5

Consultation and Coordination

PUBLIC AND AGENCY INVOLVEMENT

The National Park Service consulted with various agencies, organizations, and interested persons in preparing this document. The process of consultation and coordination is an important part of this project. The public had three primary avenues for participation during the development of the plan—participation in public meetings; responses to newsletters; and comments submitted by regular mail and electronically through the NPS Planning, Environment, and Public Comment (PEPC) system website.

PUBLIC MEETINGS AND NEWSLETTERS

The notice of intent to prepare an environmental impact statement for the Brooks River project was published in the March 30, 2009, *Federal Register* (vol. 74 [59, p.14155]). The notice was also posted on the NPS PEPC website.

Public meetings and newsletters were used to keep the public informed on the planning process. A mailing list was compiled of members of governmental agencies, organizations, businesses, legislators, local governments and tribal councils, and interested citizens.

Public Scoping Meetings

Public scoping meetings were held on September 28, 2009, in Anchorage, and on September 29, 2009, in King Salmon. The meetings were announced via newsletters (see below), advertisements in the September 24 issue of *The Bristol Times* and the September 25 issue of *The Anchorage Daily News,* public service radio announcements (sent to KSKA, KBFX, KMXS, KBRJ, and KDLG), and through online advertisements submitted to the "What's Up" list serve and the "Anchorage Community Datebook." The purpose of these public meetings was to disseminate information about the proposed project and to identify issues and concerns that should be addressed in the document. The meetings combined an open house with a brief, formal presentation, followed by a public comment opportunity.

Four individuals attended the Anchorage meeting, and seven attended the King Salmon meeting. Much of the discussion focused on clarifying details regarding the design, alignment, and relationship to other projects taking place in the park. Oral comments were received at both meetings. In addition, 14 comments were received by e-mail or through the PEPC system.

Public comments fell into 11 categories (NPS 2009b). The primary issues and concerns that were raised included the following:

- purpose and need for the project (what is the intent of the bridge and why is it needed?)
- relationship of the bridge to the 1996 development concept plan (how is this new plan amending the older plan and is the bridge consistent with the intent of the development concept plan?)
- access to the area (how will the bridge affect access and visitor use capacity?)
- impacts on cultural, visual, water, and wildlife resources and park operations
- design of the project (including bridge span distances, viewing platforms, costs, clearance for bears, protection from bears, and provision for floatplane landings)

- notification of the public about the project (public notification was insufficient)

Newsletters

Two newsletters with project information, public scoping meeting announcements, and information on how to submit comments were mailed June 18, 2009, and September 18, 2009, to agencies, organizations, and individuals identified on the project mailing list. The September newsletter included preliminary alternative design concepts for the north and south boardwalks and the bridge.

A third (alternatives) newsletter was distributed and posted on the PEPC website in summer 2010. This newsletter described five alternatives (including the no-action alternative) that the planning team was considering. The descriptions of the alternatives covered the boardwalks, bridge, and a barge landing site. Similar elements shared by all of the action alternatives were identified.

CONSULTATION WITH OTHER AGENCIES/OFFICIALS AND ORGANIZATIONS

U.S. Fish and Wildlife Service

The planning team checked the USFWS Alaska Region endangered species consultation website (http://alaska.fws.gov/fisheries/endangered/consultation.htm) on September 22, 2010. Based on the website map, no federally listed species are present in the project area. Therefore, section 7 consultation with the U.S. Fish and Wildlife Service is not necessary.

The planning team contacted the U.S. Fish and Wildlife Service's Alaska Region Permitting Branch on August 19, 2010, requesting coordination assistance for a possible incidental take of a bald eagle nest near Beaver Pond, as required under the Bald and Golden Eagle Protection Act. The agency responded by providing an eagle permit fact sheet and information on how to avoid and minimize eagle disturbances. Based on the information provided, a project-specific decision tree was developed to aid in determining if a permit is needed.

Section 106 Consultations

On multiple occasions beginning in 2006, the National Park Service consulted with concerned Alaska Native groups/families, i.e., Council of Katmai Descendants, heirs of Palakia Melgenak, and the Alaska state historic preservation office regarding general project activities in the Brooks Camp area. In 2006, the council expressed support for relocating the operations at Brooks Camp in accordance with the 1996 development concept plan and did not support additional development in the area. A meeting was held at the NPS regional office in Anchorage, Alaska, on February 27, 2009, among NPS and council representatives with a discussion of the proposal to construct a permanent bridge across Brooks River. Following this initial meeting, an NPS archeologist met with council representatives in February 2009 to discuss traditional uses of the Brooks River area and to arrange subsequent interviews with knowledgeable council members.

At a meeting in December 2009, council representatives again expressed that the bridge project went against their understanding that development would be removed from Brooks Camp and that their traditional access and activities are impacted by too many people in the area. Similar sentiments were expressed in a letter to U.S. Senator Lisa Murkowski in March 2010 by the attorney representing the heirs. The National Park Service went over schematic bridge designs and alternative alignments with council members at a meeting in May 2010. The

National Park Service advised the group that cultural resources (e.g., archeological resources, cultural landscapes, and ethnographic resources) could be potentially affected by the project. An agreement was reached to hold subsequent meetings in King Salmon and Brooks Camp during July 2010; these meetings did not occur; however, primarily because of NPS emergency operations in Valley of Ten Thousand Smokes that curtailed staff availability at the time. In June 2010, an NPS anthropologist interviewed Alaska Native, Vera Angasan, in King Salmon (transcripts of the interview are on file at the Katmai National Park and Preserve cultural resources office, 240 W. 5th Avenue, Anchorage, AK 99501).

An on-site visit was conducted June 9–10, 2010, with an NPS archeologist and representatives of the Alaska state historic preservation office to discuss potential project effects on cultural resources in accordance with section 106 requirements. The state historic preservation office representatives noted potential project effects on the cultural landscape.

In ongoing conformance with section 106 requirements, the National Park Service will continue to consult with the council, heirs, and state historic preservation office to ensure that their input is appropriately considered. The National Park Service would consider and incorporate appropriate measures into the final project designs to avoid, minimize, or mitigate potential adverse effects to significant cultural resources and values, including continued access to resources and places of importance to the park's traditionally associated peoples.

OTHER CONSULTATION AND COORDINATION

National Oceanic and Atmospheric Agency Fisheries Service

No endangered or threatened species under the management of the National Oceanic and Atmospheric Administration (NOAA)—National Marine Fisheries Service are in the Brooks River area. Therefore, no consultation is required.

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1855(b)) requires federal agencies to consult with the National Marine Fisheries Service if essential fish habitat may be adversely affected. Essential fish habitat (salmon spawning areas) is present in Brooks River and Naknek Lake in the project area. The effects of the alternatives on essential fish habitat are addressed in appendix C. A copy of this document has been provided to the National Marine Fisheries Service for its concurrence with the NPS finding that the preferred alternative would not adversely affect essential fish habitat. Assuming the National Marine Fisheries Service concurs, no further consultation is required.

Bear Biologist Meeting

On September 9–11, 2009, the National Park Service invited five expert wildlife biologists with experience with brown bears to discuss how the existing bridge and proposed bridge and boardwalk developments and associated access changes on Brooks River could affect brown bear behavior and related safety and operational issues at Brooks Camp. In addition to identifying probable effects of the physical structures and operations, the biologists were asked about design and operational elements to mitigate unintended effects on brown bear behavior. The biologists invited were Steve Herrero, Barrie Gilbert, Harry Reynolds, Larry Van Daele, and Bill Leacock. Van

Daele and Leacock were unable to join the others at Brooks Camp because of weather-related flight cancellations, but both talked with NPS staff after the meeting. Key points were compiled from the discussions and from individual written responses to questions asked by the National Park Service.

LIST OF AGENCIES, ORGANIZATIONS, BUSINESSES, AND PUBLIC OFFICIALS RECEIVING A COPY OF THIS DOCUMENT

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Alaska Public Lands Information Center
Bureau of Land Management,
    Anchorage Field Office
Environmental Protection Agency,
    Region 10
National Marine Fisheries Service, Alaska
    Region, Habitat Conservation Division
U.S. Army Corps of Engineers,
    Regulatory Branch
U.S. Department of the Interior, Office of
    Environmental Policy and Coordination
U.S. Fish and Wildlife Service
    Ecological Services Office
    Alaska Peninsula/Becharof National
        Wildlife Refuges
    Kodiak National Wildlife Refuge
U.S. Forest Service

U.S. SENATORS AND REPRESENTATIVES

Congressman Don Young
Senator Lisa Murkowski
Senator Mark Begich

ALASKA STATE AGENCIES

Alaska Department of Fish and Game
Alaska Natural Heritage Program
ANILCA Implementation Program, Office
    of Project Management
Alaska State Historic Preservation Office

ALASKA STATE OFFICIALS

Governor Sean Parnell
Representative Alan Austerman
Representative Bryce Edgmon
Senator Gary Stevens
Senator Lyman Hoffman

ALASKA NATIVE TRIBAL GOVERNMENTS

Levelock Village
Naknek Native Village
Igiugig Village
King Salmon Tribe
Kokhanok Village
South Naknek Village

BOROUGH AND REGIONAL GOVERNMENTS

Bristol Bay Borough
Lake and Peninsula Borough

ALASKA NATIVE ASSOCIATIONS, CORPORATIONS, AND GROUPS

Alaska Peninsula Corporation
Bristol Bay Native Association
Bristol Bay Native Corporation
Council of Katmai Descendants
Heirs of Palakia Melgenak
Igiugig Native Corporation
Paug-Vik Incorporated, Limited

ORGANIZATIONS AND BUSINESSES

Alaska Audubon Society
Alaska Center for the Environment
Alaska Clean Air Coalition
Alaska Coalition
Alaska Conservation Foundation
Alaska Forum for Environmental Responsibility
Alaska Friends of the Earth
Alaska's Lake Cark Inn and Air
Alaska Outdoor Council
Alaska Quality Rights Coalition
Alaska Rainforest Campaign
Alaska Travel Industry Association
Alaska Wilderness League
Alaska Wilderness Recreation & Tourism Association
Alaska Wildlife Alliance
Audubon Alaska, Alaska State Office
Citizens' Advisory Commission on Federal Areas
Defenders of Wildlife
Earthjustice Legal Defense Fund
Katmailand, Inc.
National Parks Conservation Association
National Wildlife Federation, Alaska Office
Natural Resources Defense Council
Nature Conservancy of Alaska
Resource Development Council
Sierra Club, Alaska Chapter
The Wilderness Society
Trustees for Alaska
Wilderness Watch
Wildlife Conservation Society

MEDIA

Alaska Newspapers, Inc.
Anchorage Daily News
Bristol Bay Times
KDLG
KIMO Channel 13
KTUU
KTVA
KUTUU Channel 2
KYES TV

LIBRARIES

Alaska Resources Library and Information Service (ARLIS)
Egan Library, University of Alaska-Southeast
Elmer E. Rasmuson Library, University of Alaska-Fairbanks
Martin Monsen Regional Library
UAA/APU Consortium Library
Z. J. Loussac Public Library

INDIVIDUALS

A list of individuals who received a copy of this document is on file at the park headquarters, King Salmon, Alaska.

Appendixes, Selected References, Preparers and Consultants, Index

APPENDIX A: ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT (ANILCA) SECTION 810 SUMMARY EVALUATION AND FINDINGS

Readers should note that in this appendix *Katmai National Park* only refers to the park, not to the park and preserve.

BACKGROUND

Subsistence uses, as defined by the Alaska National Interest Land Conservation Act, section 803, defines subsistence uses as follows:

> [T]he customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.

Subsistence activities include hunting; fishing; trapping; and collection of berries, edible plants, and wood or other materials.

I. INTRODUCTION

This appendix complies with title VIII, section 810 of the Alaska National Interest Land Conservation Act. It summarizes the evaluation of potential restrictions to title VIII federal subsistence uses that could result from implementing the NPS preferred alternative to improve visitor and employee access within the Brooks River Camp area of Katmai National Park and Preserve. The National Park Service has developed this document for the proposed project.

II. EVALUATION PROCESS

Section 810(a) of the Alaska National Interest Land Conservation Act states,

> In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands . . . the head of the federal agency . . . over such lands . . . shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be affected until the head of such Federal agency
>
> (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to Section 805;
>
> (2) gives notice of, and holds, a hearing in the vicinity of the area involved; and determines that (A) such a significant restriction of subsistence uses

> is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary . . . and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

A proclamation by President Woodrow Wilson in 1918 created Katmai National Monument from a reservation of approximately 1,700 square miles. Three major purposes of the monument designation were (1) to preserve an area important to the study of volcanism; (2) to preserve Valley of Ten Thousand Smokes; and (3) to conserve an area potentially popular with persons seeking unique scenery and those with scientific interest. Increased in 1931 to include Lake Brooks, Grosvenor Lake, Lake Colville, and part of Naknek Lake, again in 1942 to include offshore islands within 5 miles of the monument coastline, and again in 1969 to include the remainder of Naknek Lake, the monument grew to contain 4,361 square miles.

With the passage of the Alaska National Interest Land Conservation Act in 1980, the designation of 3.7 million acres of the monument was changed to a national park and an additional 308,000 acres was included as a national preserve. Furthermore, 3.4 million acres of the park and preserve were designated as wilderness. Katmai Preserve was created by the Alaska National Interest Land Conservation Act section 202(2) for the following purposes (among others):

> [T]o protect habitats for, and populations of, fish and wildlife including, but not limited to, high concentrations of brown/grizzly bears and their denning areas; to maintain unimpaired the water habitat for significant salmon populations; and to protect scenic, geological, cultural, and recreational features.

The taking of fish and wildlife for subsistence uses is allowed by the Alaska National Interest Land Conservation Act in Katmai National Preserve pursuant to section 203; however, subsistence activities are not authorized within Katmai National Park.

III. PROPOSED ACTION ON FEDERAL PUBLIC LANDS

The proposed action involves the installation of two primary boardwalks on the north and south sides of the Brooks River within Katmai National Park each connected by an elevated bridge across the river. The boardwalks would contain a number of viewing/pullout areas, each capable of accommodating between 20-25 people. The existing barge landing would be relocated to an area approximately 2,000 ft south of the existing site and would require the construction of a new access road approximately 1,500 ft in length.

North Boardwalk

The north boardwalk would start adjacent to the lodge and then continue south through the wetlands for approximately 560 ft. The boardwalk would be at least 10 ft above grade once it clears the area around the lodge. This boardwalk would be 8 ft wide and designed to accommodate both pedestrians and vehicles simultaneously.

The north boardwalk would consist of four viewing/pull out areas. Two would face west and overlook the wetland and Brooks River. Two would be placed on the each side of the north end of the bridge to provide upriver and downriver viewing opportunities.

Bridge

The bridge would follow the existing alignment of the floating bridge. This bridge would be a wooden short-span bridge, approximately 350 ft in length, with a minimum distance of 24 ft between piles. There would be up to 14 sets of piles in the riverbed. The bridge would be built using the same techniques as the boardwalk system. This bridge would be a minimum of 10 ft above the river.

South Boardwalk

An 8-foot-wide pedestrian-vehicle boardwalk would cross a wetland south of the southern bridge terminus and then cut west through a wooded area. The boardwalk would follow the edge of the western wetland before ending approximately 100 ft from the existing bus parking area. This boardwalk would be 10 ft above grade and would ramp down to grade as it approaches the bus parking area. This section of boardwalk has an estimated length of 630 ft.

The south boardwalk would consist of three primary viewing/pullout areas. Two would be placed on the each side of the south end of the bridge to provide upriver and downriver viewing opportunities. One would face east and overlook the wetland. Because of the length of the south boardwalk, one to two additional smaller pullout areas may be installed to allow for the safe passage of pedestrians and vehicles.

Barge Landing and Access Road

A barge landing would be located on the shore of Naknek Lake approximately 2,000 ft south of the existing barge landing. There would be a hardened beach landing ramp (24 ft to 30 ft wide and 170 ft to 240 ft long) and parking for miscellaneous small boats / trailers during the summer operating season. The boat parking area would also be used to overwinter the park's landing craft. A new access road, approximately 1,500 ft in length, would replace the one proposed in the development concept plan that went around the south side of Beaver Pond. The existing barge landing site and the access road on the south side of the river would be removed and the landscape restored.

IV. AFFECTED ENVIRONMENT

The preferred alternative would affect a total area of approximately 12 acres as is described in this document. Concerning subsistence resources within the project area, adverse moderate impacts would occur on wildlife and wildlife habitat during project implementation, and a beneficial moderate impact on these resources from elevating pedestrian and small vehicle access across Brooks River and the adjacent wetlands and relocating the barge access away from the mouth of the river.

Naknek Lake and Brooks River provide spawning habitat primarily for sockeye salmon that migrate from Bristol Bay to Naknek Lake and Brooks River. Most of the salmon harvested in the Naknek River system have been produced within Katmai National Park, and many have been produced in the Brooks River / Lake Brooks section of this system. Harvest of salmon generally occurs in Naknek River downstream of the park boundary; however, a limited fishery for "red fish," or spawned-out sockeye salmon, is permitted. This activity is authorized under separate legislation, subsequent to the Alaska National Interest Land Conservation Act at 36 CFR 13.1204 to local residents who are descendants of Katmai residents who lived in the Naknek Lake and River drainage. Other subsistence activities are not permitted in Katmai National Park in accordance with title II section 203, title VIII section 816(a), and title XIII section 1314(c) of the Alaska National Interest

Land Conservation Act. However, brown bears, moose, salmon, and other subsistence resources migrate in and around the Brooks River area to other geographic places that permit subsistence activities outside of the park.

Subsistence uses are allowed in Katmai National Preserve in accordance with title II section 203 and provisions of title VIII of the Alaska National Interest Land Conservation Act. Katmai National Preserve, encompassing 308,000 acres, is on the northern end of the Alaska Peninsula in Game Management Unit 9C, and it contains geologic features, scenery, wildlife, and cultural resources of national significance. The Alaska National Interest Land Conservation Act also authorized subsistence uses on adjacent federal public lands managed by the Bureau of Land Management and the U.S. Fish and Wildlife Service.

Subsistence activities in Katmai National Preserve include hunting, trapping, fishing, gathering firewood, picking berries and wild plants, and gathering bird eggs. The area is used for subsistence by residents of Kokhanok, Igiugig, Levelock, Naknek, and King Salmon to harvest caribou, brown bear, moose, beaver, snowshoe hare, fox, lynx, mink, wolf, wolverine, ptarmigan, waterfowl, salmon, trout, berries, wild edible plants, and other wood resources.

Regional subsistence activities include seasonal gathering of wild edible plants and berries, hunting, trapping, and fishing. The main subsistence species are moose, caribou, furbearers, and fish. Subsistence fish include coho, king, and sockeye salmon; northern pike; burbot; Dolly Varden; arctic grayling; lake trout; rainbow trout; and whitefish. Beaver, coyote, red fox, gray wolf, wolverine, river otter, weasel, lynx, marten, mink, and muskrat are important furbearer resources. Subsistence birds include rock and willow ptarmigan, grouse, ducks, and geese.

The National Park Service recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in a given year may vary considerably from previous years because of weather, migration patterns, and natural population cycles.

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on subsistence activities by the proposed installation, upgrade, and maintenance of the bridge, boardwalk, and barge landing site in Katmai National Park, three evaluation criteria were analyzed relative to current subsistence resources that could be impacted.

The evaluation criteria are as follows:

1. The potential to reduce important subsistence fish and wildlife populations by (a) reductions in abundance; (b) redistribution of subsistence resources; or (c) loss of habitat.
2. Potential impacts the action may have on access for subsistence hunters and anglers.
3. The potential for the action to increase competition among hunters and anglers for subsistence resources.

1. Potential to Reduce Populations

(a) Reduction in Numbers. The proposed project within Katmai National Park is not expected to reduce wildlife species populations. Although about 0.5 acres of wetland habitat and some riparian habitat would be lost because of the construction of the bridge, boardwalks, and barge landing access road in the preferred alternative, with the application of the mitigation measures included in chapter 2

of this document it is expected there would be minimal losses of wildlife that move outside the park and are harvested for subsistence. Natural wildlife population and migratory cycles would continue, and the ongoing regional subsistence pattern would remain unchanged.

(b) Redistribution of Resources. The preferred alternative is not expected to redistribute, displace, or stress subsistence wildlife resources. Some individual animals probably would be temporarily displaced during the construction period, but most would be expected to stay in the general area. For example, some individual bears may not use the area during the construction period, but they would still likely stay in the park and preserve. Any such changes would not affect subsistence harvests outside the park.

(c) Habitat Loss. The preferred alternative is not expected to cause the loss of beneficial or critical habitat for subsistence species such as salmon, caribou, moose, furbearers, grouse, and waterfowl. The construction of the bridge, boardwalks, and barge landing road in the preferred alternative would result in the loss of approximately 0.5 acres of wetland habitat. However, such impacts would be minor to moderate and localized and would not result in the loss of key habitat. Provisions of the Alaska National Interest Land Conservation Act, the Federal Subsistence Board, and NPS and ADF&G regulations and policies provide for the adequate protection of fish and wildlife populations within Katmai National Preserve while ensuring a subsistence priority for local rural residents.

2. Restriction of Access for Subsistence Hunters and Anglers

Under all alternatives, access to subsistence uses in Katmai National Preserve is not expected to be limited or restricted. None of the alternatives propose changes to access regulations.

3. Increase in Competition for Subsistence Resources

The preferred alternative is not anticipated to result in increased competition for fish, wildlife, and other subsistence resources on federal public lands. Provisions of the Alaska National Interest Land Conservation Act, the Federal Subsistence Board, and NPS and ADF&G regulations provide the tools for adequate protection of fish and wildlife populations while ensuring a subsistence priority for local rural residents.

VI. AVAILABILITY OF OTHER LANDS

The preferred alternative is site-specific to Katmai National Park and requires the use of federally managed lands within the Brooks River area. Subsistence users have access to and use other lands within the region for subsistence activities.

VII. ALTERNATIVES CONSIDERED

Descriptions of other alternatives considered are in chapter 2 of this document.

VIII. FINDINGS

This analysis concludes that the NPS preferred alternative (alternative 4) would not result in a significant restriction of subsistence uses.

APPENDIX B: STATEMENT OF FINDINGS FOR FLOODPLAINS AND WETLANDS

Brooks River Visitor Access
Environmental Impact Statement

National Park Service
Katmai National Park and Preserve

Recommended: _____
Superintendent Date

Concurred: _____
NPS Water Resources Division Date

Approved: _____
Alaska Regional Director Date

1.0 INTRODUCTION

Executive Orders 11988, "Floodplain Management" and 11990, "Protection of Wetlands" require the National Park Service and other federal agencies to evaluate the likely impacts of actions in floodplains and wetlands. NPS Director's Order #77-1: *Wetland Protection and Procedural Manual #77-1* provides NPS policies and procedures for complying with Executive Order 11990, and NPS Special Directive 93-4, "Floodplain Management Guideline" provides NPS procedures for complying with Executive Order 11988. This "Statement of Findings" (SOF) documents compliance with these NPS wetland protection and floodplain management procedures.

The National Park Service is proposing to improve visitor access and resource protection within the Brooks River area of Katmai National Park. The project would involve the replacement of the Brooks River floating bridge and access trails with an elevated bridge and boardwalk system. The National Park Service is also proposing to relocate the existing barge landing site and access road to a location away from the mouth of the Brooks River.

2.0 NPS PREFERRED ALTERNATIVE

The preferred alternative involves the installation of two primary boardwalks on the north and south sides of the Brooks River within Katmai National Park and Preserve, each connected by an elevated bridge across the river. The boardwalks would contain a number of viewing/pullout areas, each capable of accommodating 20–25 people. The barge landing would be relocated to an area approximately 2,000 ft south of the existing site and would require the construction of a new access road, approximately 1,500 ft in length.

North Boardwalk: The north boardwalk would start adjacent to the lodge and then continue south through the wetlands for approximately 560 ft. The boardwalk would be at least 10 ft above grade once it clears the area around the lodge. This boardwalk would be 8 ft wide and designed to accommodate both pedestrians and vehicles simultaneously.

The north boardwalk would consist of up to four viewing/pullout areas. Two would face west and overlook the wetland and Brooks River. Two would be placed on the each side of the north end of the bridge to provide upriver and downriver viewing opportunities.

Bridge: The bridge would follow the existing alignment of the floating bridge. This bridge would be a wooden short-span bridge, approximately 350 ft in length, with a minimum distance of 24 ft between piles. There would be up to 14 sets of piles in the riverbed. The bridge would be built using the same techniques as the boardwalk system. This bridge would be a minimum of 10 ft above the river.

South Boardwalk: An 8-foot-wide pedestrian-vehicle boardwalk would cross a wetland south of the southern bridge terminus and then cut west through a wooded area. The boardwalk would follow the edge of the western wetland before ending approximately 100 ft from the bus parking area. This boardwalk would be 10 ft above grade and would ramp down to grade as it approaches the bus parking area. This section of boardwalk has an estimated length of 630 ft.

The south boardwalk would consist of up to three primary viewing/pullout areas. Two would be placed on the each side of the south end of the bridge to provide upriver and downriver viewing opportunities. One would face east and overlook the wetland. Because of the length of the south

boardwalk, one to two additional smaller pullout areas may be installed to allow for the safe passage of pedestrians and vehicles.

Barge Landing and Access Road: A new barge landing would be located on the shore of Naknek Lake about 2,000 ft south of the existing barge landing. There would be a hardened beach landing ramp (24 ft to 30 ft wide and 170 ft to 240 ft long) and parking for miscellaneous small boats / trailers during the summer operating season. The boat parking area would also be used to overwinter the park's landing craft. A new access road, approximately 1,500 ft in length, would replace the one that went around the south side of the Beaver Pond as proposed in the 1996 development concept plan. The existing barge landing site and the access road on the south side of the river would be removed and the landscape would be restored.

3.0 FLOODPLAIN

3.1 Site Description

Brooks Camp is part of the Katmai National Park and Preserve and is on the lower Brooks River near Naknek Lake. The Brooks River is roughly 1.5 miles long, and flows from Lake Brooks into Naknek Lake (figure 1). The proposed activities would be within the estimated 100-year floodplain. Brooks Camp, on the north side of Brooks River, appears to be situated above the 100-year floodplain (NPS 2009).

3.2 Floodplain Values

Values associated with floodplain use include recreation, such as hiking and sightseeing, as well as wildlife habitat for a diversity of species. Floodplains also play a necessary function in the overall adjustment of a river system. Floodplains influence the hydrology of a watershed by dissipating floodwater energy, and they serve as a temporary storage component for sediment eroded from the watershed.

3.3 Nature of Flooding and Associated Floodplain Processes

Lake Brooks accounts for approximately 20 percent of the total Brooks River watershed area. Flooding along Brooks River can result from rain, snow, and spring breakup. A U. S. Geological Survey (USGS) gauging station is on Brooks River at the outlet of Lake Brooks. The gauging station is a partial record station, with only eight discharge measurements on record. There are also no historical flood data available for Brooks River.

Brooks River is characterized as an alluvial river. Brooks River transitions from a relatively steep, confined boulder and cobble bedded channel to a meandering sand/gravel/cobble river as it flows into Naknek Lake. The hydraulics of the flow is generally slowing from a relatively swift, turbulent flow condition in the upper half of the channel to a lower gradient, slower flow condition near Naknek Lake. Flooding would likely cover a wider area in the lower half of Brooks River because the topographic slope is less steep and wider alluvial valley. The Brooks River response to normal hydrologic and geomorphic forces, such as wind waves from Naknek Lake, includes progression of meandering in the lower reach causing some channel migration and riverbank erosion.

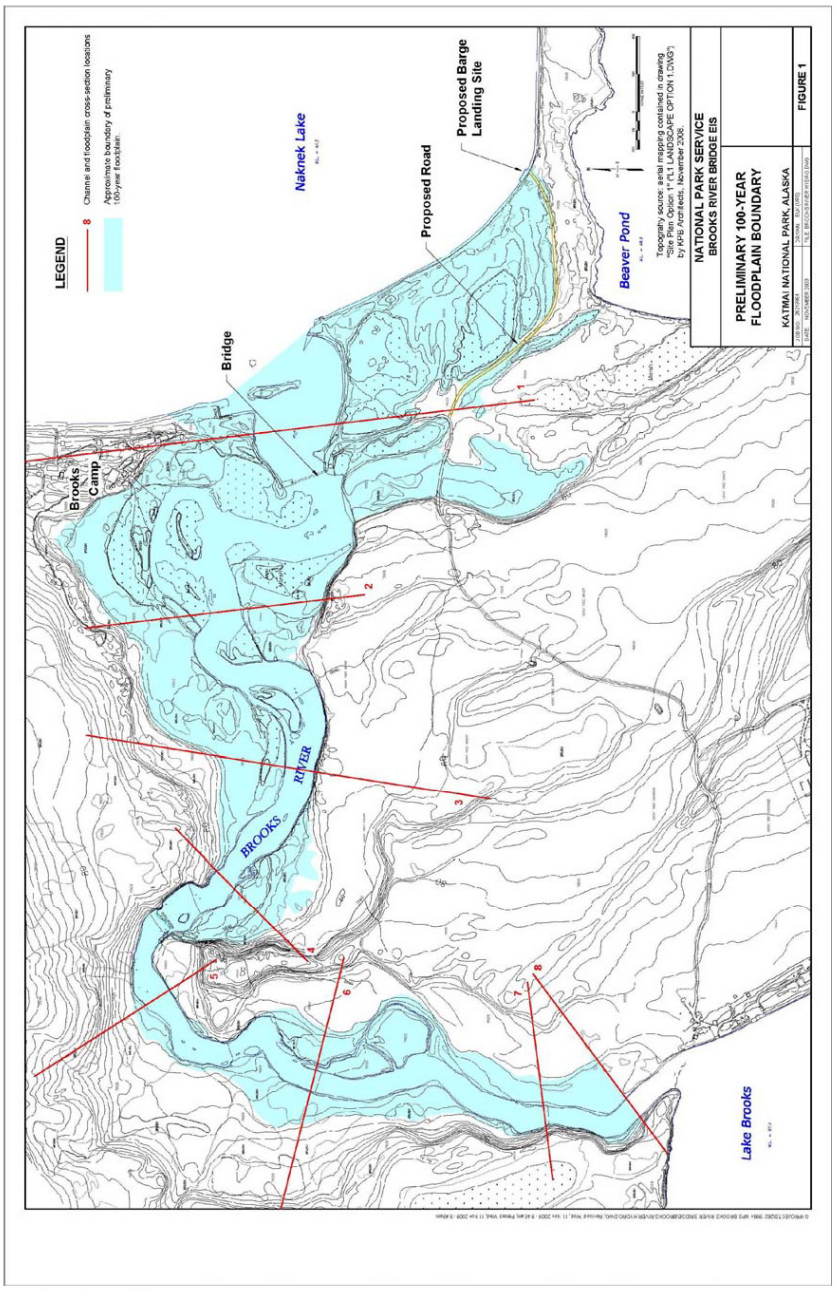
LEGEND
Channel and floodplain cross-section locations
Approximate boundary of preliminary 100-year floodplain.
Naknek Lake
Proposed Barge Landing Site
Proposed Road
Beaver Pond
Bridge
Brooks Camp
BROOKS RIVER
Lake Brooks
Topography source: aerial mapping contained in drawing "Site Plan Option 1" ("L1 LANDSCAPE OPTION 1.DWG") by KPS Architects, November 2006.
NATIONAL PARK SERVICE
BROOKS RIVER BRIDGE EIS
PRELIMINARY 100-YEAR FLOODPLAIN BOUNDARY
KATMAI NATIONAL PARK, ALASKA
FIGURE 1

FIGURE 1

3.4 Justification for Floodplain Use

3.4.1 Rationale for Location in the Floodplain

The proposed bridge and associated boardwalk, as well as the barge landing site and associated access road would have to be in the floodplain. There are no alternative upland sites associated with the river crossing or barge landing.

3.4.2 Investigation of Alternative Sites

All alternative sites investigated would also involve facilities being in the floodplain.

3.5 Site-Specific Flood Risk

3.5.1 Recurrence Interval

Much of the lower Brooks River valley is in the 100-year floodplain. A 100-year flood is defined as the flood elevation that has a 1 percent chance of being equaled or exceeded in any given year. The rate at which flooding occurs would be related to the rate of precipitation and would also be influenced by the presence or absence of ice in the river channel. Flooding associated with precipitation would likely be attenuated because of the size of Lake Brooks and related storage capacity.

3.5.2 Hydraulics of Flooding at the Site

Because of the surface roughness (trees, brush, surface undulations) of the floodplain, it is predicted that floodplain velocities will typically be less than 1 foot per second; however, main channel velocities are likely to be as high as 8 ft/s in the upper portion of the reach to as low as 2 ft/s near Naknek Lake. Channel bottom and banks are likely to erode, altering channel patterns and shapes in some areas.

Water depths near the proposed Brooks River bridge and boardwalk during a 100-year flood would range from about 2 ft to 5 ft. Floodplain water depths in near the proposed road and barge landing site would likely be less than 2 ft. Given the relatively wide area inundated across the lower Brooks River valley during a 100-year event, and the small footprint of the proposed improvements, construction of the proposed improvements would likely not affect the base flood elevation.

3.5.3 Time Required for Flooding to Occur

Floods are more likely when the water level of Naknek Lake is at its highest. This usually occurs in August and September from spring snowmelt. Although extended rains lasting three or more weeks in August and September may raise the water level of Naknek Lake and Brooks River, the time required for flooding to occur would be at least 24 hours. This is because Naknek Lake, Lake Brooks, and adjacent wetlands have the capacity to temporary store additional water.

3.5.4 Opportunity for Evacuation

Depending upon the rate of rainfall for a given event, it is likely that the natural attenuation effect of Lake Brooks would allow sufficient time for evacuation provided that visitors are near the road and trail system in the Brooks River and Camp area. In the event of a 100-year or larger flood, the

lower portion of the road between Lake Brooks and the Brooks River footbridge would likely be under water and closed to vehicular traffic after evacuation for public protection. Evacuation would occur by boat to higher ground in the Brooks River area or by floatplane or boat to communities outside the park.

3.5.5 Geomorphic Considerations

Brooks River is characterized as an alluvial river that widens in the lower portion near Naknek Lake. Increased bank erosion and channel migration would likely occur during a 100-year flood. Depending upon the occurrence of debris and/or ice jams during a flood, channel and bank erosion could increase.

3.6 Floodplain Mitigation

Construction activities in the estimated 100-year floodplain include a new Brooks River bridge and boardwalk, and a new barge landing site and associated access road (figure 1). It is not anticipated that these facilities would have an impact on the floodplain base elevation. Mitigation and compliance with regulations and policies to prevent impacts to water quality, floodplains, and loss of property or human life would be adhered to during and after the construction. If required, permits with other federal and cooperating state and local agencies would be obtained prior to construction activities. After construction activities are completed, the sites would be returned as close as possible to natural contours; floodplain fill and grading requirements would be minimized. If a flood notification is issued, people within the affected flood area would be evacuated. The area would be closed until the flood event had subsided and authorities deem the area safe for the public to return. The structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR Part 60).

3.7 Summary

Based on the preliminary floodplain assessment, the Brooks Camp area improvements are within the 100-year floodplain of the lower Brooks River (figure 1). The estimated water surface elevations associated with the 100-year recurrence interval should be considered preliminary and approximate. The assessment is based on limited available hydrologic and hydraulic data and does not take into account the influence of Naknek Lake storm surge.

Although the location of proposed structures in the flood zone would result in risks from the possibility of flooding, methods to minimize flood damage would be incorporated into the overall design of the facilities. In addition, efforts to protect vegetation in the floodplain would be undertaken as standard procedure during site preparation and construction. Therefore, floodplains would be protected to the maximum extent possible, and potential flood hazards would be minimized.

In accordance with Executive Order 11988 for the protection of floodplains, mitigation and compliance with regulations and policies to prevent impacts on water quality, floodplains, and loss of property or human life would be strictly adhered to during the design, construction, and operation of the proposed improvements to the Brooks Camp area. The National Park Service finds that no long-term adverse impacts on the 100-year designated floodplain would occur from the preferred alternative.

4.0 WETLANDS

4.1 Description of Affected Wetlands

A total of 12 individual wetlands were delineated in the project vicinity (figure 2) by qualified wetland professionals David Erikson, Senior Biologist, and Joan Kluwe, Senior Planner of URS Group (URS 2009).

Nonvegetated wetlands in the project area include (1) Brooks River, which is classified as a riverine, lower perennial, unconsolidated bottom, permanently flooded wetland (R2UBH); (2) Naknek Lake; and (3) the beaver pond, which are classified as a lacustrine, limnetic, unconsolidated bottom, permanently flooded wetlands (L1UBH). These waterbodies often have aquatic and/or emergent vegetation along the shorelines.

Wetland A

This wetland is a wet herbaceous meadow in a long, narrow (22 ft) depression between two forested ridges paralleling the proposed barge landing access road route. The vegetation in this wetland is dominated by bluejoint (*Calamagrostis canadensis*). There were individual balsam poplar (*Populus balsamifera*) and white spruce (*Picea glauca*) in the slightly elevated features in the wetland, and they were not considered representative of the wetland vegetation. The only shrub was Bebb willow (*Salix bebbiana*). Soils consist of a 6-inch horizon of fibrous peat, a 6-inch horizon of fine-grained volcanic ash with redox concentrations, and then 9-inch horizon of fibrous organics below the ash layer. Gravel was encountered at the bottom of the test pit. Saturation in the soil test pit occurred at 8 inches below the surface, and the standing water was measured at 16 inches. All three jurisdictional wetland criteria were met. The area was classified as a palustrine emergent persistent, saturated wetland (PEM1B).

Wetland B

The second wetland along the barge landing access road route was located in the same long, narrow depression as Wetlands A, but it is separated from Wetland A by a stretch of uplands. Dominant species included bluejoint (*Calamagrostis canadensis*) and Northwest Territory sedge (*Carex utriculata*). The criteria for hydrophytic vegetation were met. Soils consist of a 6-inch mat of fibrous peat over a 10 -inch horizon of volcanic ash. The upper 6 inches of ash had faint redox concentrations, whereas the lower 4 inches did not, suggesting minimal fluctuation in the water level 12 inches below the surface. The primary indicator of wetlands hydrology was saturation of the soil within 12 inches of the surface. There were also small areas of standing water within the observation point. All three jurisdictional wetland criteria were met. The area was classified as a palustrine emergent persistent, saturated wetland (PEM1B).

Wetland C

Wetland C is a narrow depression on the south side of the proposed barge landing access road route and near an active eagle nest adjacent to the beaver pond. Vegetation in this depression was dominated by Northwest Territory sedge (*Carex utriculata*) and water hemlock (*Cicuta virosa*). The soil profile shows a 4-inch mat of fibrous organics over a 10-inch horizon of fine-grained volcanic ash. Below the ash, the fibrous organics continued to the bottom of the soil test pit. The primary indicator of wetland hydrology was saturation to the surface. There was also standing water in low areas approximately 0.5 inches deep within the area. All three jurisdictional wetland criteria were met for this site. The area was classified as a palustrine emergent persistent, saturated wetland (PEM1B).

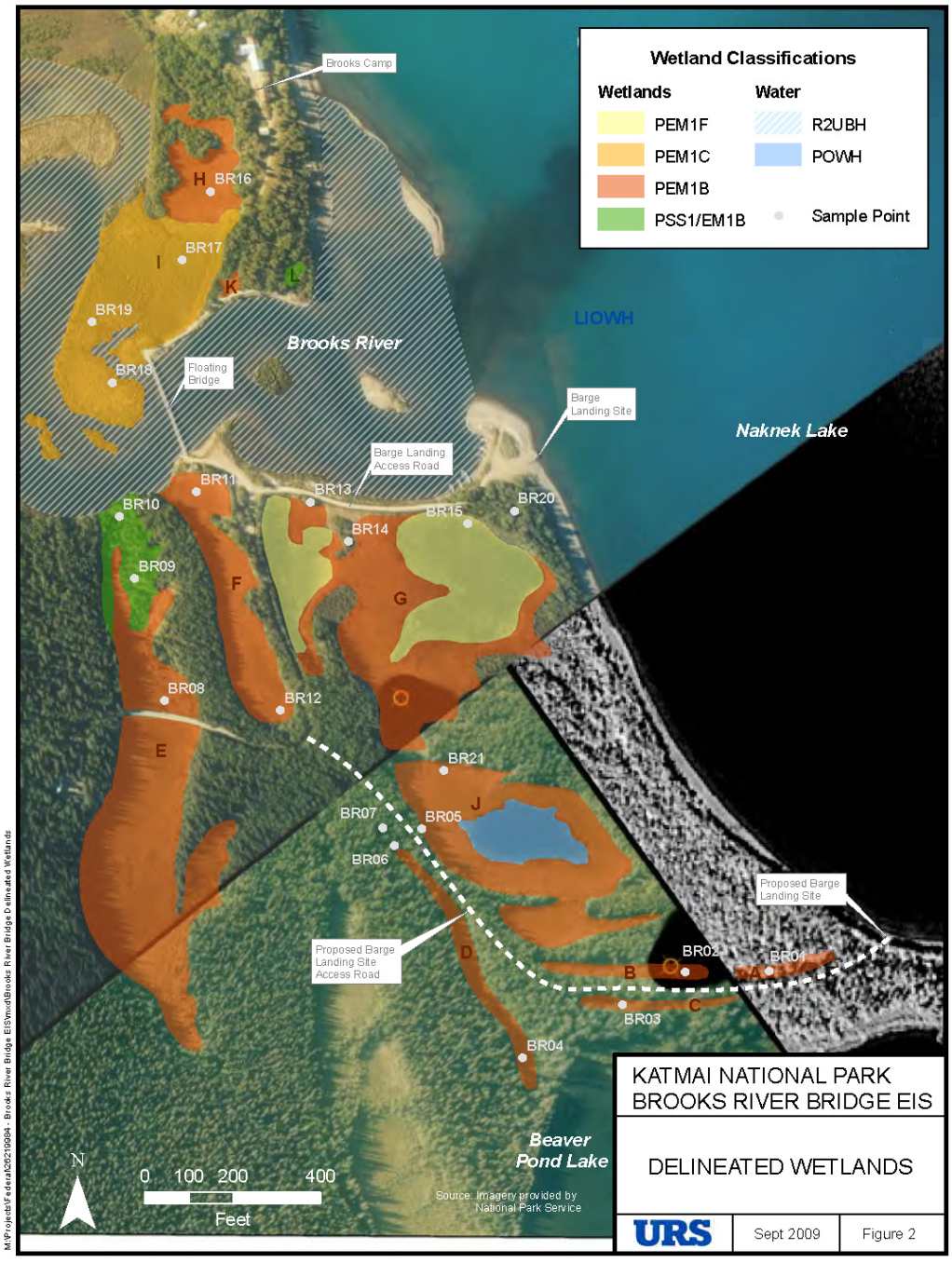

FIGURE 2

Source: URS Group, Inc. 2009b
Note: Aerial photograph was recorded in 2002, before the floating bridge was relocated to its current location. Also, the location of the barge landing access road in this figure is approximate.

Wetland D

This wetland is a long, narrow depression west of the proposed barge landing access road route. This depression did not appear to connect directly with the beaver pond. The perimeter of the wetland had thick emergent vegetation, and there was open water with aquatic vegetation in the center. Standing water occurred in portions of the wetland but was not continuous. Vegetation was dominated by longawn sedge (*Carex macrochaeta*), Northwest Territory sedge (*Carex utriculata*), and marsh fivefinger (*Comarum palustre*). Aquatic vegetation in areas of open water consisted mostly of burreed (*Sparganium angustifolium*). Other species included water horsetail (*Equisetum fluviatile*) and water hemlock (*Cicuta virosa*). At the northern end of the wetland the vegetation is dense bluejoint (*Calamagrostis canadensis*) in the lowest parts of the depression with small amounts of Bebb willow (*Salix bebbiana*) and birch (*Betula spp.*) present. The soil profile shows a 3-inch mat of fibrous organics over an 8-inch horizon of volcanic ash with redox concentrations. Below the ash, soils turn to gravel. Wetland hydrology was evident from the standing water in the center of the depression in several areas along the wetland's length. Saturated soil was also documented at 10 inches below the surface where surface water was not present. All three jurisdictional wetland criteria were met at the southern end of the wetland. The area was classified as a combination of palustrine, emergent persistent, semi-permanently flooded wetland (PEM1F) and saturated wetland (PEM1B). The northern end of the area lacked one or more of the criteria for a jurisdictional wetland due to lack of hydric soils and wetlands hydrology.

Wetland E

This wetland is in a low depression extending from the edge of Brooks River; it is west of the bear viewing platform, and south of Valley of Ten Thousand Smokes access road. Bluejoint (*Calamagrostis canadensis*) was the only dominant species. Longawn sedge (*Carex macrochaeta*) made up only 5 percent of the total, and Northwest Territory sedge (*Carex utriculata*) was only 1 percent. Diamondleaf willow (*Salix planifolia*) occurred as a few individual plants. Other shrubs included Bebb willow (*Salix bebbiana*) and Barclay's willow (*Salix barclayi*). Small individual specimens of white spruce (*Picea glauca*) and paper birch (*Betula papyrifera*) were also present in the slightly elevated area but showed signs of stress. Soils have a 3.5- to 4-inch mat of organic material over a 3.5- to 8-inch horizon of volcanic ash. The layer below the ash varies between fibrous peat, silt loam over sand and gravel, or sandy loam. The primary indicator of wetland hydrology was saturation within 7 to 12 inches of the surface. All three jurisdictional wetland criteria were met. The southern portion of the wetland was classified as palustrine emergent persistent, saturated (PEM1B). The northern portion was classified as palustrine scrub-shrub/emergent persistent, saturated (PSS1/EM1B).

Wetland F

Wetland F is a large wet meadow in a long, narrow depression that extends south from Brooks River near the elevated bear viewing platform and parallels Valley of Ten Thousand Smokes access road on the west side. There were no sizable areas of standing water in this wetland at the time of the survey. The vegetation in this wetland is mostly all herbaceous. Dominants include longawn sedge (*Carex macrochaeta*) and bluejoint (*Calamagrostis canadensis*). The only other common species is the Northwest Territory sedge (*Carex utriculata*). The soil profile at the northern end of the wetland had a 4-inch surface horizon of fibrous organics over a 7-inch horizon of volcanic ash. Below the ash was a dark brown sandy loam mixed with a high percentage of fibrous organics. Below this layer, the soil transitions to a dark gray sand and gravel matrix. The soil profile at the southern end of the wetland had a 3-inch organic mat over a 7-inch ash horizon with faint redox concentrations. Beneath the ash layer, there was a 1-inch horizon of

fibrous peat. The lowest horizon is gravel. Surface water in the northern end of the wetland was about 1 inch deep. Subsurface saturation was observed at a depth of 5 inches. Saturation at the northern end of the wetland was documented at 10 inches below the surface. Standing water was found at 20 inches from the surface. All three jurisdictional wetland criteria were met. The area was classified as a palustrine emergent persistent, saturated wetland (PEM1B) with a small fringe scrub-shrub wetland.

Wetland G

This wetlands complex consists of both emergent wetlands and open water areas with aquatic vegetation. Vegetation was heavily dominated by the Northwest Territory sedge (*Carex utriculata*) and bluejoint (*Calamagrostis canadensis*). Other emergent species included pendantgrass (*Arctophila fulva*), water hemlock (*Cicuta virosa*), common mare's-tail (*Hippuris vulgaris*), and longawn sedge (*Carex macrochaeta*). The wetland also contains diamondleaf willow (*Salix planifolia*) (FACW) and Barclay's willow (*Salix barclayi*). Aquatic vegetation was primarily burreed (*Sparganium spp.*). Wetland hydrology was evident from the abundance of standing water. All three jurisdictional wetland criteria were met. The wettest areas with emergent vegetation is classified as a palustrine emergent persistent, semi-permanently flooded (PEM1F). The remainder of the wetland is classified as palustrine emergent persistent, saturated (PEM1B).

Wetland H

This large grass/sedge wet meadow is in a depression on an elevated river terrace just west of Brooks Camp. The plant cover is very uniform over most of the wetland and grades into shrub habitats on three sides. The vegetation is heavily dominated by bluejoint (*Calamagrostis canadensis*), with only a small amount of Northwest Territory sedge (*Carex utriculata*). The soil profile showed a 12-inch fibrous peat organic horizon over a 17-inch horizon of volcanic ash. There was only coarse gravel below the ash layer. Saturation was to the surface of the ground. Some small areas within the observation point had standing water up to 1 inch deep. All three jurisdictional wetland criteria were met. The area was classified as a palustrine emergent persistent, saturated wetland (PEM1B).

Wetland I

This wetland is a large emergent marsh on the northern shoreline of Brooks River. Much of this wetland is flooded during high water periods, and the lower portions of the marsh were inundated during this survey. A portion of this marsh was filled to create the northern access to the floating bridge on Brooks River. Vegetation in the higher portions of the wetland was dominated by bluejoint (*Calamagrostis canadensis*). Other minor species included water horsetail (*Equisetum fluviatile*), yellow willowherb (*Epilobium luteum*), bog yellowcress (*Rorippa palustris*), Northwest Territory sedge (*Carex utriculata*), and longawn (*Carex macrochaeta*) sedge. Soils contained at least 16 inches of fibrous organic peat. The wetland had saturation to the surface. All three criteria for jurisdictional wetlands were met. The area was classified as a palustrine emergent persistent, seasonally flooded wetland (PEM1C).

Wetland J

The wetland consists of a large emergent marsh around the perimeter with an area of open water in the center. This wetland is not directly connected to Wetland G to the north. The emergent vegetation around the perimeter of the marsh was dominated by bluejoint (*Calamagrostis canadensis*), longawn sedge (*Carex macrochaeta*), and Northwest Territory sedge (*Carex utriculata*). Soil was a 6-inch mat of fibrous organic material over a horizon of volcanic ash.

Fibrous organic material continued below the ash horizon. The primary indicator for wetlands hydrology along the perimeter of the wetland was saturation to the surface. Standing water was evident in the center of the wetland. All three jurisdictional wetland criteria were met for this site. The area near the observation point, along the perimeter of the wetland, was classified as a palustrine emergent persistent, saturated wetland (PEM1B), and the pond in the center of the wetlands was classified as palustrine open water permanently flooded (POWH).

Wetlands K and L

Two small wetlands were delineated between Brooks Camp and the northern shoreline of Brooks River by NPS employees in 2008 (Rice 2008). All three criteria for jurisdictional wetlands were met for both sites. Wetland K was classified as a palustrine emergent persistent saturated (PEM1B). Wetland L was classified as palustrine scrub-shrub/emergent persistent saturated (PSS1/EM1B).

4.2 Functional Assessment of Affected Wetlands

Palustrine wetlands are known to provide a variety of ecological functions depending on the location and type of wetland (Larson 1989). Some of the major ecological functions of wetlands include the following:

- discharge of groundwater
- flood control or moderation
- water quality control and improvement
- stabilization of sediments
- retention, removal, and transformation of nutrients
- fish and wildlife habitat
- biomass production and export

Wetlands in the study area provide several of these functions to some degree, and the major functions are discussed below. However, because of the small size of some of the wetlands in the project area, the ecological functions provided by some of these habitats are limited.

Discharge of groundwater is an important function of wetland habitats; however, because of the location of many of these wetlands, adjacent to Brooks River, the opportunity to provide this function is limited. Wetland G could potentially perform this function to some degree, but the lack of an outlet suggests discharge is not substantial.

Flood control or moderation is a function performed by the large wetlands adjacent to Brooks River—Wetlands E, F, G, H, I, and J. This function could be considered one of the more important for these wetlands as a whole. These wetlands provide areas for floodwater storage so the excess water can spread out and moderate the velocity of the floodwaters. Reducing the velocity of the floodwaters in the river can limit scouring of the riverbed.

Wetland I is the only wetland in the surveyed area that provides any substantial functions as habitat for fish. The southern portions of this wetland are within the floodway portion of Brooks River and provide food and cover for small fish in the river. This wetland also provides the function of bank stabilization, which protects habitat in other areas in the river. These riparian wetlands also support insects and aquatic invertebrates that wash down river to Naknek Lake to serve as food for fish in the lake.

All of these wetlands also provide some level of wildlife habitat for waterfowl and shorebirds as well as moose and brown bear and a variety of small mammals. Waterfowl, such as the common merganser, can use open water areas in Wetlands G, I, and J for feeding and rearing. The early emerging grasses and sedges in the large wetlands along Brooks River and other smaller wetlands can provide spring foraging habitat for brown bear after emerging from their dens. The willow habitats along the perimeters of the wetlands can provide winter forage habitat for moose, nesting habitat for songbirds in the summer, and habitat for small mammals such as snowshoe hare.

Maintenance of water quality is an important function of wetlands, particularly in this area. Runoff from roads and paths can carry sediment into the Brooks River and Naknek Lake. Wetlands E, F, G, and I are in positions for retaining, removing, and transforming nutrients, retaining inorganic sediments, and acting as a filter system and maintaining water quality in the adjacent waterbodies.

Wetlands are known for their production of biomass. This biomass is exported to adjacent areas in the form of dissolved or particulate organic carbon from the wetland through leaching, flushing, erosion, and other mechanisms or through the aquatic and terrestrial food webs. All of the wetlands in the area provide this function to some degree.

Wetlands have benefit and provide benefits for humans, such as open space areas and places for recreational activities such as birding, wildlife viewing, photography, general nature appreciation, and esthetics. The wetlands adjacent to Brooks Camp and Brooks River provide the best areas for these functions because of their location and the numbers of visitors that come to enjoy the scenic nature of the river and its wildlife and fish.

Overall, wetlands in the surveyed area provide a wide variety of important ecological functions and enhance the experience of people visiting Brooks Camp and Katmai National Park and Preserve.

4.3 Adverse and Beneficial Impacts on Wetlands

Table 1 provides a summary of wetland impacts resulting from the preferred alternative, including acreages affected by wetland type. The preferred alternative would adversely impact approximately 0.1 acre of wetlands within the Brooks River area. Impacts would be from the installation of pilings for the elevated bridge and boardwalk and the construction of a new barge access road. Because the boardwalk would be elevated at least 10 ft above the ground, no indirect impacts on wetlands from boardwalk shading would be anticipated.

The preferred alternative would have a beneficial impact on approximately 0.12 acre of wetlands from the restoration of natural wetland functions when the barge road is removed. Overall, the preferred alternative would have a net gain of approximately 0.0014 acre of wetlands.

SUMMARY OF WETLAND IMPACTS RESULTING FROM THE PREFERRED ALTERNATIVE

Wetland (See figure 2)	Code	Total Acres	Wetland Area Impacted	Description
A	PEM1B	0.2	(–1,300 ft^2)	Possible wetland fill for proposed barge landing access road (includes fill for part of the road to avoid archeological resources and for part of the pad in the barge landing area).
B	PEM1B	0.3	500 ft^2	Impacts due to construction of a culvert and barge landing access road.
C	PEM1B	0.3	500 ft^2	
D	PEM1B	0.2	0	
	PEM1F	0.3	0	
E	PEM1B	4.1	–18 ft^2	Impacts from boardwalk pilings (two 8-inch diameter pilings spaced 12 ft apart for a length of approximately 300 ft.
	PSS1B/EM1B	0.6	0	No wetland impacts.
F	PEM1B	1.0	–8 ft^2	Impacts from boardwalk pilings (two 8-inch diameter pilings spaced 12 ft apart for a length of approximately 130 ft.
G	PEM1B	2.7	+5,040 ft^2	Restoration of wetland function by removal of barge access road.
	PEM1F	1.3		
H	PEM1B	0.7	–14 ft^2	Impacts from boardwalk pilings (two 8-inch diameter pilings spaced 12 ft apart for a length of approximately 240 ft.
I	PEM1C	2.7	–14 ft^2	Impacts from boardwalk pilings (two 8-inch diameter pilings spaced 12 ft apart for a length of approximately 240 ft.
J	PEM1B	2.4	0	No wetland impacts.
	POWH	0.7	0	
K	PEM1B	0.1	0	
L	PSS1B/EM1B	0.1	0	
Brooks River	R2UBH		–24 ft^2	Impacts from up to 14 sets of bridge piles in river. Bridge piles are estimated to be 12 inches in diameter.
Naknek Lake	L1UBH		–2,600 ft^2	Impacts from the installation of a hardened barge ramp on Naknek Lake

Total Negative Wetland Impact		–4,978 ft^2 (-0.1143 ac)
Total Positive Wetland Impact		+5,040 ft^2 (**+0.1157 ac.**)
Total Overall Wetland Impact		**+62 ft^2 (+0.0014 ac)**

4.3.1 Biotic Functions

The preferred alternative would have a negligible adverse impact on wetland biotic functions, such as fish and wildlife habitat, floral and faunal productivity, and native species and habitat diversity. Biotic functions would be adversely affected if wetland areas are modified through the placement of fill or culverts to accommodate the proposed barge landing access road near the beaver pond (figure 2—Wetlands A, B, and C).

4.3.2 Hydrologic Functions

The preferred alternative would likely not adversely impact the hydrologic functions of the wetlands within the surveyed area. Standard erosion and sediment control measures would be used during the installation of the proposed bridge and boardwalk and construction of the proposed barge landing access road.

Removal of the barge landing access road on the south side and pedestrian trail on the north side of the Brooks River and restoring the areas' predevelopment elevations could provide additional flood attenuation and detrital export to Wetlands G and I (figure 2) within the lower part of Brooks River. Other hydrologic functions, such as stream flow maintenance, groundwater recharge and discharge, water supply, and water purification would not be adversely affected.

4.3.3 Cultural Functional Resources

The preferred alternative would have a minor to moderate adverse impact on the cultural resources of the Brooks River area. Specifically, the installation of a bridge over Brooks River would affect the historic cultural landscape and archeological/ethnographic resources of the Brooks River and its floodplain in the project area.

The preferred alternative would have a positive impact on visitors experiencing the wetlands in the Brooks River area. Park visitors would be able to experience wetland-specific exhibits and ranger-led programs. The installation of ramps and emergency egress stairs/ladders from the bridge/boardwalk would ensure that recreational access to Brooks River and adjacent wetlands would not be adversely affected.

4.3.5 Research and Scientific Values

Because the wetlands in the project area are not classified as nonimpacted wetland reference sites, the preferred alternative would not adversely impact wetland research and scientific values. The wetlands in the project area have not been used for studies or long-term monitoring, and do not have documented research and scientific values.

4.3.6 Economic Values

The preferred alternative would not have an adverse effect on flood protection for Brooks Camp facilities, on fisheries resources within the river and adjacent Naknek Lake and Lake Brooks, or on tourism.

4.4 Investigation of Alternative Sites

The National Park Service investigated alternative elevated bridge and boardwalk alignments in addition to the no-action and preferred alternative.

Alternative 2 would have similar impacts on wetlands as the preferred alternative (alternative 4) (see section 4.3). In this alternative, the north boardwalk would be installed over a wetland between the lodge and Brooks River and the south boardwalk would be installed over two wetlands between the river and the bus parking area.

Alternative 3 would have the least impact on wetlands. In this alternative, the north boardwalk would be installed over the upland trail corridor between the lodge and the river. Approximately six sets of piles would be placed in the Brooks River riverbed to accommodate the bridge span. The south boardwalk would be placed over a previously disturbed upland area. The barge landing site would be relocated to an area approximately 200 ft south of the existing site and would use all but a small portion of the existing access road, which may currently affect a wetland immediately south of the road. A hardened beach landing ramp would be installed at the new landing site within Naknek Lake.

Alternative 5 would have similar impacts on wetlands as alternative 3 with two exceptions: (1) the north boardwalk would be installed over a wetland between the lodge and Brooks River; and (2) the barge landing site and access road would be relocated to a new location approximately 2,000 ft south of the existing site. The construction of the new barge access road and removal of the existing barge access road would have the same impacts on wetlands as the preferred alternative.

The no-action alternative and alternatives 2, 3, and 5 would not fully meet the purpose and need of the project, which is to improve visitor access and resource protection within the Brooks River area. The area contains a high concentration of brown bears during the summer, especially in July and September. To travel between the lodge on the north side of the river and the bus parking area on the south side of the river without being delayed by bears, the boardwalk would need to start/end near Brooks Lodge and the bus parking area. Using several years of bear monitoring data, the National Park Service has learned that the forested upland area between the lodge and the river (this area is commonly called the Corner) provides suitable habitat for bears to rest, away from park visitors. Removing the trail and restoring this upland area would improve bear habitat. In addition, relocating the barge landing site and access road away from the mouth of the river would improve barge operation. Park staff, contractors, and others would be able to load and unload boats and barges without pausing for nearby bears.

4.5 Wetland Mitigation

Construction activities in wetlands would be limited to the minimum area needed to install the boardwalk and bridge pile supports. The installation of the boardwalk supports would occur during the winter season(s) when the ground is frozen to reduce soil compaction and avoid injuring wetland vegetation growth.

Equipment servicing and refueling would not be conducted within wetlands. Equipment leaking fuel, oil, hydraulic fluid, or other pollutants would not be operated within wetlands.

The rehabilitation of former trail and road areas would use local native plants. Discontinued trails and roads would be removed and the areas would be revegetated with local native plant species.

4.6 Wetland Compensation

The preferred alternative would result in adverse impacts to 0.1143 acre of wetlands. It is anticipated that the removal of the existing barge access road in the preferred alternative would

restore wetland function and compensate for any wetland loss from the installation of the elevated bridge and boardwalk and construction of the new barge landing site and access road (Wetland G in figure 1). Removing the road and grading the area to its natural elevation would enable surface water from Brooks River and Naknek Lake to flow into the adjacent wetland during flood events. It is expected that this would increase the size of the wetland by approximately 0.1157 acre. The overall wetland gain would be approximately 0.0014 acre.

5.0 CONCLUSION

The National Park Service finds that the preferred alternative is consistent with the policies and procedures of NPS Special Directive 93-4, "Floodplain Management Guideline" and Director's Order #77-1: *Wetland Protection* including the "no net loss of wetlands" policy.

6.0 REFERENCES

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APPENDIX C: ESSENTIAL FISH HABITAT ANALYSIS AND DETERMINATION

BACKGROUND

Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (PL 104-267), refined the focus of fisheries management by emphasizing the need to protect fish habitat. Specifically, the act requires that fishery management plans identify "essential fish habitat" (EFH), which are areas that are necessary for fish to carry out their basic life functions. Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." In this case, *waters* include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. *Substrate* includes sediment, hard bottom, structures underlying the waters, and associated biological communities. The term *necessary* means the habitat required to support a sustainable fishery and the managed species' contributions to a healthy ecosystem. Spawning, breeding, feeding, and growth to maturity cover the full life cycle of fish.

The overall intent of the amended Magnuson-Stevens Fishery Conservation and Management Act is to conserve and enhance essential fish habitat and focus conservation efforts on areas that are important to the life cycles of federally managed fish and shellfish. The act requires federal agencies such as the National Park Service (NPS) to consult with the National Marine Fisheries Service (NMFS) regarding any action they authorize, fund, or undertake that may adversely affect essential fish habitat. The National Marine Fisheries Service must provide conservation recommendations to federal and state agencies regarding any action that would adversely affect essential fish habitat.

In Alaska, the National Marine Fisheries Service uses information from the Alaska Department of Fish & Game (ADF&G) to help identify essential fish habitat in the state. Important anadromous fish habitat areas in Alaska are compiled and described in the ADF&G *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes*, which is updated on an annual basis. The term *anadromous* refers to fish that migrate from marine aquatic habitat to inland freshwater aquatic habitat during different points of their life cycles.

ESSENTIAL FISH HABITAT IDENTIFICATIONS

Given the ADF&G's identification of important anadromous fish habitat in the Brooks River, the National Marine Fisheries Service also considers the river as essential fish habitat. According to the ADF&G *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* 2010 update, Brooks River provides aquatic habitat for the following species of anadromous fish and their respective life stages:

- Chum salmon: "spawning" (freshwater larvae and juveniles and freshwater adults)
- Coho salmon: "present" (possibility of multiple life stages)
- King salmon: "present" (possibility of multiple life stages)

- Pink salmon: "spawning" (freshwater larvae and juveniles and freshwater adults)
- Sockeye salmon: "spawning" (freshwater larvae and juveniles and freshwater adults)

PROJECT DESCRIPTION

The National Park Service is proposing to improve visitor access and resource protection within the Brooks River area of Katmai National Park and Preserve. The proposed project would involve replacing the floating bridge and trails with a permanent elevated bridge and elevated boardwalks and relocating the existing barge landing site and access road away from the mouth of the Brooks River. A detailed description of the various action alternatives for the proposed project (including the NPS preferred alternative) is provided in the first five chapters this document.

The proposed bridge would involve the placement of multiple pile system supports in the channel of the Brooks River. Each pile support system would include two piles anchored in the riverbed. The spacing and separation of each pile system varies from alternative to alternative. Under the NPS preferred alternative, each set of piles would be spaced at a minimum of 24 ft.

The proposed bridge would also eliminate the need for the annual placement and removal of a temporary floating bridge across the Brooks River and associated bank stabilization efforts by NPS maintenance staff.

PROPOSED MITIGATION MEASURES FOR FISH HABITAT

To protect fish populations and habitat in Brooks River, the following mitigations would be followed within the project area:

- Fuel, lubricants, or other hazardous substances would not be stored below the ordinary high water (OHW) of Brooks River or Naknek Lake.
- Equipment servicing and refueling would not be conducted below the OHW level of Brooks River or Naknek Lake.
- Equipment leaking fuel, oil, hydraulic fluid, or other pollutants would not be operated or moved below the OHW level of Brooks River or Naknek Lake.
- Work below the ordinary high water within Brooks River and the shoreline of Naknek Lake would occur during the winter and spring when water levels are low and spawning fish are less likely to be impacted.
- During equipment operation and the construction of the barge ramp and bridge pilings and abutments, displaced riverbed and lakebed materials important for fish spawning habitat would be redistributed to adjacent areas within Brooks River and Naknek Lake. Materials would not be completely removed from the project areas.
- After construction activities have been completed, areas below ordinary high water would be graded to match near preconstruction slopes and contours.
- The use of riprap and nonvegetation bank stabilization methods would be avoided or greatly minimized. Riverbanks would be rehabilitated using native vegetation and natural materials, such as coir logs, willow stakes, and downed trees for stabilization.

- To minimize some of the effects of in-river construction for the bridge, various turbidity and sedimentation mitigation measures would be applied, such as diversion of river flows around work areas, cofferdams, and sediment traps.

PROJECT EFFECTS ON THE BROOKS RIVER ESSENTIAL FISH HABITAT

Under all action alternatives, the proposed elevated bridge would eliminate the need for the temporary floating bridge, which is an obstacle to fish migration across the full width of the Brooks River. The permanent bridge would also eliminate the riverbed disturbances (e.g., stirring up riverbed sediment, turbidity) each spring and fall from placement and removal of the floating bridge. These effects would result in localized beneficial impacts on essential fish habitat.

Under the various action alternatives, the proposed bridge would have varying span lengths between pile support systems. The bridge for the NPS preferred alternative would have up to 14 sets of pile supports in the channel (at a minimum of 24-foot spans). Although the piles themselves would not pose any substantial threats to spawning fish migration up Brooks River, the piles would (1) affect flow hydraulics, which could lead to some riverbed scouring and downstream sediment deposition; and (2) obstruct the flow and passage of debris in the river, which could directly block fish passage and compound the hydraulic scouring and sediment deposition effect in the river channel. Riverbed scouring and sediment deposition could affect the hatch rate of fish eggs that have been deposited downstream of the bridge by certain fish species. In addition, sandbar development downstream of the bridge could reduce the channel's cross-section area. The shallower water near the sandbars could obstruct some fish migration upstream. However, this sandbar effect would likely be limited. Park staff would mitigate some of these effects by removing debris buildup when staff members are present at Brooks Camp. Overall, these effects of the bridge support piles would have some adverse impacts on essential fish habitat. However, the effect would be localized in the waters immediately upstream and downstream of the proposed bridge.

The construction of the bridge foundation would involve the installation of multiple sets of piles in the river channel (up to 14 sets of piles in the NPS preferred alternative). This construction work would generate disturbance areas in the Brooks River channel during the construction phrase (winter/spring), from pile driving and construction equipment access in the channel. The installation would stir up sediment in the riverbed, which could lead to increases in water turbidity and sedimentation downstream of the bridge. Pile systems would also be installed on each shoreline relatively near the river, which could also generate turbidity and sedimentation in the area. Although the construction would not occur during the times of year when fish migration and spawning occurs in Brooks River, the sedimentation could negatively affect the hatch rate of the fish eggs that were deposited in the spawning beds downstream of the bridge during the previous autumn. Overall, these construction effects would have a temporary, minor effect on essential fish habitat.

CUMULATIVE IMPACTS

Because other present and reasonably foreseeable future projects in and near the project area would have no known effects on essential fish habitat in Brooks River, no cumulative impacts would result.

CONCLUSION

Direct adverse effects on essential fish habitat in Brooks River would be localized and limited to the addition of up to 14 sets of permanent bridge support piles in the river channel (spaced at a minimum of 24 ft) and the associated construction disturbances for these piles in the channel. The support piles, and river debris that catches on them, could obstruct fish passage and alter flow hydraulics, which may result in scouring and sediment deposition in the river. However, these adverse effects on essential fish habitat would be offset by various mitigation measures and the beneficial effects of no longer using the temporary floating bridge every year (i.e., riverbed disturbances every spring and fall, bank erosion, and obstruction in upper flow column during migration periods). As a result of the limited and localized potential effects of this project, the National Park Service concludes there will be only minor adverse impacts on essential fish habitat.

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Paul Wharry, Supervisor, Natural Resource Specialist

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

NPS 127/109955 JUNE 2012

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