National Park Service
U.S. Department of the Interior

Denali National Park and Preserve
Alaska

Finding of No Significant Impact

Rehabilitate Mile 4.0 and 4.5 of Denali Park Road

August 2007

Recommended: _____ 8/21/07
Superintendent, Denali National Park and Preserve — Date

Approved: _____ 8/24/07
Regional Director, Alaska — Date

FINDING OF NO SIGNIFICANT IMPACT

Rehabilitate Mile 4.0 and 4.5 of Denali Park Road
Denali National Park and Preserve, Alaska
August 2007

The National Park Service (NPS) prepared an environmental assessment (EA) to evaluate a proposal to rehabilitate two sections of the Denali Park Road (park road) just beyond the park headquarters at mile post (MP) 4.0 and MP 4.5 in Denali National Park (see the attached two figures).

The NPS has selected Alternative 2, the Proposed Action (NPS Preferred Alternative), with mitigation measures and without modification, to rehabilitate the two sections of park road.

The Federal Highway Administration (FHWA) was a cooperating agency on the EA.

An attachment provides NPS responses to public comments. Two written comments were received during the 30-day public comment period.

The purpose of the project is to:

- Rehabilitate a problem slump area at mile post (MP) 4.0 by realigning approximately 1,600 feet of the road through an abandoned borrow pit to the north, or uphill side, and restore the bypassed section of road.
- Rehabilitate a problem sheet ice area at MP 4.5 by raising the road surface approximately 2 to 4 feet and shifting it approximately 2 to 8 feet along a stretch of road approximately 2,200 feet long; enlarging the uphill drainage ditch to retain greater winter ice volume; and adding and enlarging culverts.

The road rehabilitation is needed to reduce annual maintenance costs and to improve operational efficiency of park management. Park maintenance crews are provided hazard pay for road clearing in the vicinity of MP 4.5 when slippery aufeis is present. The current road design often requires increased wages and large amounts of time to clear the ice. The unstable roadbed at MP 4.0 requires high annual maintenance including 1 to 2 feet of additional gravel surfacing due to the slumping. The improved road conditions will help the park provide a more reliable spring road opening date to park concessions and other visitor service businesses.

While the spring road opening will occur at the same time annually with or without the project, the maintenance activities could start later and will be safer because there will be considerably less ice on the road surface. The road in winter will provide a safer and more reliable corridor for visitors to access the park backcountry by cross-country ski, dog sled, or snowshoe, because aufeis will not accumulate in large volumes on the road surface at MP 4.5. The road in summer will provide reliable visitor access into the park, because the unpaved and unstable MP 4.0 area will be bypassed with a paved road in a more stable location, and both MP 4.0 and MP 4.5 areas will have fewer maintenance delays.

ALTERNATIVES

Two alternatives were evaluated in the EA.

Alternative 1, No Action

Under the no-action alternative, management of the existing park road would remain unchanged. The park road would remain open for summer vehicular travel and for winter non-motorized over-snow travel, but the two subject problem areas would not be repaired. Spring road opening by the NPS would proceed as in past years.

At MP 4.0, the road slump area, approximately 1,600 feet long, would remain unpaved, and NPS would add 300 to 400 cubic yards of gravel fill material annually to maintain a safe driving surface.

At MP 4.5, the sheet ice (aufeis) area, approximately 2,200 feet long, NPS would continue to remove large volumes of accumulated winter ice annually, during spring road opening operations.

Alternative 2, Proposed Action, the NPS Preferred Alternative, the Environmentally Preferred Alternative

Under the proposed action, the two subject problem areas of park road would be repaired. The new road sections would continue to have two 11-foot paved travel lanes and 2-foot paved shoulders for a total, unchanged pavement width of 26 feet. The roadbed would consist of roadway aggregate, compacted to about 8 inches deep. The finished road surface would be compacted asphalt approximately 3 inches deep.

Approximately 2,500 truckloads of material for the project would be transported into the park along the paved section of park road during the visitor season. Borrow material, free of weed seeds, would be obtained from nearby commercial sources outside of the park. Excess material would be hauled to the staging and stockpile site at MP 5.0 for later use in the project revegetation work. No new surface disturbance would occur for staging or stockpiling.

Unstable cut slopes would be treated with 12-inch think gabion mattresses. Sections would typically cover 9 to 20 feet. About 200 to 800 feet of gabion mattress would be needed. Topsoil to a depth of about 6 inches would be placed on the gabion mattress sections to facilitate native revegetation. Disturbed areas would be seeded by park staff with native legumes such as sweetvetch (*Hedysarum alpinum)*. All reseeding would be completed, after the construction period, in 2008 or 2009. Annual mowing (taking care not to damage the gabion mattress material) would keep tree species from becoming established.

Road construction would occur between mid-May and late September in two to three phases. The first phase would consist of tree clearing, which would be completed in autumn (September through October) of 2007. The second phase would occur in late spring and summer of 2008, and would consist of constructing the road at MP 4.0 and rehabilitating the road at MP 4.5.

Depending on construction progress and weather delays, paving the new and rehabilitated sections of road may occur in late spring 2009. Traffic would continue to be routed along the existing road during construction. FHWA would hire a private construction contractor and would administer the construction contract with representation from NPS. The design life of this proposed project is 50 years.

MP 4.0

The NPS would reroute approximately 1,600 feet of road at MP 4.0 through an abandoned borrow pit to the north, or uphill side. The new road section would have a maximum grade of 5.1 percent. Approximately 2,600 cubic yards would be excavated, roughly 5,100 cubic yards of fill would be used, and 1,400 cubic yards of base material would be laid down for this road section. The finished road surface would consist of approximately 430 cubic yards of asphalt concrete.

Enough borrow material would be removed from the old roadbed to approximate natural land contours. The uphill road cut slope would be 1:1.5 to 1:2 and reseeded by park staff. The existence of permafrost in some cut slopes is likely, but cannot be determined until the excavation phase. Subsurface conditions exposed may require cut slope stabilization (most likely in permafrost areas). Traffic would be directed along the old section of road until the rerouted portion is completed. About 2.6 acres of natural vegetation would be disturbed, thereby increasing the development footprint within the park.

MP 4.5

The NPS would widen and deepen the upslope ditch along approximately 2,600 feet of road, increase culvert size and number, raise and shift the roadbed to provide a larger ditch, and stabilize cut slope areas with a gabion mattress. The road surface would be raised about 2 to 4 feet. Approximately 12 large culverts would be placed in the road prism, about 6 to 7 feet in diameter each. The roadbed would be shifted about 2 to 8 feet. These changes would increase the flow of water under the road during the fall and early winter, increasing the amount of room available for winter ice accumulation, minimizing the amount of aufeis that would deposit on the road surface through the winter. The road section would have a maximum grade of 6.8 percent. Approximately 8,700 cubic yards of material would be excavated, roughly 22,000 cubic yards of fill would be used, and about 2,400 cubic yards of base material would be laid down for this road section. The finished road would require approximately 800 cubic yards of asphalt concrete. Approximately 5,000 to 7,500 square feet of gabion mattress would be constructed on the unstable cut slopes in the MP 4.5 project area. About 1.1 acres of natural vegetation would be disturbed, thereby increasing the development footprint within the park.

Mitigation

Mitigation measures are specific actions that would reduce impacts, protect park resources, and protect visitors. The following mitigation measures would be implemented by the proposed action alternative and are assumed in the analysis of impacts.

Vegetation: Backslopes and fill slopes would be covered with conserved topsoil from earlier excavation. Disturbed sites within the project area would be replanted with native vegetation, following the Interior Alaska Revegetation Plan (USGS 1994). Measures to prevent invasive plant colonization would include: pressure washing construction equipment and vehicles prior to entering the park, any gravel or fill required would either come from a weed-free materials site (as verified by a park vegetation technician) or would be heated to kill any plant material or seeds, and continuation of the park's existing exotic plant eradication program.

Wetlands: Best Management Practices (BMPs), such as the use of silt fences, would be used to protect adjacent wetlands. The NPS would rehabilitate an off-site degraded wetland area near Kantishna as compensation for the wetland loss at the project site.

Wildlife: Bird habitat (vegetation) would not be removed during the nesting season, April through July 15. After completing all the nesting vegetation removal required for the project, there would be no seasonal restriction for construction activities, even during subsequent nesting seasons. If an active nest were encountered at any time, it would be protected from destruction. "Active" is indicated by intact eggs, live chicks, or presence of an adult on the nest. Eggs, chicks, or adults of wild birds would not be destroyed.

Geological Processes: Energy dissipaters would be placed at the outflow of each culvert to reduce water velocity and prevent erosion.

Cultural Resources: Project excavations would be monitored by cultural resource staff. If previously unknown cultural resources were located during construction, the project would be stopped in the discovery area until cultural resource staff could determine the significance of the finding and recommend appropriate courses of action.

Air Quality: Contractors would use BMPs to protect air quality, such as controlling vehicle and equipment pollution. Equipment not in use would be turned off. During construction, a water truck would apply water to the road and the excavation areas for dust abatement.

Visitor Use: Construction phasing and timing would be coordinated with the park bus systems and low visitor use times to minimize traffic delays on the park road.

Visual Resources: Approximately 5,000 to 7,500 square feet of 12-inch thick gabion mattress would be constructed on exposed unstable slopes and an erosion control mat would be placed on top of it. Topsoil to a depth of approximately 6 inches would cover the gabion mattress and park staff would complete revegetation.

Soundscapes: All noise-producing project equipment and vehicles using internal combustion engines would be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) would be equipped with shrouds and noise control features that are readily available for that type of equipment. The use of noise-producing signals, including horns, whistles, electronic alarms, and sirens and bells, would be for safety warning purposes only.

PUBLIC INVOLVEMENT

The EA was issued for public review and comment from June 22, 2007 to July 23, 2007. The EA, or notices of the EA, were sent by mail or email to approximately 280 government agencies, tribal entities, organizations, 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 June 25, 2007.

Comments were received from 2 individuals. The comments did not change the conclusions in the EA concerning environmental effects of the proposed action. NPS responses to substantive public comments are attached.

One commenter supported the project. The other commenter mentioned the public safety aspect of the proposal.

DECISION

The NPS decision is to select Alternative 2, Proposed Action (NPS Preferred Alternative) with mitigating measures. See the attached two figures.

Mitigating Measures

All mitigation measures have been incorporated into the actual alternative description above.

Rationale for the Decision

The selected action will satisfy the purpose and need of the project better than the other alternative because it will provide for the continued public use of the park road and rehabilitation of two problem areas while protecting park resources and values. The road rehabilitation will reduce annual maintenance costs, result in fewer maintenance delays, improve operational efficiency of park management, and improve safety for winter visitors and park staff. The improved road conditions will help the park provide a more reliable spring road opening date to park concessions and other visitor service businesses.

At MP 4.0, the project will rehabilitate a problem slump area by realigning approximately 1,600 feet of the road through an abandoned borrow pit to the north, or uphill side, and restore the bypassed section of road. The unstable roadbed currently requires high annual maintenance, including 1 to 2 feet of additional gravel surfacing due to the slumping. The road in summer will provide reliable visitor access into the park, because the currently unpaved and unstable MP 4.0 area will be bypassed with a paved road in a more stable location.

At MP 4.5, the project will rehabilitate a problem aufeis area approximately 2,200 feet long by raising the road surface approximately 2 to 4 feet, shifting it approximately 2 to 8 feet, enlarging the uphill drainage ditch to retain greater winter ice volume, and adding and enlarging culverts.

Spring road opening is currently hazardous for park maintenance and crews receive hazard pay for road clearing when slippery aufeis is present. While the spring road opening will occur at the same time annually with or without the project, the maintenance activities could start later and will be safer because there will be considerably less ice on the road surface. The road in winter will provide a safer and more reliable corridor for visitors to access the park backcountry by cross-country ski, dog sled, or snowshoe, because aufeis will not accumulate in large volumes on the road surface.

The proposed action is consistent with the park's 1986 General Management Plan and the 1997 Entrance Area and Road Corridor Development Concept Plan (DCP). The DCP mentioned the specific management objective of undertaking "maintenance and safety improvements that maintain the park road and its future reliability."

The reasons for rejecting the No-Action alternatives are that it would not satisfy the purpose and need. The No-Action alternative would not improve the deteriorated road conditions and would not provide for rehabilitation of the two subject problem areas at MP 4.0 and 4.5. Annual maintenance costs would remain high. Road maintenance delays would not be reduced. Operational efficiency of park management would not be realized. Aufeis at MP 4.5 would continue to pose a safety hazard to winter visitors attempting to cross the slippery area by dog sled, ski, snowshoe, or foot. The safety hazard would not be reduced for park staff annually working to clear the aufeis for spring road opening.

Significance Criteria

The selected alternative will not have a significant effect on the human environment. This conclusion is based on the following examination 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 selected action would result in **moderate** long-term impacts to approximately 2.6 acres of vegetation. The greatest amount of disturbance at MP 4.5 would be caused by the fill necessary to raise and shift the road and the clearing and grubbing to widen and deepen the roadside ditch.

The proposed action would result in **moderate** long-term impacts to about 1 acre of jurisdictional wetlands. The majority of wetland disturbance at MP 4.5 would be caused by the fill necessary to raise and shift the road and clearing and grubbing to widen and deepen the roadside ditch. Project activities would result in the direct loss of about 0.4 acre of wetlands at MP 4.0, and about 0.6 acre at MP 4.5.

The proposed action would result in **minor** impacts to wildlife and habitat. About 2.6 acres of wildlife habitat would be lost long-term. Wildlife would be temporarily disturbed by construction activities. Positive impacts would occur from shorter-term spring road opening.

The proposed action would result in **minor** impacts to geological processes at both locations. Hydrological connectivity would be restored. Damage to down-slope vegetation and soils would be reduced.

The proposed action would result in **minor** impacts to visitor use. Impacts to visitor use would be temporary, from construction activities and traffic delays. The proposal would have positive impacts to winter visitor use at the aufeis area (MP 4.5) making it safer for dog sled mushers, skiers, and snowshoers.

The proposed action would result in **minor**, temporary impacts to visual resources, mainly resulting from rehabilitation activities. Disturbed areas would take years to fully revegetate. Visual character would be impacted locally.

The proposed action would result in **minor** impacts to soundscapes. Impacts would be temporary from construction activities. Noise from spring road opening maintenance equipment would decrease.

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

The selected alternative would significantly reduce the aufeis on the road surface near MP 4.5. This will improve safety for winter visitors. Currently, visitors attempting to cross the aufeis area often slip, fall, or slide off the road due to the broad slippery surface. This can be especially hazardous for dog sleds if heavy sleds slide into visitors or dogs. During spring road opening maintenance operations, the aufeis area is hazardous for park staff. Heavy equipment is used to break up and remove the ice sheet that may be more than six feet thick. If the equipment begins to slide on the ice it can be hazardous for the equipment operator. They currently receive hazard pay because of this added danger.

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

The project area is located in Denali National Park along the only road into the park interior. The immediate area is wooded rolling foothills but lacking the grand landscape views common on other parts of the road. Small stream drainages and weeping spring seeps drain through culverts under the road towards Hines Creek which is well below the road. Local winter ice accumulation from these springs is considerable. These unique characteristics would not be affected by the selected alternative.

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

Road repair on an existing paved park road is not controversial. The road will not be changed in pavement width, vehicle weight, or travel speed. Roadside drainage features will be substantially enlarged in the two subject road sections. Some engineered structures will be added and will be visible – a sloping wall to stabilize the slope. Sections of the road will be

raised in elevation and shifted so that the off-pavement road prism will be enlarged. These new features may be noticeable and controversial to some, but the public review period drew no letters of concern, and only two letters total.

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

The effects of the selected alternative do not involve unique or unknown risks.

(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.

The selected alternative would not establish a precedent for future actions or represent a decision on principle about a future consideration.

(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 action is not related to other actions with individually insignificant but cumulative significant impacts.

(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 selected alternative would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. There are no known cultural or archeological resources which would be affected by the road rehabilitation work. No known scientific resources would be adversely affected by 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 would not adversely affect an endangered or threatened species or its habitat.

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

The selected alternative would not violate any Federal, State, or local law.

FINDINGS

The levels of adverse impacts to park resources anticipated 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 Endangered Species Act; the National Historic Preservation Act; the Migratory Bird Treaty Act; Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands); and the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA) which authorizes FHWA programs. There will be no restriction of subsistence activities as documented by the Alaska National Interest Lands Conservation Act, Title VIII, Section 810(a) Summary Evaluation and Findings.

The National Park Service 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
Denali National Park and Preserve EA for
Rehabilitate Mile 4.0 and 4.5 of Denali Park Road

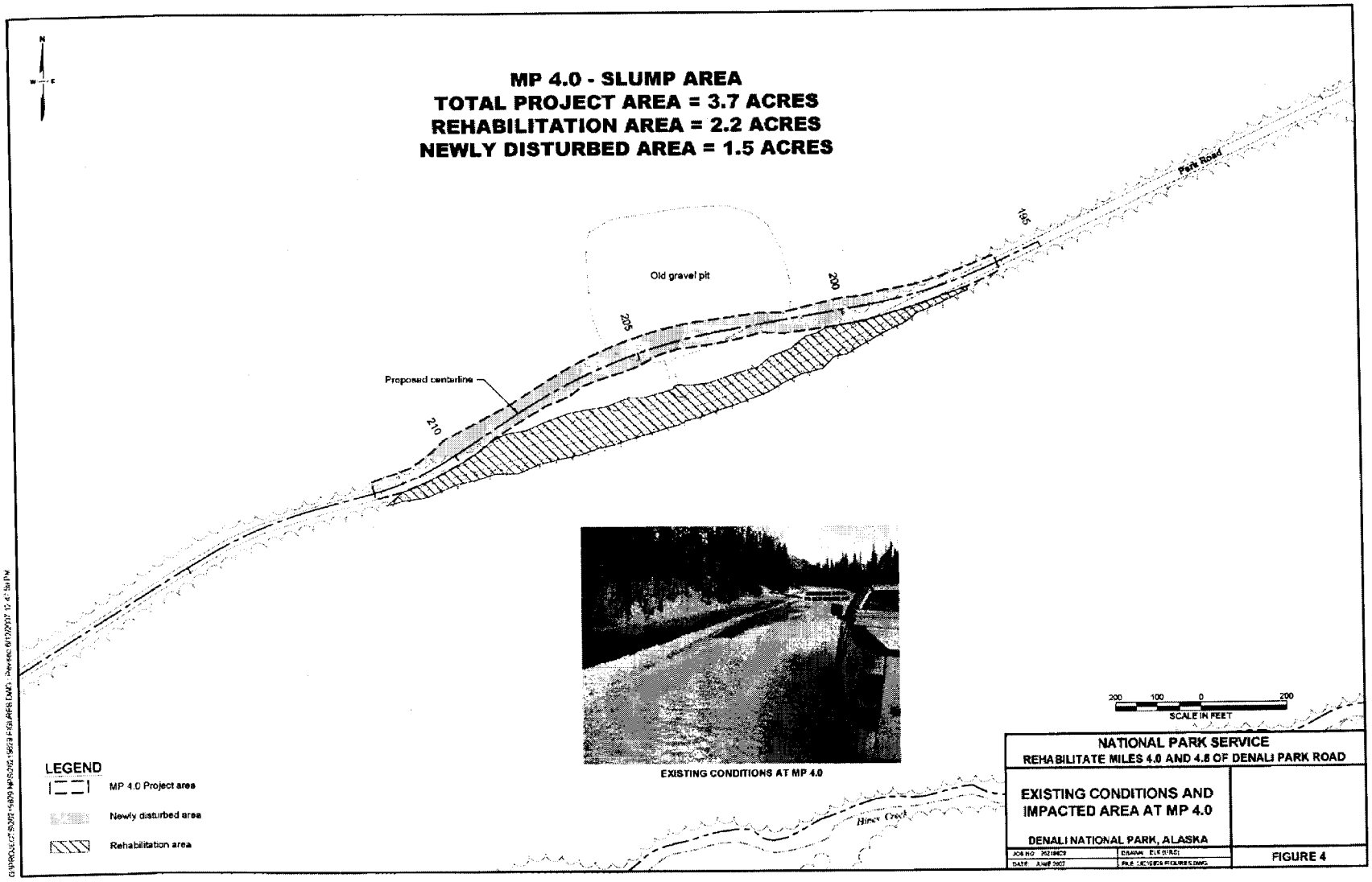
This attachment provides NPS responses to public comments.

PUBLIC COMMENTS

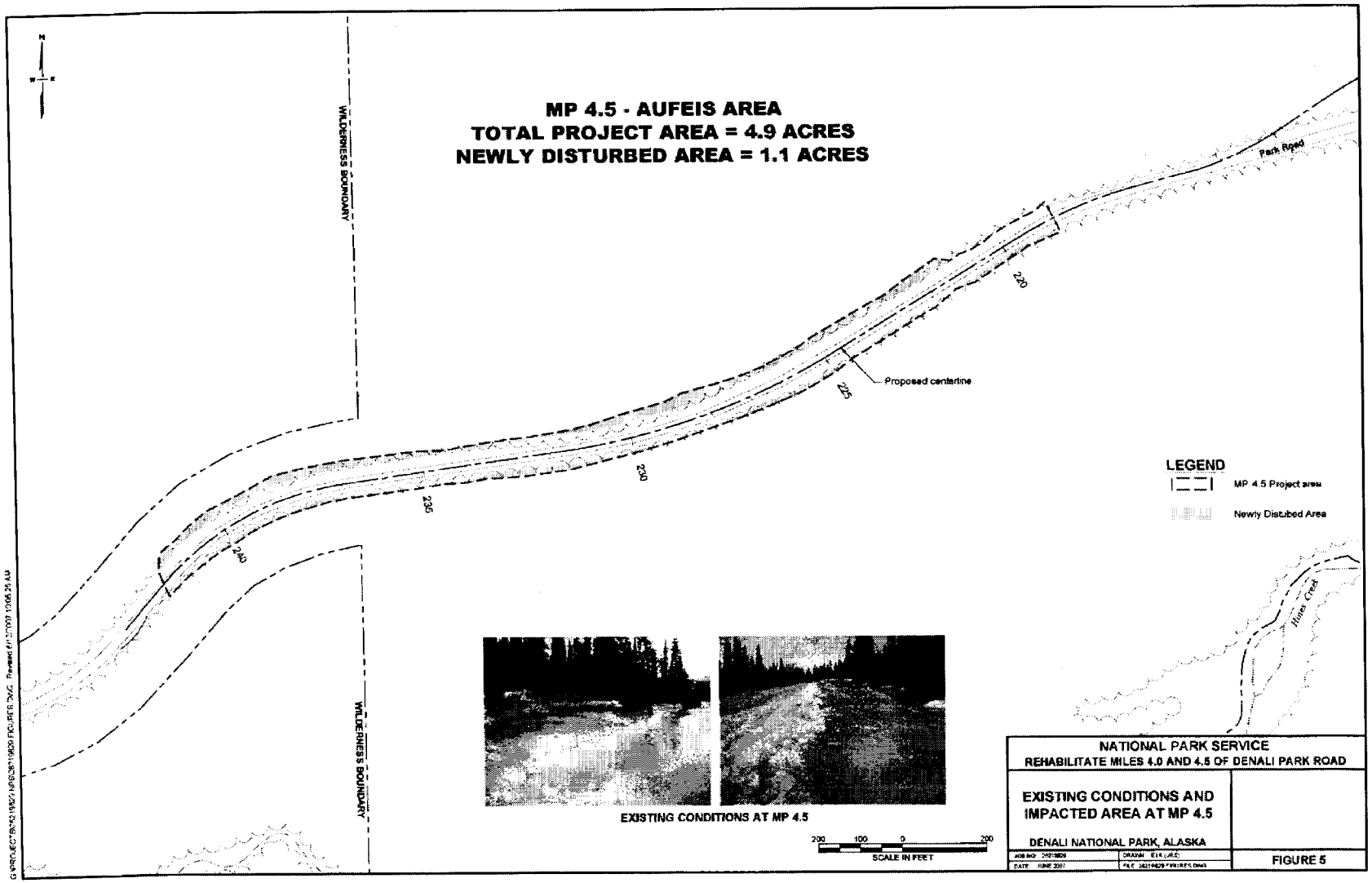
The NPS received two public comments: one from the Army Corps of Engineers (ACE), and one supportive letter from congressional delegation.

The NPS has read and considered all comments received. Responses to substantive comments are provided below. A substantive comment is defined as one which leads the NPS to: (1) modify an alternative, including the proposed action; (2) develop and evaluate an alternative not previously given serious consideration; (3) supplement, improve, or modify the environmental analysis; or (4) make factual corrections (CEQ NEPA Regulations 1503.4).

Comment, ACE: The public safety aspect of the proposal should be discussed.
Response, NPS: The EA mentioned the public safety aspect of the project, although the benefits to NPS staff safety and to park management are greater reasons for the project. Public safety will improve because the aufeis near MP 4.5 will be greatly reduced, making it safer for park visitors to cross the area in winter by dog sled, snowshoe, ski, or foot. Employee safety will be significantly improved during annual spring road opening operations when heavy equipment used to break up and remove the aufeis will not slide on the ice.



Project Site at Mile 4.0 of the Denali Park Road, Figure 4 from the Environmental Assessment



Project Site at Mile 4.5 of the Denali Park Road, Figure 5 from the Environmental Assessment

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ATTACHMENT B

WETLAND STATEMENT OF FINDINGS
for the
Denali National Park and Preserve EA for
Rehabilitate Mile 4.0 and 4.5 of Denali Park Road

August 2007

Recommended:

Paul R. Anderson 8/21/07

Superintendent, Denali National Park and Preserve Date

Certified for Technical Accuracy and Servicewide Consistency:

Mark O Salm 8/27/07

For Chief, Water Resources Division, Washington Office Date
(by Direction)

Approved:

Regional Director, Alaska Region Date

ATTACHMENT B

WETLAND STATEMENT OF FINDINGS
for the
Denali National Park and Preserve EA for
Rehabilitate Mile 4.0 and 4.5 of Denali Park Road

August 2007

Recommended:

Paul R. Anderson 8/21/07

Superintendent, Denali National Park and Preserve Date

Certified for Technical Accuracy and Servicewide Consistency:

Chief, Water Resources Division, Washington Office Date

Approved:

John R. Jarvis

Regional Director, Alaska Region Date

PURPOSE AND NEED FOR ACTION

The National Park Service (NPS) has prepared and made available for public review an environmental assessment (EA) to evaluate the impacts of road rehabilitation and realignment around milepost (MP) 4.0 and MP 4.5 of the Denali National Park Road (park road) in Denali National Park and Preserve (the park).

The NPS is proposing to:

- Bypass a slump area at MP 4.0 by realigning the road through an abandoned borrow pit to the north, or uphill side.
- Raise the road surface at MP 4.5 approximately 2 to 4 feet, shift it 2 to 8 feet to the west, widen and deepen roadside ditches, and install equalization culverts.

The proposed project is consistent with similar projects and management plans outlined in both the 1986 General Management Plan and the 1997 Development Concept Plan/Environmental Impact Statement, which was an amendment to the 1986 plan.

Executive Order (E.O.) 11990, Protection of Wetlands, requires the NPS, and other federal agencies, to evaluate the likely impacts of actions in wetlands. The E.O. requires that short- and long-term adverse impacts associated with occupancy, modification, or destruction of wetlands be avoided whenever possible. Indirect support of development and new construction in such areas should also be avoided wherever there is a practicable alternative.

To comply with these orders, the NPS has developed a set of agency policies and procedures which can be found in Director's Order (DO) 77-1, Wetland Protection, and Procedural Manual 77-1, Wetland Protection. The policies and procedures related to wetlands emphasize: exploring all practical alternatives to building on, or otherwise affecting, wetlands; reducing impacts to wetlands whenever possible; and providing direct compensation for any unavoidable wetland impact by restoring degraded or destroyed wetlands on other NPS properties.

The purpose of this Statement of Findings (SOF) is to present the NPS rationale for its proposed road rehabilitation at MP 4.0 and MP 4.5 in the wetland area. This SOF also documents the anticipated effects on these resources.

WETLANDS WITHIN THE PROJECT AREA

Wetland boundaries were identified in the field by NPS personnel in August 2006, transcribed onto air photos, and converted to a geographic information system (GIS) layer to determine wetland acreage. Of the approximately 2.6 acres that would be newly disturbed by the proposed action, 1 acre is classified as wetlands under the "Classification of Wetlands and Deepwater Habitats of the United States," the Cowardin Classification System (Cowardin et al. 1979), and are therefore subject to NPS wetlands compliance procedures. Of the 2.6 acres that would be newly disturbed, 1.6 acres are upland, as evidenced by the white spruce associations, the lack of hydrologic indicators, and the presence of well-draining soils.

The 1 acre of wetlands located within the proposed project area is classified as palustrine forested/scrub-shrub, needle-leaved evergreen, saturated wetlands (PFO4/SS1B) and riverine intermittent, vegetated streambed (R4SB7). Vegetation in palustrine forested/scrub-shrub wetlands is typically dominated by black spruce/white spruce hybrids (Viereck et al. 1992). The understory shrub layer can vary slightly, but typically consists of both low and tall shrubs of willow (including *Salix planifolia*), Labrador tea (*Ledum* spp.), lowbush cranberry (*Vaccinium vitis-idaea*), and bog blueberry (*Vaccinium uliginosum*). Common ground cover includes peat mosses (*Sphagnum* spp.) and herbaceous species like field horsetail (*Equisetum arvense*) and few flowered sedge (*Carex pauciflora*) and a variety of forbs (Viereck at al. 1992; Reed 1996). Local wetlands of the riverine intermittent classifications are small streambeds wet enough to be colonized by dense willow swarms (*S. planifolia*).

These affected wetlands function to attenuate snow melt surface flow during spring break-up, when the ground is still frozen. They also function to slow water movement during heavy rainfall events and limit erosion of soils during those events and help protect the park road from flood events. The wetlands involved here also include ground water discharge points (springs) that help keep the lower slopes saturated; however, they contribute to the aufeis situation on the road. These wetlands also provide habitat for wildlife, such as red squirrels, snowshoe hares, porcupine, and common bird species such as gray jays, thrushes, sparrows, and warblers. Less common raptors such as hawk-owls use wetland trees for nesting. Moose frequent the area for forage. No threatened or endangered animal or plant species are found in the area and no research or reference sites have been developed in the project area.

There are no water wells located near the project area. Flooding at this site has not been documented, as forests and open wetlands cover most of the adjacent land and gravelly subsurface soils absorb the rainfall.

THE PROPOSAL IN RELATION TO WETLANDS

The proposal and alternatives are described in detail in the project EA.

The road rehabilitation at MP 4.0 and MP 4.5 would impact a maximum of 0.9 acre of palustrine forested/scrub-shrub (PFO4/SS1B) and 0.1 acre of riverine (R4SB7) wetlands. The extent of disturbance is shown on Figures 4, 5, 8, and 9 of this EA. The majority of the wetland disturbance would be caused by the fill necessary to raise and shift the road at MP 4.5.

Palustrine forested/scrub-shrub, needle-leaved evergreen/broad-leaved deciduous, saturated wetlands (PFO4/SS1B) and riverine intermittent, vegetated streambed (R4SB7), as described above, are common throughout the eastern areas of the park. The wetlands located at the proposed project site are a relatively small part of the park's wetlands and are locally common: in the valley that surrounds about the first 10 miles of the park road alone, there are over 1,000 acres of palustrine forested/scrub-shrub wetlands. Therefore, the approximately 0.9 acre of palustrine forested/scrub-shrub wetlands that would be lost by the proposed action equates to less than 0.1 percent of the total palustrine forested/scrub shrub wetland acreage in just this area of the park. Removal of this amount of wetlands would have a moderate impact on overall wetland

functions and values, such as surface water quality (including sediment control and water purification), floodwater attenuation, and animal habitat.

The primary purposes of this project are to reroute and solidify a section of slumping road and minimize aufeis impacts on another section of road. The road improvements would help to make the road passable and safe throughout the year. Also, activities associated with the proposed project (i.e., trenching, ditching, and installation of culverts) would result in the beneficial impact of increased hydrological connectivity between vegetation upgradient and downgradient from the road. This increased hydrological connectivity, coupled with the retention of winter ice in upgradient ditches, would greatly decrease the volume of ice that currently reaches and covers the road. Since there would be minimal aufeis on and around the road, park personnel would not have to dig up the ice and dispose of it to the downgradient side of the road; an act which crushes vegetation. And, the upgradient retaining ditch would be placed in such a location (lower and closer to the road) so that vegetation upslope from it would not be affected by a lack of moisture during the growing season.

The proposed project area wetland soils include up to 60 inches of organic peat soils (such as Doroshin or Salamatof peat) over gravelly glacial till. The installation of culverts and ditch, and related road improvements would be accomplished by removing the organic soils and replacing it with clean fill on top of the glacial till to the depth necessary to support a paved road for vehicular traffic.

Discharge of dredged or fill material into jurisdictional wetlands is regulated by the U.S. Army Corps of Engineers (USACE) under section (§) 404 of the Clean Water Act. The project would need a §404 permit from USACE for the culvert work and the work around the intermittent streams that coalesce from uphill springs.

MITIGATION PROPOSED

Federal and NPS policy is to avoid locating projects in wetlands whenever possible. If circumstances make it impracticable to avoid wetlands, then mitigation of unavoidable impacts must be planned. An NPS wetlands no-net-loss policy requires that wetland losses be compensated for by restoration of wetlands, preferably of comparable wetland type and function and in the same watershed if possible.

Of the 2.6 acres potentially affected by the proposed action, 1 acre is classified as wetlands. This SOF commits to full 2:1 compensation for the 1 acre of disturbed wetlands.

On-Site Rehabilitation

As much as possible, disturbance of wetlands in and around the project area would be avoided. Silt fences would be set up to define construction impact limits. Any areas disturbed by construction activities would be restored to as near natural conditions as possible. Fugitive dust from construction activities would be mitigated through the use of dust abatement practices (i.e., watering). Prior to the start of construction activities, the NPS would salvage as much topsoil, organic matter, and vegetation as necessary for later use in site revegetation or for use in

revegetating other local sites. Salvaged material would be stockpiled separately and would be placed in the disturbed areas following construction.

Off-Site Compensation (Wetland Restoration)

Compensation, by restoration of previously disturbed degraded wetlands, is required under the NPS no-net-loss policy for projects involving disturbance or loss of wetlands. Compensation would occur for the loss of 1 acre of palustrine forested/scrub-shrub and riverine intermittent wetland. Two-for-one compensation would be completed within the park, rather than 1:1, because the work at the compensation site would restore some, but not all of the natural functioning of the riparian wetlands previously lost at the site. Stabilizing the channel and floodplain would allow processes such as natural revegetation, soil deposition from spring breakup events, and pool and riffle initiation to begin with a much smaller chance of channel blowout during flooding and resultant loss of functioning.

The project site and the Kantishna compensation site (see Figure 10) are separated by about 65 miles but are both within Denali National Park. The affected area and the proposed compensation site have some different wetland functions and values. The wetlands impacted by the project are described above as a PFO4/SS1B and R4SB7 type and the wetlands to be restored at the Kantishna compensation site are described below as a R3USJ/PUS1D classification.

An NPS-funded project to restore landscapes within former placer mined areas in Kantishna is scheduled for 2008-2010. An estimated 2.7 acres (based on 2:1 compensation of wetlands lost to proposed project) within the park's Glen Creek floodplain (specifically at the confluence of the West and East Forks of Glen Creek) has been selected for restoration within the scope of this mitigation, for compensation related to this road rehabilitation project. These Kantishna area wetlands are classified as riverine upper perennial unconsolidated shore, intermittently flooded; palustrine unconsolidated shore, cobble gravel, seasonally flooded/well-drained (R3USJ/PUS1D). Restoration plans at the Glen Creek site include removing and disposing of debris; stabilizing the channel and floodplain; stabilizing the access road; and revegetating the stripped areas. Preliminary work would include water and soil sampling and an engineering survey of the existing stream channel, floodplain and upland topography. Discharge measurements would be collected to aid in stream channel design. Soil sampling would assess the geo-chemistry of the upper watershed, and determine the soil's potential for revegetation efforts. Surveys, both cross-sectional and topographical, would be conducted to supplement site data on the NPS topographic maps. This information would be used to locate and estimate material amounts for use in recontouring the site and reconstructing the stream channel and floodplain.

The cost estimate for this compensation project is approximately $20,000 per acre, based on an unpublished report, "Cost Estimation for Reclamation, National Park Service, Alaska Regional Office, January 1994." This report reviewed three separate mining reclamation projects that were conducted on abandoned claims in the park. The cost associated with compensation for the proposed road project would be about $40,000. The park cannot use funds specifically earmarked for natural resources management (e.g., Natural Resources Preservation Program

funding, Water Resources Division-Competitive, etc.) to compensate for construction impacts. The NPS base funding for park operations would be used for this compensation.

Project design requirements would include a channel capacity for a 1.5-year (bank full) discharge and a floodplain capacity for up to a 100-year discharge. The project design would include the use of bio-revetment, located on meanders, to encourage channel stabilization using natural methods. Brush bars, located in areas of little or no fines, would be employed to dissipate floodwater energy and encourage sediment deposition. Riparian areas would be revegetated with willow cuttings and other appropriate vegetation. Depending on the results from the soils nutrient analysis, fertilizer would be used to ensure a quick start for new vegetation. Monitoring of the stream channel and riparian areas would occur to determine the success of the reclamation efforts. Vegetation plots and permanently mounted cross-sections would be surveyed and measured again after the first year. Additional seeding and revegetation would occur on areas not vegetated during the first year. It is anticipated that the site would be at least a partially functional wetland within 3 to 5 years after treatment, and would be fully-functioning within 15 years.

ALTERNATIVES CONSIDERED

Alternative 1 describes the No Action Alternative; under this alternative, the NPS and Federal Highways Administration would not complete the proposed road rehabilitation. Existing use and maintenance of the road at MP 4.0 and MP 4.5 would continue. Refer to Section 2.2 of the EA for a more detailed explanation of Alternative 1.

Alternative 2 is the NPS Preferred Alternative to reroute the slumping park road at MP 4.0 and raise and shift it at MP 4.5. Alternative 2, the proposed action, is the Environmentally Preferred Alternative. This alternative addresses the worsening road issues at MP 4.0 and the icing problem at MP 4.5. It ultimately extends the life of the existing infrastructure and reducing the need for more extensive rehabilitation and reconstruction in the future. The redesigned road would avoid or stabilize an unstable and sliding slope and provide a safer road for park visitors and staff during winter and spring road opening when aufeis threatens the park road. A broader range of beneficial uses of the environment would be accomplished in the aufeis area. Dog sled mushers and Nordic skiers have great difficulty safely passing this area when the ice overtakes the road. The road rehabilitation would provide safer passage by reducing the amount of ice that forms on the roadway. The amount of vegetation that is destroyed when large blocks of ice are cleared and thrown over the side of the road during spring road opening would be reduced.

Alternative 1, the No Action Alternative, would not accomplish the purpose or relieve the need for the project. This alternative allows the continuation and possible worsening of roadway slumping at MP 4.0 and the continued formation of aufeis at MP 4.5 that can cover 1,000 feet or more of roadway with ice up to 6 feet deep. Safety is a concern for winter visitors and for park maintenance crews who remove the large quantities of ice in the spring to open the park road for safe travel.

The reason for selecting Alternative 2, with a greater wetland impact, is that it better serves the purpose and need of the project. The purpose and need are described in detail in Section 1.1 of the project EA, which is incorporates this SOF through reference.

Several other alternatives were discussed during the project scoping process but were eliminated from further evaluations. These are briefly explained in the EA.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH THE PROPOSED ACTION

The potential environmental consequences of the proposed action and alternatives are fully described in the EA.

CONCLUSION

The NPS concludes that there are no practical alternatives to disturbing about 1 acre of wetlands for proposed project related activities including: raising and realigning the road grade, installing new and larger culverts, excavating a wider and deeper ditch, and related road improvements. Wetlands would be avoided to the maximum extent practicable. The wetland impacts that could not be avoided would be minimized. The NPS acknowledges that some natural localized wetlands, and their accompanying processes, would be lost by the road rehabilitation project. Impacts on the 1 acre of wetlands would be compensated for, on a minimum 2:1 acreage basis, by restoring riverine and palustrine wetland habitat in the Kantishna Hills region of the park (formerly a placer-mined stream and riparian habitat at the confluence of the East and West forks of the Glen Creek). The NPS finds that this project is consistent with the Procedural Manual #77-1, Wetland Protection and with NPS DO #77-1, Wetland Protection. The NPS finds that this project is in compliance with E.O. 11990, Wetland Management.

REFERENCES:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/1998/classwet/classwet.htm (Version 04DEC98).

Reed, P.B., Jr. 1996. National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary. Available online.

Viereck, L.A., et al. (1992). The Alaska Vegetation Classification. General Technical Report PNW-GTR-286. USDA Forest Service, Pacific Northwest Research Station. Portland, OR.

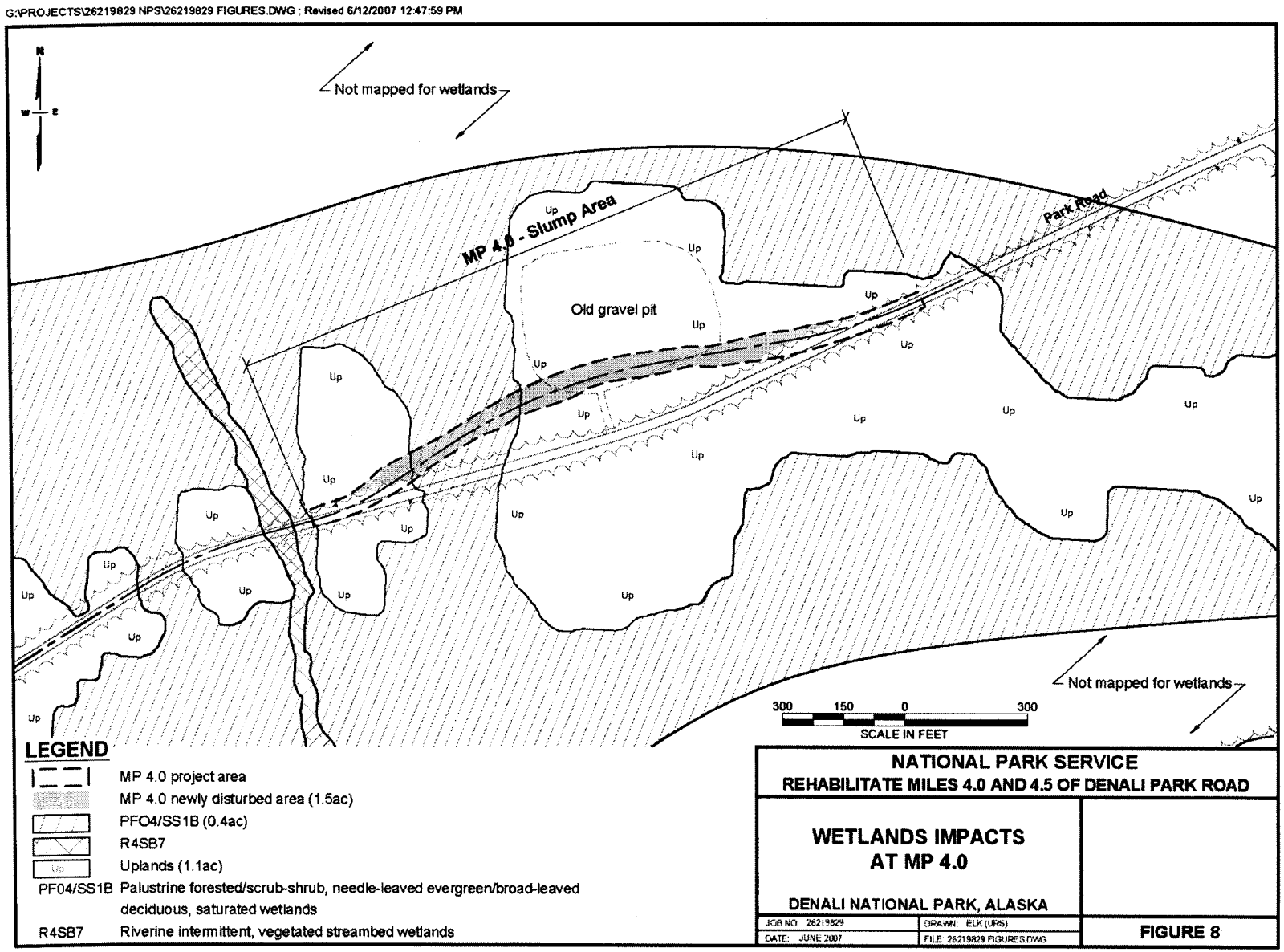

Figure 8. Wetlands Impacts at MP 4.0

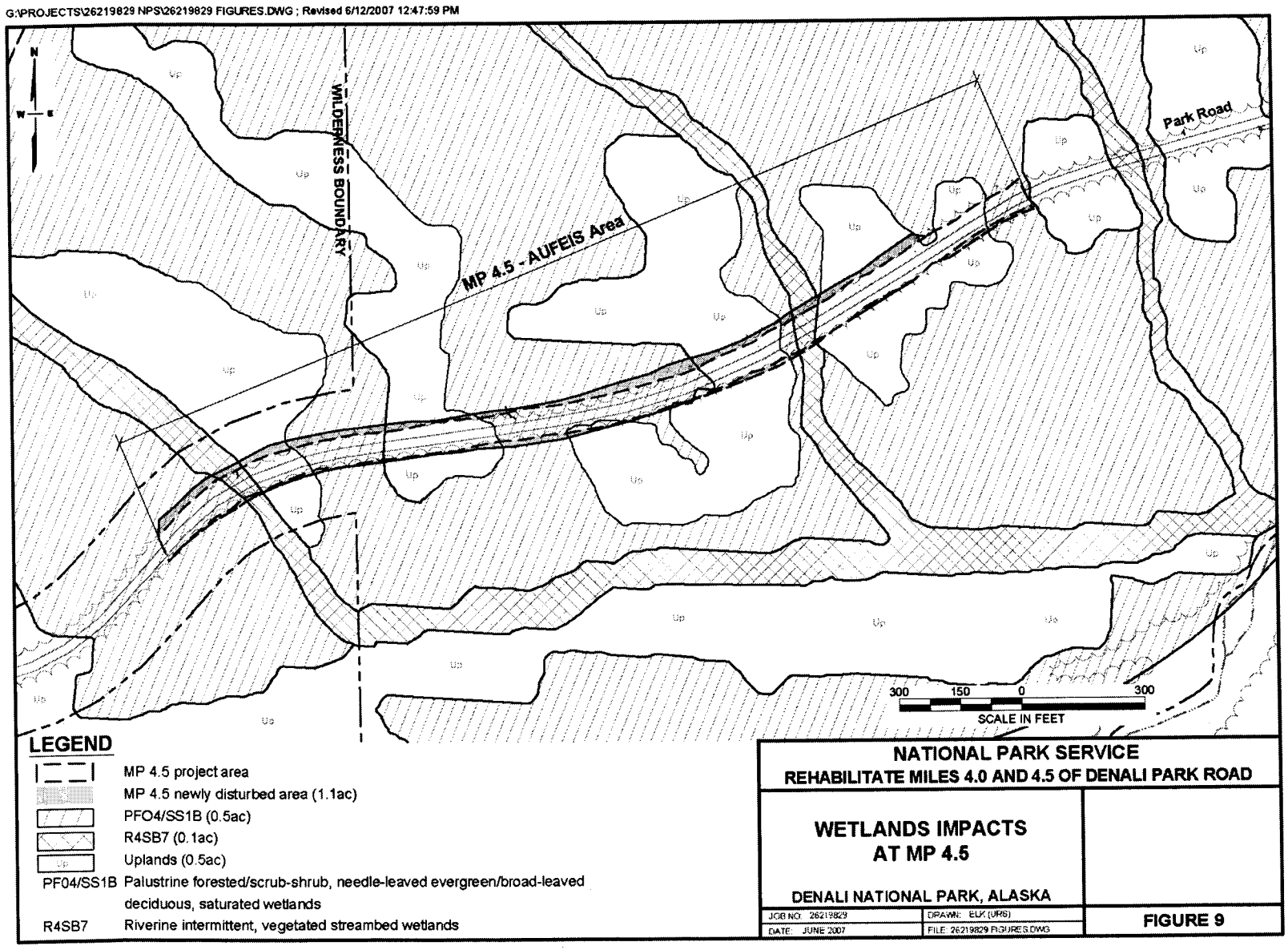

Figure 9. Wetlands Impacts at MP 4.5

Wetlands Compensation Site
Statement of Findings

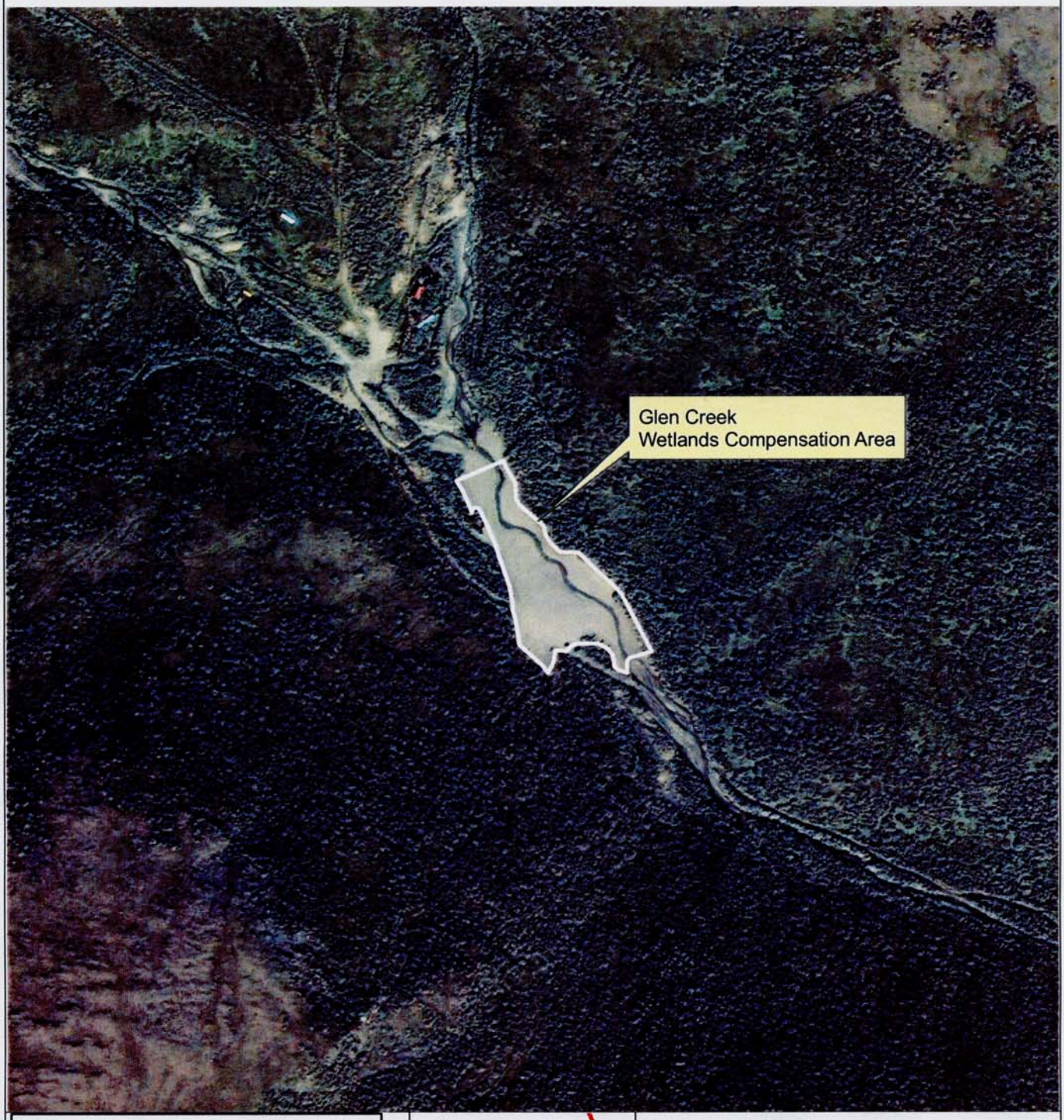

Figure 10 - Wetlands Compensation Area Location - Glen Creek, Kantishna Hills, Denali National Park and Preserve. 2.0 acres - Latitude N63.55 / Longitude W150.74, WGS94

Image date: July 2005

Denali NP and Preserve