
National Park Service
U.S. Department of the Interior

Denali National Park and Preserve
Alaska



**Gorge Creek Trail
Environmental Assessment
January 2015**





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

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I. PURPOSE AND NEED

The National Park Service (NPS) is proposing to improve and repair the Gorge Creek trail near Eielson Visitor Center (see Figure 1 and cover picture). The park's General Management Plan calls for expanding day use opportunities in the front country area along with improved resource protection. The purpose of the trail improvements would be to protect resources while providing a safe and sustainable trail for visitors to enjoy. Trail improvements are needed because substantial pedestrian use has caused resource damage on unsustainable route locations (see Figures 2, 3, & 4).

The 1996 Entrance Area and Road Corridor Development Concept Plan (DCP/EIS) designated certain areas along the road corridor for increased development which would provide a variety of expanded recreational opportunities for visitors. These expanded opportunities included formalized trails where appropriate. This concept was widely supported during public review of the DCP/EIS.

The park's Backcountry Management Plan (BCMP) and General Management Plan (GMP) state that except as otherwise specified in the management area descriptions and the Backcountry Facilities section, backcountry access and travel in Denali would continue without designated routes or constructed trails to allow for freedom to explore and to minimize signs of human presence. However, The BCMP approved the construction of a trail from the Eielson Visitor Center to Gorge Creek on an 'if needed' basis.

The proposed action supports Denali's Five Year Strategic Plan for 2011-2016 (NPS 2005). Specifically, it supports Goal 2 – Provide Exceptional Experiences by accommodating visitor activities while protecting park resources.

This Environmental Assessment (EA) analyzes a No Action Alternative, and the NPS preferred action for the repair and reroutes of Gorge Creek Trail in Denali National Park and Preserve and has been prepared according to the National Environmental Policy Act of 1969 and regulations of the Council of Environmental Quality (40 CFR 1508.9).

Background

The Eielson Visitor Center (Eielson or EVC) is located on dry alpine tundra at Mile 66 of the Denali Park Road (Figure 1) with a spectacular view of Mt. McKinley and the Alaska Range. Opened in 1959, Eielson was built on the former site of Camp Eielson, a concessioner and Armed Forces camp that operated from the opening of the road in that area in 1934 until 1950. During the 1930s the site was also a leading candidate for a park hotel. The visitor center was constructed as part of a ten-year plan called Mission 66 to upgrade facilities nation-wide, and was constructed just after completion of the gravel Denali Highway in 1957, which allowed visitors for the first time to drive their cars to see the park. Previously visitors had to put their automobiles on a rail car to get them to the park. Visitation increased dramatically after 1957 and then stabilized at about 30,000 visits per year. It increased dramatically again when the Parks Highway opened in 1972, connecting the paved road system to the park. In 1972 a shuttle bus system replaced most private vehicle use on the park road and established Eielson as the major visitor destination in the park. Construction at Eielson in 1976 added more restrooms and an

outside, covered, wildlife-viewing platform. Concessioner-operated tour buses stopped going to Eielson in June, 1981, after a fatal bus accident at mile 64, and have since turned around at Toklat (mile 54), Stony (mile 62), or Primrose (mile 17). Approximately 70,000 visitors on the park shuttle buses, however, visited the exhibits and facilities at Eielson in 2003, in addition to 11,000 guests of the Kantishna lodges riding private buses. The 35,000 visitors traveling to Wonder Lake and Kantishna stopped at Eielson more than once during their trip.

The previous EVC was constructed during an era of light visitation, with perhaps no more than 50 families arriving by automobile per day. Between 2004 and 2008 a new visitor center was constructed on the same site to replace the small and aging building. Today, Eielson is visited by more than 1000 people per day for most of the summer.

In addition to the Gorge Creek Trail, three constructed trails are available at Eielson (Figure 2). Social trails are informal trails created by erosion due to foot traffic from people and animals. A short trail was constructed south of the building in 1991, using pieces of social trails, to establish a maintained facility for the visitors who wanted a 15-20 minute tundra trail experience during their 30-minute bus trip lunch break. However, this 20 minute trail has sections up to 18% in grade. A less-steep trail was constructed in 2001 from the east side of Eielson to a flat bench south of the visitor center. That trail is 1,900 feet long and has a maximum grade of 7.5%, which meets standards of accessibility for a recreational trail. Approximately 1200 feet of previously existing trail was reclaimed and revegetated. The Thorofare Ridge Trail (aka Eielson Alpine Trail) leads visitors to the top of the ridge above Eielson (1,000 feet vertically) and was completed in June 2004. Additionally, social trails have developed at Eielson, including a trail generally following the water pipe to the visitor center from the water source at a spring, and two trails leading downhill toward Gorge Creek.

The Gorge Creek Trail below EVC is currently a signed spur departing the Tundra Loop Trail and descending to the southwest of the visitor center, eventually joining the Gorge Creek gravel bar via a series of social trails. The trail offers spectacular views of Denali, as well as access to a popular natural overlook that attracts many Eielson bus passengers. Day hikers and backpackers use the trail to access the Thorofare River and adjacent backcountry units. This trail delivers backpackers for overnight trips into backcountry unit numbers 12, 13, and beyond. Units 12 and 13 are the fourth and eighth most popular areas to backpack in Denali, respectively. In summer 2014 the top section of this trail had an average of 27 passes per day, with a maximum of 142 (from infrared trail counter data). Many hikers passing by the trail counter were likely traveling both up and down the trail so this is not a reflection of total number of people.

Beginning shortly after its departure from the Tundra Loop Trail, the Gorge Creek Trail becomes braided and gullied until it is funneled into two trails. As the trail descends, the slope increases, resulting in a very steep and crumbly hiking surface and extreme rutting as much as 24" deep in the worst places. At the gravel bar level, numerous braided trails, in addition to one main trail, snake through high willows before emerging near Gorge Creek.

Figure 1 – Project Area

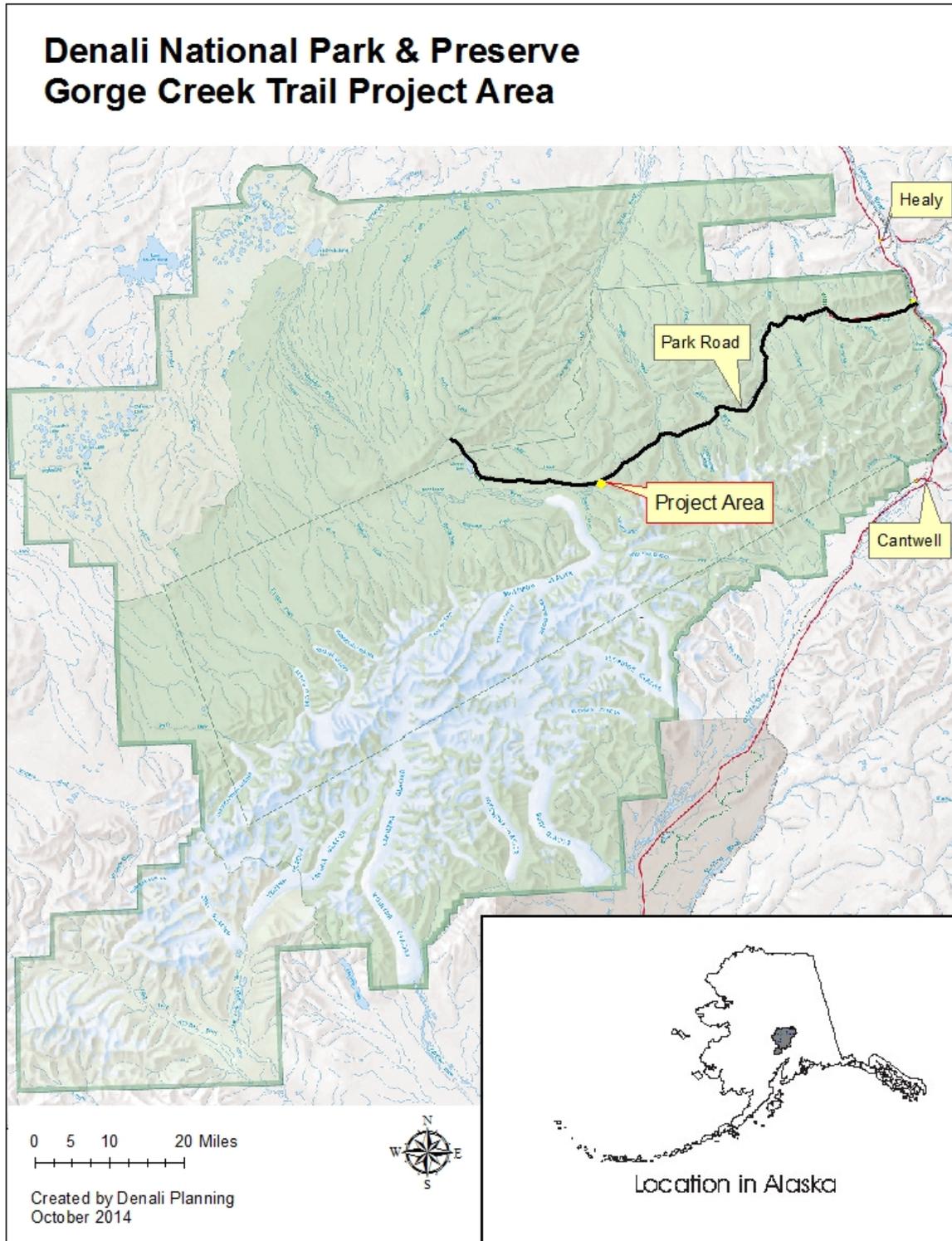
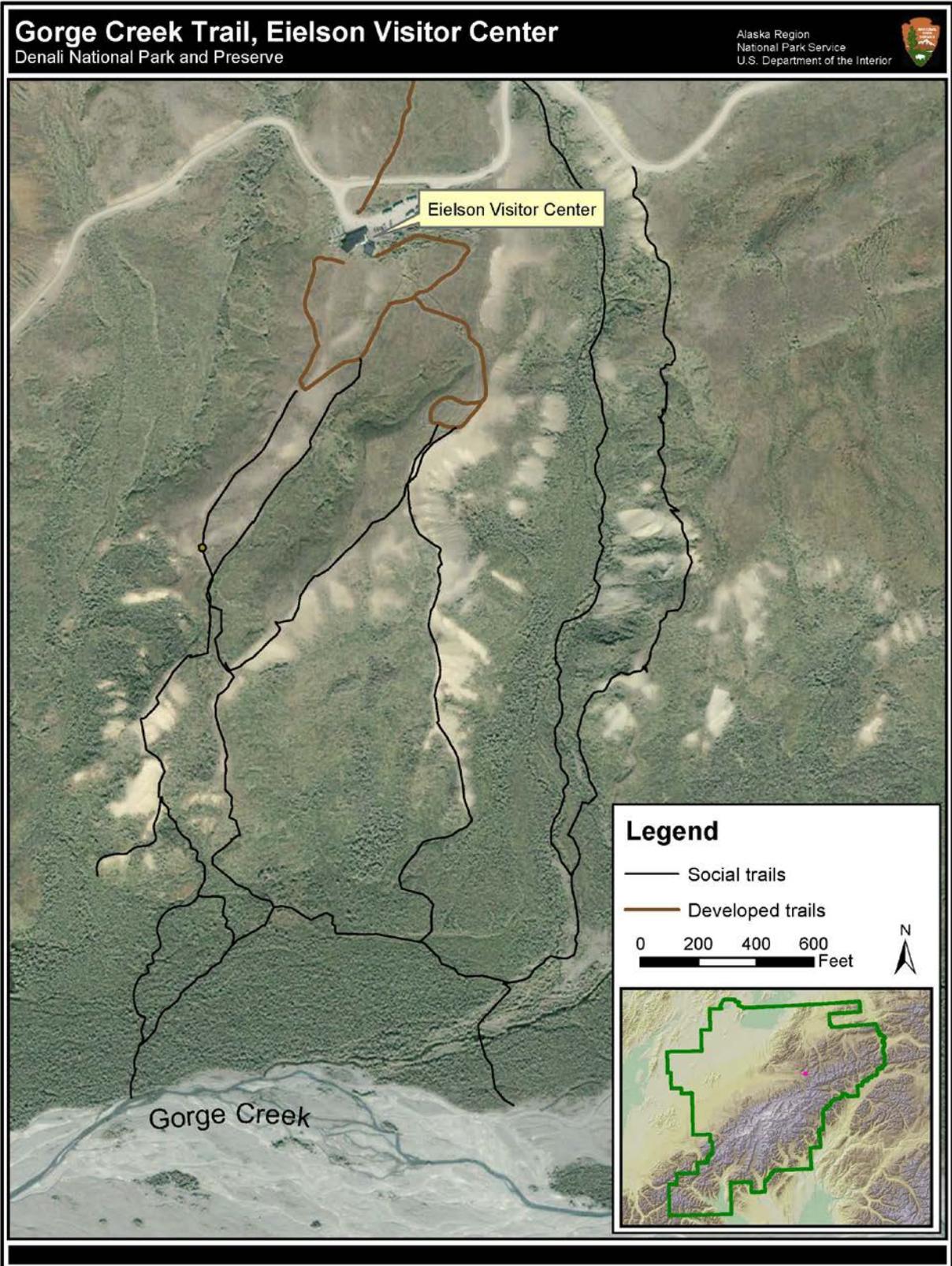


Figure 2 – Eielson Area Trails – Existing Conditions



Legal Context

The 1916 Organic Act directed the Secretary of the Interior and the NPS to manage national park units to:

...conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 U.S.C. 1).

The Organic Act also granted the Secretary the authority to implement, “rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments and reservations under the jurisdiction of the National Park Service,” (16 U.S.C. 3.).

In 1917, Congress established Mount McKinley National Park:

...as a public park for the benefit and enjoyment of the people . . . said park shall be, and is hereby established as a game refuge,” (39 Statute 938).

Additions to the park were made in 1922 and 1932 to provide increased protection for park values and, in particular, wildlife.

The 1970 NPS General Authorities Act and 1978 amendments (Redwoods Act Amendments) to the 1916 NPS Organic Act and expressly articulated the role of the national park system in ecosystem protection. The amendments further reinforce the primary mandate of preservation by stating:

The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress (16 U.S.C. 1-a1.).

The primary mandate of the Wilderness Act of 1964 is to preserve wilderness character.

Section 2(a) of the Wilderness Act directs us to manage wilderness areas:

...in such manner as will leave them unimpaired for future use as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character...

Similar direction is repeated in Section 4(b):

Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.

The Alaska National Interest Lands and Conservation Act of 1980 (ANILCA) added approximately 2,426,000 acres of public land to Mt. McKinley National Park, approximately 1,330,000 acres of public land as Denali National Preserve, and re-designated the entirety as Denali National Park and Preserve. ANILCA also designated 99% of the former Mt. McKinley National Park as wilderness. ANILCA directs the NPS to preserve the natural and cultural resources in the park and preserve for the benefit, use, education, and inspiration of present and future generations.

The NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The 2006 NPS Management Policies use the terms “resources and values” to mean the the park’s scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them; appropriate opportunities to experience enjoyment of the above resources, to the extent possible without impairing them; and any additional attributes encompassed by the specific values and purposes for which the park was established. 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 a condition that will allow the American people to have present and future opportunities to enjoy them.

Issues

Issues and impact topics are identified and form the basis for analysis in this EA. A brief rationale is provided for each issue or topic that is analyzed in the environmental consequences section of this EA. Issues and topics considered but not addressed in this document also are identified.

Floodplains

The trail would end at the Gorge Creek floodplain and would be marked by a rock cairn, small sign, or other appropriate marker. Approximately 8 cubic yards of gravel would be extracted from the floodplain to use as fill material for abandoned social trails.

Vegetation, Wetlands, and Soils

Trail construction would remove vegetation and soils in the project area and fill wetlands. Specific concerns include:

- Trail reroutes and formalizing social trails would remove up to 0.2 acres of dry tundra, with low forbs and shrubs predominating
- Vegetation would be removed during construction of the trail and soils exposed because of the project could be susceptible to erosion.
- Less than 0.04 acre of wetlands would be disturbed during construction.
- Overall improvements to vegetation and soils are expected due to restoration of 0.5 acres of social trails.

Visitor Experience and Opportunity

Trail construction could affect visitor use. Specific concerns include:

- This action would improve visitor experience by providing improved hiking opportunities in the Eielson Visitor Center area.

- The extension would also provide safe constructed trails and eliminate hazardous social trails.

Wilderness Character

A portion of the proposed trail improvement would be in designated wilderness. A rock cairn, small sign, or other marker would be installed at the bottom of the trail in designated wilderness.

Issues Eliminated from Further Consideration

Wildlife Values and Habitat

Due to the general activity level around Eielson during the summer, the construction of new trail segments and revegetation of old trail segments are not expected to have more than a negligible impact on wildlife or habitat.

Cultural Resources

The EVC site and the Park Road are both historic properties eligible for listing on the National Register of Historic Places (NRHP). The site of the EVC was determined eligible for listing on the NRHP in 2002. The EVC site is significant under Criteria A for its long history of providing enhanced visitor experience and visitor services. The Park Road is significant for its association with the period of scenic road development in national parks in the 1920s and 1930s, as well as for its association with the Mission 66 park development program in the 1950s and 1960s.

By revegetating multiple social trails in the EVC area the view shed from the Park road will be improved as the landscape returns to a more natural setting. Likewise, the EVC Site will also not be adversely impacted by the project as the construction of a hardened surface and a designated route down to Gorge Creek will improve the visitor experience by providing a formalized trail that accesses the wilderness area. In place of multiple rutted trails that crisscross the hillside a single narrow width trail will provide the necessary access for an enhanced visitor experience.

The project area has been surveyed for other cultural resources and no other known sites are present. As designed the project will not adversely affect the Park Road or the EVC Site's integrity which qualifies these properties for inclusion within the NHRP. The Park is seeking concurrence from the State Historic Preservation Office on the determination of "No Historic Properties Adversely Affected" (36 CFR Park 800.5(3)(b))

Effects on Threatened and Endangered Species

The Endangered Species Act requires an analysis of impacts on all federally listed threatened and endangered species, as well as species of special concern. In compliance with Section 7 of the Act, the U.S. Fish and Wildlife Service (USFWS) was consulted. No federally designated threatened or endangered species are known to occur within Denali National Park (pers. comm. Ted Swem, USFWS, Fairbanks, Alaska, September 9, 2013).

Species of Special Concern

There are no species of concern in the project area.

Air Quality

Exhaust from equipment such as power wheelbarrows and compactors would contribute a negligible amount of air pollution due to the short duration of operation.

Natural Soundscape

Trail construction activities would degrade natural sounds by only a small amount due to the context of existing background of noise from motorized transportation.

Subsistence Use

Subsistence use is not allowed in the project area or on any of the lands of the former Mt. McKinley National Park. No impacts to subsistence activities would occur from this trail project and no further ANILCA Section 810 analysis is required.

Local Communities/Socioeconomic Resources

There are no communities near the project area.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This project would not result in changes in the socioeconomic environment of the area, and therefore is expected to have no direct or indirect impacts to minority or low-income populations or communities.

Subsistence Use

Subsistence use is not allowed in the project area or on any of the lands of the former Mt. McKinley National Park. No impacts to subsistence activities would occur from this trail project and no further ANILCA Section 810 analysis would be required.

Permits and Approvals Needed to Complete the Project

Prior to the start of the project concurrence from the State Historic Preservation Officer is required on the determination of "No Historic Properties Adversely Affected".

Confirmation from the U.S. Army Corps of Engineers was received on January 13, 2015 verifying that the project is authorized by Nationwide Permit No. 18, Minor Discharges (see Appendix B).

A National Park Service Wetlands and Statement of Findings, used to evaluate wetlands impacts and prescribe mitigation measures and compensation efforts, is not required for this project. Scenic overlooks and foot/bike trails or boardwalks, including signs, where primary purposes include public education, interpretation, or enjoyment of wetland resources and where total wetland impacts from fill placement are 0.1 acre or less may be permitted (pers. Comm. Gary Smillie, Natural Resource Stewardship and Science Directorate, Water Resources Division, Fort Collins, Colorado, December 10, 2014).

A National Park Service Floodplains Statement of Findings is not required for this project. Small recreational day-use facilities located near water in non-high hazard areas with minimal impacts on floodplains are excepted from this requirement (pers. Comm. Gary Smillie, Natural Resource Stewardship and Science Directorate, Water Resources Division, Fort Collins, Colorado, December 10, 2014).

II. DESCRIPTION OF THE ALTERNATIVES

Common to All Alternatives

Social trails in the area may be addressed according to standards established in the 2006 Backcountry Management Plan (BCMP) as outlined in Table 1.

Table 1 - Decision Guide for Addressing Social Trail Formation (BCMP 2006)

Situation	Strategy	Application of Access Management Tools
No social trail formation; terrain allows dispersal or travel on durable surfaces (e.g., gravel river beds).	Keep use dispersed.	Provide Leave-No-Trace education for backcountry users to encourage continued dispersal and travel on durable surfaces.
No social trail formation at existing use levels, but terrain does not allow for dispersal or travel on durable surfaces.	Maintain use at level such that social trail formation does not begin.	Provide Leave-No-Trace education for backcountry users; manage guided groups to limit use; monitor level of use to detect increases; and limit number of visitors if necessary.
Social trails are present and are either stable or deteriorating but additional dispersal is possible.	Encourage additional dispersal to lower levels of use on the social trail.	Provide Leave-No-Trace education for backcountry users and encourage voluntary dispersal coordinated through a social trails working group.
Social trails are present but stable at existing levels of use; little opportunity for dispersal.	Concentrate use on social trail and limit use sufficiently to prevent deterioration.	Educate visitors or restrict them to social trail, and limit numbers of visitors if necessary.
Social trails are present and are deteriorating; additional dispersal is not possible because of terrain.	Lower use levels until condition stabilizes.	Limit numbers of visitors or use temporary closures to restrict use.
<i>In addition, the National Park Service may temporarily close some areas around social trails to allow rehabilitation even if conditions are stable.</i>		

Alternative 1 - Existing Conditions (No Action Alternative)

The NPS would not reroute or improve the Gorge Creek Trail and visitors would continue to travel on the existing trails and possibly create additional social trails.

Alternative 2 – Reroute sections and improve Gorge Creek Trail (NPS Preferred)

This alternative would replace the braided network of user-created trails below Eielson with a formal hiking trail to reach the Gorge Creek gravel bar (Figure 5). Redundant trails in the area would be abandoned and re-vegetated. The existing user-created trails below Eielson follow either ridgelines that have eroded beyond repair or descend unstable slopes into a streambed that is steep, eroded, and filled with thick vegetation.

This alternative would repair the damage (see Figures 3 and 4) from years of off-trail hiking below the Eielson Visitor Center with a two-prong strategy to both protect area resources and respond to the popularity of the trails among hikers. One effort would concentrate on rehabilitating the vegetation in impacted areas, prioritizing those areas most visible from the visitor center and those that might draw off-trail hikers. A second effort would be to harden and maintain a single trail between the EVC and Gorge Creek, while simultaneously closing and re-vegetating redundant trails. This work is proposed to begin in the summer of 2015 and would continue as necessary until the area has recovered. The area would need to be monitored after construction to ensure that revegetation and reclamation efforts are working.

Table 2 – Description of Alternative 2 Components

Component	Length (ft)	Width (in)	Description
Upper Section	830	24	Construct a new section of trail with an 18"-24" wide surface. Construction style would be full bench cut with native tread.
Middle Section	2,400	12-18	12"-18" Full bench cut trail with native tread. Existing social trails would be used if they meet construction and design standards. Tread material would be added to social trails deemed usable with locally mined borrow pits or material from a roadside pit. Small creek crossing on the lower section would be done with local rock as a "step over" crossing; if suitable rock is not available a log puncheon would be used.
Lower Section	880	12-18	Link existing social trails when possible. Remove excess organics and replace with gravel surface if necessary. Up to 8 cubic yards of gravel fill would be taken from the Gorge Creek gravel bar in areas that would recover naturally. Construct a rock cairn, small sign, or other appropriate trail marker to encourage users to find and use the formalized trail.
Abandoned Existing Upper Trail	700	48-72	Abandon and reclaim this trail alignment. Rehabilitation efforts would include: 3" minus local subgrade, a layer of organic material, and top with locally harvested tundra mats and organic mulch collected from construction of new trail sections. Rock would be used as needed to retain soils. Rough cut lumber may also be used for this purpose in the portion of the trail that is not in designated wilderness.
High Priority Social Trail Re-vegetation	570	12-24	Abandon and reclaim sections of trail that are in high visibility or high traffic areas, with special attention to where the new trail alignment crosses the abandoned trail segments to discourage use of the old alignment and allow for regrowth of reclaimed areas. Sign if necessary.
Abandoned social trails	9,690	12-24	Abandon existing social trails and sign as a re-vegetation project if needed.

Minimal impact to park visitors is expected. Visitors would be advised in park announcements, programs, and publications that there would be temporary and minor inconveniences from construction work on the trail. Construction work flow can be scheduled in such a way as to

keep enough existing trails open for public use during construction. As new sections of trails are completed these sections would be opened and the corresponding existing trail would be closed and reclaimed. 6-12 NPS staff and up to 20 youth corps members or volunteers may work on the project at any given time.

Materials for filling entrenched and eroded trails would be moved by wheelbarrow, power wheelbarrows, and/or helicopter. All helicopter use in Denali involves detailed planning and approval by the park's Aviation Officer and Park Superintendent. If possible, helicopter use would be completed prior to the opening of the EVC or after the visitor center closes for the season; or before or after the visitor center's normal hours of operation. Sub-grade material (3" minus) for reclamation would be acquired from Toklat and delivered to EVC; this material would be used to fill deep entrenched and eroding informal trails. Gravel from the Teklanika gravel pit could also be used as tread material on the upper section of trail as far as the overlook, if native material is determined as a less than adequate surface, due to greater traffic flows to an overlook.

NPS staff and volunteers will mine gravel fill from along Gorge Creek to fill in rutted trail segments through the brushy floodplain. Workers will use hand tools to mine the fill and manually haul the fill. No mechanized devices will be used in the mining or transport of the Gorge Creek gravel, so it is preferred to using Toklat River gravel, which would require 16 additional helicopter flights into designated wilderness. Up to 8 cubic yards of gravel will be used from this source.

Different gravel sources would be utilized for different purposes. The use of gravel from Toklat is to provide a base layer of gravel along upper portions of the trail. Teklanika gravel provides a compactible finish surface for trails. Gravel from the Gorge Creek floodplain would be used to fill in abandoned social trails and would not be used for the final formal trail.

Use of Toklat River gravel on trails is consistent with park and NPS policy and was evaluated in the 2003 Gravel Acquisition Plan EA, which addresses the cumulative effects of borrow site extraction, restoration, and importation. The 2003 EA also discusses borrow pits in wilderness, such as the source on the Gorge Creek bar. "Small, replenishable gravel pits may be opened in alluvial sites for use in trail construction in wilderness, but these small pits may not be served by heavy equipment (bulldozers, dump trucks, front-end loaders)." Denali Gravel Acquisition Plan EA, Purpose and Need, p. 1-16, May 2003

The Denali National Park Trails Program Routine Maintenance and Operating Standards discusses tread material and borrow pits consistent with NPS and Park policy, "Borrow pit locations with appropriate material will be selected to minimize impacts to the natural and cultural environment and visual impacts to visitors. Locations are close enough to the deficient trail to be economical and to reduce environmental impacts from trampling." Denali National Park Trails Program Routine Maintenance and Operating Standards, 2013, p.17

An assortment of hand tools and power tools would be used in non-wilderness areas. Trail crews would mitigate visitor exposure to power tools by limiting operation of them to early morning and during other times of low visitation. Cable grip hoists and rigging systems would be used to

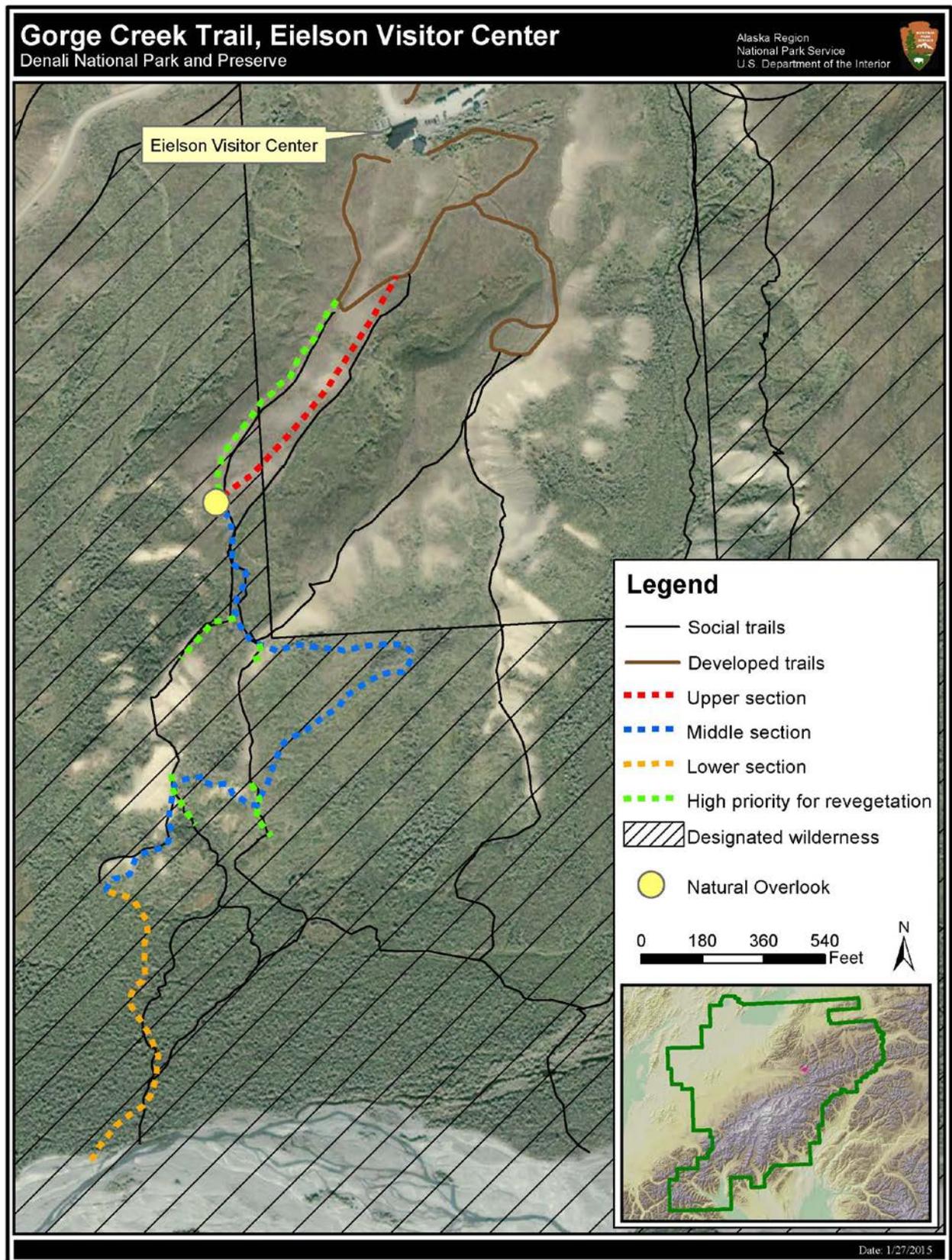
move stumps and rocks, and also aid in the relocation of materials around the work area by way of high line systems.

Vegetation material that needs to be removed from the trail surface would be saved and relocated to abandoned trail segments. Any other organic material would be saved for revegetation. The Trails Supervisor would work with Vegetation Specialist to determine the best course of action for revegetation efforts. Seeds have been collected in the Eielson area for many years and are ready for use under the supervision of the vegetation specialist.

Figures 3 and 4 – Braids and deep ruts occurring along the Gorge Creek Trail.



Figure 5 – Alternative 2 – Proposed Work



Alternatives Considered and Eliminated from Further Evaluation

- Other routes to the east of the current Gorge Creek Trail were considered including the historic jeep route. However, these were not preferred due to their poor location in relation to views of the Alaska Range and Mt. McKinley. Soils in these areas are also water saturated and overgrown with Alder. Due to thick vegetation, visitors were more likely to have surprise wildlife encounters with bears or moose. For visitor's safety these areas were eliminated. Rehabilitation on one of the ridge trails has already occurred.
- Formalize a trail (commonly referred to as Grassy Pass) to the Thorofare River in the Thorofare Bluffs area to form a loop with the proposed Gorge Creek Trail. Internal and public scoping determined that this project is not necessary at this time. The park recognizes resource impacts in the area, and will manage impacts using the Decision Guide for Addressing Social Trail Formation (Table 1).
- Create connector trail from west to east. A social trail exists from the Gorge Creek Trail to the existing Tundra Spur trail. The trail is approximately 1,350'. If use continues along this route, a connector trail may be desirable in the future but is not part of the current project.

Environmentally Preferred Alternative

Alternative 2 is identified as the Environmentally Preferred Alternative because it places visitor use on a more sustainable route and helps prevent further social trail damage.

Mitigation and Monitoring

Mitigation measures are specific actions that, when implemented, reduce impacts, protect park resources, and protect visitors. The following mitigations would be implemented under Alternative 2 and are assumed in the analysis of effects.

Vegetation

- Vegetation mats that need to be removed from the trail surface would be saved and relocated to abandoned trail segments.
- Tundra mats from exposed slopes along the Park Road between Grassy Pass and Stony Hill would be collected and used to revegetate areas of similar habitat.
- Periodic surveys would be conducted to determine the presence of exotic plants. If found, the Vegetation Specialist would be consulted to determine the best course of action.
- A Trails Supervisor would work with a Vegetation Specialist to determine best course of action for revegetation efforts.

Wildlife and Habitat

- The NPS would follow established guidelines in the park's bear-human conflict management plan. The plan requires staff to use bear-proof containers for food and refuse, and sets up guidelines for temporary closures.
- To avoid destroying and/or disturbing occupied bird nests and cavity trees within the project area in accordance with the Migratory Bird Treaty Act (MBTA), the project leader would work with the park's wildlife biologist to determine if nest surveys are needed; when vegetation clearing can be done; and to develop any additional measures to protect birds.
- The construction area would be kept free of debris and would be checked at the end of each day for small objects that could be ingested by wildlife.
- To avoid bear-hiker conflicts, the trail route would not go through large soapberry patches.

Cultural Resources

- The Park archaeologist would determine if periodic monitoring of ground disturbance for the trail would be needed.
- The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during project implementation, work in that area must stop and the Superintendent be notified immediately (36 CFR 800.13).
- The Native American Graves Protection and Repatriation Act (NAGPRA) requires that if previously undocumented cultural resources or items protected by NAGPRA are encountered during project implementation all work in that area must stop and the Superintendent and park archaeologist would be notified immediately. Procedures laid out in the 2008 National Park Service Programmatic Agreement Section VI will be implemented.

Visitor Experience and Opportunity

- Visitors would be advised in park announcements, programs, and publications that there would be temporary inconveniences from construction work on the trail.
- If helicopters are used to transport materials, efforts would be made to complete flights prior to opening of the EVC to visitors. This can be done either prior to EVC’s opening day or early in the day prior to visitor arrivals.

Wilderness Character

- Use of compactors, power wheel barrows, and other mechanized equipment would be completed in the mornings prior to visitors arriving and would not be used in designated wilderness.

Table 3. Summary Impacts of the Alternatives

IMPACT TOPIC	Alt. 1 – No Action	Alt. 2 – NPS Preferred
Floodplains	None	Short- and long-term negligible adverse impacts due to extraction of 8 cubic yards of gravel from floodplain and installation of a rock cairn, sign, or other marker
Vegetation, Soils, and Wetlands	Long-term minor adverse impacts due to continued impact from social trail development	Negligible beneficial impacts due to restoration of 0.5 acres of social trails despite up to 0.2 acre removal of alpine tundra and up to 0.04 acre impact to wetlands
Visitor Experience and Opportunity	Continued long-term minor adverse impacts due to social trails	Minor long-term benefits to visitors from improved opportunities for trail hiking
Wilderness Character	Continued long-term minor adverse impacts due to social trails	Minor temporary impacts from presence of staff and equipment on trail. Minor impacts from installation of a rock cairn, small sign, or other suitable marker. However, overall long-term minor beneficial impacts as social trails are closed and revegetated

III. AFFECTED ENVIRONMENT

The following documents contain descriptions of the environment of the road corridor in the Eielson vicinity. They are incorporated by reference and summarized below:

- The 1986 Denali General Management Plan (GMP), Land Protection Plan, and Wilderness Suitability Review, guides the general management of the park and the protection of park natural and cultural resources. The plan contains a review of the suitability of park lands for wilderness preservation. It also describes the park's natural and cultural environments and existing visitor use.
- The 1996 Park Entrance Area and Road Corridor Development Concept Plan /EIS amends the park's 1986 GMP. It contains an updated description of the park's natural and cultural environments and visitor use, focusing on the park road corridor.

Floodplains

Gorge Creek is a tributary of the much larger Thorofare River with a willow dominated riparian edge. It has a flow of approximately 10-12 cubic feet per second (cfs) and is braided and often changing course within the 100' to 120' wide floodplain.

Vegetation, Wetlands, and Soils

At 3,733 feet, the Eielson area exemplifies dry tundra, with low forbs and shrubs predominating. Mountain avens, alpine heather, blackish oxytrope, blueberries, numerous saxifrages and composites and a wide variety of other forbs and shrubs cover the slopes. Tall shrubs, such as feltleaf and other tall willows, are common in the creek beds and in a narrow band adjacent to the fill slope of the park road where warmer soils and runoff from the road increases the water and nutrients available to plants at the toe of the slope.

Mountain or tundra soils form directly from bedrock and the slow accumulation of organic matter. The sparseness of these soils is attributable to cold weather extremes and steepness of slopes. The soils in the project area are generally thin and dry.

Springs above the road east and west of Eielson combine with the dry environments to produce a mosaic of microhabitats. This range of wet and dry soils has provided a large variety of plant species within a short distance from the visitor center, including the parking island. Wetlands in meadows (mixed herb vegetation on seasonally saturated soil) occur in the project area.

Visitor Experience and Opportunity

The possibility of seeing bears, wolves, caribou, Dall sheep, and other animals against the backdrop of a spectacular subarctic, alpine landscape and vegetation is the cornerstone of a multimillion-dollar tourism industry in Alaska, and the Eielson area fulfills this possibility as well as any area along the road corridor. The view of Mt. McKinley and the Alaska Range are spectacular from the visitor center and trails when weather cooperates.

Wilderness Character

About 95% of the former Mt. McKinley National Park was designated in 1980 as wilderness by Section 701 of the Alaska National Interest Lands Conservation Act. Wilderness is an area "without permanent improvements" and with outstanding opportunities for solitude. An 80-acre area straddling the park road at Eielson was excluded from wilderness designation to provide room for the visitor center grounds and to provide a threshold experience for those visitors willing to leave the buildings and buses and who desire an introduction to classic alpine tundra.

IV. ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Assumptions for Impact Analysis

This section contains an evaluation of the direct and indirect environmental impacts of the alternatives presented in Section II. The analysis assumes that the mitigation identified in the *Mitigation and Monitoring* section would be successfully implemented under any of the action alternatives.

Cumulative impacts add the incremental impacts to the environment resulting from the alternatives' effects to the effects of other past, present, and reasonably foreseeable future actions. The cumulative impacts relate primarily to the construction of the Eielson Visitor Center.

Alternative 1 – Existing Conditions (No Action)

Floodplains

No fill material would be extracted from the floodplains; no impacts would occur.

Vegetation, Wetlands and Soils

No vegetation, soils or wetlands would be removed or disturbed by park management. Existing social trails would continue to be used and new ones would likely be established. This would result in continued erosion and loss of vegetation. Although this is not a change from existing conditions, the impacts would be long-term, minor and adverse.

Visitor Experience and Opportunity

This alternative would not provide any additional recreational opportunities. Some visitors would continue to use or create new social trails to access Gorge Creek and the Thorofare River. Visitor experience would be adversely impacted due to continued social trail creation. The level of impact would be long-term, minor and adverse.

Wilderness Character

This alternative would not create a sustainable route to the river bar. Some visitors would continue to create new routes which would be a long-term, minor and adverse impact to wilderness character.

Cumulative Effects: The impacts of this alternative to resource values, including floodplains, vegetation, wetlands, soils, wildlife habitat, visitor experience, and wilderness character would be negligible to minor. However, this minor impact may continue to contribute to the overall impact from years of social trail creation and resulting impacts from those trails.

Alternative 2 – Reroute Sections and Improve Gorge Creek Trail (NPS Preferred)

Floodplains

Extracting up to 8 cubic yards of gravel and placing a sign or marker on the trail would cause short-term (gravel extraction) and long-term (sign) negligible adverse impacts to the Gorge Creek floodplain. The gravel extraction would be completed in a way that causes no lasting

impacts to the floodplain due to the regular influx of new gravel along the floodplain and the changing course of Gorge Creek.

Conclusion: Due to the small amount of gravel that would be extracted and the changing course of Gorge Creek, the overall impact of this project to the floodplain is expected to be short-term, negligible and adverse. The installation of the sign would be a long-term impact but would also be negligible.

Cumulative Effects: Extracting 8 cubic yards of gravel from the Gorge Creek River Bar would contribute only a minute amount to the overall gravel extraction totals from the biennial Toklat gravel harvest of 22,200 cubic yards.

Vegetation, Wetlands and Soils

Under this alternative up to 0.2 acre of alpine tundra and soil would be removed for the construction of the trail segments that are not located on existing social trails. The limited vegetation removal from this alternative would not have a significant impact on the thousands of acres of alpine tundra and other vegetation resources near the paved section of the Denali Park Road corridor. All vegetation removed would be used in rehabilitation.

Approximately 0.5 acres of alpine tundra would be restored. Seeds collected from the immediate area would be used to begin the revegetation for the abandoned trail segments.

Less than 0.04 acres of palustrine scrub-shrub saturated (PSS1b) wetlands are affected by this project.

Conclusion: Due to the small area affected by trail construction and the large number of social trails to be restored, the overall impacts of this project to vegetation, wetlands, and soils are expected to be long-term negligible and beneficial.

Cumulative Effects: The total acreage of existing disturbance along the west end of the park road is approximately 78 acres and is limited to the park road, administrative facilities, and visitor facilities at Toklat, Stony, and Eielson. Under this alternative the total would decrease slightly after the revegetation efforts have succeeded. This project adds less than 0.04 acres of impact to the less than 0.1 acres previously disturbed due to the installation of the hydro power plant and equipment during the construction of the Eielson Visitor Center. Because thousands of acres of similar alpine tundra exist in the vicinity, there exists a moderate cumulative impact on vegetation, wetlands and soils in the Eielson area and this alternative would be a negligible contributor to that impact since it removes only up to 0.2 acres.

Visitor Experience and Opportunity

There would be a temporary impact to recreational opportunities for visitors to the EVC from the construction activities, noise, and presence of trail crew. All trails would remain open for visitors throughout the project. Once completed the new trail would improve the experience and safety of the visitor by creating a safer, less steep trail. Impacts are expected to be long-term, minor and beneficial.

Conclusion: This alternative would provide visitors with the positive benefit of a safer and scenic trail to the river bar. There would be temporary impacts to visitor experience during the trail construction. Overall, the impacts would be long-term, minor and beneficial.

Cumulative Effects: Projects to enhance recreational opportunities in the western end of the park include the construction of the EVC and surrounding trails. This project would also contribute a minor amount to the overall improvement of opportunities for visitors in this area of the park.

Wilderness Character

This project lies mostly within wilderness (see Figure 5) with 3,300' of the total 4,100' of trail work occurring in designated wilderness. The current network of social trails in the area negatively affects wilderness character. While the rugged nature of the social trails may seem more in line with the primitive and unconfined recreation traits of wilderness, the visual impacts and damage that are occurring are likely more detrimental to the natural character trait of wilderness. The trail would transport visitors from an impacted area (Eielson) to a durable surface (river bar) from which visitors can travel in any direction they choose without creating more social trails.

There would be temporary impacts to wilderness character due to the use of helicopter to transport the fill material for the project although this would not be done while visitors are typically in the area. The presence of trail crew working on the trail would also be an adverse impact for the 2015 summer season. However, the overall impacts would be long-term minor and beneficial due to the reduction in social trails and by allowing visitors to get to the river bar more easily from which they can begin a primitive recreational route-finding adventure.

Conclusion: This alternative would create a constructed trail, 3,300' of which is in designated wilderness. It would improve overall wilderness character by reducing the visible signs of humans in the wilderness by eliminating unsafe social trails. Overall impacts would be long-term minor and beneficial. However, some short term impacts would occur during the project duration since visitors will encounter trail crew several times while on the trail.

Cumulative Effects: Overall trails in wilderness would not be increased by this alternative but would be reduced slightly due to revegetation of multiple social trails. This would be a beneficial long-term impact to wilderness character. The cumulative effects on wilderness character would be minor relative to the vast area of the park and the numerous social trails that exist along the road corridor.

V. CONSULTATION AND COORDINATION

List of Persons and Agencies Consulted:

Janet Post, Regulatory Specialist, Department of the Army, Alaska District, U.S. Army Corps of Engineers, JBER, Alaska

Ted Swem, U.S. Fish and Wildlife Service, Endangered Species Coordinator, Ecological Services Office, Fairbanks, AK

Phoebe Gilbert, Archeologist, Denali National Park and Preserve

Steve Carwile, Compliance Officer, Denali National Park and Preserve

Carol McIntyre, Wildlife Biologist, Denali National Park and Preserve

Pat Owen, Wildlife Biologist, Denali National Park and Preserve

Steve Arthur, Wildlife Biologist, Denali National Park and Preserve

Gary Smillie, Hydrology Program Lead, Natural Resource Stewardship and Science Directorate, Water Resources Division.

List of Preparers:

Aaron Eddington, Trails Leader, Denali National Park and Preserve

Paula Homan, Environmental Protection Specialist, Denali National Park and Preserve

Dan Ostrowski, Trails Foreman, Denali National Park and Preserve

Jared Zimmerman, Project Leader, Denali National Park and Preserve

VI. REFERENCES

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1986. General Management Plan. Denali National Park & Preserve, Alaska.
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2004. Environmental Assessment for the Construction of a new Eielson Visitor Center and a permanent Toklat Rest Stop.
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APPENDIX A – Wilderness Minimum Requirement Analysis Summary

Denali National Park & Preserve - Minimum Requirement Analysis

Project Name:
Gorge Creek Trail Reroutes & Improvements

Project Leader:
Dan Ostrowski

PROBLEM:

The Gorge Creek Trail below the Eielson Visitor Center (EVC) is currently a signed spur departing the Tundra Loop Trail and descending to the southwest of the visitor center, eventually joining the Gorge Creek gravel bar via a series of user-created trails. The trail offers spectacular views of Denali, as well as access to a popular overlook that attracts many Eielson bus passengers. The buses deliver approximately 1000 visitors per day from June to mid-September, with many of these seeking a short day hike. Day hikers and backpackers use the trail to access the Thorofare River and adjacent backcountry units. This trail delivers backpackers for overnight trips into backcountry unit numbers 12, 13, and beyond. Units 12 and 13 are the fourth and eighth most popular areas to backpack in Denali, respectively. In summer 2014 the top section of this trail had an average of 27 passes per day, with a maximum of 142 (from infrared trail counter data). Many hikers passing by the trail counter were likely traveling both up and down the trail so this is not a reflection of total number of people.

Beginning shortly after its departure from the Tundra Loop Trail, the Gorge Creek Trail becomes braided and gullied until it is funneled into two trails. As the trail descends further, the slope increases, resulting in a very steep and crumbly hiking surface and extreme rutting (as much as 24" deep in the worst places). At the gravel bar level, numerous braided trails, in addition to one main trail, snake through high willows before emerging near Gorge Creek.

PROJECT INFORMATION:

This project would replace the braided network of user-created trails below Eielson Visitor Center with a formal hiking to the Gorge Creek gravel bar. Redundant trails in the area would be abandoned and re-vegetated. The existing user-created trails below the Visitor Center follow either ridgelines that have eroded beyond repair or descend unstable slopes into a streambed that is steep, eroded, and filled with thick vegetation.

Areas impacted by social trails would be rehabilitated, prioritizing those areas most visible from the visitor center and those that might draw hikers off trail. A single trail would be created between the Eielson Visitor Center and Gorge Creek, while at the same time closing and re-vegetating redundant trails. This work is proposed to happen during the summer season of 2015 and is expected to be completed that same summer of 2015. This area would need to be monitored after construction to ensure that revegetation and reclamation efforts are working.

Tools used would be an assortment of hand tools and power tools in non-wilderness areas. Trail crews would mitigate visitor exposure to power tools by limiting operation of them to early morning and during other times of low visitation. Cable grip hoists and rigging systems would be used to move stumps and rocks, and also aid in the relocation of materials around the work area by way of high line systems.

WILDERNESS CHARACTER:

Untrammelled

This project would not affect the untrammelled quality of wilderness character.

Undeveloped

This project would have a minor affect the undeveloped quality of wilderness character due to the installation of a small trail marker in wilderness at the end of the trail and the use of helicopters.

Natural

Soils and vegetation have been degraded by overuse in the local area of the social trails. Some action is necessary to address and restore natural conditions. Resources would be allowed to recover. More acreage would be restored than would be affected by this project. The installation of the small sign at the bottom of the trail would have a minor impact to natural quality of wilderness.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

Opportunities for solitude are degraded by having multiple human-caused social trails that are visible from the wilderness. Presence of trail crew on the trail for the 2015 summer season would impact solitude.

Unique Attributes or Other Features

This project would not affect any unique attributes or other features of wilderness

Other Options considered

- Other routes to the east of the current Gorge Creek Trail were considered including the historic jeep route. However, these were not preferred and some rehabilitation on one of the ridge trails has already occurred.
- Formalize a trail in the Thorofare Bluffs (Grassy Pass) area. NPS staff and the public have expressed doubts as to whether or not a formal trail is necessary in this area. NPS staff would place cameras and counters in this area to determine level of human use and impacts. No formal trail is planned at this time.
- Create connector trail from west to east. A social trail exists from the Gorge Creek Trail to the Tundra Spur trail. The trail is approximately 1350'. If use continues along this route, a connector trail may be desirable in the future but is not part of the current project.
- Excluding the use of helicopters was considered but dismissed due to the time it would take to haul all the necessary materials to the work sites. This would extend the project into multiple years and trail crew presence on the trail would be a much bigger impact than the short term use of a helicopter outside of visitation times.

Alternative 1 Analysis

Wilderness Character	Untrammeled	Undeveloped	Natural	Solitude	Other Features
No Transport of Material to the site	0	0	0	0	0
No Trail reroutes or improvements	0	0	-1	-1	0
No Old trail revegetation	0	0	-1	-1	0
No Presence of Trail Crew	0	0	0	0	0
No Cairn or sign installation	0	0	0	0	0
Explanation: Natural landscape may continue to be damaged due to social tailing and additional human created trails may develop.					

Other	Maintaining Traditional Skills	Special Provisions	Economics & Time Restraints	Safety of Visitors & Workers
No Transport of Material to the site	0	0	0	1
No Trail reroutes or improvements	0	0	0	0
No Old trail revegetation	0	0	0	1
Presence of Trail Crew	0	0	0	0
Cairn or sign installation	0	0	0	0
Explanation: No elimination of unsafe routes would occur but no staff would be put at risk due to use of helicopter and trail work.				

Alternative 2 Analysis

Wilderness Character	Untrammeled	Undeveloped	Natural	Solitude	Other Features
Transport of Material to the site via helicopter	0	-1	0	0	0
Trail reroutes & improvements using hand tools	0	0	0	0	0
Old trail revegetation using hand tools	0	0	1	0	0
Presence of Trail Crew	0	0	0	-1	0
Cairn or sign installation	0	-1	-1	0	0
Explanation: Short term helicopter use would be prior to opening for visitors. The installation of the sign at the bottom of the trail would be a slight impact to undeveloped nature of area but would allow visitors to find the trail more easily and reduce impacts to resources by avoiding additional social trails. A more natural setting is anticipated by the reduction of the number of trails however is also impacted by installation of the sign. Visitors would be able to use the area during the project although trail crew will be present for the summer 2015 season.					

Other	Maintaining Traditional Skills	Special Provisions	Economics & Time Restraints	Safety of Visitors & Workers
Transport of Material to the site via helicopter	-1	0	1	-1
Trail reroutes & improvements using hand tools	1	0	0	-1
Old trail revegetation using hand tools	1	0	0	-1
Presence of Trail Crew	1	0	0	0
Cairn or sign installation	0	0	0	0
Explanation: Overall negative safety score due to of helicopter and nature of the work. Use of helicopter and mechanized equipment is quickest and most efficient means of completing project. New trail crew staff would get to learn trail building without use of power tools while in designated wilderness.				

Scoring Summary

Wilderness Character	Alternative 1		Alternative 2	
	Positive	Negative	Positive	Negative
Untrammeled	0	0	0	0
Undeveloped	0	1	0	2
Natural	0	1	1	1
Solitude or Primitive & Unconfined Rec.	0	0	0	1
Other Features of Value	0	0	0	0
Totals	0	2	1	4
Wilderness Character Rating	-2		-3	

Other Criteria	Alternative 1		Alternative 2	
	Positive	Negative	Positive	Negative
Maintaining Traditional Skills	0	0	4	1
Special Provisions	0	0	0	0
Economics & Time Constraints	0	0	1	0
Totals	0	0	5	1
Other Criteria Rating	0		4	

Safety	Alternative 1		Alternative 2	
	Positive	Negative	Positive	Negative
Safety of Visitors & Workers	0	0	0	4
Safety Rating	0		-4	

DECISION & JUSTIFICATION

Alternative 2 is the minimum tool because it places the trail on a more sustainable route and prevents further social trailing. It protects and improves natural resources such as vegetation, wetlands, wildlife, geologic resources, and wilderness character. The short term use of a helicopter for delivery of gravel does not contribute significantly to the overall use of helicopters in the park for purposes of management, research, and maintenance; and greatly reduces the presence of trail crew in the area.

Mitigations to Protect Resources including Wilderness Character

The project leader would be responsible for the following mitigation measures pertaining to wilderness character. A full list of mitigation measures is included in Chapter 3 of the Environmental Assessment:

- If helicopters are used to transport materials, efforts would be made to complete flights prior to opening of the EVC to visitors. This can be done either prior to EVC's opening day or early in the day prior to visitor arrivals.
- Use of compactors, power wheel barrows, and other mechanized equipment would be done in the mornings prior to visitors arriving. No power tools would be used during open hours at the EVC. No power tools would be used in designated wilderness.

APPENDIX B – USCOE Authorization to use Nationwide Permit No. 18, Minor Discharges



Regulatory Division
POA-2014-541

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 6898
JBER, ALASKA 99506-0898

JAN 13 2015

National Park Service
Attention: Don Striker
Post Office Box 9
Denali, AK 99755

Dear Mr. Striker:

This is in response to your December 11, 2014, application for a Department of the Army (DA) permit, to discharge 17 cubic yards of fill materials into less than 0.1-acre of wetlands in order to improve the Gorge Creek Trail and revegetate other trails. It has been assigned file number POA-2014-541, Gorge Creek, which should be referred to in all future correspondence with this office. The project site is located within Section 19, T. 17 S., R. 14 W., Fairbanks Meridian; USGS Quad Map Kantishna River B-1; in the vicinity of Latitude 63.4285° N., Longitude 150.3123° W.; Yukon-Koyukuk Census Area; near Mile 66 of the Park Road in Denali National Park.

Based on our review of the information you furnished and available to us, we have preliminarily determined the above project area contains waters of the United States (U.S.), including wetlands, under the Corps' regulatory jurisdiction. Please see the attached Preliminary Jurisdictional Determination Form.

DA permit authorization is necessary because your project may involve work in and placement of dredged and/or fill material into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan (sheets 1-4), dated December 11, 2014, is authorized by Nationwide Permit (NWP) No. 18, Minor Discharges. NWP No. 18 and its associated Regional and General Conditions can be accessed at our website at: www.poa.usace.army.mil/Missions/Regulatory/Permits.aspx. Regional Conditions D, E, F, G, and H apply to your project. You must comply with all terms and conditions associated with NWP No. 18.

Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to us.

This verification is valid until March 18, 2017, unless the NWP is modified, reissued, or revoked. It is incumbent upon you to remain informed of changes to the NWPs. Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at Cameron.R.Kuhle@usace.army.mil, by mail at the address above, by phone at (907) 753-2823, or toll free from within Alaska at (800) 478-2712, if you have questions or to request paper copies of the regional and/or general conditions. For more information about the Regulatory Program, please visit our website at <http://www.poa.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Kuhle', written over a horizontal line.

Cameron Kuhle
Regulatory Specialist

Enclosures