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PACIFIC WEST REGIONAL OFFICE Memorandum

L7617 (PGSO-PP)

AUG 0 3 2010

Memorandum 8.6.10

To: Superintendent, Hawaii Volcanoes National Park

From: Acting Regional Director, Pacific West

Subject: Environmental Compliance for Rehabilitation of the Crater Rim Drive

The revised *Finding of No Significant Impact* (received at PWRO on 8\3\10) for this much anticipated road improvement project is approved.

To complete this particular compliance process, at the time when the park announces the decision, the *Errata* should be distributed directly to all persons who received or commented on the original environmental assessment (EA; with instructions to attach to the EA so as to have a full and complete record of the environmental impact analysis process).

George J. Turnbull

Attachment
cc:
PWRO-FLHP

FINDING OF NO SIGNIFICANT IMPACT

CRATER RIM DRIVE REHABILITATION

Hawai'i Volcanoes National Park

August, 2010

INTRODUCTION

In accordance with provisions of the National Environmental Policy Act of 1969 and the regulations of the Council on Environmental Quality, the National Park Service prepared an Environmental Assessment (EA) to address rehabilitation of Crater Rim Drive. The document was released May 30, 2010 for a 30-day opportunity for public review. This decision document and finding of no significant impact describes the selected alternative including required mitigations, presents other alternatives considered, and summarizes public involvement and agency coordination in the conservation and environmental impact analysis process.

PURPOSE AND NEED FOR FEDERAL ACTION

The purpose of this federal action is to rehabilitate 2.8 miles of Crater Rim Drive, located in Hawai'i Volcanoes National Park (HAVO). The project begins 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. This road segment receives the highest visitor use of all the roadways in the park. Users of this road segment include personal vehicles, commercial tour buses, vendor and employee trucks, bicycles and pedestrians. The purpose of the proposed project would be to maintain the road for continued visitor and management use.

Action is needed 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 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.

SELECTED ALTERNATIVE

After careful review of scoping comments, public and agency review of the EA, and due consideration of potential impacts to affected resources and visitor use, the park has selected Alternative 2 (Preferred Alternative) for implementation (as presented in the EA; no substantial modifications due to public and agency comment are incorporated herein). The actions selected for implementation include the following elements:

The project will 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 will be provided, which will address the concerns resulting from inconsistent and narrow pavement width and areas. The roadway will be paved at a typical design template of 22 feet. There will be two 10-foot travel lanes, each with a one-foot paved and chip sealed shoulder. Some segments of the road will require widening to meet this template, while other pavement areas are greater than 22 feet and will be reduced to 22 feet. This design template will 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 will be rehabilitated by replacing deteriorated pavement and sidewalks, addressing drainage problems, and improving pedestrian accessibility. Informal pullouts will be removed and rehabilitated, through returning to natural conditions, to protect park resources.

Construction for rehabilitating the 2.8 mile road segment will 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 will be treated to look visually distinct to the travel lanes to maintain the historic road character. Parking areas will similarly be pulverized, have drainage and grading improved, and then a new layer of asphalt will be put down.

The project 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 point where parking lot pavement meets the concrete walkway that leads to the Volcano House entrance.

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 portions of the historic guardwall 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 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.

OTHER ALTERNATIVES CONSIDERED

Alternative 1 – No Action Alternative

Alternative 1, the No Action Alternative, would continue present management activities, which provide for existing vehicular access on the road. On the 2.8 mile segment, two-way vehicular travel would continue as seismic and eruptive conditions allow. The road has been closed between Jaggar Museum and the Devastation parking area since March 18, 2008, because of the volcanic eruption at the Halema`uma`u Crater.

Under the No Action Alternative, the roadway segment would not undergo comprehensive resurfacing or other improvement. The NPS would respond to future needs without major actions or changes from current management activities. Routine roadway feature repair and cyclic maintenance, preservation maintenance, and minor rehabilitation would continue in accordance with available funding and as seismic and eruptive conditions allow. Actions that would continue include: Maintain current roadway width, which ranges from 18 to 26.5 feet; asphalt patching, crack sealing, and application of slurry- or chip-seal treatments (if pavement condition allowed); ditch clearing; culvert cleaning; vegetation maintenance; traffic control striping; informal pullout removal; and signage replacement as needed. This alternative would include some minor reconstruction of existing roadway features if failure occurred.

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.

Preliminary Alternatives Considered & Dismissed

Rehabilitate 4.6 Miles of Crater Rim Drive - The Crater Rim Drive rehabilitation planning was initiated in 2003. Rehabilitating 4.6 miles of Crater Rim Drive, from the entrance station to the Southwest Rift Zone, was considered in all of the action alternatives. However, the eruption of Kilauea at the Halema`uma`u Crater (begun March 2008) continues and the road remains closed past Jaggar Museum (1.8 miles of the 4.6 miles). As a result, rehabilitating the 1.8 miles beyond the Jaggar Museum was dismissed.

Rehabilitate Crater Rim Drive at Current Width - An alternative to rehabilitate 4.6 miles (and following the road closure just 2.8 miles) of the Crater Rim Drive roadway surface at existing pavement widths was considered but dismissed. This would not have corrected the narrow roadway below Volcano House (west of the Kilauea Visitor Center); the narrow roadway between the rock-lined ditches and steep/deep drop-offs in the Kau curves; and the narrow roadway and steep drop-offs due to the road sitting far above the existing landscape through the Southwest Rift Zone.

Rehabilitate Crater Rim Drive and Limit All Vehicles to One-Way Traffic - An alternative to rehabilitate 4.6 miles of Crater Rim Drive and limit all vehicles to one-way traffic was considered and dismissed because 1) there was no significant gain in historic feature protection over Alternative 2, 2) the roadside hazards would not be addressed, and 3) it would change the

Crater Rim Drive flow pattern and access to the Chain of Craters Road; road users would be forced to drive the entire Crater Rim Drive. The one-way traffic option might increase traffic and driving time on Crater Rim Drive, as Chain of Craters Road is accessed from the Crater Rim Drive and drivers would have to drive around the entire Crater Rim Drive. (Two way traffic allows drivers to bypass the Kilauea Caldera road segment). Road users would not have the option of seeing only a portion of Crater Rim Drive. Under this alternative, emergency response vehicles and other NPS authorized vehicles would have the option of two-way traffic using a specially marked contra-flow lane. Because of the potential impacts on the entire Crater Rim Drive and access to the Chain of Craters Road, the one way alternative is outside the scope of this EA. Due to the fundamental change in traffic flow this alternative provides, this approach may be considered in the park's broader transportation needs during the pending update of the General Management Plan (GMP; an EIS effort is currently underway). Neither Alternatives 1 nor 2 analyzed in the EA precluded consideration for a one-way route in the future.

Rehabilitate Crater Rim Drive and Limit Commercial Motor Vehicles to One-Way Traffic from Jaggar Museum to the Halema`uma`u Parking Area - An option of limiting commercial vehicles to one way traffic from Jaggar Museum to the Halema`uma`u parking area was considered as a way to reduce road widening and reduce impacts to the historic road features. There was no significant reduction in resource impacts; impacts to cultural resources would have been similar to Alternative 2. This alternative would have caused a fundamental change in traffic flow. This approach would likely be considered in the parkwide transportation section of the GMP. Alternatives 1 and 2 did not preclude consideration for a one-way route in the future.

Rehabilitate Crater Rim Drive, Limit Commercial Vehicle Size, and Limit Commercial Vehicles to One-Way Traffic from Jaggar Museum to Halema`uma`u Parking Area - An alternative to limit commercial vehicle size as well as limit them to one way traffic from Jaggar Museum to the Halema`uma`u parking area was considered as a way to reduce impacts to the historic road features. There was no significant reduction in resource impacts; impacts to cultural resources would have been similar to Alternative 2. This alternative would have caused a fundamental change in traffic flow and in the commercial vehicles that could be used in the park. This approach would likely be considered in the parkwide transportation section of the GMP. Consideration for a one-way route or limiting commercial size of tour vehicles is not precluded in the future.

Rehabilitate Road at Steam Vents by Altering Road Profile and Exposing Shoulder Stones on One Side - An alternative to rehabilitate Crater Rim Drive at Steam Vents by altering the road profile and exposing the north shoulder stones was considered. Under this alternative the pavement would be removed from the north (mauka) historic shoulder stones. The road would be extended to the south (towards the caldera), over the south shoulder stones, for a pavement width of 22 feet. The road would be crowned and the centerline shifted to the south to allow for the pavement depth on the south side. In some areas the south shoulder currently serves as a retaining wall for the roadbed. At these locations fill would be added to raise the shoulder to match the road grade. This alternative was dismissed because the resulting cross-slope would create a hazard. In addition, while this would allow for the historic shoulder stones to be exposed on the north side, there would be an increase in the area affected, greater than what is currently affected, because of the fill slope.

Rehabilitate Road at Steam Vents by Altering Road Profile and Moving and Exposing the Shoulder Stones on both Sides - An alternative to rehabilitate the road through Steam Vents was considered that would have exposed the shoulder stones on both sides of the road. The shoulder stones would be removed, the road widened to 22 feet, and the shoulder stones then placed on both sides. This alternative would increase the area affected, beyond that which is currently affected, because of the widening. The historic shoulder stones would lose integrity because they were moved. While the shoulder stones would be visible, the relationship of the road to the landscape would be changed because of the increased road width. Because impacts to the cultural resources would be greater and because impacts to natural resources would also be greater than what exist currently, this alternative was dismissed.

Implement an Alternative Transportation System - An alternative to improve the visitor experience by implementing an alternative transportation system consisting of shuttle buses and large staging areas was considered but dismissed. Existing parking facilities are not capable of supporting the staging needs for a shuttle system. This alternative was outside the scope of the EA, but such a system may be considered in the future.

Add Bicycle Lanes to Crater Rim Drive - The possibility of creating bicycle lanes along the Crater Rim Drive project was considered during the planning process. This would require additional roadway widening, which would increase the potential to impact threatened and endangered species and cultural resources. The addition of bicycle lanes was dismissed as an alternative component. Concurrent use of park roads by commercial vehicles, personal vehicles, bicycles, and pedestrians may be considered in updating the GMP

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferred alternative is determined by applying criteria described in §101 of the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations. These criteria are:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

2. Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.

3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain wherever possible an environment that supports diversity and variety of individual choice.

5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative 1 (No Action) was not deemed to be environmentally preferred since it would not be effective in meeting these criteria. Specifically it would:

- Not address the deteriorating road surface, variable road width, and long-term maintenance needs (criteria 1 and 2 not met as well as they will be under Alternative 2, the Preferred Alternative).

- Not attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences (criterion 3 not met as well as under Alternative 2, the Preferred Alternative).

- Preserve important natural and cultural resources better than Alternative 2, the Preferred Alternative; but both alternatives would preserve natural and cultural resources through resource avoidance and with vegetation rehabilitation and restoration. Both alternatives equally support diversity and variety of individual choice (the second part of criterion 4 is equally met by both alternatives).

- Not reduce the need for road and road feature maintenance that consumes depletable resources (criteria 6 not met as well as under Alternative 2, the Preferred Alternative).

Alternative 2 (agency preferred) was determined to be the environmentally preferable alternative because it overall best protects and enhances park resources. Specifically it would:

- Address the deteriorating road surface, variable road width, and long-term maintenance needs (criteria 1 and 2 met better under Alternative 2, the Preferred Alternative).

- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences (criterion 3 met better under Alternative 2, the Preferred Alternative).

- Preserve important natural and cultural resources, but not as well as Alternative 1, the No Action Alternative. The road work would be a compatible alteration for the historic road under the Secretary of Interior's Standards for Rehabilitation. The design retains historic road conditions and preserves in place historic features. Natural resources would be protected through resource avoidance measures, as well as vegetation rehabilitation and restoration (the first part of criterion 4 is better met under Alternative 1, the No Action Alternative). Both alternatives equally support diversity and variety of individual choice (the second part of criterion 4 is equally met by both alternatives).

- Improve operations efficiency and sustainability by reducing the need for ongoing road maintenance and the consumption of depletable resources associated with such maintenance (criterion 6 best met under Alternative 2, the Preferred Alternative).

WHY THE SELECTED ALTERNATIVE WILL HAVE NO SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR 1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse.
Table 1 summarizes the impact category and associated mitigations for the selected alternative. All impacts are site specific, local, or parkwide. There are direct impacts. All impacts that are potentially beneficial range from negligible to moderate. All impacts that are potentially adverse are range from negligible to moderate. There are many mitigating measures to be undertaken by park staff, as well as the Federal Highway Administration and contractor/construction personnel to reduce impacts on the park's geologic, natural and cultural resources, park operations, visitor use and experience, commercial use operations, topography, water quality, air quality, greenhouse gas emissions, and night sky.

Degree of effect on public health or safety.
Public health and safety was an important issue addressed during alternative development for this project. The selected alternative will have long-term minor to moderate benefits on public health and safety. The project will improve the road surface for all users. Specifically resurfacing the road, making it a consistent width, and improving the structural road base, will contribute to overall safety benefits for the public. During project construction/implementation there will be some short-term, local, minor effects to the public, due to lane closures or re-routing, but the resulting road will be a benefit to public health and safety in the park.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
Unique characteristics of the areas potentially affected by the project include geologic resources, threatened and endangered species and habitat, archeological resources; historic structures and cultural landscapes, and ethnographic resources. Mitigating measures that would avoid, reduce, or eliminate impacts on the unique characteristics of the park are outlined in Table 1.

Degree to which effects on the quality of the human environment are likely to be highly controversial or are highly uncertain or involve unique or unknown risks.
There were no highly controversial effects, highly uncertain effects, nor unique or unknown risks identified during preparation of the environmental assessment, during the public review period, or from the §7 and §106 consultation.

Degree to which the action may establish a precedent for future actions with significant impacts, represent a decision in principle about a future consideration, or is related to other actions with individually insignificant but cumulatively significant impacts.
Nothing described in the selected alternative precludes or constrains future actions, nor does it commit the NPS to other impacts with significant impacts. It does not set a precedent for future actions with significant impacts or represent a decision in principle about a future consideration. The EA addressed cumulative impacts for each of the resources that could be affected by the alternatives considered. Implementing the selected alternative will have no cumulative impact.

Degree to which an action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.
Implementation of the selected alternative will have no adverse effect on districts, sites, highways, structures, or objects listed on the National Register of Historic Places and should not cause loss or destruction of significant scientific, cultural, or historic resources.

In consultation with NPS resource specialists, it was determined that key elements of Alternative 2 (selected alternative) contribute to it being assessed as a "compatible alteration" consistent with the Secretary of the Interior's Standards for Rehabilitation, including design that features a 1 foot-wide coarse aggregate (chip seal) shoulder on either side of the traveled way.

Reasons for compatibility of textured paved shoulder:

1) At the end of the period of significance (1942) the road was generally 20 feet wide with narrow gravel shoulders. The textured paved shoulder design simulates the historic design condition, only the historic gravel shoulders would now be composed of bonded granular material, rather than loose granular material. Overall, the historic proportions of traveled way to shoulder would still be discernible.

2) To be compatible and meet the Secretary of Interior's Standards for Rehabilitation, an alteration must be distinguishable, removable, in keeping with the historic character, and not destroy a character-defining feature. The narrow width of the road is a character-defining feature. A general width of 20 feet is a historic park road geometry, and a 22 feet width is a post-World War II park road geometry. By simulating the historic width condition, the rehabilitation design would not destroy this character defining feature.

3) The design retains the historic shoulder stones near Steam Vents in their historic location, and preserves them in-situ, by removing the asphalt, covering with barrier fabric, and covering with new asphalt up to 5" in thickness. Removal of the stones would destroy a historic feature, result in loss of cultural resources information, and would be an adverse impact. Preserving the stones in-situ avoids the adverse impact.

4) The design disguises the proposed drains in the vicinity of the Volcano House rock cut slope with naturalistic area features. These features may include vegetated swales, native rock and blue stone swales or dry wells, and should disguise any metal grate that must be used. Visual large metal grates would detract from the historic character of the area. The historic character is conveyed by rustic architecture and naturalistic landscape architecture. The drainage structure disguise should be naturalistic, using natural forms and materials, in order to be determined a compatible alteration of the road.

Other project elements that minimize potential effects upon historic structures and cultural landscapes include:

- Historic road features shall be preserved in place unless specified in the project design.

- The existing rock cut slope in the road segment west of Kilauea Visitor Center will be cut back in several small locations to create sufficient road width. An estimated 10 rock cuts will be needed over a road length of approximately 60 feet; each will be cut back approximately 2-10" and will be done by NPS approved stone masons. The new cut surfaces shall be visually compatible with the existing cut.

- The new road surface in the segment west of the Kilauea Visitor Center will be 3-9" lower than the existing road surface, exposing more of the historic stone guardwall, the base of which has been obscured by layers of accumulated asphalt. A narrow drainage ditch would also be constructed in this section to improve surface drainage.

- Parking areas would not be expanded. Features such as curbstones would remain.

- The paved trail from the intersection with the Sulphur Bank Trail through Steam Vents will be repaved. The profile relationship of the trail to the road will be maintained or improved to minimize the drop between the road and the trail.

- Tree removal shall be minimized (estimated 15 trees will be removed) wherever possible trees will be limbed, trimmed, or salvaged/replanted. Trees will be removed only after consultation between the road design engineer and park resource specialists.

Degree to which the action may adversely affect an endangered or threatened species.
The U.S Fish and Wildlife Service was initially consulted in August 2005 regarding the presence of the Hawaiian goose/nene (*Branta sandvicensis*) and Hawaiian catchfly (*Silene hawaiiensis)* in the project area. As highlighted in Table 1 and the Agency Consultation section of this document, they concurred with the park that with mitigation the selected alternative will have no adverse effect on endangered or threatened species. A continuation of informal consultation was initiated on May 18, 2010, due to the reduction of project scope and the identification of three additional listed species in the EA, Hawaiian hawk (*Buteo solitarus*), Hawaiian hoary bat (*Lasiurus cinereus semotus*), and Hawaiian petrel (*Pterodroma sandwichensis*). In a letter dated June 24, 2010, the USFWS concurred that with the implementation of the conservation and mitigation measures outlined, the project is not likely to adversely affect listed species.

Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.
The selected alternative and associated actions will not violate any federal, state, or local environmental protection laws.

PUBLIC INVOLVEMENT

A press release was sent out August 11, 2004, announcing two public scoping meetings on the Crater Rim Drive Rehabilitation proposed project. The meetings were held in Naalehu on September 7, 2004, and in Volcano on September 8, 2004. Comments from the public included the following topics: The entrance station placement, design, traffic flow, and traffic

management; add another entrance station on the Mauna Loa Road segment; have employees use an alternate entrance to reduce congestion at the entrance station; improve accessibility; Volcano House parking and the concession operation; bus parking and limit where they can park; better directional signage; start mass transit; improve pedestrian crossing between Kilauea Visitor Center and Volcano House and between Volcano House and Volcano Art Center; Native Hawaiians go to Steam Vents for cultural practices/religious reasons; Steam Vents parking area placement, capacity, area already impacted, and move parking away from vents; ohelo berry pickers and parking; road intersections, road width and roadside parking; need traffic calming techniques to reduce speeding; trails/pathways improved; pullouts; improve conditions for bicycling; restrooms; and picnic areas.

The Crater Rim Drive Rehabilitation EA was made available for a thirty-day public review on May 30, 2010; approximately 50 printed copies of the full EA were distributed. In addition, a letter or eMail, with a summary of the EA and notification of a web address to review and/or download the full EA, were sent to approximately 150 interested parties (including commercial tours that operate in the park, Hawaiian elders, community associations, historic and natural resource preservation organizations), state, county, and federal agencies. Twelve Hawai`i Island libraries and the Hawai`i State Library also received full copies of the EA. A news release was distributed to five Hawai`i newspapers, five Hawai`i radio outlets, and four periodical, internet sources on May 27, 2010. Information about the EA appeared on the Hawai`i 24/7 website on May 27, 2010 (http://www.hawaii247.com/2010/05/27/park-seeks-public-input-on-crater-rim-drive-rehabilitation-ea/); and in Hawai`i Tribune Herald newspaper on June 8, 2010, and was also found on a few of the internet periodicals. The EA was also posted for review on the park web site (www.nps.gov/havo).

Comments received on the EA are as follows:

Letters that were sent to HAVO:

1. The County of Hawai`i Fire Department stated they had no comments.
2. The County of Hawai`i Planning Department stated they had no comments.

Two additional comments (in *italics* below) submitted via the internet were:

3. *Please consider striping bicycle lanes.* The park will be addressing the addition of bicycle infrastructure in all or some areas of the park as part of the EIS process which will be undertaken to update the General Management Plan.

4. *Fix the pot holes if there are any and leave it be. Its a scenic drive, not a freeway. The $ could be used for better things in the park. Making the road wider just invites speeding. Or add maybe some new pull outs and trails off of the road to make up for the huge west rift zone area that's closed. More trails would be nice rather than a wider road.* The selected alternative will make the 2.8 miles of road a consistent width. This will include some minor widening of the road, but in some areas the road width will also be reduced. Pot holes, along with the structural sub-base of the 2.8 miles will also be improved under the selected alternative. At this time HAVO resource specialists have advised against adding pullouts, and for removal of some existing informal pullouts, to protect sensitive

park resources. The addition of trails is not within the expressed purpose, need, and scope of analysis for this road project.

Finally the Federal Highway Administration and the engineering firm SSFM conferred with park staff following release of the EA; minor corrections and text clarifications were developed and are documented in an Errata prepared as a technical supplement to the EA.

CONSULTATION

Internal Consultation

In 2002 a NPS Transportation Assistance Group (TAG) assessed the park's transportation system. Issues identified for Crater Rim Drive included its narrow width and steep drop offs, as well as its use by both tour buses and bicyclists. A park interdisciplinary team was formed to address these issues. The team identified goals, objectives, and areas for Crater Rim Drive rehabilitation. An initial project was proposed to rehabilitate portions of the road. Through the Federal Highways Administration (FHWA) ground and geotechnical surveys, a historic road inventory, historic resource studies, and engineering planning and design were conducted to better understand the resources and to facilitate future proposed actions.

- Meetings were conducted with NPS and FHWA, with the first meeting in July 2003.
- Interdisciplinary scoping meetings were held with staff from the park, FHWA, and the Hawaiian Volcano Observatory from July to September 2004.

Agency Consultation

Endangered Species Act Consultation

The Endangered Species Act (ESA §7) 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 the EA, NPS initiated informal consultation with the USFWS on 8/22/05 for the Hawaiian goose/nene (*Branta sandvicensis*) and Hawaiian catchfly (*Silene hawaiiensis).* In a letter dated 3/29/06, the USFWS concurred with the park's recommendations to avoid/minimize impacts to nene and *S. hawaiiensis* and the park's determination that the proposed action is not likely to adversely affect these two species. A continuation of informal consultation was initiated on May 18, 2010, due to the reduction of project scope, additional project information, and the identification of three additional listed species in the EA, Hawaiian hawk (*Buteo solitarus*), Hawaiian hoary bat (*Lasiurus cinereus semotus*), and Hawaiian petrel (*Pterodroma sandwichensis*).

In a letter dated June 24, 2010, the USFWS concurred that, contingent upon full implementation of the conservation and mitigation measures (identified throughout the course of project design and agency consultation) the project is not likely to adversely affect listed species. The

conservation and mitigation measures are summarized in Table 1, included at the end of this document, and more fully explained here below:

Hawaiian goose/nene/*Branta sandvicensis*

- Road construction activities that take place on the portions of the road that pass through nene nesting habitat (of the total 2.8 miles, this applies to the 1.4 mile section from Kilauea Military Camp to the Jaggar Museum) will occur outside the nene breeding season. Therefore, road construction will be confined to May through August.

- The park biologist will be consulted prior to road striping, sign installation, or any other similar low-impact road construction related activity, if it will occur during the Hawaiian goose breeding season (September through April) in the road section from Kilauea Military Camp to Jaggar Museum. The park biologist will search for nests prior to these activities occurring, and if necessary further consult USFWS. No low impact construction activities will occur if the park biologist (or further consultation with USFWS) determines that nests will be impacted by the noise and activity associated with these actions.

- The area adjacent to Mauna Loa Strip Road and Kilauea Overlook will be surveyed for Hawaiian goose nests during the breeding season prior to any use of these areas for staging of equipment or materials.

- If Mauna Loa Strip Road and Kilauea Overlook are used for staging of equipment or materials, weekly surveys of the adjacent areas for Hawaiian goose nests will continue throughout the breeding season or until the areas are no longer in use by the project.

- If a nest or brood was located, activity will be halted while the park biologist evaluates the situation. Measures to avoid adversely affecting the birds, such as closing the area, will be implemented.

- Speed limits will not be increased in the project area.

- Revegetation along the roadside will not include plant species attractive to the Hawaiian goose.

- Disturbed areas will be monitored for up to three years following construction to identify and herbicide noxious weeds or non-native species, particularly grasses that may be attractive to the Hawaiian goose.

- Contractors will be instructed not to approach or feed the Hawaiian goose, and to be cautious when driving in the park. Any wildlife collisions would be reported to park bird biologist immediately.

- Park staff would give the contractor a briefing on nene and potential project impacts and would include instructions to immediately report any nene sightings in the area.

Hawaiian hawk/Io (*Buteo solitarius*)

- To the degree possible, construction activities between the park entrance and the Kilauea Visitor Center will occur between October and February to avoid the Hawaiian hawk nesting season.

- A park biologist will give the contractor a briefing on the Hawaiian hawk and potential project impacts, which will include instructions to immediately report Hawaiian hawk sightings to the park biologist.

- A park biologist will survey for Hawaiian hawks and Hawaiian hawk nests prior to the start of any construction that starts in September or lapses into March.

- If a Hawaiian hawk nest is observed adjacent to the project area, construction will be halted and situation will be assessed by a park biologist. Construction will resume only after coordination with the U.S. Fish and Wildlife Service is concluded.

Hawaiian hoary bat/opeapea (*Lasiurus cinereus semotus*)

- To the extent possible, tree removal will not occur during the pupping season (May through August). If tree removal must occur, no trees greater than 15 feet in height will be removed during the pupping season.

- The park biologist will brief the contractor on the Hawaiian hoary bat, potential project impacts, and instructions to immediately report Hawaiian hoary bat sightings.

Hawaiian petrel/uau (*Pterodroma sandwichensis*) and Band-rumped Storm Petrel/ akeake (*Oceanodroma castro*)

- No night work will occur for this project.

- If a temporary traffic signal is used to control traffic during the project, the signal must use shields, hoods, or similar coverings to minimize light intensity and prevent light from pointing toward the sky.

- Foot lighting added would be low to ground, shielded, and downward pointing.

Hawaiian catchfly/*Silene hawaiiensis*

- Informal pullouts with or adjacent to areas with *Silene hawaiiensis* would be removed (blocked off).

- New pullouts would only be constructed in locations without potential impacts on *Silene hawaiiensis*. (Note: No new pullouts would be constructed.)

- Any *Silene hawaiiensis* within 10 feet of the roadway would be flagged, fenced off, and avoided during construction.

- On field review and before final drawings, the roadway would be walked by engineers and resource specialists and avoidance of potentially impacted *Silene hawaiiensis* would be incorporated into the final drawings.

National Historic Preservation Act

Under §106 of the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations, all federal agencies must consider the effects of their undertakings on historic properties (resources that have been determined eligible or are listed on the National Register of Historic Places (National Register). The NHPA also requires that 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. Federal agencies also must consult with Native Hawaiian organizations about the potential effects of their undertakings on resources of traditional religious or cultural importance eligible for listing or listed on the National Register.

The State Historic Preservation Division was contacted and the project discussed informally. The park consulted with the SHPO on determinations of eligibility (DOE) for cultural resources within the proposed project's area of potential effect, including the Crater Rim Historic District National Register eligibility. The EA and formal §106 consultation letter were sent to SHPO on May 24, 2010. In a letter dated June 24, 2010, the SHPO concurred with the NPS assessment of no adverse effect for the proposed Crater Rim Drive rehabilitation actions.

Before preparation of the EA, the proposals were discussed with the members of the park's kupuna consultation group (an informal Native Hawaiian group) in July 2004. The kupuna expressed agreement with the resources protection and road improvement aspects of the proposal. Closing the Steam Vents parking area and relocating it was discussed. A comment was made that "culturally we have adapted, leave it the way it is" (NPS 2004). Approximately 31 members of the park's kupuna consultation group were mailed a copy of the EA and the §106 consultation letter. The consultation letter stated that the National Park Service believed that a finding of no adverse effect to historic properties was appropriate for the undertaking. No comments in favor of or against the Preferred Alternative were received from kupuna.

The EA and §106 consultation letter were also sent to the Historic Hawai`i Foundation, the Office of Hawaiian Affairs (OHA), Hawai`i Island Burial Council, Historic Roads, University of Hawai`i American Studies Department, and the Hawai`i State Historic Sites Division. The consultation letter stated that the National Park Service believed that a finding of no adverse effect to historic properties was appropriate for the undertaking. No comments were received from these organizations.

IMPAIRMENT

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the selected Alternative will not constitute an impairment to Hawai`i Volcanoes National Park resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the EA, the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by NPS *Management Policies 2006*. As documented in the EA, implementing the Preferred Alternative will not result in major, adverse impacts to a resource or value whose conservation is 1) Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, 2) Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) Identified as a goal in the park's general management plan or other relevant NPS planning documents. Overall, the selected alternative results in benefits to park resources and values, and opportunities for their enjoyment, does not result in their impairment, and will not violate the NPS Organic Act.

CONCLUSION

Based on detailed information contained in the EA as summarized above, the minor nature of the commentary received during the public review period, and the capability of the mitigation measures to avoid or reduce potential impacts, it is the determination of the National Park Service that implementing the selected alternative does not constitute a major federal action that will significantly affect the quality of the human environment. Therefore, in compliance with the National Environmental Policy Act regulations, an Environmental Impact Statement is not required, and the selected actions as detailed above may be implemented immediately.

Recommended: Cynthia L. Orlando Date: 7.30.10
Cynthia L. Orlando
Superintendent

Approved: George Turnbull Date: 8/3/10
George Turnbull
Acting Regional Director, Pacific West Region

TABLE 1. Impact topics analyzed in CRD EA, Mitigations, & Mitigation Responsibilities*

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Geologic Resources: Includes volcanoes; volcanic emissions, faults, cracks, lava tubes, and collapse features; and geothermal resources.	Construction activities associated with road rehabilitation would occur in an area with numerous geologic resources. Activities could impact resources in numerous ways. Impacts on the Kilauea Volcano and volcanic emissions would be direct, local, short-term, and negligible. Impacts on faults, cracks, lava tubes, and collapse features would depend on whether these features were encountered. If they were not encountered then impacts would be direct, local, short-term, and negligible. If features were encountered, impacts could be direct, local, long-term, adverse, and minor to moderate. Impacts would be direct, local, long-term, beneficial, and minor for geothermal resources.	• No impact to volcanoes or volcanic emissions expected. • Geotechnical surveys would be conducted before construction. For any crack, lava tube or collapse features (anomalies) discovered within 2 feet of the surface, a plan for covering over, protecting, or collapsing the feature would be drafted in consultation with park archeologist. • If features are found during construction work would halt, pending consultation and identification of a mitigation plan. • Steam Vents geothermal resource would be protected from debris run-off during construction. Result at Steam Vents beneficial; pavement pulled back from resource.	** **HAVO/NPS:** Coordinate and consult with FHWA and project contractor regarding plans for anomalies discovered before and/or during the project (PM &CR). **FHWA:** Ensure contract specifications outline mitigation plans and procedures for contractor. As necessary consult and coordinate with NPS regarding plans for geologic anomalies. **Contractor:** Adhere to plans and procedures outlined in contract specifications for geologic resource anomalies, and the discovery of new anomalies during construction. Adhere to Steam Vent erosion control mitigation measures outlined in contract specifications.

*Which party is responsible for individual mitigation measures is not meant to be exhaustive in this table; but rather generally summarizes who takes responsibility for the elements listed in the mitigations.

Under HAVO/NPS the following abbreviations are used to refer to which person or park division will oversee the mitigations mentioned: **PM = Project Manager, **FM** = Facilities & Maintenance, **NR** = Natural Resources, **CR**= Cultural Resources, **PR** = Protection, **CM** = Concessions Manager, **F**= Fees. Ultimately the responsibility for all HAVO/NPS mitigations falls to the Project Manager, assisted by the Chief of Facilities & Maintenance, and the park Superintendent.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Geologic Hazards: Includes volcanoes; volcanic emissions; faults, cracks, lava tubes, and collapse features; and geothermal resources.	Road rehabilitation would be performed in an area, used by visitors & staff, where these hazards exist. Impacts from geologic hazards would be direct, local to park wide, long-term, adverse, and negligible to moderate.	• Road would remain open, with delays for traffic being limited to no more than 15 minutes per passage through a construction segment. • No new geologic areas would be opened to public, staff, or construction contractors. • Follow existing park protocols for dealing with geologic hazards (as they apply to public, employees, and contractor): 1) Volcanic monitoring and reporting; 2) air quality monitoring and reporting; • Follow plans for protecting or collapsing faults, cracks, lava tubes, collapse features, and geothermal features; and procedures for what to do if new anomalies are encountered during construction (as outlined in Geologic Resources above).	**HAVO/NPS:** Continue to inform public, employees & contractor about volcanic & air quality monitoring, and outdoor operating procedures at different levels on the monitoring scale (PM & PR). Follow same responsibilities outlined in Geologic Resources, above (PM & CR). **FHWA:** Ensure contract specifications outline mitigation plans and procedures for contractor. As necessary consult and coordinate with NPS regarding plans for geologic anomalies. **Contractor:** Provide passage to vehicles through construction segment at least every 15 minutes. Adhere to plans and procedures outlined in contract specifications for geologic anomalies, and the discovery of new anomalies during construction. Adhere to outdoor work requirement procedures outlined by NPS volcanic and air quality monitoring programs.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Vegetation: Including removal of vegetation & prevention of non-native species	Some removal of trees and vegetation along 2.8 miles of road in this project.	**A rehabilitation/restoration plan would be developed by the park. including:** • Before construction salvage vegetation, as appropriate & according to park specifications, for replanting. • Revegetate disturbed sites immediately following construction. • Monitor rehabilitated areas to determine if efforts are successful or if additional remedial actions are necessary. • For every ohia (*Metrosideros polymorpha*) tree removed for the purpose of rehabilitating the road, the park would replant 5. • Result is no net green loss.	**HAVO/NPS:** Conduct pre-construction salvage of appropriate vegetation. Design, implement, and monitor elements of the revegetation plan, including replacing ohia, and no net green loss (PM, FM, & NR). **FHWA:** Ensure project design minimizes need for tree and native vegetation removal. **Contractor:** Only remove vegetation design outlines.
	Potential for introduction or further spreading of non-native species.	**Minimize impacts to vegetation by:** • Minimizing soil disturbance. • Limiting vehicle parking to existing roadways & parking areas. • Limiting disturbance to roadsides and culvert areas. **Non-native Species Control would be implemented:** • Ensure all construction equipment is weed & seed free before entering the park. • Gravel & soil sources for construction must be weed-free. • Haul trucks bringing materials from outside the park would be covered up enroute. • The park would monitor areas disturbed during construction for up to 3 years & treat in accordance with NPS guidelines.	**HAVO/NPS:** Monitor areas disturbed by construction up to 3 yrs. Implement NPS DO 13 guidelines for treatment and control of non-native species (NR & PM). **FHWA:** Ensure contract specifications outline these mitigations; including contractor's obligation to ensure equipment is weed & seed free. **Contractor:** Ensure construction equipment, gravel, and soil sources are weed & seed free. Minimize soil and vegetation disturbance outside of already disturbed areas.
	Removal and rehabilitation of informal pullouts. Result is beneficial for vegetation.	• No additional mitigation necessary.	**HAVO/NPS (NR & PM), FHWA, & Contractor:** Follow removal and rehabilitation plans as discussed and approved in design reviews, and outlined in contract specifications.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Wildlife: Includes mammals, amphibians, and birds, native and non-native. Does not include wildlife that is of special species status.	Construction occurs in area where numerous species of wildlife (native & non-native exist). Impacts would be direct, local, long-term, and minor with mitigations.	• Before removing trees January through July, conduct surveys for native bird nests. • The road contractor would ensure that all construction equipment, vehicles, and machinery are coqui free before entering the park. • Park's non-native species control standard operating procedures would be implemented. The park would monitor disturbed areas to identify and remove coqui tree frogs.	**HAVO/NPS:** Conduct pre-tree removal surveys for native bird nests, if removing Jan- July (NR). Conduct/coordinate tree removal (PM, FM, & NR). Notify contractor to refine equipment cleaning methods if coqui found during construction (PM). Monitor areas disturbed by construction up to 3 yrs. Implement NPS DO 13 guidelines for treatment and control of non-native species (NR & PM). **FHWA:** Ensure contract specifications include contractor obligation for equipment to be coqui free before entering the park. **Contractor:** Ensure equipment is coqui free before entering park. If notified of presence of coqui in construction site, refine cleaning methods.
Vegetation: Special Status Species: Presence of *Silene Hawaiiensis* from Kilauea Overlook to the Jaggar Museum (~ Station 625 to 601).	Addition of pavement width & rebuilding shoulders could disturb plants.	• NPS botanist would survey, flag, or fence off *S. hawaiiensis* prior to construction. • Collaborate w/ contractor to avoid foot & vehicle traffic off-pavement where plants found.	**HAVO/NPS:** Survey & flag areas adjacent road construction w/ *S. hawaiiensis*. Collaborate w/ FHWA & contractor to avoid those areas during construction (NR & PM). **FHWA:** Ensure contract specifications instruct contractor to not disturb flagged areas. **Contractor:** Avoid disturbing flagged areas.
	Removal of informal pullouts has potential to affect species. Impacts upon vegetation special status species would be direct, local, long-term, beneficial, &minor.	• NPS botanist would survey, flag, or fence off *S. hawaiiensis* prior to construction. • Collaborate w/ contractor to avoid foot & vehicle traffic off-pavement where plants found.	Responsibilities for HAVO/NPS, FHWA, and Contractor are the same as above cell.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Wildlife Special Status Species (Threatened and Endangered Species and Species of Concern): Presence of Nene, Petrels, Hawaiian Hoary Bat, & Hawaiian Hawk.	Road rehabilitation occurs in areas where 4 endangered birds and an endangered mammal are or may be found. Construction activities could affect these species. Impacts upon the Hawaiian hoary bat, petrels, and Hawaiian hawk, would be direct, local, short-term, and negligible. Impacts upon the nene would be direct, local, short-term, and minor.	• Inform construction personnel of presence of special species wildlife and advise on how to avoid impacts to them. **Nene:** • Park staff would brief contractor on potential impacts to nene, instructions for what to do when nene are encountered, and to immediately report any nene sightings. • No road construction between KMC and the Jaggar Museum from Sept. 1st to April 30th to protect nene during breeding season. • September through April, the park biologist would be consulted before low impact construction activities, such as road striping or sign installation, between KMC & the Jaggar Museum. Activities may be halted or not permitted depending on the nature of nene activity. • Staging areas between KMC & Jaggar would be routinely surveyed between Sept. 1 & April 30, with areas adjacent to the Mauna Loa Strip Road and Kilauea Overlook surveyed weekly if used for staging. If nene activity is found, measures would be taken to protect them. If nest or brood found, construction activity would be halted while park biologist evaluates the situation. • Re-vegetation along roadway would avoid vegetation attractive to nene. • Following construction road speed would not be increased. • Disturbed areas would be monitored for up to three years following construction to identify and herbicide non-native species, particularly grasses that may be attractive to nene. **Petrels:** • No night construction work would be allowed. • Temporary traffic signals must have shields and/or hoods. • Path lighting added would be low to ground, shielded and downward pointing. **Hawaiian Hoary Bat:** • If bats are observed in area, halt work, consult biologist, and wait for assessment and recommendation on how to proceed. • No trees greater than 15 feet in height in potential endangered bat habitat should be removed during May-August without prior monitoring and approval by the park biologist.	**HAVO/NPS:** Conduct necessary bird and wildlife surveys outlined in mitigations to inform contractor and guide construction schedule (NR & PM). Inform contractor of procedures when special species are encountered (NR & PM). Consult and collaborate w/ FHWA, Contractor, and appropriate natural resources advisory agencies when new or different issues arise during construction regarding special wildlife species (NR &PM). Ensure re-veg plan does not include species attractive to nene and herbicide any non-native species attractive to nene that come in on own along road following construction (PM & NR). **FHWA:** Ensure contract specifications clearly outline restrictions to construction schedule, and requirements for conducting certain construction activities in areas where wildlife special species exist. **Contractor:** Adhere to contract specifications outlining schedules, and requirements that must be met to conduct certain construction work. Halt work and consult NPS and FHWA when new or different conditions arise regarding wildlife special species.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Wildlife Special Status Species (Threatened and Endangered Species and Species of Concern) CONTINUED: Presence of Nene, Petrels, Hawaiian Hoary Bat, & Hawaiian Hawk.	Road rehabilitation occurs in areas where 4 endangered birds and an endangered mammal are or may be found. Construction activities could affect these species. Impacts upon the Hawaiian hoary bat, petrels, and Hawaiian hawk, would be direct, local, short-term, and negligible. Impacts upon the nene would be direct, local, short-term, and minor.	**Hawaiian Hawk/Io:** • To degree possible, construction between the entrance station and Volcano House would be conducted outside of nesting season, which is typically between March and September. • A park biologist would brief the contractor on the Hawaiian hawk, potential impacts, and give instructions to immediately report Hawaiian hawk sightings to the bird biologist. • Before construction activities during the breeding season, a survey of the area for birds and nests would be conducted by the bird biologist. • If an active nest is detected, construction activity would halt and not resume until the nest has been vacated or further coordination with the USFWS occurred.	**HAVO/NPS:** Conduct necessary bird and wildlife surveys outlined in mitigations to inform contractor and guide construction schedule (NR & PM). Inform contractor of procedures when special species are encountered (NR & PM). Consult and collaborate w/ FHWA, Contractor, and appropriate natural resources advisory agencies when new or different issues arise during construction regarding special wildlife species (NR & PM). **FHWA:** Ensure contract specifications clearly outline restrictions to construction schedule, and requirements for conducting certain construction activities in areas where wildlife special species exist. **Contractor:** Adhere to contract specifications outlining schedules, and requirements that must be met to conduct certain construction work. Halt work and consult NPS and FHWA when new or different conditions arise regarding wildlife special species.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Cultural Resources: Ethnographic Resources: Sacred sites, areas of traditional access and practices for Native Hawaiians.	Sites identified as sacred to Native Hawaiians are within or adjacent to the 2.8 miles of Crater Rim Drive that would be rehabilitated under this alternative. However, access, use, or preservation of traditional sites would not change as a result of this project. Impacts would be direct, local, long-term, adverse, and minor.	• Construction activities in areas may be stopped for short-terms to allow for traditional cultural practices, including the absence of construction-associated sound. • Access, use, and preservation to/of traditional sites would not change as a result of this alternative. • If Native Hawaiian remains or resources were discovered, work would halt that had a potential to affect them and consultation would occur with Native Hawaiians.	**HAVO/NPS:** Provide FHWA/Contractor idea of when construction may need to halt for cultural practices. Consult if remains are found (CR & PM). **FHWA:** Include possible work stoppages in contract specs. **Contractor:** Adhere to work stoppages. Contact NPS staff if remains are found.
Cultural Resources: Historic Structures & Cultural Landscapes: Road width, individual features, landscape, and viewshed all contribute to character and historic eligibility of Crater Rim Drive.	Completely cover shoulder stones. Result preserves them in place; avoids adverse impact.	• Hand remove asphalt adhering to stones now. • Cover stones with barrier fabric & 5" new asphalt	**FHWA:** Include mitigations in specs. **Contractor:** Adhere to these mitigations as outlined in specs.
	Addition of road width and paved shoulders could change historic look of road.	• Treat shoulders to present visual appearance closer to historic gravel, rather than asphalt.	**FHWA:** Include final treatment decision in specs. **Contractor:** Adhere to these mitigations as outlined in specs.
	Altering of historic road features: cutting rock slope; removing & resetting curbstones.	• Use NPS approved masons for rock cutting. • Clean curbstone & return them to exact location they were removed from.	**HAVO/NPS:** Coordinate approved masons for rock cutting w/ construction schedule (CR & PM). **FHWA:** Include these mitigations in specs. **Contractor:** Adhere to these mitigations as outlined in specs.
	Some alteration to vegetation and drainage. Impacts for all these would be direct, local, long-term, moderate, and beneficial.	• Limit tree removal. • Disguise metal grates with natural features.	**HAVO/NPS:** Coordinate /conduct tree removal (PM, FM & NR). **FHWA:** Minimize tree removal in design. Include final disguise treatment in specs. **Contractor:** Adhere to these mitigations as outlined in specs.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Cultural Resources: Archeological Resources: Presence of archeological site throughout the area between KMC & the Jaggar Museum (~ Station 650 to 601).	Addition of pavement width & rebuilding shoulders could disturb site.	• Limit off pavement activity to area necessary for widening (~6' wide, .5' deep altogether). • NPS archeologist to conduct ground testing before construction. • NPS archeologist to monitor during construction. • If discoveries made during construction, work is halted pending further consultation.	**HAVO/NPS:** Conduct surveys and monitoring (CR & PM). **FHWA:** Ensure contract specs instruct contractor what to do if new discoveries are found during construction. **Contractor:** Adhere to contract specs.
	Removal of informal pullouts could disturb site. Result is beneficial to site, prevents further disturbance. Impacts would be direct, local, long-term, minor, and beneficial.	• Limit off pavement activity to area necessary to rehab pullout. • NPS archeologist conducts shovel testing prior to construction. • NPS archeologist to monitor during removal. • If discoveries made during removal, work is halted pending further consultation.	**HAVO/NPS:** Conduct shovel tests and monitoring (CR & PM). **FHWA:** Ensure contract specs instruct contractor what to do if new discoveries are found during construction. **Contractor:** Adhere to contract specs.
Park Operations: 2.8 mile segment used by over 1000 people working in park including.	Road would be rehabilitated to accommodate average daily traffic loads and avoid the need for large scale road repairs for another 20 years. Traffic delays during construction for staff working in park. Delays for emergency responders leaving park.	• Traffic delays would be limited to less than 15 minutes per passage of vehicles through a road segment. • Emergency responders would contact construction crew when they were dispatched, allowing 5 minutes to clear the road. • The entire construction project is expected to take no more than 6 months.	**HAVO/NPS:** Keep park staff informed as to construction schedule and anticipated delays (PM, PR & F). **FHWA:** Ensure contract specs instruct contractor about limits of delays, and timely access for emergency responders **Contractor:** Adhere to contract specs.
	Road would undergo comprehensive improvements & have structural deficiencies fixed with 1 project (~6 months). Repairs needed over next 20yrs are fewer. Impacts would be direct, local, long-term, moderate, and adverse (during construction), and beneficial (after).	• Road remains open, alternate entry into park for staff.	**HAVO/NPS:** Coordinate installation of alternate entry gate w/ FHWA. Coordinate park employees using this gate (PM & FM). **FHWA:** Coordinate installation of gate with HAVO/NPS.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Visitor Use and Experience: Main route to major park destinations used by majority of visitors. Road itself is part of the visitor experience.	Road would undergo improvements by 1 project (~6 months). Project would be funded. Road would provide better experience for users, with minimal repairs over next 20 years. Completed construction impact to visitors is beneficial. Impacts would be direct, local, long-term, minor to moderate, and adverse (during construction), and beneficial (after construction).	• Reduce delays and impacts to visitors during 6 month construction. • Road remains open. Access maintained to visitor facilities. Accessible parking, walkways, and crosswalks added. Signs added to better direct visitors. • Information on construction to be provided on park's website and at the Kilauea Visitor Center.	**HAVO/NPS:** Keep visitors informed as to construction schedule and anticipated delays; including on web. If delays at entrance station back up to Hwy 11, coordinate to move visitors through faster (PM, PR & F). **FHWA:** Ensure contract specs instruct contractor about limits of delays. **Contractor:** Adhere to contract specs. Coordinate w/ NPS staff when delays at Entrance Station are due to construction and backing up to Hwy 11.
Commercial Operations: Routine users of CRD. Use of the road is vital to the nature of their operations.	Road would undergo numerous improvements via 1 project (~6 months). Road would be better experience for users with minimal repairs over next 20 years. Impacts would be direct, long-term, local, minor to moderate adverse (during construction) and beneficial (after construction).	• Provide advance construction notification and road use coordination with these groups. • Assist in finding alternate destinations or routes during construction. • Minimize traffic delays in construction area to 15 minutes.	**HAVO/NPS:** Keep commercial operators informed as to construction schedule and coordinate w/ them to find alternate routes. **FHWA:** Ensure contract specs instruct contractor about limits of delays. **Contractor:** Adhere to contract specs.

TABLE 2. Impact topics dismissed in CRD EA (with mitigations)

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Topography, Soils, and Drainage	Localized, long-term, beneficial and minor, impacts are expected to topography, soils, and drainage. With mitigation, potential impacts are further reduced.	• Erosion & sediment controls would be installed during construction. • NPS must approve all topsoil needed for the project & it must come from within HAVO. • Topsoil removed during construction would be replaced in the same area it is removed from.	**HAVO/NPS:** Approve any additional topsoil should it be needed for construction (PM & NR). **FHWA:** Ensure contract specs instruct contractor about these mitigations. **Contractor:** Adhere to contract specs.
Water Resources/ Water Quality	Negligible impacts are expected to water resources. With mitigation, potential impacts are further reduced.	• Sediment logs/erosion controls would be used where necessary at culvert drains & ditches. • Sediment & erosion controls would be used where necessary at cut & fill areas. • Restoration & re-vegetation would be implemented to minimize long-term erosion (and associated effects). • Water needed for construction would come from existing developed systems within the park and the county.	**HAVO/NPS:** Approve any additional topsoil should it be needed for construction (PM & NR). **FHWA:** Ensure contract specs instruct contractor about these mitigations. **Contractor:** Adhere to contract specs.
Air Quality	Local short-term, and negligible, air quality impacts associated with rehab and construction of road. Mitigations further reduce potential for impacts.	**During rehab and construction the following mitigations would be implemented:** • Use water to control fugitive dust. •Drivers told to not idle vehicles more than 3 min., including while waiting in construction delay. • Concrete & asphalt plants would be located outside of the park • Construction debris would be hauled from the park to an appropriate disposal location.	**HAVO/NPS:** Conduct outreach or information campaign to encourage visitors not to idle in construction delays (PM, PR, & F). **FHWA:** Ensure contract specs instruct contractor that non-operation related vehicles are subject to park's 3-min idle rule, and can be ticketed by park rangers if they violate this; specs also include other mitigations listed here. **Contractor:** Adhere to mitigations in contract specs.

IMPACT TOPIC	DESCRIPTION OF IMPACT	MITIGATIONS	MITIGATION RESPONSIBILITIES
Greenhouse Gas Emissions, Climate Change, & Energy Conservation	Minor, short-term, greenhouse gas emissions associated with rehab and construction of road. Mitigations further reduce potential impacts.	• No idling more than 3 min. for all vehicles, including non-operation related construction vehicles and vehicles waiting in construction delays. • Install temp card gate for HAVO employees; redistributes traffic flow and volume; potentially reduces waiting. • Recycle existing asphalt into new pavement. • Encourage contractor to use alternative fuel vehicles & environmentally friendly materials where possible.	**HAVO/NPS:** In addition to same responsibilities listed in above cell, coordinate w/ FHWA to have contract install card gate (PM & FM). **FHWA:** In addition to responsibilities listed in above cell, ensure other mitigations here are included in specs Ensure contract specs include installation of card gate. **Contractor:** Adhere to specs.
Night Sky/Natural Landscapes	Local, long-term, and negligible impacts are expected from this project. Mitigation will further minimize potential for impacts.	• There would be no construction at night • Foot lighting added would be low to ground, dim, and downward pointing. • If temporary traffic signal used for traffic control during construction, shields and/or hoods will be on the light to minimize light pollution.	**FHWA:** Ensure these mitigation measures are included in contract specs. **Contractor:** Adhere to these specs.
General Measures Associated w/ Construction Project	Variety of small impacts that accompany construction activities and do not fall into a specific impact topic, or fall under multiple impact topics. With mitigations, all impacts are expected to be negligible.	• Identify limits of construction on design drawings in consultation with park resources protection restrictions. No activity occurs outside these limits. •Protect staging areas from spillover impacts •Properly maintain construction equipment. •Utilize best management practices for sediment and drainage control. •Disposal of natural material from the park would be handled in the park, or else disposed of legally outside of the park. •Utilize traffic controls: signs, temporary signals, flaggers, to maintain traffic safety and flow. •Control /pick-up all litter. •Ensure culverts and ditches are properly cleaned.	**HAVO/NPS:** Coordinate w/ FHWA to identify construction limits; remove all litter, clean ditches & culverts prior to construction; conduct periodic checks of contractor practices (PM, FM, CR, & NR). **FHWA:** Coordinate w/ park to identify construction limits. Ensure all mitigations outlined in specs. **Contractor:** Adhere to specs.