National Park Service
U.S. Department of the Interior

Denali National Park and Preserve
Alaska

Finding of No Significant Impact

Rock Creek Bridge Replacement

June 2012

Recommended: Paul R. Anderson 6/14/12
Superintendent, Denali National Park and Preserve — Date

Approved: for Sue Masica 6/19/2012
Regional Director, Alaska — Date

FINDING OF NO SIGNIFICANT IMPACT

Rock Creek Bridge Replacement

Denali National Park and Preserve, Alaska
June 2012

The National Park Service (NPS) prepared an environmental assessment (EA) to evaluate impacts of replacing or retrofitting the Rock Creek Bridge on the Denali Park Road in Denali National Park.

The NPS has selected Alternative 2 (the preferred alternative), *Construct New Culvert*, with the mitigation measures. Under this alternative, a contractor selected by the Federal Highways Administration (FHWA) will replace the Rock Creek Bridge with an 18 foot diameter culvert buried half the diameter of the culvert under the floodplain, with an embankment placed above the culvert up to the present level of the park road. Two 12 foot vehicle lanes with 3 foot shoulders and a re-routed 8 foot wide pedestrian pathway will be constructed on top of the embankment.

Responses to public comments are found in Attachment A**.**

ALTERNATIVES

Three alternatives were evaluated in the EA.

Alternative 1, *No Action* (Environmentally Preferable Alternative)
Under Alternative 1, the Rock Creek Bridge would continue to serve year-round traffic up to its design load and width. This steel-multi-beam bridge is currently in fair condition overall, but would remain susceptible to damage from a major seismic event. Bridge maintenance and repairs would include periodically removing soil and debris from expansion joints, cleaning and painting all bearings, spot painting beams and diaphragms, replacing missing and bent anchor bolts, and repairing erosion of slopes in front of both abutments. The cost for these actions would range from $100,000 to $130,000. The existing separate parallel steel pedestrian bridge upstream about 30 feet and at a lower elevation would remain in use.

Alternative 2, *Construct New Culvert* (Preferred Alternative)(Selected Alternative)
Under Alternative 2 the existing bridge would be removed and an 18 foot diameter round culvert would be constructed and covered by gabion (rock filled wire baskets) tiers, mechanically stabilized earth (MSE), and natural grade fill slopes. Nearly half the diameter of the culvert would be buried in stream-bed gravels, and habitat boulders would be placed inside the culvert. In addition to the main culvert, a 4 foot diameter overflow culvert would be installed.

A temporary access route would be constructed for heavy equipment to move to and from the creek bed. As the fill section is built up on top of the large culvert, one lane of traffic would be diverted to drive on the fill while the bridge deck is removed. The fill would be brought up around the bridge piers, with the final fill wide enough for two 15 foot lanes and an 8 foot wide pedestrian trail. Local pedestrian trail would be realigned, and the new pedestrian trail alignment south of the road would require cutting into the slope just before the residential area. This slope is located in the Headquarters Historic District.

The total area of impact would be 2.3 acres.

Construction would start in the summer of 2013, and it would be completed in one season (5 months). The net construction cost of a new culvert and causeway is currently estimated at cost between $2,300,000 and $2,800,000.

Alternative 3, *Retrofit Existing Bridge, Existing Alignment*.
This alternative would consist of two main categories of work: seismic retrofitting of the existing bridge substructure, and rehabilitating the existing superstructure. Seismic retrofitting would include retrofitting piers, crossbeams and abutments and installing transverse restrainers at both abutments and piers, installing longitudinal restrainers at piers, and installing longitudinal restrainers at abutments tied to dead-man anchors in fill. Rehabilitation of the existing superstructure would include replacing the existing steel beams with weathering steel beams, replacing the existing concrete deck, widening it to 34 feet, and replacing the existing bridge rails with two-tube rails

One lane traffic access over the bridge would be maintained throughout the entire construction operation. The superstructure would be replaced in two stages by using temporary supports to support the girders and deck. The life span of the replaced elements would be approximately 75 years, but the remaining elements that are not addressed would be shorter to varying degrees.

A temporary access route would be constructed down to the creek for heavy equipment. Pedestrian traffic would remain on the existing pedestrian bridge.

The total area of impact would be 1.6 acres.

Construction would start in the summer of 2013 and extend for eight months over two summers. The net construction cost of retrofitting the bridge is currently estimated at between $2,700,000 and $3,300,000.

Alternative 4, *Construct New Bridge, Downstream Alignment*
A new bridge would be a single span structure on a curved alignment on the downstream side of the existing bridge, approximately 180 feet long and 34 feet wide. It would have deep pile foundation, semi-integral reinforced concrete abutments, weathering steel beams with cast-in-place deck, and two-tube barrier rails.

Two-way traffic would be maintained across the existing bridge during construction. A temporary access route would be constructed down to the creek for heavy equipment. Pedestrian traffic would remain on the existing pedestrian bridge.

The total area of impact would be 2.3 acres.

Construction would start in the summer of 2013, with planned completion in fall of 2014. Operations would cease over winter. The construction schedule would take place over an 18 month period, but active only for ten months (two seasons). The net construction cost of constructing a new bridge downstream is currently estimated to cost between $4,600,000 and $5,700,000.

PUBLIC INVOLVEMENT

The EA was issued for public review and comment from March 29, 2012 to April 30, 2012. Paper copies of the EA, or notices of the EA's availability, were sent by mail or email to over 200 government agencies, interest groups, and individuals. The EA was posted on the NPS Planning, Environment, and Public Comment (PEPC) website and on the park's webpage. The park issued a press release about the availability of the EA and the open comment period on March 29, 2012. Three written comments were received. All three comments favored Alternative 3, ***Retrofit Existing Bridge, Existing Alignment***, and one commenter questioned the adequacy of the fishery impact analysis.

The public comments received did not change the conclusions in the EA about the environmental effects of the action. The NPS responses to substantive public comments are found in Attachment A.

DECISION

The NPS decision is to select a modified Alternative 2, *Construct New Culvert*, along with the mitigating measures. Modifications are described in the Errata in Attachment A.

Mitigating Measures

The following mitigation measures apply to the selected Alternative 2, *Construct New Culvert*:

Best management practices (BMPs) and mitigation measures will be used to prevent or minimize potential adverse effects associated with replacing the Rock Creek Bridge. Mitigation measures undertaken during project implementation will include, but will not be limited to, those listed below:

Soils and Vegetation

- The area of disturbance will be kept to a minimum. For example, heavy construction equipment will be kept on the road surface to the extent possible (i.e., when performing excavation adjacent to the roadway).
- Construction areas will be identified by and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications, and workers will be instructed to avoid construction activities beyond the construction zone, as delineated by the construction zone fencing. Construction materials will be stored in previously disturbed areas.
- Soil erosion due to wind and rain will be minimized. The erosion prevention practices could include using silt screening around any disturbed areas, mulching all exposed slopes, placing staked hay bales in drainages, and sprinkling exposed soil to prevent wind erosion. Upon completion of the construction project, all disturbed soils will be revegetated to prevent erosion.
- Topsoil will be removed and stockpiled for reapplication to disturbed areas when construction is complete.
- Disturbed areas will be restored to natural contours to the extent possible to reduce the potential for erosion, and native species from genetic stocks originating in the Park, or from plants previously removed from the construction area whenever possible, will be used for revegetation. Revegetation efforts will be designed to reconstruct the natural spacing, abundance, and diversity of native plant species.
- Subsequent to project completion, park staff will monitor and require removal of any invasive plant species observed.
- Gravel and fill for construction or maintenance will be obtained from sources certified free of non-native plants. Gravel pits and fill sources will be inspected to identify sources free of non-native plants. There will be no quarrying or borrow of construction materials from inside the park.
- All debris will be removed from the park for legal and proper disposal.

Wildlife and Habitat

- If erosion matting/netting is required, a biodegradable type with mesh that is small enough (1/2" or less) to not entangle small animals will be used.
- Mitigation for the minor loss of habitat will include the revegetation with native plants and removing exotic vegetation in the remaining habitat.
- Under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703), it is illegal to “take” migratory birds, their eggs, feathers, or nests. “Take” includes by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof. The MBTA does not distinguish between intentional and unintentional take. Vegetation clearing, site preparation, or other construction activities that may result in the destruction of active bird nests or nestlings will violate the MBTA. In order to avoid violations of the MBTA, bird habitat (vegetation) will not be removed during the nesting season, April through July 15. After completing all the nesting vegetation removal required for the project, there will be no seasonal restriction for construction activities, even during

subsequent nesting seasons. If an active nest were encountered at any time, it will be protected from destruction.

Water Resources

- Storm water runoff control measures, including silt capture techniques such as silt fences and natural filters, will be employed to improve quality of runoff and prevent degradation of the creek and wetlands.
- Design and construction measures will include development of surface water control features to minimize post-construction run-off.
- Construction vehicles could leak fluids into the creek and wetlands, introduce noise pollution, and emit pollutants to the atmosphere. To minimize this possibility, equipment will be checked frequently to identify and repair any leaks, mufflers will be checked for proper operation, and only equipment that is within proper operating specifications will be used.
- Fuel and oil services for construction machinery will be provided in a designated area away from the stream channel and wetlands. This will include secondary containment for all fuel storage tanks and on-site availability of a specialized "spill kit" with capacity to contain a 95 gallon fuel spill.

Visitor Use and Experience and Visual Quality

- Signs will be posted to warn travelers about road construction and traffic delays.
- Construction phasing and timing will be coordinated with the park bus systems and low visitor use times to minimize traffic delays on the park road.
- Well-tuned construction equipment with properly operating mufflers will be used.
- During construction activities, traffic flows will be maintained by keeping construction equipment out of the traffic lanes when possible.
- Adverse impacts to visitor use and experience of the natural landscape will be minimized by the use of coloring on constructed elements to blend their appearance with the surrounding landscape.

Cultural Resources

- If newly discovered cultural resources are identified during project implementation, work in that area (within 600 feet) will stop and the Superintendent will be notified immediately (36 CFR 800.13).

Rationale for the Decision

The selected action (Alternative 2) will satisfy the purpose and need of the project better than other alternatives. Even though Alternative 2 would affect 2.3 acres of wildlife habitat versus 1.6 acres with the Bridge Retrofit alternative, selecting the New Culvert alternative is justified for numerous reasons. The New Culvert will require less maintenance over the next 50 years or more than any bridge alternative. Many routine repairs to a bridge are expensive due to the specialized training or equipment involved, whereas the park has over 600 culverts maintained by local staff. The Bridge Retrofit alternative will require up to two full summers of one-lane traffic over the bridge, while the New Culvert alternative could require up to three months of one-lane traffic. The construction delays over a two-year period would reduce the amount of time that bus

passengers on the park road have to experience the park wilderness and increase the time they have at a construction site. The New Culvert will end up with a structure that has no load limits. Bridge load limits often make simple transfers of heavy equipment from one part of the park to another to be an expensive exercise using flaggers, special matting for the bridge surface, or re-routes that bypass a bridge. The New Culvert installation would eliminate all seismic rating concerns. The damage to a fill section from even a significant earthquake could be repaired quickly by park crews to restore the passage of traffic, while the damage to a bridge could make the bridge and the road unusable for an extended period of time.

Alternative 1, *No Action*, would not accomplish the purpose and need of the project. Though routine maintenance and repair of the bridge would replace sheared pins, clean the expansion joints, and repair erosion at the abutments, the bridge would remain deficient in vehicle load capacity, width, and seismic reliability.

Alternative 3, *Retrofit Existing Bridge*, would accomplish the purpose and need of the project by replacing or retrofitting bridge beams, crossbeams, restrainers, and by widening the bridge deck to 34 feet. The life span of the replaced or retrofitted elements would be approximately 75 years, but the remaining elements that are not addressed would be shorter to varying degrees. This alternative, however, would require deck work that would limit the structure to one lane of traffic for up to two full summers. This alternative would initially cost approximately $218,000 more than Alternative 2 and future maintenance on the bridge would be more costly than maintenance of the culvert proposed in Alternative 2.

Alternative 4, *Construct New Bridge Downstream*, would also accomplish the purpose and need of the project. Though there would be traffic delays through the work area, the park road would remain open for two-way traffic most of the time. The new bridge alternative, however, would cost nearly twice as much as Alternative 2, about $2,145,000 more.

Significance Criteria

The selected alternative (Alternative 2, *Construct New Culvert*) will not have a significant effect on the human environment. This conclusion is based on the following examination of the significance criteria defined in 40 CFR Section 1508.27.

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

The EA evaluated the effects of Alternative 2, *Construct New Culvert* on fish, wildlife and habitat, soils and vegetation, cultural resources, water resources, visual quality, visitor use and enjoyment, and park operations and safety. As documented in the EA, Alternative 2 will have a minor effect on the area's fish, wildlife and habitat, cultural resources, visitor use and enjoyment, and a moderate impact on vegetation and soils, water resources and visual quality, while having a moderate beneficial effect on park

operations by providing improved traffic flow and a seismically stable creek crossing. There will be no restriction of subsistence uses.

(2) The degree to which the proposed action affects public health or safety.

The selected alternative will have a beneficial minor impact on public health and safety because the traffic lanes at the creek crossing will be widened and the crossing itself will be seismically stable.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetland, wild and scenic rivers, or ecologically critical areas.

The facility construction will be located in a national park. The existing bridge is a non-contributing structure to the Historic Register-eligible Denali Park Road. The habitat acreage affected is not unique in that similar floodplains are found in numerous creeks draining the Outer Range in the eastern section of the park.

(4) The degree to which effects on the quality of the human environment are likely to be highly controversial.

The effects on the quality of the human environment will not be controversial. The NPS sent the EA to over 200 agencies, organizations, and individuals for public review. Only three comment letters were received. The environmental analysis concluded that the proposed facility construction will have no more than minor to moderate adverse impacts on park resources. Similar effects would attend any of the alternatives, due to the need to work in the floodplain.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The environmental effects of the selected alternative (Alternative 2, *Construct New Culvert*) do not involve unique or unknown risks. The mitigations and best management practices included with this decision will minimize risks to the public or wildlife populations.

(6) The degree to which the action may establish a precedent of future actions with significant effects or represents a decision in principle about a future consideration.

Each creek or river crossing on the park road needs to be evaluated for seismic stability, flow capacity, life expectancy, and fish friendliness. Any crossing could be evaluated as being better for cost effectiveness and resource impacts as a bridge or as a culvert depending on circumstances and improvements in engineering.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a

cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

The EA evaluated replacement of one bridge along the park road. All of the bridges are evaluated every couple of years for compliance with seismic and other safety specifications. The other seismically deficient bridge, the Ghiglione Bridge at MP 43, may be replaced by a small culvert in a couple of years. While the conceptual outline for this work was not evaluated in the *1997 Entrance Area and Road Corridor Development Concept Plan/Environmental Impact Statement*, and the *2001 Environmental Assessment for Construction of New Visitor Facilities in the Entrance Area of Denali National Park,* it has to be assumed that road segments fail in time and become in need of repair or replacement.

(8) Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The State Historic Preservation Officer (SHPO) has concurred in the park's analysis that the 1959 Rock Creek Bridge is not a contributing structure to the Historic Register-eligible Denali Park Road. The project is located in proximity to the Denali Headquarters Historic District. On May 4, 2012 the SHPO concurred with the park's assessment of **no adverse effect** for the bridge replacement project.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The selected alternative will not adversely affect an endangered or threatened species or its critical habitat.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The selected alternative (Alternative 2, *Construct New Culvert*) will not violate any Federal, State, or local law.

FINDINGS

The levels of adverse impacts to park resources from the selected alternative will not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or that are key to the natural or cultural integrity of the park.

The selected alternative complies with the NPS Organic Act, ANILCA, the Endangered Species Act, the National Historic Preservation Act, and Executive Orders 11988

(floodplains) and 11990 (wetlands). There will be no restriction of subsistence activities as documented by the ANILCA, Section 810(a) Summary Evaluation and Findings.

The NPS has determined that the selected alternative does not constitute a major federal action significantly affecting the quality of the human environment. Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), an environmental impact statement is not needed and will not be prepared for this project.

ATTACHMENT A

NPS RESPONSES TO PUBLIC COMMENTS
for the
Environmental Assessment for
Rock Creek Bridge Replacement
in Denali National Park

In response to the environmental assessment, the NPS received three comment letters. Described below are the substantive comments and the NPS responses.

1. Comment #1. Individual: Why choose an alternative that has greater impacts to water resources and visual quality when the cost differences are so minimal?

NPS Response #1: While the footprint of the New Culvert will be greater than a retrofitted bridge, the impact from creating a temporary access to the floodplain would be the same for either alternative and that is a large part of the acreage to be disturbed. While an embankment may never be as aesthetically pleasing as a well-designed bridge, a vegetative cover is planned to take hold on the upper areas of the embankment so that the appearance will be softened. The main reasons to choose the New Culvert is that the construction can be accomplished in one season rather than in two, the New Culvert will be as seismically stable as any other section of the road, and that the New Culvert will cost approximately $218,000 less than the bridge retrofit and cost less to maintain for the next 50 years.

2. Comment #2. Individual and Environmental Group: The New Culvert will dramatically alter the view of the natural streambed from the road.

NPS Response #2: The view of the streambed from the road is generally to the mid-distance either upstream when travelling west, or downstream when travelling east, and that will not change. There is a short section of road east of the bridge where today one looks in summer at the tops of the vegetation below the bridge, but the streambed itself and the sections of the bridge below the guardrail are generally hidden. The pedestrian crossing of the New Culvert will include a view almost straight down to the downstream side, though it will not have the views both downstream and upstream that the present pedestrian bridge has. Once the vegetation removed for the construction of the temporary access road starts to regrow, the views of the lower sections of the culvert and embankment will be buffered by vegetation.

3. Comment #3. Environmental Group: The EA fails to consider impacts to fish from construction and for the long term, and does not provide baseline data.

NPS Response #3: The New Culvert is designed to be "fish friendly." Recent culvert installations at Hogan Creek and at some of the other Hines Creek tributaries that flow under the paved part of the park road have followed a design whereby the culvert is partially buried and habitat boulders are placed on the replaced streambed gravels and cobbles to create resting areas for grayling or other species found in the creek. These designs have been improved through consultations with the Alaska Department of Fish and Game. There will be two periods of impact to migrating fish in Rock Creek. First, during excavation for the culvert the creek will be routed around the work area. Excavation for and placement of the 104 foot long culvert will require two to three weeks of construction activity. Once the culvert is placed in the floodplain and the seven to nine feet of gravel, cobbles and habitat boulders are set in the culvert, the stream will be returned to the culvert and it will provide for fish passage essentially as usual. Second, other construction around the culvert to build the embankment will increase turbidity downstream but will not affect water flows or the fish upstream, and coir logs and other sedimentation prevention practices will be employed to reduce erosion and turbidity inputs.

The commenter is correct that we have little baseline data on fish populations in Rock Creek. A study in 1981 found 34 dwarf Dolly Varden upstream of the bridge. Other studies have shown that floods in Rock Creek can significantly lower the macro-invertebrate population, reducing the food available and the survival chances for any fish left after the flooding. This indicates that populations of Dolly Varden and other fish in Rock Creek could naturally experience large swings in population numbers. The NPS commits to surveying the fish resources of Rock Creek after the New Culvert installation. The NPS will work with FHWA and the construction contractor to plan the culvert installation phase of the project so that it will have the least impact on potential Dolly Varden upstream migration. The work of installing the big culvert would be scheduled before or after the migration period of the resident fish, set as Memorial Day weekend through June 15. Other work that does not involve moving the creek would not have this restriction.

4. Comment #4. Individual and Environmental Group: The New Culvert will be subject to washouts during floods and blockages if the winter ice builds up. Additional mitigation measures should be used to protect water quality during construction.

NPS Response #4: The two mitigations listed in the EA for managing water quality during construction and post construction are the minimum mandated for this purpose. Once the approximately seven feet of streambed depth is replaced into the 18 foot culvert, including heavy boulders, the resistance to erosion and washouts will be similar to that found today. Three 60" diameter culverts have been added to the design, to be placed above the main culvert as overflow conduits. If winter ice, flood debris or landslide debris plug the main culvert, the overflow culverts will be there to carry the water flow.

5. Comment #5. Environmental Group: The projected cost does not include removing the pedestrian bridge

NPS Response #5: The NPS hopes to find a compatible use for the Rock Creek pedestrian bridge at another location in the park. Because there would be a crane on site, the cost of remove the bridge would be minimal.

6. Comment #6. Environmental Group: The trail should be made to ADA standards.

NPS Response #6: The full trail can't be made to strict ADA standards because of the elevation difference between the bridge site and the residential road in park headquarters. The NPS will ensure that the trail segments between the bridge and park headquarters will meet ADA standards for width and compaction, but will only be able to meet ADA standards for grade where the terrain allows within the scope of the project area.

7. Comment #7. Individual: Moose will have to come up to the road to follow the floodplain and be more of a danger in the sight-distance challenged area.

NPS Response #7: NPS agrees that moose will not likely travel through a 104 foot long culvert, summer or winter. However, no data exists to suggest that moose restrict their movement to the current creek valley below the bridge. Moose and other animals will be able to continue to cross the road at any point so drivers will be alert to any animal near the road.

8. Comment #8. Individual: The plan says that to reduce impacts to visitors, much of the work will be done at low visitor use times. Does this mean at night? This plan then shifts those noise impacts to the residents of C-Camp and Headquarters.

NPS Response #8: Residents and visitors will be temporarily impacted by the noise and delays during construction. Some of the noisier work phases may be better done between 8am and 8pm. Work that requires longer traffic delays will be better accomplished at night and may or may not be associated with increased noise.

9. Comment #9. Individual: The analysis in Chapter 4 seems to indicate that there would be a greater impact to fish, wildlife and habitat from Alternative 3 than from Alternative 4. I don't believe the information in the evaluation supports that.

NPS Response #9: We agree that the summary evaluations were poorly worded. Alternative 2 will have a greater impact to wildlife than would Alternative #3 because a greater area will remain disturbed after construction, though both alternatives would have a minor adverse impact to fish, wildlife and habitat. Re-written paragraphs are given as corrections in the Errata. Alternative #4 would have a greater impact to wildlife than Alternative #3.

10. Comment #10. Environmental Group: The NPS should commit to a comprehensive fish population and habitat monitoring program.

NPS Response #10: See response to #3 above.

11. Comment #11. Environmental Group: Bridges are preferable to culverts. Are there other plans to replace bridges with culverts along the park road?

NPS Response #11: See response to #3 above.

ATTACHMENT B

ERRATA
In the EA for Replacing the Rock Creek Bridge in Denali National Park

This errata section provides clarifications, modifications or additional information to the EA and to the selected alternative, Alternative 2, *Construct New Culvert*. This modification does not significantly change the analysis of the EA and, therefore a new or revised EA is not needed and will not be produced.

1. **Modification. Replace this sentence at 2.3 on page 11:**

"In addition to the main culvert, a 4 foot diameter overflow culvert would be installed."
With this sentence:

"In addition to the main culvert, three 5 foot diameter overflow culverts would be installed."

2. **Correction. Replace this paragraph on page 41:**

"The cumulative impact on fish, wildlife, and habitat from such actions would be adverse and minor to moderate. Alternative 2 would contribute minor, adverse cumulative impacts on fish, wildlife, and habitat. Combined with known past, current and future projects and actions, there would be minor, adverse cumulative impacts on fish, wildlife, and habitat."

with this paragraph:

"Combined with known past, current and future projects and actions, there would be moderate, adverse cumulative impacts on fish, wildlife, and habitat. The contribution of Alternative 2 to that cumulative impact would be minor and adverse."

3. **Correction. Replace this paragraph on page 50:**

"The cumulative impact on fish, wildlife, and habitat from such actions would be adverse and moderate. Alternative 3 would contribute minor, adverse cumulative impacts on fish, wildlife, and habitat. Combined with known past, current and future projects and actions, there would be minor to moderate, adverse cumulative impacts on fish, wildlife, and habitat."

with this paragraph:

"Combined with known past, current and future projects and actions, there would be moderate, adverse cumulative impacts on fish, wildlife, and habitat. The contribution of Alternative 3 to that cumulative impact would be minor and adverse."

ATTACHMENT C

NON-IMPAIRMENT DETERMINATION
for Replacing the Rock Creek Bridge
in Denali National Park

The NPS Organic Act of 1916 and the General Authorities Act of 1970 prohibit impairment of park resources and values. The 2006 NPS Management Policies use the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park is established and managed, including the Organic Act's fundamental purpose and any additional purposes as stated in the park's establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in an unimpaired condition that will allow people to have present and future opportunities for enjoyment of them.

A determination of impairment is made for each of the resource impact topics carried forward and analyzed in the Rock Creek Bridge Replacement environmental assessment for the preferred alternative (Alternative 2, *Construct New Culvert*). The description of park significance in Chapter 1 was used as a basis for determining if a resource is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment determinations are not provided for visitor opportunity, park management, or socioeconomic resources because impairment determinations relate back to park resources and values. These impact areas are not considered to be park resources or values subject to the non-impairment standard.

Fish, Wildlife and Habitat

The mosaic of tundra, forest, shrubland, wetland, and open meadow vegetation types found throughout the park and adjacent to the project area provide optimal habitat for several large mammal species and numerous small mammals and birds. Small populations of Dolly Varden trout migrate annually to pools upstream of the bridge site. Alternative 2 construction activities will cause temporary displacement and disturbance of resident wildlife for the five months duration of construction. It is estimated that a total of 2.3 acres of wildlife habitat will be disturbed. Moose, which are common in the area, and occasional wolves and grizzly bears, will be temporarily displaced from adjacent habitats, but are likely to utilize similar abundant habitats in the vicinity. Small mammals will be displaced from the immediate area of vegetation clearing and

disturbance during construction. To address the issue of fish passage through the culvert, 7 feet of the 18 foot diameter of the culvert will be buried and filled with gravel and habitat rocks to simulate the substrate of Rock Creek. There may be temporary blockage of fish passage during construction while the gabion tiers, MSE, a natural grade fill slope, and new culvert are being placed; however, over the long-term, fish will be able to move freely through the culvert. The minor adverse impacts of this alternative to fish, wildlife and wildlife will be temporary for fish due to the reconstructed channel, and much of the habitat removed for access purposes will quickly grow back as willow or alder and available for moose and small mammals. These impacts will not degrade the quality of area-wide biological resources and will not result in impairment.

Vegetation and Soils

Alternative 2 will disturb up to 2.3 acres of soils and vegetation during bridge replacement. Site preparation will require construction of a temporary access road to the creek bed, plus the work to excavate and fill for the culvert and embankment.
There will be alteration of soil function from construction activities. If any natural soil horizons exist, they will likely be lost during the earthwork. Construction will compact and destroy the structure and function of the organic soil horizon and mineral soils. The excavated area will be reseeded with locally-gathered seeds. Due to active revegetation, not all of the impact area will have permanent loss of native vegetation cover. Alternative 2 will have a moderate adverse impact to soils and vegetation. The soil types and vegetation are common locally and regionally and these impacts will not result in impairment.

Cultural Resources

The State Historic Preservation Officer has concurred in the park's analysis that the 1959 Rock Creek Bridge is not a contributing structure to the Historic Register – eligible Denali Park Road. The new pedestrian trail alignment south of the Park Road will require cutting into the slope on both sides of the residential road at the junction with the Park Road. This back slope is located at the edge of the Headquarters Historic District and was constructed in 1959 to match the new road alignment coming off the new bridge. New soil disturbance for the trail construction will affect the less than 0.1 acres in the Historic District. The new trail alignment will follow existing trail design for appearance, width; tread type, and vegetation clearing. Alternative 2 will have an adverse, minor impact on cultural resources, specifically the Headquarters Historic District, from cutting into the back slope to build the new pedestrian trail, but this impact will not result in impairment.

Water Resources

The interior of the proposed culvert will be backfilled with 7 feet of gravel-cobble-boulder material matching the existing natural stream bed material. When the 18-foot diameter culvert is sloped 5.8 percent, the water depth at the inlet for the 2-year and 100-

year peak discharges will be approximately 1.0 feet and 3.0 feet, respectively. Clearance between the culvert crown and predicted 100-year water surface elevation at the culvert inlet will be approximately 8 feet. Localized depressions in the stream profile of 2 to 4 feet occur where water plunges over transverse boulder clusters creating a scour hole. These localized depressions may migrate upstream or downstream with extreme flood discharges. Placing the culvert invert 7 feet below the projected streambed surface, backfilling with gravel-cobble-boulder material matching the existing natural streambed material, and matching the culvert slope to the natural stream gradient will promote unrestrained sediment conveyance through the culvert. It also will accommodate the expected stream degradation and localized adjustments in the stream profile. Identifying and staking the limits of clearing and grading, installing silt fences, establishing a controlled area for construction material and equipment, and preparing and implementing a sediment and erosion control plan will minimize the potential for adverse impacts to water quality, floodplains, and wetlands. Water quality during construction will be protected by constructing a sump upstream of the bridge that will collect water from the stream and pump it past the construction site where it will then discharge into the natural streambed. Alternative 2 will have a moderate adverse impact on water resources by constricting the stream floodplain for 104 feet. This impact will not result in impairment.

Visual Quality

Under this alternative, visual components of the project area will be altered: the existing bridge will be removed and replaced with a culvert and embankment, and the existing pedestrian bridge will be removed and replaced with a new road crossing and an ADA-compliant pedestrian trail adjacent to the new road section. There will be short-term impacts to visual resources during the construction phase from vegetation clearing, presence of equipment, a temporary access route down to the creek, dust, and fresh cut banks. In the long-term, a new culvert will replace the existing bridge, giving the roadway a different appearance. Alternative 2 will have moderate, adverse impacts on visual quality due to the exposed gabion structure design features. This impact will recede in time as vegetation grows back on the embankment and temporary access route and will not result in impairment.

SUMMARY

The level of impacts to fish, wildlife and habitat, vegetation and soils, cultural resources, water resources, and visual quality anticipated from implementing Alternative 2, *Construct New Culvert*, will not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or that are key to the integrity of the park.