

Environmental Assessment



Naknek Lake Sand Removal

Katmai National Park and Preserve, Alaska

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United States Department of the Interior
National Park Service
Katmai National Park and Preserve

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PHOTO

Photo 1: Brooks Camp, Naknek Lake Beach..... Cover

1.0 INTRODUCTION

1.1 Purpose and Need

The National Park Service (NPS) is considering removal of up to approximately 200 cubic yards of sand from the shore of Naknek Lake in Katmai National Park and Preserve (KATM) (Figures 1, 2). Located within the Brooks Camp Developed Area (BCDA), the proposed project is approximately 150 yards south of the Brooks Camp campground (Figures 3, 4). Brooks Camp lies within the Lake and Peninsula Borough in section 6, Township 19S., Range 39W., Seward Meridian. The site, a lacustrine wetland, is below the ordinary high water (OHW) line of Naknek Lake and is composed of loose gravel and pumice substrate. The sand removal project would occur in late spring of 2007.

Brooks Camp is located approximately 30 air miles east of the park headquarters and gateway visitor center in King Salmon, Alaska. Access to Brooks Camp is primarily from King Salmon by either float plane or boat. Most Brooks Camp facilities are located north of the mouth of the Brooks River, near the shore of Naknek Lake (Figure 4). Additional facilities are located south of the river, near the shore of Brooks Lake.

The purpose of this project is to excavate sand material, of adequate quantity and quality, for the rehabilitation of the existing Brooks Camp leach field. As described in the *Environmental Assessment, Rehabilitation and Replacement of Brooks Camp Facilities and FONSI* of August 2006 (NPS, 2006c), the leach field system has failed and requires rehabilitation for successful operation. Without a suitable material source for the proposed project, it would not be possible to rehabilitate the leach field. Both park and concessioner operations at Brooks Camp, highly dependent on the wastewater system provided by the leach field, would be detrimentally affected without adequate sand material stockpiled in time for the autumn 2007 rehabilitation project. The proposed sand removal project and alternatives are described in more detail in Chapter 2.

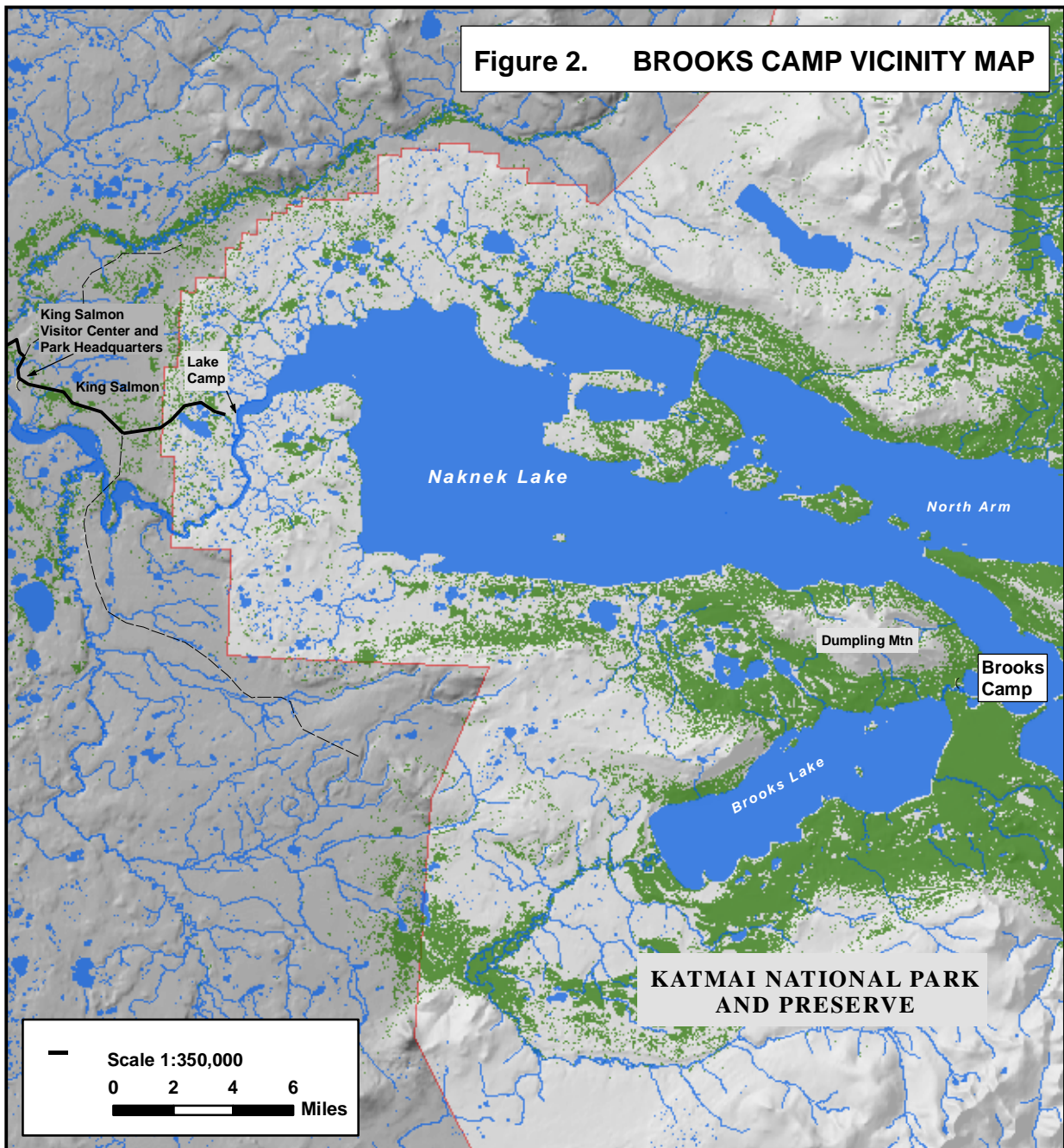
This environmental assessment (EA) presents and analyzes a “no action” and a proposed action alternative and their associated environmental impacts. It has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9).

1.2 Background

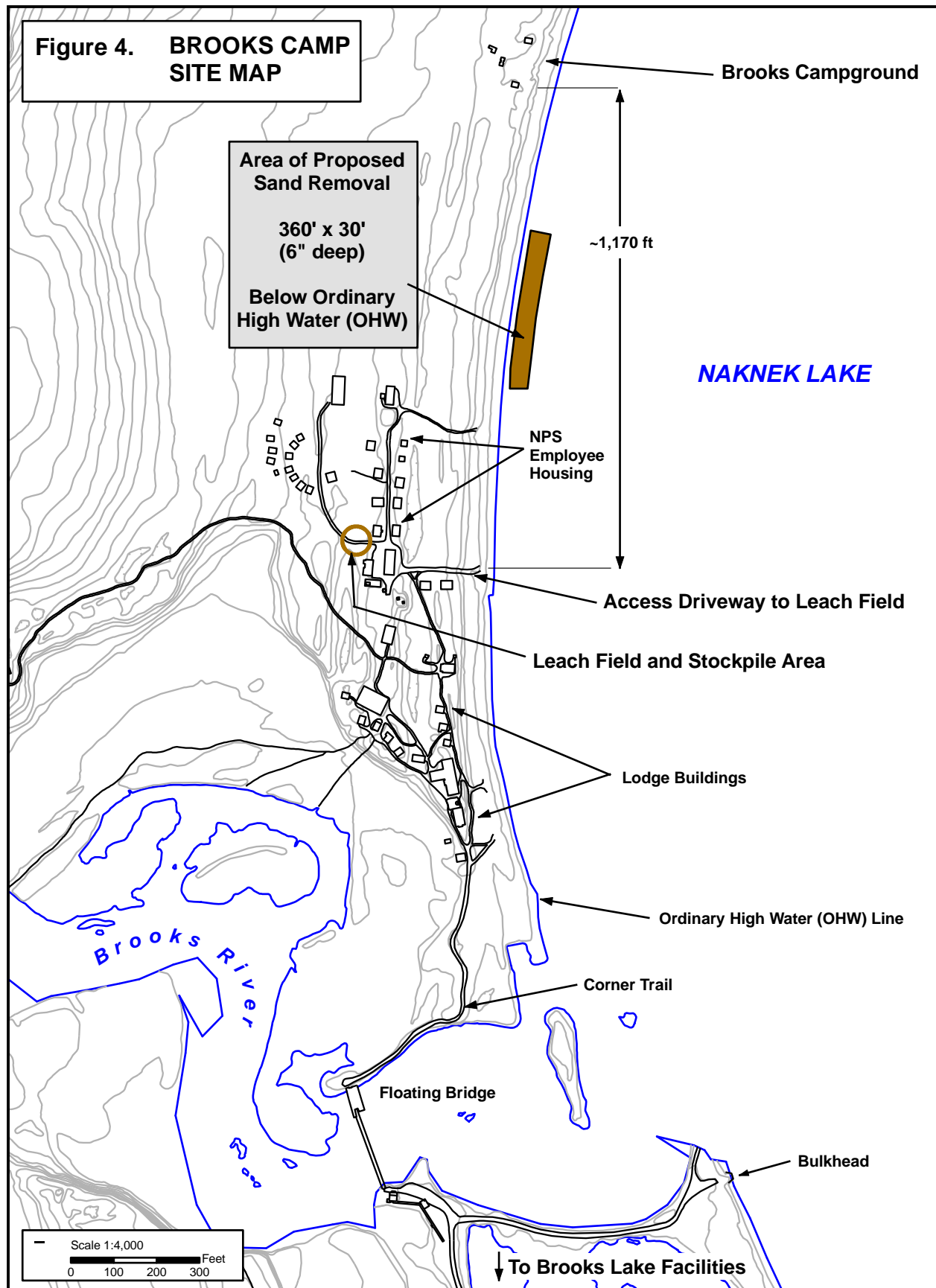
Katmai National Park and Preserve, encompassing approximately 4.3 million acres, is located at the head of the Alaska Peninsula, 290 miles southwest of Anchorage. Established as a National Monument in 1918 to preserve the Valley of Ten Thousand Smokes and the landscape associated with the cataclysmic volcanic eruption of 1912, it was expanded over the years by four presidential proclamations, then enlarged and re-designated a National Park and Preserve by the Alaska National Interest Lands Conservation Act (ANILCA, PL 96-487) in 1980.

The park’s field headquarters in King Salmon is about 10 miles west of the park’s western boundary and is the main departure point and gateway for Brooks Camp visitors. Brooks Camp is located in west-central KATM, outside of designated park wilderness areas. The Brooks River area (Figure 4) lies within the original 1918 monument boundary. The camp lies near the outlet of Brooks River, a 1.5 mile long river that drains from Brooks Lake into Naknek Lake. The Brooks River divides Brooks Camp into two parts that lie north and south of the river. The area north of the river includes Brooks Lodge and other Katmailand and NPS buildings; including the ranger station, maintenance facilities, seasonal housing cabins and tent platforms, a visitor center, auditorium, campground and leach field.









The area south of the river includes several bear viewing platforms, NPS employee housing cabins and maintenance facilities and a visitor contact area at Brooks Lake.

Park Purpose and Significance

Park purpose statements for KATM can be viewed in the General Management Plan (NPS, 1986) and Development Concept Plan/Environmental Impact Statement (DCP/EIS) (NPS, 1996b). In addition, the DCP contains an overview of the park, preserve and the Brooks River area. To focus the content of this EA, purpose and significance statements for the Brooks River area are given below.

Brooks River Area Purpose Statements

Stemming from the ANILCA legislation, the NPS identified three primary purposes for the Brooks River area: (1) to protect habitats for, and populations of, fish and wildlife, including, but not limited to, high concentrations of brown bears and their denning areas and maintain the watersheds and habitat vital to red salmon spawning in an unimpaired condition, (2) to provide for the general public resource-based recreation that does not impair natural and cultural values and (3) to protect and interpret outstanding natural, cultural, geologic and scenic values (NPS, 1996b).

Brooks River Area Significant Resource Statements

The DCP also describes the area's significant resources as (1) the largest concentration of protected brown bear populations in the world, many of which can be easily viewed by the public in the Brooks River area, (2) the Brooks River channel that serves as an important red salmon spawning area, (3) the Brook River Falls that serves as a concentration area for red salmon, (4) the gathering of brown bears to feed on migrating salmon at Brooks Falls that provides world-class wildlife viewing and photography opportunities of brown bears in a natural setting, (5) Brooks River, Brooks Lake and Naknek Lake that support world-class recreational fisheries for rainbow trout and red salmon, quality sport fishing opportunities in the river and adjoining lakes for Arctic grayling and lake trout, (6) the immense size of the surrounding landforms, their topographic relief, volcanic and glacial origins, and their active geologic processes, in addition to the many expansive freshwater lakes that make the area an outstanding scenic resource and (7) the Brooks River area, designated as a National Historic Landmark that contains an internationally significant concentration of ethnographic, historic and prehistoric cultural remains spanning a 4,500-year period.

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

The evaluation of whether impacts of a proposed action would lead to an impairment of park resources and values is included in this EA. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

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

1.3 Relationship of the Proposal to Other Park Planning

The 1986 *KATM General Management Plan* (GMP) directed that a Development Concept Plan/EIS be prepared to address management issues in the Brooks River area. The GMP states that any proposed developments will be designed to avoid impacts on the significant known archeological resources of the area. Ground-disturbing activities will be preceded by archeological surveys and testing. The NPS will also consult with Native American tribes on actions that have the potential to affect significant ethnographic resources. The NPS is committed to taking whatever actions are necessary to limit conflicts between bears and visitors in the Brooks Camp area to an acceptable level.

The 1996 *Development Concept Plan, Brooks River Area* (DCP) describes desired future conditions for natural resources, cultural resources and visitor experience/interpretation. Future conditions that are especially relevant to this project include protecting and maintaining habitat vital to red salmon and rainbow trout spawning and juvenile development cycles; protecting ecosystem functions; enhancing the visitor experience by focusing visitor use and development in specific areas in order to minimize disturbance to natural, cultural and scenic resources; and encouraging concessioner-provided services and facilities that are economically feasible, site-suitable and necessary for appropriate public recreation. The DCP also recognizes the important, desired future condition to preserve cultural resource sites and remains that best illustrate the 4,500 years of Alaska Peninsula occupation. Public use goals and objectives for the Brooks River area pertinent to this specific project are that the NPS and concessioner are to develop and maintain facilities for recreational users that are consistent with park management concerns regarding wildlife, fish, biological diversity, preservation of cultural resources and public safety.

The DCP and its accompanying 1996 *Record of Decision* (ROD) describe alternative strategies for the operation and location of development in the Brooks River Area. The DCP defines the purpose and significance of the area's resources, identifies resource management objectives, describes primary interpretive themes and formulates visitor experience objectives for the area. The Preferred Alternative 5 calls for removing all facilities at the present Brooks Camp location and developing a new site south of the Brooks River for visitor services and support facilities. The plan's goal was to reduce public use impacts on prime bear habitat and nationally significant archeological sites in the Brooks River corridor. The Brooks River Area is to retain a unique cultural resources heritage and is to have a diverse array of recreational opportunities.

However, in the 11 years since the ROD was signed, funding has not been available to implement the Brooks Camp move described in Alternative 5. A significant deferred maintenance backlog has developed since the DCP planning process was initiated in the late 1980's and facilities at Brooks Camp are in need of major upgrades or replacement. The lack of adequate support facilities, identified in the DCP/EIS, increasingly contributes to employee welfare and life/health/safety deficiencies. Several utility systems have experienced failures and need replacement or extensive repairs in the near future. Facilities for employee housing, visitor camping and sanitation are inadequate and substandard. To address these specific, urgent concerns, the park requested funding for new facilities and replacement or rehabilitation of existing facilities. These projects are described and analyzed in the *Environmental Assessment, Rehabilitation and Replacement of Brooks Camp Facilities and FONSI* of August 2006 (NPS, 2006c). Underscored is the NPS intent to accomplish Alternative 5, including the gradual relocation of functions and facilities from the north to the south side of the Brooks River.

In the continued absence of full implementation of the Preferred Alternative 5 the following general strategy is being followed by the NPS management:

- Maintain all existing facilities within funding and resource constraints

- Propose new or replacement facilities to meet identified needs
- Any new facility will be evaluated for locating south of the river corridor
- Assess and address developing life/health/safety and employee welfare facilities issues

This sand removal EA is procedurally connected, or “tiered” to the larger-scale 1996 DCP and EIS. Cumulative regional impacts and policy direction have already been defined by the EIS. This tiered document allows the NPS to focus on the current maintenance and management issues that are ready for decisions and exclude from consideration those issues already decided by the EIS. An EA could not be tiered to the EIS if the NPS intended to forego the Brooks Camp move or if new information required a re-analysis of the move decision. The NPS stands by the original EIS/ROD decision to eventually move the Brooks Camp operation south of the Brooks River. By tiering with an EA, the NPS can avoid unnecessary duplication and focus on solving urgent, current and anticipated Brooks Camp problems over the next several years.

The proposed project described in this EA has been reviewed and approved by an interdisciplinary team of NPS facility managers, engineers, environmental protection specialists and planners. Implementation of this project would allow KATM to complete necessary wastewater system rehabilitation to protect employees and safely meet the current demands of the visiting public at Brooks Camp.

The *NPS Management Policies 2006, Chapter 9.1.2.2, Borrow Pits and Spoil Areas*, states that sand sources on NPS lands will be extracted and used only (1) by the Park Service, agents or contractors for in-park administrative uses, (2) after NEPA compliance with written findings that extraction will not impair park resources or values, (3) if it is the park’s most reasonable alternative based on economic, environmental and ecological considerations and (4) if no outside sources are reasonably available.

Special Directive 91-6, Administrative Use In-Park Borrow Material, advises that the park superintendent should first search for sand material outside of park lands. In-park sources should only be considered if the following tests are met: (1) acceptable sources exist in the park and (2) economic factors make it totally impractical to import materials from outside the park. In determining whether “acceptable” sources exist in the park, the superintendent must evaluate the natural, cultural, socioeconomic and visitor use effects of using existing or new sites. The definition of “totally impractical” is case-specific so the superintendent must compare the expected costs and effects of in-park sources against those of outside sources to determine the acceptability of in-park sources. Economic considerations to be evaluated include costs of extraction, transportation and reclamation; traffic disruptions; health and safety implications; purchase price of outside sources; and cost of exotic plant management. Socioeconomic effects include effects on area businesses; local and regional economy; and park and concessions operations. Material sources should also be evaluated for visitor experience impacts such as site visibility, park zoning considerations, views of surrounding lands and visitor expectations.

Further, *Special Directive 91-6* states that in-stream sources should not be considered since stream channels and floodplains are generally recognized as sensitive resources. Material sources used for administrative purposes should be recontoured and reclaimed to the maximum extent possible while still allowing for administrative use. Reclamation plans are to address erosion control, drainage, revegetation period, exotic plant control, access, reestablishment of native vegetation and site monitoring. *Special Directive 91-6* also recommends that an extraction site developed for a specific project be reclaimed within the timeframe of that project.

The 1996 KATM *Draft Sand, Rock, and Gravel Plan* describes approved, long-term material sources along the Valley of Ten Thousand Smokes (VTTTS) road (NPS, 1996a). These sites are located south of the Brooks River.

The 2007 *KATM Compendium* contains special regulations for specific park areas, including the Brooks Camp Developed Area (BCDA, Figure 3).

The 2006 *Bear-Human Conflict Management Plan* describes appropriate behaviors and actions to use for preventive and responsive management within the BCDA, including sections on signage, regulations, human food storage and preparation, garbage disposal, fishing and heavy bear-use areas.

1.4 Issues

To focus the content of the EA, the NPS selected specific issues and eliminated others from further analysis. Subsequent discussions of the affected environment and environmental impacts related to each alternative focus on these selected issues. A brief rationale for the selection or dismissal of each topic is given below.

1.4.1 Issues Selected for Detailed Analysis

Water Resources. The Clean Water Act, National Environmental Policy Act and *NPS Management Policies 2006* require consideration of impacts to water quality. Removal of up to 200 cubic yards of sand from the shore of Naknek Lake could potentially increase water turbidity.

Fisheries. Legislation creating Katmai National Park and Preserve requires the protection of sockeye (red) salmon and their habitat. *NPS Management Policies 2006* direct the National Park Service to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and ecological integrity of fisheries. Removal of up to 200 cubic yards of sand from the shore of Naknek Lake could potentially affect fish and fish habitat.

Wetlands. Consideration of impacts on wetlands is required by Executive Order 11990 *Protection of Wetlands*. The proposed action would occur within a lacustrine wetland, as defined by the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS 1979). On January 31, 2007, the U.S. Army Corps of Engineers determined that this project does not fall under Section 404 jurisdiction. Even so, all NPS actions with the potential to have adverse impacts on wetlands must comply with the NPS Director's Order (DO) 77-1, *Wetlands Protection*. Alternatives are to be analyzed in an EA to determine whether the actions would have an adverse impact to wetlands.

Cultural Resources. The National Historic Preservation Act, National Environmental Policy Act, *NPS Management Policies 2006*, and *NPS Cultural Resource Management Guidelines* all require the NPS to consider effects of its actions on cultural resources.

Visitor Experience. The no-action alternative could indirectly impact the visitor experience in the Brooks River area if park maintenance and concessioner operations are affected.

1.4.2 Issues Dismissed from Detailed Analysis

Air Quality. Air quality is excellent within the Brooks Camp area and is within a designated Class II attainment area under the Clean Air Act. The proposed action would not affect air quality or related values. Although the proposed site would be dry when sand removal occurred, enough moisture would remain in the substrate to prevent dust from being produced during project work. Because only three motor vehicles (a tracked loader, a dump truck and a grader) would be used during the two-day project, the impacts on air quality from related emissions would be negligible.

Visual Quality. Sand removal would not be expected to affect the visual quality of the Naknek Lake shore or general area because, once the lake levels rise, the affected area would be under water.

Soundscape. The project site is used on a seasonal basis with high levels of visitation activity during June through September when Brooks Camp is in full operation. The Naknek Lake beach opposite Camp is used routinely as a seasonal transportation loading and off-loading point for visitors, park personnel and supplies for Brooks Camp. Although the surrounding area is predominantly a natural area, the natural soundscape is frequently impacted during the spring and summer season by noise associated with increased aircraft, ATV traffic and visitors. Existing noise sources during spring within the Brooks Camp area are wind, wheeled-plane beach landings and take-offs, heavy equipment operation, ATV utility vehicles and generators. The two-day, proposed project would be expected to have a short-term, negligible effect and no long-term effect on the soundscape of the area.

Wilderness. The proposed action would not occur within a wilderness area and, therefore, would not impact wilderness characteristics or values.

Floodplains. The project area is not within a regulatory floodplain. Even so, the project site is likely within the floodplain of Naknek Lake and the Brooks River. The levels of Naknek Lake and the Brooks River fluctuate between early spring and summer. According to area residents, no flooding has occurred in Brooks Camp in recent years. The NPS has no historical records regarding flooding incidents in Brooks Camp. There would be no adverse effects to the natural resources and functions of the floodplain, nor would the project create an increased flood risk. This is because the excavated area would gradually fill in with the loose gravel and pumice of the shore substrate as the lake's water level rises and covers the project area, and would, therefore, not have a permanent effect on the floodplain. Since the project is not expected to impact the floodplain, this EA does not address Executive Order 11988 *Floodplain Management*.

Soils and Vegetation. Upland soils and vegetation would not be impacted as the project area is not upland, but rather the exposed shore of Naknek Lake. Likewise, no submerged aquatic vegetation occurs in the project vicinity. The excavated sand material would be transported by truck over an existing, hard-packed driveway and deposited on already disturbed ground within the developed area of Brooks Camp.

Geomorphology. This topic includes geomorphological effects such as beach sand erosion, depletion, replenishment and transport. Janet Curran, a hydrologist with the USGS, provided an analysis of expected geomorphological effects from the sand removal action (Appendix C). Ms. Curran concluded that "...a one-time harvest of the proposed volume of sand would not deplete the beach to the extent that wave attack would cause significant shoreline erosion. Similarly, information regarding direction of longshore transport, sediment sources, and lack of beach vegetation suggests that sediment is mobile and present in quantities sufficient to replenish the beach on an annual-to-decadal scale." Ms. Curran based her conclusions on "...discussions with park staff, review of ground-based photos and a sketch map of the planned harvest area, review of aerial images from Google Earth, and a single site visit for unrelated, river erosion concerns several years ago." The proposed action would not be expected to cause significant shoreline erosion; rather the beach would be replenished by northward transport of sediment. Therefore, geomorphological effects from this project would be expected to be negligible.

Terrestrial Wildlife. The project site is not considered suitable terrestrial wildlife habitat since it is under water much of the year. Human activity and noise associated with the project would last two days so any indirect impacts on wildlife in the area would be negligible.

Threatened, Endangered, and Other Special Status Species. The NPS has obtained concurrence with the USFWS that this project would have no effect on federal endangered, threatened or candidate species.

Steller's eider is the only listed species with the potential to occur in the project area. The USFWS has evidence indicating that Steller's eiders (*Polysticta stelleri*), listed as threatened under the Endangered Species Act in 1997, migrate through the region as some have collided with a road power line off the west end of Naknek Lake. They are thought to migrate through the region, probably flying at night. The project is scheduled for early April as soon as the beach is ice-free, when no open water is expected in the project area. The USFWS has requested that a mitigation be followed so that if Steller's eiders are seen in the area, the project would not proceed while they are present.

Subsistence. Per ANILCA, subsistence activities are only permitted in Katmai National Preserve, not in Katmai National Park. The effects of the proposed action on subsistence uses and needs were dismissed from further analysis because (1) Katmai National Park (including the project area) is closed to subsistence uses by the general public, (2) the proposed action would not affect regional subsistence resources or activities outside the park and (3) the limited harvest of spawned-out sockeye salmon (red fish) at the mouth of Brooks River (allowed under the "Red Fish Act" by the Descendants of Katmai), would be unaffected as the project would occur during dewatered conditions, prior to the red fish fishery in September - October. Thus, there would be no potential for significant subsistence restrictions. An ANILCA Section 810(a) summary evaluation and analysis is contained in Appendix A, based on potential impacts of proposed NPS activities in the Preserve.

Local Economy. Some materials for this project may be obtained from the nearby communities of King Salmon and Naknek. However, any related impacts on the local economy would likely be short-term, negligible and beneficial due to the small size and duration of the project.

Executive Order 12898, "Environmental Justice." Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This project would not be expected to result in significant changes in the environment of the project area, and therefore would not be expected to have any direct or indirect impacts to minority or low-income populations or communities.

Land Use and Access. Under any alternative, the potential for park visitors trespassing on non-federal lands would not be expected to increase. The NPS conservation easement and private allotment parcel are located south of the Brooks River, outside of the immediate Brooks Camp project area (USA, 1998). This project would not be expected to increase visitor use nor would it interfere with the provisions of the 1998 Conservation Easement Agreement. As part of the normal NEPA public review process, all parties of the Agreement would be welcome to express their views on this proposal. The proposed sand removal area is located on federal land, below the OHW mark, not on the "Protected Property". The Agreement does not apply to federal lands below the OHW line. Furthermore, excavation and transport of the sand would not occur on or adjacent to the private property.

ANILCA Section 1306. ANILCA Section 1306 calls for locating NPS administrative facilities on Native land in the vicinity of the NPS when practicable and desirable. For the Brooks Camp administrative site, Section 1306(a)(1) applies, because the site is located within the boundary of the conservation system unit. Currently, with the DCP planned move of facilities and functions south of the Brooks River, ample federal land area is available for foreseeable site development. Thus, Section 1306(b)(2) does not apply; the NPS has no need to acquire additional private real property for this project, including parcels from nearby Native lands.

1.5 Permits and Approvals Needed to Implement the Project

State of Alaska Coastal Zone Management Program

The NPS would submit a Negative Determination Letter to the State of Alaska, Department of Natural Resources, Office of Project Management and Permitting, to request concurrence that this project is consistent with the standards of the Alaska Coastal Management Program and would have no effects on the uses or resources of the coastal zone (Appendix B). This project would also be reviewed by the Lake and Peninsula Borough (L&PB) for provisions under the borough coastal management plan. The NPS would apply for appropriate authorizations and permits identified during this State and L&PB project review process.

U.S. Army Corps of Engineers

The NPS submitted a request for a jurisdictional determination to the U.S. Army Corps of Engineers on December 27, 2006 to determine whether a Department of the Army permit authorization under the Clean Water Act Section 404 is necessary. On January 31, 2007, the NPS received written concurrence that the proposed project does not require a permit.

2.0 ALTERNATIVES

2.1 Introduction

This chapter describes a no-action alternative and a reasonable alternative; the proposed action alternative. Additional action alternatives are briefly described in section 2.5, but not considered further or analyzed in Chapter 4. At the end of this chapter, Table 2-1 provides a summary and comparison of the no-action and the proposed action alternatives and their environmental impacts.

An interdisciplinary team of NPS staff, including engineers, managers, environmental protection specialists and facility planners considered several material source and transport alternatives to obtain sand for the leach field. The team applied criteria related to agency regulatory requirements, previous NEPA decisions, cost, and Brooks Camp management. Specific considerations included current location of infrastructure services; DCP goals, requirements and desired future conditions; Katmailand concessions contract provisions; feasibility of transport to the remote site; length of the construction season; disruption of visitor services; disturbance of bears; site topography; natural resource impacts; resource agency permitting; labor availability; and site hydrology.

2.2 Alternative A: No-Action (Environmentally Preferred Alternative)

Under the no-action alternative, no sand would be removed from the Naknek Lake, Brooks Camp shoreline. No sand of suitable quality and quantity would be available to complete the leach field rehabilitation project. The “Affected Environment” in Chapter 3 describes existing facilities and functions. This alternative represents a continuation of the existing situation and provides a baseline for evaluating the changes and impacts of the proposed action alternative.

2.3 Alternative B: Sand Removal from Naknek Lake Beach (NPS Preferred Alternative)

The NPS would excavate up to approximately 200 cubic yards of native material (sand) from below the ordinary high water line (OHW) of Naknek Lake along the Brooks Camp beach, between the campground and the leach field driveway (Figure 4). Excavation would occur in late spring when lake water levels are very low and the proposed project site is dewatered. Specifically, the NPS KATM maintenance personnel would use a tracked front-end loader to scrape off an approximately six-inch layer of sand within a

rectangular area of approximately 360 feet by 30 feet. Depending on results of resource agency project review, this volume configuration could change, for example, to a three-inch layer of sand within a rectangle of approximately 720 feet by 30 feet. The front-end loader and a five-yard dump truck would access the excavation site along the lake shoreline. The sand removed from the lake shore would be deposited directly into the dump truck and hauled approximately 200 yards to the upland area of the existing leach field, across the previously hard-packed leach field driveway, oriented perpendicular to the beach. The sand would be stockpiled adjacent to the leach field and placed in a 40-foot by 40-foot area lined with geo-textile fabric. Using a JD 670B grader, maintenance personnel would re-grade the excavated area to match, as much as possible, the natural contour of the beach per guidance in *Special Directive 91-6*.

Work would be accomplished during two days in late spring 2007, between early April to May when the shore is exposed and dry. As soon as the Naknek Lake beach is free of ice and aircraft beach landings could safely occur, park personnel would access the Brooks Camp site and begin heavy equipment mobilization and operation. During winter, some heavy equipment is kept in storage in maintenance yards on the south side of the Brooks River. This equipment would be operational by approximately mid April, to coincide with State permitted, annual Brooks Camp septage hauling and floating bridge installation activities. The lake sand removal project would be one of the first tasks to be performed when the maintenance crew arrived at Brooks Camp, to ensure completion during extreme, low, lake water levels. No work would be performed until archeological clearance was obtained. All work would be accomplished with park labor, equipment and materials. As every year, springtime Brooks Camp start-up maintenance tasks would be prioritized and staged, according to existing weather, lake and ground conditions that can vary widely each year.

2.3.1 Mitigation Measures

Cultural Resources. Ground disturbance would be restricted to active beach deposits below the OHW line of Naknek Lake. Consultation would take place with interested Alaska Native groups to identify and evaluate any ethnographic resources, sacred sites and traditional, cultural properties that might be affected by this undertaking. Should previously unknown cultural resources be identified during project implementation, work would be stopped in the discovery area and the NPS would perform consultations in accordance with 36 CFR 800. The resources would be evaluated to determine if they are eligible to be listed on the National Register of Historic Properties. If proposed excavation locations could not be adjusted to avoid adversely affecting eligible cultural resources, the NPS would execute a Memorandum of Agreement (MOA) with the Advisory Council on Historic Preservation and the Alaska State Historic Preservation Office that would incorporate comments from consulting parties. The MOA would specify measures to minimize or mitigate adverse effects. Furthermore, as appropriate, the NPS would abide by provisions of the Native American Graves Protection and Repatriation Act of 1992. Any artifacts recovered from park property at the project site would be accessioned, cataloged, preserved, and stored in compliance with the *NPS Cultural Resource Management Guidelines*.

Beach Vegetation. As USGS hydrologist Janet Curran recommends (Appendix C), "...disturbing beach vegetation should be avoided as this could destabilize beach forms or generate shoreline erosion. Excavation should also avoid disturbing the area immediately adjacent to the upland, again to minimize the potential for erosion." Thus, maintenance workers would avoid disturbing vegetated areas and incorporate Best Management Practices (Appendix D) to control erosion.

Steller's Eiders. Per guidance from the USFWS, Ecological Services office, if Steller's eiders are seen in the area, the project would not proceed while they are present.

Exotic Species Management. During transport of personnel into the park and equipment mobilization and operation, efforts would be made to avoid the introduction of non-native species into the area. The lake sand material source is inside the park and is expected to be devoid of vegetation. Even so, KATM personnel would consult with the Exotic Plant Management Team at the NPS Alaska Regional Office as to what project-specific actions should be taken. Park staff would identify and list invasive species of concern, then verify that the sand material site was free of target invasive species prior to its use.

Site Rehabilitation. After the sand is removed, park maintenance personnel would use a JD 670B grader to backfill adjacent sand into the depression, returning the surface to a more natural and smooth appearance.

2.4 Environmentally Preferred Alternative

The no-action alternative is the environmentally preferred alternative, because it would cause no damage to the biological and physical environment, whereas, the NPS preferred alternative would result in negligible, negative environmental impacts to wetlands. The no-action alternative would result in no impacts to wetlands. However, the no-action alternative would result in minor, negative, indirect impacts to the visitor experience due to inadequate wastewater system facilities. (see “Environmental Consequences” chapter below for more information about these impacts).

2.5 Description of Alternatives and Actions Considered but Eliminated from Detailed Study

Various alternatives for material sources and transport were considered but dismissed from further analysis based primarily on factors relating to whether the alternatives are feasible or reasonable.

Material Source Alternatives Dismissed

1. Import Sand From Outside The Park

Per *Special Directive 91-6*, park personnel should first search for sand material outside of park lands. Due to the high cost of mobilization and de-mobilization for local contractors operating out of a King Salmon area base, this alternative would cost approximately \$150,000 for the purchase and barge transport of 200 cubic yards of suitable quality sand. Transport could only occur during high water levels in summer; not in time to meet a stockpile deadline of spring 2007. In addition, soil importation could introduce non-native species, altering the gene pool within the park. This alternative source would benefit local businesses and the local economy, but would indirectly, severely hinder park and concessioner operations due to the late sand arrival for wastewater system rehabilitation. Thus, per guidance and analysis followed in *Special Directive 91-6*, outside park sources from local contractors have been evaluated and determined to be “totally impractical” from park budget and logistics aspects.

2. Purchase Sand From Nearby Private Landowner

This alternative refers to parcels located along the Naknek Lake shore, south of the barge bulkhead (Figure 4). The Conservation Easement Agreement (USA, 1998) states that for the “Protected Property” the extraction of sand or other aggregate materials for any purpose by the private land owners is prohibited. The owners of the “Exclusive Use” lot do not own the sand below the OHW mark; rather this is owned by KATM as part of the region acquired by a 1931 presidential proclamation. Similarly, the sand located above the OHW mark along the “Exclusive Use” property cannot be sold since the 1998 Agreement prohibits any commercial activities, including the sale of sand. Therefore, this alternative is prohibited by the terms of the 1998 Agreement.

3. In-Park Source From Proposed Construction Site of the Brooks Lake Maintenance Facility

Engineers reported that test results from this Brooks Lake site revealed high quality sand, suitable for the leach field project. This alternative source was considered briefly, until schedule delays for the proposed facility construction resulted in the predicted unavailability of sand material until late summer of 2007. As in alternative 1, this delay would have made it impossible to transport the material during high river/lake water levels and high visitor use activity in the BCDA. The sand must be stockpiled in spring so that extraction and transport activities avoid the busy summer Camp season with bear use and visitor traffic. This alternative had benefits such as low extraction and reclamation costs and low cultural resources concerns. However, it was eliminated due to anticipated traffic disruptions for park and concessioner operations, visitors, and bears.

4. In-Park Source at Established Material Site: Moraine Pit

The Moraine Pit is identified in the *Draft Sand, Rock and Gravel Plan* (NPS, 1996a). Since the late 1990's, this source has been one of the main in-park material sources for most maintenance and construction projects. During summer 2006, the NPS obtained sand samples from this source and tested them for physical properties. Engineers determined that this source did not meet the specifications required for the leach field rehabilitation. *Special Directive 91-6* advises that in-park sources are to be considered for a project only if they are "acceptable". Thus, this material source was dismissed because of substandard quality.

Transportation Alternatives Dismissed

5. Brooks River Truck Crossings

This alternative called for sand transport from any material source south of the Brooks River (along the VTTS road or Brooks Lake area) by truck crossing of the Brooks River. With a five-yard dump truck, this would require approximately 40 round trips, or 80 crossings of the lower Brooks River bed. State habitat biologists decided that because of the excessive number of crossings during a short period, with accompanying high potential for streambed damage, a Fish Habitat Permit could not be issued. The NPS concurred and dismissed this alternative because of the high probability of damage to the sensitive Brooks River natural resources.

6. Modular Floating Bridge Across Brooks River

Engineers considered an option to transport sand from any material source south of the Brooks River (along the VTTS road or Brooks Lake area) by a temporary, modular floating bridge across the river. A modular floating bridge would cost approximately \$120,000 to purchase, with an additional cost to transport it to the Brooks Camp site. NPS engineers determined that the excessive cost of this alternative was grounds for dismissal. In addition, the river bank is unstable near the river mouth and installation of a modular bridge could have caused major impacts to river resources such as soils, vegetation, wetlands, fish habitat and visitor trail systems.

7. Ice Road From Bulkhead to Brooks Camp, Across Naknek Lake

This proposal called for winter transport of sand from any material source south of the Brooks River area (along the VTTS road or Brooks Lake area) using an ice road constructed between the Brooks River barge bulkhead and the beach opposite the leach field. This alternative was eliminated due to the extreme variability and unpredictability of weather conditions and lake freeze conditions each winter/spring, as well as mobilization of pumping equipment and permitting challenges associated with a contracted, ice road construction in a remote location.

2.6 Summary and Comparison of Alternatives

Table 2.1 presents a summary and comparison of the potential effects of the No-Action and the reasonable alternative.

Table 2.1 Summary and Comparison of Alternatives

Impact Topics	Alternative A: No-Action (Environmentally Preferred Alternative)	Alternatives B: Sand Removal (NPS Preferred Alternative)
Water Resources	Short-term – no impact. Long-term – no impact.	Short-Term – no impact. Long-term – no impact.
Fisheries	Short-term – no impact. Long-term – no impact.	Short-term – no impact. Long-term – no impact.
Wetlands	Short-term – no impact. Long-term – no impact.	Short-term – negative, negligible impact. Long-term – no impact.
Cultural Resources	Short-term – no impact. Long-term – no impact.	Short-term – no impact. Long-term – no impact.
Visitor Experience	Short-term – minor, negative, indirect impacts if leach field malfunctioned during the visitor season, resulting in temporary (1) alternative wastewater system services, (2) water conservation measures and (3) Camp closures by public health officials. Long-term – negligible, indirect impacts to quality and extent of visitor services since the park would be expected to adequately resolve the wastewater problems within one visitor season.	Short-term – no impact since sand removal operations would occur in late spring, prior to the start of the Brooks Camp visitor season. Long-term – positive, minor, indirect impacts from improved Brooks Camp wastewater services; less stringent water conservation measures and elimination of the risk of Camp closure.

3.0 AFFECTED ENVIRONMENT

3.1 Project Area

The DCP (NPS, 1996b) and the 2006 Brooks Camp EA (NPS, 2006c) contain descriptions of the Brooks Camp affected environment. Additional highlights are presented here, relevant to the proposed project.

Elevations at Brooks Camp range from 42 to 62 feet above mean sea level. The natural topography in the camp area slopes gently to the east-southeast, from Dumpling Mountain toward Naknek Lake. The site is covered by a mixed forest of white spruce and birch and understory vegetation of alder, grasses and forbs.

The BCDA has no road system on the north side of the river, however the well-packed trails accommodate a variety of small motorized vehicles. Secondary trails within the Camp and between facilities such as the leach field and NPS housing are approximately eight to ten feet in width and are compacted native soils. NPS Brooks Camp employee housing is located along a main gravel trail parallel with the lake border and west of the campground. The campground is located at the far northern end of the development. The leach field and associated infrastructure is described in detail in the 2006 Brooks Camp EA (NPS, 2006c).

3.2 Resource Impact Topics

Water Resources. Naknek Lake is oligotrophic and very clear. The substrate of Naknek Lake is composed primarily of loose gravel and unconsolidated pumice. Water chemistry and quality is greatly affected by volcanic and glacial activity. Total phosphorus appears to be a key nutrient in the system, but nitrogen is limiting. Summer stratification does not fully develop in the lake; instead, the lake circulates often through the summer due to coastal winds. Water levels vary as much as nine feet between the high and low water marks. Naknek Lake is heavily used by floatplanes and boats during the summer months. A limited amount of diesel and gasoline fuels are introduced into Naknek Lake by leakage from the engines of small boats and aircraft anchored or beached adjacent to Brooks Camp. Brooks Camp lies within the coastal management zone defined by the Lake and Peninsula Borough as an area at or below the 200 foot contour level.

Fisheries. Naknek Lake is formally recognized by the State of Alaska as important for anadromous fishes, including sockeye salmon and coho salmon (ADFG, 1992). Salmon migrate to spawning areas in the lake and its tributaries in the spring and summer, but none are known to spawn along the lake shore in the project area (Troy Hamon, pers. comm.). Nonanadromous fish such as rainbow trout, dolly varden, and grayling, also inhabit the lake.

Wetlands. Wetlands are areas transitional between terrestrial and aquatic systems, and are defined by the National Park Service using the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS 1979). Under this classification system, the project site on the shore of Naknek Lake is a lacustrine wetland. Lacustrine wetlands are defined as wetlands that are: (1) situated in a topographic depression or a dammed river channel; (2) lack trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% area coverage; and (3) have a total area that exceeds 8 ha (20 acres) (USFWS 1979). The 1987 "Corps of Engineers Wetlands Delineation Manual" requires that all three of the parameters (hydrophytic vegetation, hydric soil and wetland hydrology) be present in order for a habitat to be considered a wetland. Because the project site is not vegetated, it does not meet the U.S. Army Corps of Engineer's regulatory definition of a jurisdictional wetland. However, for the purpose of implementation of Executive Order 11990, any area that is classified as a wetland habitat according to the USFWS definition is subject to the NPS Director's Order (DO) 77-1, *Wetland Protection* and its implementation procedures. DO 77-1 states that whenever possible, excavated material must be placed on an upland site.

Cultural Resources. Brooks Camp is located within the Brooks River Archeological District National Historical Landmark, established because of the quantity and quality of prehistoric remains. Brooks Camp proper, occupying the point of a terrace which overlooks both lake and river, is situated on a prehistorically heavily occupied section of the landmark. Here the land is comprised of a series of

temporarily sequential beach ridges and river terraces which intersect at the mouth of the river. It is primarily on these ridges and terraces that prehistoric dwellings were constructed, with activities taking place all around. Occupation of the beach ridges along the Naknek Lake began as early as 4,500 years ago and has been found to extend from near the mouth of Brooks River to the campground.

The ethnographic importance of the Brooks River corridor has not been afforded the same level of recognition as the archeological values. The ethnographic resources overlap many of the archeological deposits, but the heart of the ethnographic resources is located near the Brooks River mouth and immediate shoreline on the north side of the river and the shoreline south of the river mouth to a point beyond which the “Beaver Pond” comes closest to Naknek Lake. The ethnographic resources associated with Brooks Camp are rich, varied and include the traditional harvest of redfish or the taking of spawned out red salmon in the Naknek drainage by those Alaska Natives traditionally associated with the area. Other ethnographic resources are largely undocumented and poorly understood. The Brooks River corridor contains numerous burials that are of extreme ethnographic importance to contemporary peoples traditionally associated with this site. The preliminary information that has been recorded suggests that Qit’rwik, or Brooks Camp, is a potential candidate for the National Register of Historic Places as a Traditional Cultural Property.

Visitor Experience. Brooks Camp is the most heavily visited site in KATM. The summer visitor season in the Brooks Camp area begins in early June and continues through October. Brooks River is a world-class sport fishing area for rainbow trout and red salmon, as well as a world-class wildlife photography area. Visitor numbers have increased substantially in past years, particularly day visitation. Today, many private lodges and hotels outside the park, as well as major tour companies, fly visitors to the Brooks River for sportfishing and bear viewing. Brooks Camp annually receives approximately 10,000 visitors (NPS, 2006e). Concessions and NPS development in the area support a range of visitor activities, including lodging, camping, dining, sightseeing, canoeing/kayaking, hiking, fishing, and wildlife photography. Summer visitor use and activities are described further in the 1996 DCP.

The 2006 Katmailand concessions contract guides the management of the sole Brooks Camp concessions operation, in accordance with NPS concessions management standards. Visitors rely heavily on the services made available and regulated through this contract. In 2008, a new 10-year contract is planned to be issued to Katmailand, Inc.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter provides an evaluation of the potential effects or impacts of each alternative on the resources described in the issue statements presented in Chapter 1, “Purpose and Need” for the action. The environmental consequences to each of these resources are presented in terms of direct, indirect, and cumulative impacts, as well as the duration, context and intensity of impact.

4.2 Cumulative Impacts Analysis Assumptions

Cumulative impacts are defined as the incremental impacts to the environment resulting from adding the proposed action to other past, present, and reasonably foreseeable future actions (also referred to as regional actions), regardless of what agency (federal or non-federal) or person undertakes those actions. Cumulative impacts may result from singularly minor but collectively significant actions taking place over a period of time (CEQ Sec 1508.7).

Cumulative impacts are analyzed by considering the past, present, and reasonable foreseeable future actions taken by the NPS, other agencies, private organizations and individuals in the Brooks Camp area. These include the following:

- Past construction, conversion and expansion of numerous NPS and private structures, including offices, storage facilities, maintenance facilities, a visitor center, commercial lodge, employee and concessions residences, a campground, utilities, roads and trails.
- Past, present and future operation of the above facilities and infrastructures.
- Future possible actions such as (1) implementing projects related to housing, visitor services, sanitation and utility services described and analyzed in the 2006 *Environmental Assessment, Rehabilitation and Replacement of Brooks Camp Facilities and FONSI* (NPS, 2006c); (2) construction of NPS facilities (e.g., replacing the existing Brooks Lake maintenance facility); (3) moving the bulk fuel storage facility inland, away from the shore of Brooks Lake; (4) concessioner facility repairs and improvements associated with a new 2008 Katmailand concessions contract; and (5) implementing the Brooks Camp move as specified in Alternative 5 of the 1996 DCP/ROD.

Replacement of the Brooks Lake maintenance facilities would allow park structures and equipment to be adequately serviced and maintained, thereby allowing employees to safely perform their duties and visitors to safely travel park roads and use park facilities. The proposed project would undergo a future, NEPA public review. Relocation of the fuel storage facility would greatly reduce the potential of accidental discharges of fuel into sensitive areas such as salmon habitat and archeological resources and employee residential areas.

At this time, it is unknown when the move described in Alternative 5 of the DCP/ROD would be completely funded and implemented. However, in the absence of full implementation of the Proposed Alternative, the NPS would continue to attempt to resolve issues related to inadequate support facilities by following the strategy described in Section 1.3.

4.3 Alternative A: No-Action (Environmentally Preferred Alternative)

Water Resources. No impacts would occur to water resources, because no action would take place.

Cumulative Impacts. Construction, Brooks Camp operation and related water disturbance activities from past, present and future area projects would be expected to generate minor, negative effects to water resources in the short-term. However, due to the large volume of water bodies in the area, long-term adverse effects would be expected to be negligible. To mitigate impacts, NPS projects would include the use of Best Management Practices and revegetation to prevent run-off and erosion problems. However, in the long-term, overall, positive, minor impacts would accrue as fuel spill potentials were reduced, with elimination of bulk fuel tank storage at the Brooks Lake entrance point and reduced vehicle traffic over the lower Brooks River. Alternative A, No-Action, would have no impacts on water resources and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have negligible long-term, adverse cumulative impacts on water resources.

Conclusion. Water resources would be unchanged because there would be no sand removal activity. The level of impacts on water resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Fisheries. There would be no impacts to fisheries, as no action would be taken to remove sand from the project site.

Cumulative Impacts. Construction and operation activities from past, present and future Camp area projects near open water bodies would be expected to produce minor, short-term, negative impacts to fisheries resources such as salmon, rainbow trout, dolly varden, grayling and stickleback. However, due to the large volume of water bodies in the area and the small scale of projects, long-term negative effects would be expected to be negligible. To mitigate impacts, NPS projects would include the use of Best Management Practices and revegetation to prevent sedimentation and degradation of fish habitat. Alternative A, No-Action, would have no impacts on fisheries and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have negligible long-term adverse cumulative impacts on fisheries.

Conclusion. The no-action alternative would not impact fisheries resources. The level of impacts on fisheries resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Wetlands. No impacts would occur to wetland resources, because no action would take place.

Cumulative Impacts. Wetlands in and adjacent to past, present and future construction activities would be negatively impacted from alteration, degradation or destruction of wetland functions and values. Any NPS projects with projected negative impacts to wetlands would require mitigation and/or compensation under provisions of DO 77-1 *Wetlands Protection*. Generally, projects with proposed fill in wetlands would require review, permits and/or approval from the U.S. Army Corps of Engineers, Alaska Coastal Management Program, State agencies and the Lake and Peninsula Borough. However, with implementation of mitigation measures during and after construction activities, wetland impacts would be expected to be minimal. Alternative A, No-Action, would have no impacts on wetlands and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have minimal cumulative impacts on wetlands.

Conclusion. The no-action alternative would not impact wetland resources. The level of impacts on wetlands resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Cultural Resources. No cultural resources would be impacted since sand removal would not occur.

Cumulative Impacts. No impacts would be expected from future actions in the Brooks Camp area, as any projects would be regulated under State and federal requirements for cultural resource protection. Any impacts to cultural resources in unsurveyed areas would need to be evaluated on a site and project-specific basis by cultural resource professionals. Alternative A, No-Action, would have no impacts on cultural resources and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have no cumulative impacts on cultural resources.

Conclusion. No cultural resources impacts would occur in the Brooks Camp area since no action would be taken to remove sand from the project site. The level of impacts on cultural resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Visitor Experience. In the event of leach field failure during summer, and if no sand could be obtained from Naknek Lake to rehabilitate the leachfield, the park would have to mitigate raw sewage spills on the ground near the housing area during the height of visitation. In addition, a leach field failure could result in the temporary closure of Brooks Camp operations by public health officials, most likely for a few days but possibly for a few weeks until solutions could be implemented. The Katmailand concessions lodge kitchen operation is dependent on the NPS-operated wastewater system and would need to be shut down temporarily during wastewater system repair work. In that event, the Katmailand concessions contract would need to be reviewed for provisions related to wastewater services. Also, park and concession operations would be forced to temporarily find alternative means of wastewater management (e.g., use of chemical waste disposal bags, lodge kitchen closure, etc.) Although such impacts may in turn inconvenience some visitors due to a delay in, or temporary lack of, visitor services, it is unlikely that total visitor numbers to the area would be affected. Therefore, the overall visitor experience would suffer only minor, short-term adverse and negligible long-term, indirect impacts under the No-Action alternative.

Cumulative Impacts. Past, present and future NPS projects would create minor, short-term disturbances for visitors during construction. In the long-term, with the construction of new concessions facilities south of the river, visitor satisfaction would be expected to improve to a minor, positive degree, as visitors were afforded safer facilities and easier access to bear-viewing areas south of the river. The No-Action alternative would have little impact on visitor experience and, therefore, would not contribute appreciably to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have minor cumulative impacts on visitor experience.

Conclusion. Under this alternative, the overall visitor experience would be indirectly impacted, adversely to a minor degree in the short-term and negligibly in the long-term. The level of impacts on visitor use anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the parks enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

4.4 Alternative B: Sand Removal (NPS Preferred Alternative)

Water Resources. The excavation of up to 200 cubic yards of sand from the exposed lakeshore would not impact the water quality of Naknek Lake. Little or no turbidity would be expected to result from removal of sand because material would be hauled to an upland site instead of being deposited along the shoreline. Vehicle tracks would be re-graded and the area would gradually fill in with the loose gravel and pumice of the shore substrate as the lake's water level rises during June and covers the project area, and would, therefore, not have a permanent affect on the lake's water quality or hydrologic processes. Natural system restoration would be expected to occur, as the excavated beach area refilled with sediment transported from lake currents and east winds.

Cumulative Impacts. Construction and related water disturbance activities from past, present and future BCDA projects would be expected to result in minor, short-term, negative effects to water quality. However, due to the large volume of water bodies in the area, long-term adverse effects would be expected to be negligible. To mitigate impacts, NPS projects would include the use of Best Management

Practices and revegetation to prevent run-off and erosion problems. However, in the long-term, overall, positive, minor impacts would accrue as fuel spill potentials were reduced, with elimination of bulk fuel tank storage at the Brooks Lake entrance point and reduced vehicle traffic over the lower Brooks River. Alternative B, Sand Removal, would have no impacts on water resources and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have negligible to minor cumulative impacts on water resources.

Conclusion. Sand removal actions during 2007 would not be expected to generate negative impacts to the water quality of Naknek Lake. The level of impacts on water resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Fisheries. Naknek Lake is formally recognized by the State of Alaska as important for anadromous fish. Salmon migrate to spawning areas in the lake and its tributaries in the spring and summer, but migration patterns would not be impeded by the proposed action due to the timing of the project (when the shore is dry and exposed). No salmon are known to spawn along the lake shore where the sand removal would occur; therefore, salmon spawning would not be affected by this project.

Nonanadromous fish such as grayling, rainbow trout, and dolly varden inhabit the lake, but because the project would occur when the shore is dry and exposed, none of these fish would be impacted by the proposal. These fish do not spawn along the lake shore; therefore, spawning would not be impacted.

Cumulative Impacts. Past, present and future construction projects near open water bodies would be expected to produce minor, short-term, negative impacts to fisheries resources such as salmon, rainbow trout, dolly varden, grayling and stickleback. However, due to the large volume of water bodies in the area and the small scale of projects, long-term negative effects would be expected to be negligible. To mitigate impacts, NPS projects would include the use of Best Management Practices and revegetation to prevent sedimentation and degradation of fish habitat. Alternative B, Sand Removal, would have no impacts on fisheries and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have negligible long-term adverse cumulative impacts on fisheries.

Conclusion. With this alternative, fisheries resources would not be impacted. The level of impacts on fisheries resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Wetlands. For the 2007 sand removal, approximately 0.25 acres of lacustrine wetland would be disturbed. The excavation dimensions proposed would be 360 feet by 30 feet by 0.5 feet deep. Adverse effects of sand removal of up to 200 cubic yards on the wetland processes, functions, and values of Naknek Lake would be negligible in the short-term and none in the long-term. The Naknek Lake beach (cover photo) is generally characterized by a gentle slope of approximately 100 feet long at summer water levels. The project area is virtually devoid of vegetation. Vegetation, if present, is limited to the extreme upper portion of the beach, and outside of the proposed extraction area. The project site is used for wheeled aircraft beach landings during spring for Camp start-up operations. Later, during May through October, it is heavily used for floatplane landings, take-offs and parking to transport Camp visitors, park personnel and supplies. The Naknek Lake beach near the Camp is a dynamic environment, influenced by strong wind and wave action. Driftwood and pumice continually wash up and are deposited along the beach. Bears use the beach as a major travel corridor. As described in section 1.4.2, geomorphological

effects from this project would be expected to be negligible and sediment transport would refill the excavated site to its previous condition. Therefore, the project would be exempted from further consideration according to the *NPS Procedural Manual 77-1: Wetland Protection* (October 2002).

Several Best Management Practices (BMPs) (Appendix D) or “conditions” also are described in the procedural manual. When implementing the proposed action all relevant BMPs would be followed.

Cumulative Impacts. Wetlands in and adjacent to past, present and future BCDA construction projects would be negatively impacted from alteration, degradation or destruction of wetland functions and values. Any NPS projects with projected negative impacts to wetlands would require mitigation and/or compensation under provisions of DO 77-1. Generally, projects with proposed fill into wetlands would require review, permits and/or approval from the U.S. Corps of Engineers, Alaska Coastal Management Program, State agencies and the Lake and Peninsula Borough. However, with implementation of mitigation measures during and after construction activities, wetland impacts would be expected to be minimal. Alternative B, Sand Removal, would have negligible short-term and no long-term impacts on wetlands and, therefore, would contribute negligibly to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have minimal cumulative impacts on wetlands.

Conclusion. This alternative would result in negligible, short-term and no long-term negative impacts to wetlands. The level of impacts on wetlands resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park’s enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Cultural Resources. The proposed project site is within the boundaries of the Brooks River Archeological District National Historic Landmark. The NPS is in the process of assessing the potential effects of the sand removal on cultural resources, as per Section 106 of the National Historic Preservation Act of 1966. Through this process, a determination of effect will be made and concurrence sought from the State Historic Preservation Office and the Advisory Council on Historic Preservation previous to any action taking place.

Should any unknown cultural resources be uncovered during project implementation, work would be stopped in the discovery area. The NPS would perform consultations according to 36 CFR 800 and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1992. A Determination of Eligibility would be conducted. If adjustments could not be made to the project to avoid cultural resource disturbance, a Memorandum of Agreement (MOA) with the Advisory Council on Historic Preservation and the Alaska State Historic Preservation Office that incorporates comments from consulting parties would be executed. The MOA would specify measures to mitigate adverse effects. Any artifacts recovered from park property at the project site would be accessioned, cataloged, preserved and stored in compliance with NPS Cultural Resource Management Guidelines.

Cumulative Impacts. No impacts would be expected to cultural resources from other future construction projects. For future projects, construction activities on unsurveyed sites would be regulated by State and federal requirements for cultural resource protection. Any impacts to unsurveyed areas would need to be evaluated on a site and project-specific basis by cultural resources experts. Alternative B, Sand Removal, would have no to negligible impacts on cultural resources and, therefore, would contribute negligibly to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have no to negligible cumulative impacts on cultural resources.

Conclusion. This alternative is not expected to result in any impacts to cultural resources in the Brooks River area. The level of impacts on cultural resources anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the park's enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

Visitor Experience. Actual sand removal would occur in spring, before the main visitor season begins; therefore, the visitor experience would not be affected by the project. Similarly, leach field project initiation in autumn of 2007 would allow normal park and concession operations at Brooks River to continue, thus visitation during the summer 2007 season would not be affected.

Cumulative Impacts. Past, present and future NPS projects would create minor, short-term disturbances for visitors during construction. In the long-term, with the construction of new concessions facilities south of the river, visitor satisfaction would be expected to improve to a minor, positive degree, as visitors were afforded safer facilities and easier access to bear-viewing areas south of the river. Alternative B, Sand Removal, would have no impacts on visitor experience and, therefore, would not contribute to the cumulative impacts in the project area. Overall, as described in the preceding paragraph, the projects outlined in Section 4.2 would continue to have minor cumulative impacts on visitor experience.

Conclusion. A one-time sand removal operation in spring of 2007, prior to the visitor season, would result in no impacts to the normal visitor experience, since park and concessions operations would continue in a normal manner. The level of impacts on the visitor experience anticipated from this alternative would not result in impairment of park resources that fulfill specific purposes identified in the parks enabling legislation or that are key to the natural and cultural integrity of the park and preserve.

5.0 CONSULTATION AND COORDINATION

Persons, Organizations and Agencies Contacted

The following agencies, organizations, and individuals were consulted in the preparation of this document.

U.S. Fish and Wildlife Service, Ecological Services:

Ellen Lance, Wildlife Biologist, was contacted by telephone on June 2, 2006 and by email on January 29, 2007 for information on the Endangered Species Act and Section 7 consultation.

Greg Balogh, Branch Chief, was contacted by telephone on January 2, 2007 for information regarding compliance with the Migratory Bird Treaty Act in the Brooks Camp Developed Area.

U.S. National Park Service, Denver Service Center, Water Resources Division:

Gary Smillie, Hydrologist, was contacted by telephone on June 2, 2006 for information regarding floodplain concerns in the Brooks Camp area.

Joel Wagner, Hydrologist, was contacted by telephone on January 30, 2007 for information regarding lacustrine wetlands and compliance with the *NPS Director's Order 77-1 Wetlands*.

U.S. National Park Service, Katmai National Park and Preserve:

Troy Hamon, Chief of Natural Resource Management and Research, was consulted on February 21, 2007 about spawning activity along the Naknek Lake shore.

State of Alaska, Department of Natural Resources, Office of Project Management and Permitting, Alaska Coastal Zone Management Program (ACMP):

Christine Ballard, ACMP Project Review Specialist, was contacted by telephone on June 2, 2006 and Tom Atkinson, ACMP Project Review Supervisor, was contacted on January 29, 2007 for consultation regarding requirements under the recently revised ACMP.

State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting (OHMP):

Cindy Anderson, Habitat Biologist, was contacted by telephone and email during November 2006 regarding permitting for Brooks River stream crossings.

Lake and Peninsula Borough, ACMP District Coordination:

Coastal Zone District Representative Marvin Smith was contacted by telephone on December 29, 2006 for consultation regarding requirements under the recently revised District CMP.

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APPENDICES

- A. Summary Evaluation and Findings, ANILCA Section 810(a)**
- B. ACMP Coastal Zone Negative Determination**
- C. Geomorphological Review of Project, US Geological Survey, Alaska Science Center**
- D. Best Management Practices**

APPENDIX A

Alaska National Interest Land Conservation Act (ANILCA) Section 810(a) Summary Evaluation and Findings

BACKGROUND

Subsistence uses, as defined by the Alaska National Interest Land Conservation Act (ANILCA), section 803, means "the 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 non-edible 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 section was prepared to comply with Title VIII, Section 810 of the ANILCA. It summarizes the evaluation of potential restrictions to subsistence uses that could result from the proposed action by the National Park Service (NPS) to remove sand from Naknek Lake. Since the ANILCA made no provisions to allow subsistence activities in Katmai National Park, this analysis will only address potential impacts of proposed NPS activities in Katmai National Preserve. The *Environmental Assessment, Naknek Lake Sand Removal, Katmai National Park*, describes a no-action and a proposed action for consideration.

II. EVALUATION PROCESS

Section 810(a) 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 effected 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
- (3) 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 the Valley of Ten Thousand Smokes and 3) to conserve an area potentially popular with persons seeking unique scenery and for those with scientific interest. Increased in 1931 to include Brooks Lake, Grosvenor Lake, Lake Colville and part of Naknek Lake; again in 1942 to include offshore islands within five 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 ANILCA 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. The Katmai Preserve was created by the ANILCA Section 202(2) for the following purposes (among others) “to 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 ANILCA within Katmai National Preserve pursuant to Section 203, however, subsistence activities are not authorized within Katmai National Park.

The potential for significant restriction of subsistence uses must be evaluated for the proposed action’s effect 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.” (Section 810, ANILCA).

III. PROPOSED ACTION ON FEDERAL PUBLIC LANDS

The NPS is considering a project to remove sand from the Naknek Lake beach of the Brooks Camp Developed Area during late spring of 2007. This site is located approximately 30 air miles east of the park headquarters and gateway visitor center in King Salmon, Alaska. Access to Brooks Camp is primarily from King Salmon by either float plane or boat. Brooks Camp is located at the mouth of the Brooks River, on the shore of Naknek Lake.

The purpose of the project is to obtain adequate sand material to use in the rehabilitation of the Brooks Camp leach field, scheduled for autumn of 2007. A detailed discussion of the sand removal project and the no-action and action alternatives are provided in Chapter 2 of this *Environmental Assessment*.

IV. AFFECTED ENVIRONMENT

The proposed project will affect a very small section of the shoreline along Naknek Lake, approximately 2000 feet north of the Brooks River mouth. The Brooks River area lies completely within Katmai National Park. Subsistence activities are not permitted in Katmai National Park in accordance with the ANILCA Title II Section 203; Title VIII Section 816(a); and Title XIII Section 1314(c). However, subsistence uses are allowed within Katmai National Preserve in accordance with the ANILCA Title II Section 203 and provisions of Title VIII. Katmai National Preserve, encompassing 308,000 acres, is located on the northern end of the Alaska Peninsula in Game Management Unit 9 and contains geologic features, scenery, wildlife and cultural resources of national significance. The ANILCA also authorized subsistence uses on adjacent federal public lands managed by the Bureau of Land Management (BLM) and the US Fish and Wildlife Service (USFWS). Becharof National Wildlife Refuge shares a common boundary with the park and is the closest land to Brooks Camp where Title VIII subsistence is allowed. The boundary between the park and the refuge is irregular, however the closest refuge land to Brooks

Camp is a distance of approximately 16 miles. Other federal public lands in Game Management Unit 9C include BLM lands situated along the south-southeast boundary of the Kvichak River drainage and adjacent to the northwest boundary of the Katmai National Preserve.

A summary of the affected environment pertinent to subsistence uses at Katmai National Preserve is presented here.

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 that occur outside of the park include hunting, fishing, trapping, berry picking and plant gathering. Caribou, moose, beaver, snowshoe hare, fox, lynx, mink, wolf, wolverine, river otter, beaver, ducks, geese, waterfowl eggs, edible plants and berries, salmon, trout, pike, whitefish and white spruce constitute the major subsistence resources used by local residents.

The Brooks River provides spawning habitat for primarily sockeye salmon which migrate from Bristol Bay to the Naknek River, to Naknek Lake and to the 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/Brooks Lake section of this system. Subsistence harvest of salmon generally occurs in the Naknek River downstream of the park boundary, however a limited subsistence fishery for red fish, or spawned out sockeye salmon, is permitted in Naknek Lake. The red fish fishery is open to local residents who are descendants of Katmai residents who lived in the Naknek Lake and River Drainage.

The NPS 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.

The removal of sand along the Naknek Lake beach, proposed at the Brooks Camp Developed Area is located in Katmai National Park (formerly Katmai National Monument) and will not affect subsistence activities in Katmai National Preserve.

The following documents contain additional descriptions of the affected environment of Katmai National Park and Preserve: Katmai National Park and Preserve Final General Management Plan, Alaska Regional Office, National Park Service, 1984; Katmai National Park and Preserve, Final Environmental Impact Statement, Wilderness Recommendation, National Park Service, 1988.

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on subsistence activities by the proposed facility upgrades, three evaluation criteria were analyzed relative to current subsistence resources that could be impacted.

The evaluation criteria are:

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 fishermen.

3. The potential for the action to increase competition among hunters and fishermen for subsistence resources.

1. The Potential to Reduce Populations:

The area upland of the project site is used by large mammals, particularly bear, moose, and to a limited extent caribou. Similarly, furbearers and small mammals (wolf, lynx, wolverine, beaver, otter, mink, weasels, fox, hare, squirrel, grouse) use this area. Some movement by individuals of these species onto refuge or preserve lands where subsistence uses are allowed probably occurs.

Salmon migrate to spawning areas in the Naknek Lake and its tributaries in the spring and summer, but migration patterns would not be significantly impeded by the proposed action due to the timing of the project (when the shore is dry and exposed). No salmon are known to spawn along the lake shore where the sand removal would occur; therefore, salmon spawning would not be significantly impacted by this project.

There should be no significant reductions in populations of subsistence fish and wildlife resources as a result of this proposal. Little or no subsistence hunting and trapping activity occurs in the area and the proposed sand removal should have no long-term effect on local moose, bear and small game populations. Thus, this project should have no impact on the availability, quality and overall abundance of moose, bear or small game habitat.

The proposed project is not expected to alter subsistence habitats or result in any measurable reduction in or redistribution of wildlife or other subsistence resources in Katmai National Preserve. Provisions of the ANILCA, the Federal Subsistence Board, and NPS regulations provide the tools for adequate protection of fish and wildlife populations within Katmai National Preserve while ensuring a subsistence priority for local rural residents. In addition, the superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

2. Restriction of Access:

All rights of access for subsistence harvest on NPS lands are granted by Section 811 of ANILCA. The proposed action to remove sand from Naknek Lake within the Brooks Camp Developed Area is not expected to limit or restrict the access of subsistence users to natural resources within the Katmai National Preserve. The superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

3. Increase in Competition:

The proposed sand removal is not expected to result in increased competition for fish, wildlife or other resources that would significantly impact subsistence users. NPS regulations and provisions of the ANILCA mandate that if and when it is necessary to restrict taking of fish or wildlife, subsistence users will be given a priority over other user groups. Continued implementation of the ANILCA provisions should mitigate any increased competition from resource users other than subsistence users. The superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

VI. AVAILABILITY OF OTHER LANDS

The proposed NPS action is site-specific to the existing, developed Brooks Camp site located in Katmai National Park. No other land inholdings with suitable material are available within the project area. Chapter 2 of this Environmental Assessment analyzes and eliminates other material source alternatives in other lands because they are prohibited or unreasonable. Since the proposed action occurs on federal lands that are not available for subsistence use, the proposed action does not affect the availability of federal land for subsistence use. The proposed action is consistent with NPS mandates and the KATM General Management Plan and is not expected to impact subsistence uses. Subsistence users also have access to and utilize other federal, State and private lands within the region for subsistence activities.

VII. ALTERNATIVES CONSIDERED

A “no action alternative” to preserve the status quo was considered in this analysis. This alternative was rejected in favor of the proposed action alternative because it did not provide for adequate material for the leach field project. Other material source and transport alternatives were briefly considered in Chapter 2 of this Environmental Assessment analysis but dismissed as unreasonable.

FINDINGS

This analysis concludes that the proposed action would not result in a significant restriction of subsistence uses.

APPENDIX B

ACMP Coastal Zone Negative Determination

NEGATIVE DETERMINATION
Proposed Naknek Lake Sand Removal with
Relevant Standards of the Alaska Coastal Management Plan (ACMP) and
Enforceable and Administrative Policies of the 1996 Lake and Peninsula Borough (L&PB)
Coastal Management Plan

A. Coastal Development

L&PB Coastal Management Plan (CMP) Section A-1, Water-Related Activities

Response: The leach field facility rehabilitation at Brooks Camp, reviewed under a previous L&PB CMP determination, is considered a water-related activity due to the location of the Camp along the shores of Naknek Lake, with access only by float plane or boat. This proposed sand removal project, required to obtain suitable material for the leach field rehabilitation, is an activity that is neither water-dependent nor water-related, but which has no feasible and prudent inland alternative to meet the public need. Section 2.5 of the *Naknek Lake Sand Removal Environmental Assessment* (EA) describes various alternatives for material sources and transport, considered but dismissed from further analysis because they were not feasible.

L&PB CMP Section A-2, Mitigation

Response: This project would be expected to result in no negative impacts for fish and wildlife populations and their habitats; commercial fishing; subsistence; air and water quality; cultural resources and recreational resources. Mitigation measures would be taken for cultural resources, beach vegetation, exotic species management and site rehabilitation as described in section 2.3.1 of the EA.

L&PB CMP Section A-4, Compatibility

Response: The proposed sand removal would be compatible with adjacent land and water uses and the primary purposes of the Brooks River area: (1) to protect habitats for, and populations of, fish and wildlife, including, but not limited to, high concentrations of brown bears and their den areas and maintain the watersheds and habitat vital to red salmon spawning in an unimpaired condition, (2) to provide for the general public resource-based recreation that does not impair natural and cultural values and (3) to protect and interpret outstanding natural, cultural, geologic and scenic values.

L&PB CMP Section A-5, Dredge and Fill Requirements

Response: The project site would be located and managed to comply with policies A-5 (a-e), avoiding significant adverse impacts to fish and wildlife habitats. Naknek Lake is formally recognized by the State of Alaska as important for anadromous fish. Salmon migrate to spawning areas in the lake and its tributaries in the spring and summer, but migration patterns would not be impeded by the proposed action due to the timing of the project (when the shore is dry and exposed). No salmon are known to spawn along the lake shore where the sand removal would occur; therefore, salmon spawning would not be affected by this project. Nonanadromous fish such as grayling, rainbow trout, and dolly varden inhabit the lake, but because the project would occur when the shore is dry and exposed, none of these fish would be impacted by the proposal. These fish do not spawn along the lake shore; therefore, spawning would not be impacted.

The NPS would use the minimum project area required to obtain up to 200 cubic yards of sand. To avoid negative impacts to water quality and to control erosion, maintenance workers would avoid disturbing vegetated beach areas and incorporate Best Management Practices (EA, section 2.3.1 and Appendix D).

After sand removal, the site would be returned to natural beach contours, as described in Response A-2.

L&PB CMP Section A-6, Disposal of Dredge Spoil

Response: The excavated sand would be deposited in an upland location, located approximately 200 yards from the leach field (EA, Figure 4). No fill disposal would occur in wetlands or lake waters.

B. Coastal Habitats and Resources**L&PB CMP Section B-1, State Habitat Standards**

Response: The proposed Brooks Camp facilities project would comply with state habitat standards at 6 AAC 80.130.

L&PB CMP Section B-2, Upland Habitats

Response: The upland, Brooks Camp leach field facility rehabilitation has been previously reviewed by the L&PB. This sand removal project would involve transport across upland habitat on a hard-packed leach field driveway, located perpendicular to the beach. The sand would be temporarily stockpiled on geo fabric near the existing leach field (EA, Figure 4). Mitigation for upper beach vegetation would occur as described in Response A-2.

L&PB CMP Section B-4, Anadromous Fish Waters

Response: The sand removal site is within the 100-foot minimum distance from the ordinary high water mark of anadromous fish waters (Naknek Lake). Project activities are expected to have no adverse effect on anadromous fish waters, as described in Responses A-2, A-4 and A-5.

L&PB CMP Section B-12, Bank Stabilization

Response: Excavation, loading, transport and rehabilitation activities would not result in sedimentation into adjoining lake waters in a manner, timing or quantity that would have a significant adverse impact on freshwater productivity, habitats or populations. The excavation would be shallow (six-inch depth) and workers would use Best Management Practices to control erosion (See Response A-2).

C. Air, Land, and Water Quality

Response: This project would comply with the stricter of either the ACMP air, land and water quality standards in 6 AAC 80.140, or the borough standards. Negative impacts to water quality would be avoided through the use of Best Management Practices (EA, Appendix D) and restricting the timing of the two-day excavation to spring (early April-May) when the site is exposed and dry, involving no in-water work.

D. Subsistence Use/Personal Use**L&PB CMP Sections D-2, Development Impacts and D-3, Access**

Response: Per ANILCA, subsistence activities are only permitted in Katmai National Preserve, not in Katmai National Park. The effects of the proposed action on subsistence uses and needs were dismissed from further analysis in the EA because the proposed action is located in the Park. An ANILCA Section 810(a) summary evaluation and analysis is contained in Appendix A of the EA, based on potential impacts of proposed NPS activities in the Preserve. The proposed project is not expected to (1) alter subsistence habitats or result in any measurable reduction in or redistribution of wildlife or other subsistence resources in Katmai National Preserve, (2) result in increased competition for fish, wildlife or other resources that would significantly impact subsistence users or (3) limit or restrict the access of subsistence users to natural resources within the Katmai National Preserve. NPS regulations and provisions of the ANILCA mandate that if and when it is necessary to restrict taking of fish or wildlife, subsistence users will be given a priority over other user groups. Continued implementation of the ANILCA provisions should mitigate any increased competition from resource users other than subsistence users. The park superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

G. Geophysical Hazard Areas

L&PB CMP Section G-2, Coastal Processes

Response: As described in Responses A-C above and in Appendix C of the EA, this project would be sited and conducted to minimize adverse impacts to coastal processes such as shoreline erosion. After sand removal, the beach would likely be replenished by lake sediment transported along a northward, longshore gradient. Therefore, geomorphological effects from this project would be expected to be negligible.

H. Recreation

L&PB CMP Section H-1, Protection of Recreation Values

Response: Public use goals and objectives for the Brooks River area pertinent to the leach field operation are that the NPS and concessioner are to develop and maintain facilities for recreational users that are consistent with park management concerns regarding wildlife, fish, biological diversity, preservation of cultural resources and public safety. The sand removal project would indirectly enhance these goals by allowing successful operation of the leach field. In addition, the project would occur prior to the visitor use season, avoiding conflicts with visitor use.

I. Archaeological and Historic Resources

L&PB CMP Sections I-1, Cultural and Historic Resource Areas and I-2, Resource Protection

Response: The NPS would comply with the National Historic Preservation Act and related laws and regulations, including consultation with the SHPO and affected parties. Cultural resource mitigation measures are described in Response A-2. No impacts to cultural resources would be expected.

K. Material Extraction and Processing

L&PB CMP Sections K-1, Siting of Material Sources, K-3, Best Management Practices, and K-6, Reclamation and Restoration

Response: This sand source would be sited in priority level “d) beaches of low habitat values” and is considered a feasible, prudent and environmentally responsible material source. As described in section 2.5 of the EA, other material sources were considered but dismissed. Mitigation measures in section 2.3.1 of the EA would be taken for cultural resources, beach vegetation, exotic species management and site rehabilitation. For site restoration, after sand extraction, park maintenance personnel would use a grader to backfill adjacent sand into the depression, returning the surface to a more natural and smooth appearance.

APPENDIX C

Geomorphological Review of Project by US Geological Survey, Alaska Science Center



IN REPLY REFER TO:

United States Department of the Interior

U.S. GEOLOGICAL SURVEY

ALASKA SCIENCE CENTER

4230 University Drive, Suite 201
Anchorage, Alaska 99508

MEMORANDUM

December 18, 2006

TO: Mary Miner, Project Engineer, National Park Service

FROM: Janet Curran, Hydrologist, USGS Alaska Science Center *Janet Curran*

THROUGH: Leslie Holland-Bartels, Director, USGS Alaska Science Center *Leslie Holland-Bartels*

RE: Review of plans to harvest beach sand from vicinity of Brooks Camp, Naknek Lake, Alaska

This memorandum is in response to your request for a geomorphological review of plans to harvest beach sand near Brooks Camp, Alaska, for a drainfield. This review does not address any biological concerns related to removing beach sand, as the National Park Service (NPS) is seeking a separate review for these concerns. The comments in this memorandum are based on discussions with you and Jim Gavin (Brooks Camp maintenance staff), review of ground-based photos and a sketch map of the planned harvest area you provided, review of aerial images from Google Earth, and a single site visit for unrelated, river erosion concerns several years ago.

Brooks Camp, located along the shore of Naknek Lake north of the mouth of the Brooks River in southwest Alaska, hosts fishing and bear-viewing visitors and NPS staff at a collection of cabins and a campground. The beach is used as an airstrip, requiring annual driftwood removal and regrading with heavy equipment. Your present plans call for harvesting sand from the beach between the cabin complex and the campground in a swath either 30 ft wide, 360 ft long, 6 inches deep, or 30 ft wide, 720 ft long, and 3 inches deep, parallel to the shoreline. The planned timeframe for removing the sand is late April to early May, when the water level in the lake is lowest.

The beach in this area appears from photographs to be a gentle slope of sand and gravel on the order of 100 ft long. Beach vegetation, where present, is limited to the uppermost part of the beach. From the shape of a small spit at the mouth of the Brooks River in aerial photographs, it appears the prevailing direction of longshore transport, or movement of sediment laterally along the beach, is toward the north. The Brooks River thus provides a local source of sediment, but its ability to replenish the beach is likely limited. The river is short, flowing just a few miles from Lake Brooks, over a bedrock falls, and through a meandering channel to its mouth. Sediment of sufficient size to replenish the beach is likely trapped in Lake Brooks and whatever sediment is present at the mouth is likely eroded from the bed and banks of the river downstream from the bedrock falls. No sediment information for the mouth of the river was available for this review. However, the beach appears in low-resolution aerial views to have a similar character on both sides of the Brooks River, suggesting that the river's sediment load is not critical to beach nourishment.

The desire to use on-site materials is commendable, as transport to this remote facility would be costly. From the review materials available, it appears that a one-time harvest of the proposed volume of sand would not deplete the beach to the extent that wave attack would cause significant shoreline erosion. Similarly, information regarding direction of longshore transport, sediment sources, and lack of beach vegetation suggests that sediment is mobile and present in quantities sufficient to replenish the beach on an annual-to-decadal scale. Without a more detailed analysis, the long-term difference in geomorphic effects between a 6-inch and 3-inch deep excavation is not discernible. Disturbing beach vegetation should be avoided as this could destabilize beach forms or generate shoreline erosion. Excavation should also avoid disturbing the area immediately adjacent to the upland, again to minimize the potential for erosion.

APPENDIX D

Best Management Practices

Several Best Management Practices (BMPs) are described in Appendix 2 of the *NPS Procedural Manual #77-1: Wetland Protection* (October 1998). These BMPs serve as conditions that should be met for many actions listed in this manual but are also practical guidance for work in or near wetlands. Additional BMPs may be appropriate depending on local conditions or special circumstances.

1. Effects on hydrology: Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on.
2. Water quality protection and certification: Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
3. Erosion and siltation controls: Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
4. Effects on fauna: Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
5. Proper maintenance: Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
6. Heavy equipment use: Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
7. Stockpiling material: Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
8. Removal of stockpiles and other temporary disturbances during construction: Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
9. Topsoil storage and reuse: Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
10. Native plants: Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
11. Boardwalk elevations: Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk at an

elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)

12. Wild and Scenic Rivers: Action cannot be "excepted" (see Section 4.2 of these procedures) if proposed in a component of the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in official study status.
13. Coastal zone management: Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
14. Endangered species: Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see NPS Management Policies (1988) and guidance on threatened and endangered species).
15. Historic properties: Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places.