shoulder width and material, making them recoverable.

Shoulder Stones/Stone Shoulders: On Crater Rim Drive shoulder stones were installed along the Steam Vents area during 1941 road work completed by the Civilian Conservation Corps. The stones are often referred to as ‘tiled’ because they resemble tile in appearance.

Subsurface: Subsurface refers to the stabilized base beneath the pavement. The subsurface provides both a stable base to support the pavement and a finished surface on which to lay or adhere the pavement. It is the subsurface that comes in contact with the ground.

Threatened and Endangered Species: Species of plants that receive special protection under state and/or federal laws. Also referred to as “listed species.”

Traditional Cultural Resource: Any site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

Traditional Cultural Properties: Traditional cultural resources that are eligible for or listed on the National Register of Historic Places as historic properties

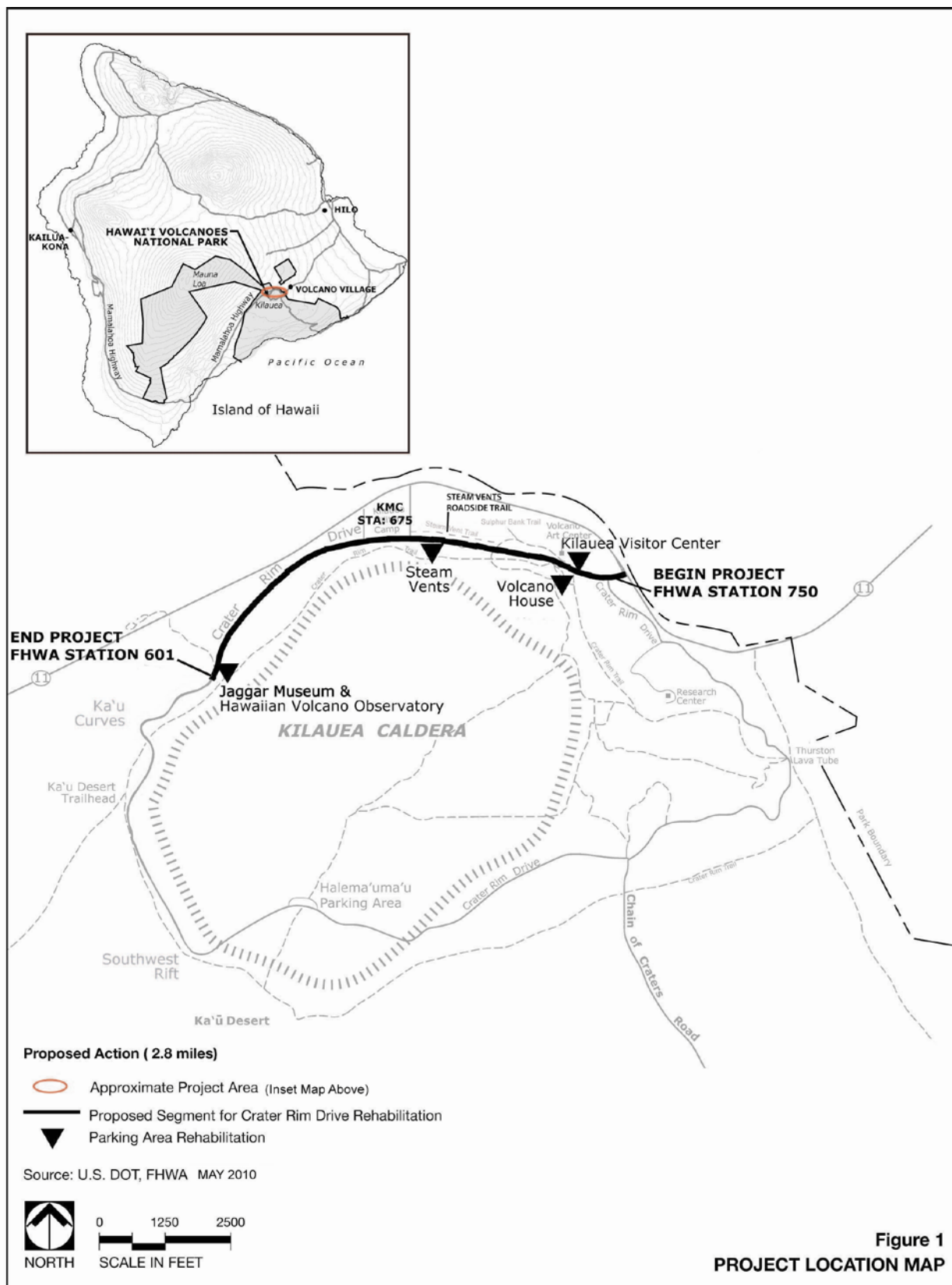
Travel Lanes: The portion of the roadway generally used for vehicular movement. It does not include the shoulders.

Treated/Treatment: Work carried out to achieve a certain goal. In this EA treatment is discussed for the new shoulders to give them a more historic look.

Visitor Experience: The perceptions, feelings, and reactions a park visitor has in relationship to the surrounding environment.

Visitor Use: Refers to the types of activities visitors participate in, numbers of people in an area, their behavior, the timing of use, and distribution of use within a given area.

Volcano House: Commercial operation in the park that provides food, beverage, lodging, and retail.



EXECUTIVE SUMMARY

The Crater Rim Drive Rehabilitation Environmental Assessment (EA) was prepared to help the National Park Service evaluate the rehabilitation of 2.8 miles of Crater Rim Drive, beginning just after the junction with State Highway 11 (just before the park entrance station), and continuing to the gate just west of the Jaggar Museum parking area (see Figure 1). This project was initiated in 2003 to address road issues along 4.6 miles of Crater Rim Drive. The eruption of Halemaumau, and subsequent closure of Crater Rim Drive beyond Jaggar Museum, prompted a reduction in the length of road addressed by this rehabilitation project.

The EA provides an opportunity for public input on the proposed 2.8 mile Crater Rim Drive rehabilitation. The EA outlines the two different alternatives being considered. It characterizes the impacts of these different alternatives on natural and cultural resources, park operations, visitors, and commercial operations, and identifies mitigations to minimize or eliminate impacts. The public is provided 30 days to comment on this EA.

Purpose and Need for the Project

The 2.8 mile road segment receives the highest visitor use of all the roadways in the park. The majority of vehicles on the road are personal vehicles. Other road users include large vehicles such as commercial tour buses, and bicyclists and pedestrians. The purpose of the rehabilitation would be to maintain this road segment for continued visitor and management use. The rehabilitation is proposed because:

- The pavement surface is deteriorated and in need of replacement.
- The road's structural section needs to be improved to accommodate heavy vehicle loads, and the road's average daily traffic volume.
- The pavement width is inconsistent, averaging 21 feet, but ranging from 18 to 26.5 feet throughout the project area.
- There are narrow widths and areas with steep shoulder slopes that make passage difficult for vehicles with longer wheelbases and heavier axle weights, such as tour buses, semi tractors, construction vehicles, and vehicles towing trailers.
- Adjacent parking areas at Kilauea Visitor Center, Volcano House, Steam Vents, and Jaggar Museum need to be rehabilitated to replace deteriorated pavement, provide for accessibility, improve drainage, and to protect resources.
- Informal pullouts need to be removed and rehabilitated to protect resources.
- The road condition is beyond the scope of the park's cyclic maintenance program; large-scale road repairs are needed.

Objectives of the Project

Objectives, as defined by the NPS *Director's Order 12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making*, are “what must be achieved to a large degree for the action to be considered a success.” Alternatives selected for detailed analysis must meet project objectives to a large degree and resolve the purpose and need for action.

Objectives must be grounded in the park's enabling legislation, purpose, significance, and mission goals, and be compatible with direction and guidance provided by the park's management plan, strategic plan, other management guidance, and federal law.

Objectives of the proposed action for Crater Rim Drive Rehabilitation are:

- Maintain the road for visitor and park administrative use.
- Improve the road for all users.
- Remedy structural deficiencies to accommodate traffic loads and avoid the need for large-scale road repairs for another twenty years, aside from cyclic maintenance and natural disasters.
- Provide for accessible parking in parking areas.
- Minimize or mitigate impacts to natural and cultural resources along the road corridor, including the features that contribute to the road's eligibility for listing on the National Register of Historic Places.
- Minimize or mitigate impacts to threatened and endangered species.
- Preserve management options for future road uses as may be identified in the upcoming General Management Plan Environmental Impact Statement.

Overview of the Alternatives

The EA was prepared in accordance with the National Environmental Policy Act (NEPA). The EA discusses two alternatives and related mitigation, resources, and issues that may be affected, and the impacts of the two alternatives. The two alternatives are Alternative 1, the No Action Alternative, and Alternative 2, the Preferred Alternative.

Alternative 1 – No Action

The No Action Alternative would continue present management activities that provide for two-way vehicular access on the road. Routine road and road feature repair, preservation and cyclic maintenance, and minor rehabilitation would continue in accordance with available funding and as seismic and volcanic conditions allow. The NPS would continue to maintain the current roadway width, which ranges from 18 to 26.5 feet; clear ditches; clean culverts; maintain vegetation; maintain traffic control striping; remove informal pullouts; and replace signage as needed. As part of routine maintenance, the NPS would continue to apply overlay asphalt on one to two mile segments, and apply asphalt patches, crack sealing, and slurry or chip seal treatments every few years; if pavement condition allows. There would be minor reconstruction of the existing road and features if failure occurred.

The overall road condition would not undergo comprehensive resurfacing or other improvements. The existing Crater Rim Drive was not designed or constructed using modern highway geometric and safety standards to handle current and future traffic volume or sizes. These geometric and safety standards would not be addressed in the No Action Alternative.

Alternative 2 – Preferred Alternative

The Preferred Alternative would rehabilitate the road, improving the road's structural section to accommodate heavy vehicle loads and average daily traffic volume. A uniform and even driving surface would be provided, which would address the concerns resulting from inconsistent and narrow pavement width and areas with steep shoulder slopes. The roadway would be paved at a typical design template of 22 feet. There would be two 10-foot travel lanes, each with a one-foot shoulder. Some segments of the road require widening to meet this template, while other pavement areas are greater than 22 feet and would be reduced to 22 feet. This design template would be modified in areas where the paved road needs to be wider due to intersections with parking areas and other roads, at the entrance station where lanes taper, and on one tight-radius curve. Parking areas at the Kilauea Visitor Center, Volcano House, Steam Vents, and Jaggar Museum would be rehabilitated by replacing deteriorated pavement and sidewalks, addressing drainage problems, and improving pedestrian accessibility. Informal pullouts would be removed and rehabilitated, through returning to natural conditions, to protect park resources.

Construction for rehabilitating the 2.8 mile road segment would involve pulverizing and recycling the existing asphalt in place, using it to improve the structural base and drainage of the road, laying down a new layer of asphalt, and grading new shoulder slopes. The new shoulders would be treated to look visually distinct to the travel lanes to maintain the historic road character. Parking areas would similarly be pulverized, have drainage and grading improved, and then a new layer of asphalt would be put down.

The Preferred Alternative contains additional actions specific to road segments and parking areas in the 2.8 mile project. The list below summarizes these actions starting from the entrance station area and moving towards the Jaggar Museum parking area:

The Entrance Station to Kilauea Visitor Center

- Install a ramp on the north inbound lane of the entrance station.
- Extend the curbing separating the inbound lanes on the west side of the entrance station.

Volcano House Parking Area

- Create accessible parking stalls.
- Stripe a walkway in front of parking stalls that leads to the Volcano House.
- Improve the existing crosswalk, making it accessible to the front door of Volcano House.

Kilauea Visitor Center Parking Area

- Add accessible parking stalls in front of the Kilauea Visitor Center entrance and lanai.
- Slightly widen and improve the sidewalk running northeast from the front entrance, and add path lighting.

- Improve and make accessible the crosswalks between Kilauea Visitor Center, Volcano House, and the Volcano Art Center.

Road Segment West of Kilauea Visitor Center

- Perform minor cuts to the rock cut slope to gain adequate road width.
- Expose more of the historic guardwall, which has been partially buried by years of road paving.

Steam Vents Road

- Preserve in place and pave over the historic shoulder stones.

Steam Vents Parking Area

- Convert vehicle access through the area to one-way travel.
- Create additional parking stalls within the existing disturbed footprint.
- Pull the parking and the road back from the Steam Vents geothermal features.

Steam Vents Roadside Trail

- Improve and repave the roadside trail from the junction with the Sulphur Bank Trail through Steam Vents to 350 feet before the first driveway into the Kilauea Military Camp.
- Improve signage for pedestrians.

Road Segment between Kilauea Military Camp and Gate just West of the Jaggar Museum

- Realign the road approximately 2 feet to the north side to avoid impacting utilities.

Jaggar Museum Parking Area

- Raise the parking area with paving, to reduce curb height, and prevent damage to vehicle bumpers and curbstones.
- Provide accessible parking stalls, and make some bus parking stalls accessible.
- Provide bicycle parking.
- Improve pedestrian walkways and signage.

Roadside Pullouts

- Remove the informal roadside pullouts and restore natural conditions.

Alternative 2, the Preferred Alternative was selected as the environmentally preferred alternative because: 1) it best addresses concerns associated with a deteriorated road surface and roadbed, and variable road widths, 2) best accommodates the range of users on the road, and 3) improves operations efficiency and sustainability, by reducing the need for ongoing road maintenance and the consumption of depletable resources associated with such maintenance. The design also minimizes and mitigates impacts to natural and cultural resources.

The EA describes the environment potentially affected by the road rehabilitation, potential impacts, and mitigating measures to reduce impacts. It also includes a discussion of other alternatives considered but dismissed.