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Katmai National Park and Preserve
Alaska



Mink Island Cultural Resources Protection Project
Environmental Assessment
June 2006



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TABLE OF CONTENTS

1.0 PURPOSE AND NEED FOR ACTION

1.1 Purpose of and Need for Proposed Project to Protect Mink Island Site .	4
1.2 Background	4
1.3 Issues	7
1.4 Permits and Approvals Needed to Implement Project	8

2.0 DESCRIPTION OF THE ALTERNATIVES

2.2 Alternative A - No Action Alternative	10
2.3 Alternative B - NPS Proposed Protective Gabion Wall	14
2.4 Environmentally Preferable Alternative	17
2.5 Alternatives Considered but Dismissed	18
2.6 Summary Table of Impacts	19

3.0 AFFECTED ENVIRONMENT

3.1 Archeological Resources	20
3.2 Coastal Resources	20
3.3 Scenic/Visual Resources	22
3.4 Wilderness Resources	23
3.5 Wildlife Resources	23

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Effects of Alternative A – No Action	
4.1.1 Impacts on Archeological Resources	25
4.1.2 Impacts on Coastal Resources	25
4.1.3 Impacts on Scenic/Visual Resources	26
4.1.4 Impacts on Wilderness	26
4.1.5 Impacts on Wildlife	26
4.2 Effects of Alternative B – NPS Proposed Protective Gabion Wall	
4.2.1 Impacts on Archeological Resources	27
4.2.2 Impacts on Coastal Resources	27
4.2.3 Impacts on Scenic/Visual Resources	28
4.2.4 Impacts on Wilderness	29
4.2.5 Impacts on Wildlife	30

5.0 CONSULTATION AND COORDINATION

6.0 REFERENCES CITED

APPENDICES

A. ANILCA Subsistence 810	34
B. Coastal Negative Determination	38
C. Wilderness Minimum Requirements Decision Document	41
D. Threatened & Endangered Species Consultation	45

1.0 PURPOSE AND NEED FOR ACTION

1.1 Purpose of and Need for Proposed Project to Protect Mink Island Site

The National Park Service (NPS) is considering the installation of rock-filled wire baskets (gabions) in summer of 2006 to protect the oldest known archeological site at Mink Island on the coast of Katmai National Park and Preserve. A complete description of the proposed action and alternatives are provided in Chapter 2, Description of the Alternatives.

The Mink Island Archeological Site (XMK-030) is the oldest dated site on the Katmai coast with occupations spanning over 7,000 years. This site is located within the Amalik Bay Archeological District National Historic Landmark (NHL) on the National Register of Historic Places. The site is open and exposed to seas of the Shelikof Strait. Pursuant to reports of erosion and vandalism and evaluation of site significance, the NPS conducted archeological data recovery at this site between 1997 and 2000. At the end of this four-year project, excavated areas subject to coastal storms were backfilled with biodegradable sand-filled bags and covered with biodegradable geotextile material to protect the site and encourage revegetation at the site. Annual site visits revealed by 2003 that most of the sand bags were gone and washed into the sea after winter storms. Storm surges have been eroding the island, which was formerly much larger in size, for thousands of years, and a significant portion of the remnant archeological site is currently in imminent danger of being washed away in the next few major storms coupled with high tide events. Burials dating back over 1,000 years from present were eroding from the site have been removed, but additional scattered human remains have been observed on the present erosional surface. The project would anchor to bedrock and interlock rock gabions with hand labor and using local beach rock to fill the wire baskets to protect the remaining site from storm events. The site would remain stable and cultural deposits would be preserved for the future. See figure 1 for project area and vicinity.

This environmental assessment (EA) analyzes the proposed action and alternatives and their impacts on the environment. The EA 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).

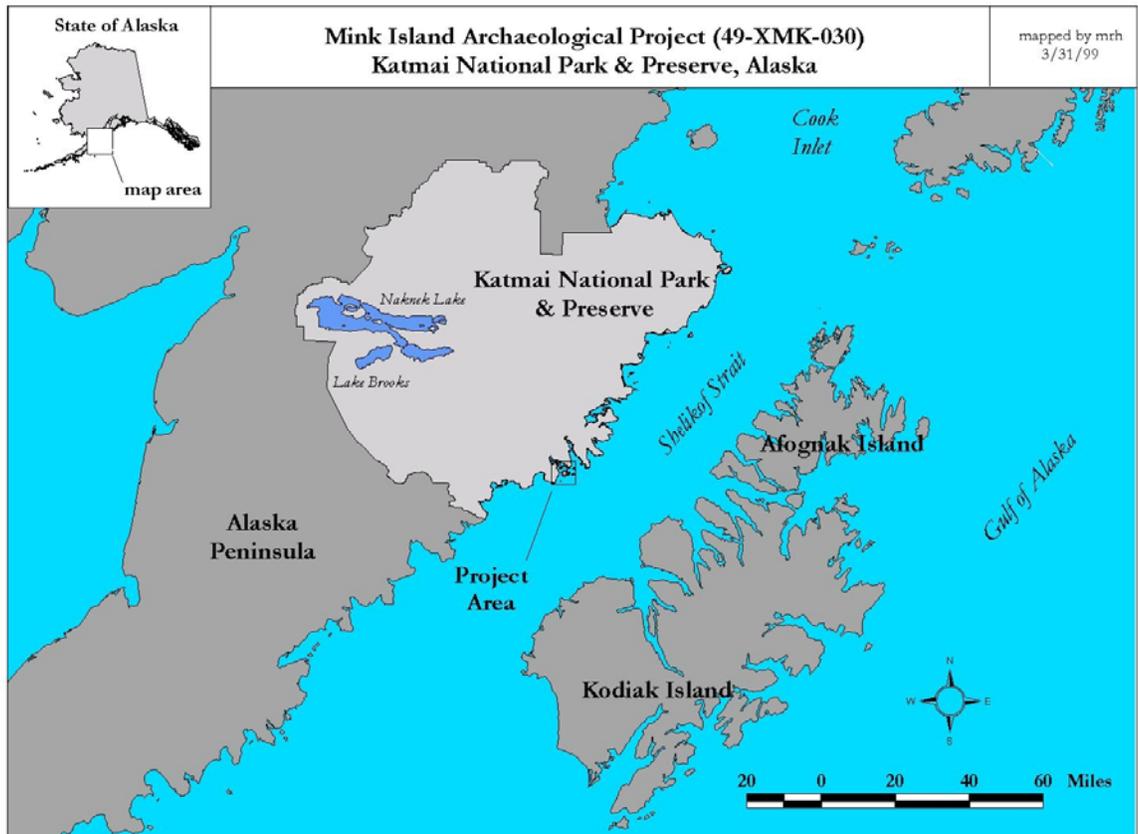
1.2 Background

1.2.1 Park Purpose and Significance

Section 202(2) of the 1980 Alaska National Interest Lands Conservation Act (ANILCA) expanded and re-designated Katmai National Monument as Katmai National Park and Preserve for the following purposes, among others identified in Section 101:

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;

Figure 1. Project Location.



to maintain unimpaired the water habitat for significant salmon populations; and to protect scenic, geological, cultural and recreational features.

ANILCA Section 701(4) established the Katmai Wilderness, which includes the project area.

Offshore islands up to 5 miles from mean high tide of the mainland portion of the national monument, including the project site, were added to the monument in 1942 by Presidential Proclamation No. 2564 "... for the proper care, management, and protection of the objects of scientific interest"

Consistent with the National Historic Preservation Act of 1964 and the Katmai General Management Plan of 1986, the Takli Island complex, including this site, was nominated by the NPS and designated as the Amalik Bay Archeological District.

1.2.2 Laws, Regulations, and Policies

1.2.2.1 Wilderness Act: Because the project is located in the designated Katmai Wilderness, provisions of the Wilderness Act apply and the NPS would follow recently adopted Alaska interagency guidelines for minimum tool/minimum requirements analyses.

1.2.2.2 Coastal Zone Management Act: Though federal lands such as Katmai National Park and Preserve are excluded from direct control of enforceable policies of established coastal districts authorized by the Coastal Zone Management Act, the NPS would demonstrate that its actions are consistent to the maximum extent practicable or that there would be no effects on coastal resources. The project area falls within the coastal zone defined for the Kodiak Island Borough. An appropriate analysis of potential project effects on the coastal zone is included.

1.2.2.3 National Historic Preservation Act: Pursuant to the Act of 1964, the NPS would confer with the State Historic Preservation Office before the project is undertaken.

1.2.2.4 The NPS Organic Act and the General Authorities Act: These Acts prohibit impairment of park resources and values. The 2001 NPS Management Policies 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 environmental assessment. 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.

1.2.2.5 National Park Service Omnibus Management Act of 1998: This Act addresses resources inventory and management in Title II. Section 201 defines the purposes of this title to enhance and encourage scientific study in National Park System (NPS) units. Section 202 authorizes and directs the Secretary of the Interior to assure management is enhanced of NPS units by a broad program of high quality science and information. Section 205 states the Secretary may solicit, receive, and consider requests from Federal and non-Federal public or private entities for the use of NPS units for scientific study. Such proposals must be: 1) consistent with applicable laws and the NPS Management Policies, and 2) the study would be conducted in a manner as to pose no threat to park resources or public enjoyment of those resources.

1.2.2.6 NPS 2001 Management Policies: Section 5.3 of these policies state, “The NPS will employ the most effective concepts, techniques, and equipment to protect cultural resources against theft, vandalism, deterioration, environmental impacts and other threats without compromising the integrity of the resources.” Section 5.3.5.1.2 addresses stabilization of archeological resources; “Archeological resources subject to erosion, slumping, subsidence, or other natural deterioration will be stabilized using the least intrusive and destructive methods.” Section 6.3.8 addresses cultural resources in wilderness; “Cultural resources ... within wilderness will be protected and maintained according to the pertinent laws and policies governing cultural resources, using management methods that are consistent with the preservation of wilderness character and values.”

1.2.3 Relationship of Proposal to Other Planning Projects

The proposed project is a follow-up measure to protect the archeological values of the Mink Island site after data recovery was conducted between 1997 and 2000. The NPS may conduct future data recovery at this site, but the agency believes it would be prudent to complete analysis and reporting of the extensive collections made from the data recovery and to await future advanced data recovery techniques and technologies before delving deeper into the site. Related NPS planned projects in the area include monitoring of archeology sites in the Amalik Bay Archeological District and NHL to prevent vandalism and record information exposed by ongoing erosion.

1.3 Issues

The NPS conducted internal scoping for the construction project on May 22 and 23, 2006, and a project agreement was drafted to obtain appropriate personnel to address the projected impact topics.

1.3.1 Issues Selected for Detailed Analysis

1.3.1.1 Archeological Resources: Failure to protect the site could result in the loss of irreplaceable data from the park’s oldest documented archeological site. Construction of a structure to protect the archeological resources at the site could result in beneficial effects to the archeological resource.

1.3.1.2 Coastal Resources: Installation of a protective structure at the archeology site could redirect sea wave energy or amplify the energy at the face or edges of the structure. The structure could fail if not properly anchored and constructed, and rock removed from elsewhere on the island could have other effects on this island.

1.3.1.3 Scenic/Visual Resources: Installation of a small rock seawall could detract from the natural visual quality of the site and attract attention to the archeology site.

1.3.1.4 Wilderness: Installation of the gabion wall could affect the wilderness character of the island.

1.3.1.5 Wildlife: Human activities to install the gabion wall could displace marine mammals and coastal birds during operations.

1.3.2 Issues Dismissed From Detailed Analysis

1.3.2.1 Low Income and Minority Populations: No low income or minority human populations use this remote site. Therefore the project would have no effects on these populations pursuant to Executive Order (EO) 12898, Environmental Justice.

1.3.2.2 Floodplains and Wetlands: This site is a near coastal upland site with no floodplains or wetlands associated with it; therefore the EA does not address EO 11988 Floodplain Management or EO 11990 Wetlands Protection.

1.3.2.3 Geological Resources: In-park uses of mineral materials (rock and sand) is not an issue because the volume of borrow material to be used is small relative to the vast amount available on site, the NPS uses borrow material for its own resources benefit, and the material matches the color and texture of the material in the general area above mean high tide, whereas material below mean high tide does not.

1.3.2.4 Subsistence: Because subsistence uses are not authorized in Katmai National Park by ANILCA Title 2, effects subsistence are not considered in this EA. An ANILCA 810 subsistence evaluation is included in Appendix A.

1.3.2.5 Threatened and Endangered Species

For the 1997 to 2000 archeological data recovery project at Mink Island the NPS conducted consultation under the Endangered Species Act Section 7 with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service and learned that there would be no adverse effects on threatened and endangered species at this project location.

1.3.2.6 Visitor Use/Experience

Because Mink Island is so remote, exposed, and small with essentially no visitors except illicit pot hunters, the NPS dismissed visitor use from further analyses.

1.4 Permits and Approvals Needed to Implement Project

All rock and sand material would be obtained from above the ordinary high tide line, as would the proposed gabion rock wall and sand bag splash guard. Because the entire

project occurs above ordinary mean high tide and outside any waters of the United States, including wetlands, no Alaska Department of Natural Resources Tideland Permit or U.S. Army Corp of Engineers individual permit would be required for the project. Because the project components and its direct effects occur on federal park lands, the NPS has issued a negative determination under the Alaska Coastal Management Plan and Kodiak Island Borough Coastal Management Plan.

2.0 ALTERNATIVES

This chapter describes the proposed action alternative, the no action alternative, and those alternatives and actions that will not be considered further (i.e., those not analyzed in Chapter 4, environmental consequences). The alternatives were developed by the project manager and project NEPA coordinator with help from NPS, Federal Highway Administration, University of Alaska engineers. Table 2.1 at the end of this chapter compares the alternatives in terms of actions taken and their environmental impacts.

2.1 Alternative A (No Action)

The no action alternative represents a continuation of the existing situation and provides a baseline for evaluating the changes and impacts of the proposed action alternative. The no action alternative would entail the continued annual monitoring of the Mink Island archeological site and the eventual data recovery of remaining archeological information after present collections are analyzed and funding of future archeological data recovery is obtained. As noted in the Purpose and Need chapter and further documented in chapter 3, the portion of the site that would have now been lost to erosion was excavated from 1997 to 2000. At the end of this project the lower exposed part of the data rich mound was backfilled with sand-filled burlap bags, underlain by reinforced Visqueen, then covered with geo-textile cloth, and overlain with some stockpiled sod and transplanted rye grass (*Elymus* sp.) to protect the site from wave run-up and erosion. The idea was to encourage vegetation to grow on the excavation area and stabilize it with organic materials that would eventually breakdown and not contribute to beach litter if washed away. The secondary objectives of this protective method were to protect the site with a minimally visually intrusive cover in a wilderness setting and to make the site less obvious and inviting to vandals. A sandbag revetment of sorts was placed along the base of the backfilled excavation area (see figures 2.1 and 2.2). The site was signed as a protected site pursuant to the National Historic Preservation Act and the Archeological Resources Protection Act.

A site condition assessment was conducted in August 2001 and found that the sandbag revetment placed at the front of the excavation area had been washed away. Large driftwood trees had been packed by waves against the base of the eroding site to the northeast of the excavation area. The base of the lower midden excavation area had been torn away (see Figure 2.3). The exposed Visqueen was cut and carried out (a practice at every site visit). The earlier data recovery efforts were timely because the area excavated would have been substantially washed away by the fall of 2001.

By August 2002, erosion of the filled and protected portion of the excavated lower midden had cut farther into the excavation cavity and more of the Visqueen underlining was exposed to the east of the site area. (Figure 2.4).



Figure 2.1. Final stage of excavation in late August 2000 with sandbag revetment partially in place. Work is still being completed in the excavation area (the dark area in the middle, right).



Figure 2.2. April 1999 photo showing the sandbag, geotextile and sod protection at the east side of the lower midden in good condition after the winter and prior to the final season of excavation.



Figure 2.3. August 2001 site condition assessment. The sandbag revetment formerly covering the Visqueen to the right and foreground up to the line of Visqueen in the mid-ground has been washed away, and sterile sediments at the base of the excavation cavity are exposed.



Figure 2.4. August 2002 photo showing continued erosion of the lower midden, exposing the Visqueen that had been under sandbags.

The annual site condition assessment in late April, 2003 found the lower midden further eroded (Figure 2.5) so in August of that same year, an erosion control expert from Denali

National Park and Preserve, Tim Taylor, was taken to the site to evaluate protective measures that might work in this situation (Figure 2.6). Based on his findings, a proposal was submitted to fund a phased plan for stabilization and protection of the site.



Figure 2.5. Late April 2003 showing stage of erosion.



Figure 2.6 August 2003 photo showing Tim Taylor in backfilled excavation cavity, the location of the proposed project. The erosion cut is now about 2 meters from the intact, unexcavated sediments of the site.

The NPS continued to monitor the site's condition annually and by August 2005, the erosional cut was within 1 meter of the intact site sediments in the east section of the excavated area (Figure 2.7). Fortunately, funding to begin site stabilization and protection efforts was received shortly after, in January 2006.



Figure 2.7. Site condition as of August 2004

2.2 Alternative B – Proposed Rock Gabion Wall to Protect Mink Island Site

2.2.1 Project Design

The proposed project is a two-phased design, with only Phase 1 funded at this time. The Phase 1 design is based on recommendations from Tim Taylor, East District Maintenance Chief for DENA, and Orson Smith, UAA Coastal Engineer. Phase 1 is a simple revetment system combining, wire gabion baskets, filled with local beach cobbles from the upper intertidal, with rock reinforcement at the toe, a sandbag splash apron on the failing slope behind the gabions, all underlain by a filter fabric (Figure 2.8).

A stepped gabion basket wall, 18 feet (ft) long, 6 ft deep and 6 ft high would be constructed in the archeological excavation cavity, in front of the failing slope of the site. The wall would be constructed with 9 baskets 6 ft x 3 ft x 3 ft in size and tied with wire securely together to form one solid unit. If the unit is well tied together, there would no need to bolt the basal gabions to the bedrock. Should the need arise to bolt the gabions to the bedrock, hand drills would be used and rock putty would be used to set the bolts. A sandbag spray apron would be placed on the failing slope behind the gabion wall. A filter cloth or geotextile to allow for drainage while protecting fine-grained sediments below the revetment from erosion would underlie the gabion wall and spray apron. Large local cobbles of about 6 inches diameter would be placed on the bedrock at the toe of the gabion wall.

If the Phase 1 work is done, it will be monitored closely for effectiveness as well as for unintended effects to the site due to placement of the gabion/sandbag revetment/filter fabric system.



Figure 2.8. Schematic representation of Phase 1 gabion wall, rock reinforcement at toe and sandbag splash apron on failing slope.

Based on the evaluation of the Phase 1 revetment and on funding, Phase 2, a similar, but longer revetment system would be placed in the area shown in Figure 2.9. This phase has been recommended by Sven Leon, Federal Highway Hydraulics Engineer and endorsed by Tim Taylor and Orson Smith.

2.2.2 Materials

Galvanized steel gabion baskets measuring 6 ft x3ft x 3ft would be provided to the project by Denali National Park. The gabion baskets would be filled with local beach cobbles, which occur in a wide variety of sizes and are plentiful on the immediate beach above mean high tide (See Figure 2.10). If 9 gabions are used, that would require 18 cubic yards of rock fill. The toe reinforcement would require an additional 6-7 cubic yards of rock.

The sandbags would be of a strong fiber weave or of a neutral colored poly and filled with local sand, available above the cobble beach. We estimate 4 -6 cubic yards of sand would be used to fill the sandbags. The filter fabric or geotextile of a type recommended by the hydraulic engineers would underlie the gabion wall and sandbag splash apron.

Wooden planks would be placed over the beach cobbles for transporting the rock via wheel barrows to the project site. In the past, sizeable milled planks have been found in

the driftwood debris on the island and may be used to augment the planks needed to be purchased and transported to the site.

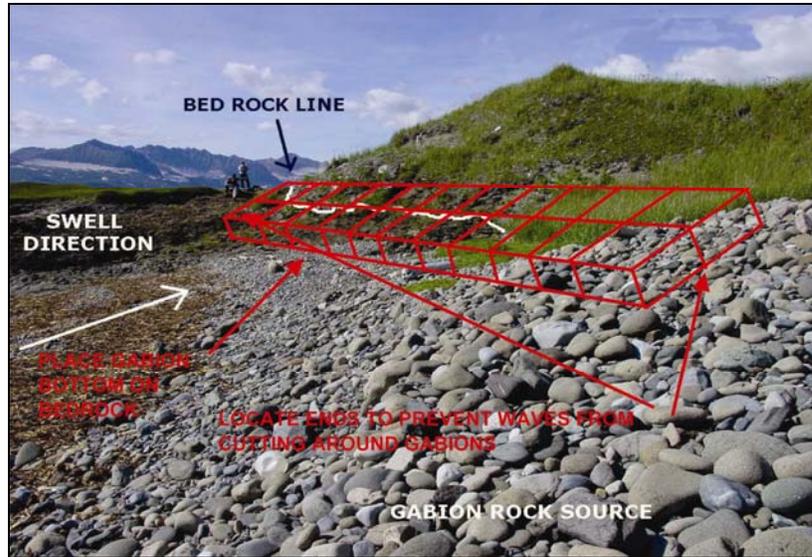


Figure 2.9. Phase 2 concept drawn by Sven Leon. Not to scale.



Figure 2.10. Cobble source area above mean high tide (brown sea weed zone). Area to be protected is in the left foreground

2.2.3 Logistics

The gabion baskets would be delivered by truck to Anchorage. Materials, supplies, and crew would be shipped to Kodiak and transported to the site from Kodiak via floatplane (requiring 3-4 Beaver loads). If there is an opportunity to bring the flat gabion baskets to the project site via boat from Homer, and if this has an economic advantage, this option would be timed to coincide with the arrival of the crew to help with offloading.

A crew of 5 to 6 people would camp on the island, in an off-site area for the duration of the project (10-12 days). The camp would follow established park protocols and regulations for camping in wilderness, bear safety, and wildlife encounters. If ranger support is available in Amalik Bay during the project, fresh water would be collected from a near mainland stream. Otherwise, the water would be brought in with the rest of the supplies.

2.2.4 Mitigation Measures

The project field personnel would consist of volunteer archeologists who participated in the earlier data recovery efforts at the site and who are aware of park protocol with regard to minimum impact requirements and best practices in wilderness, likely wildlife encounters (brown bear), and site sensitivities. The small tent camp, of 10 days duration would be established off the archeological site.

Rock needed to fill the gabions is available on the beach above mean high tide, located to the west of the project area. There is no vegetation on the rocks (Figure 2.9). The rocks would be taken from across a wide area so that beach morphology and dynamics are not altered. The rock would be collected by hand and transported using wheel barrows. Planks would be laid down for wheel barrow transport of rock to minimize impact to intertidal and supra-tidal vegetation that provide protective biological cover. The source of sand for the sand bag splash apron would be the upper beach above the cobbles. If beach grass is disturbed in the collection of the sand, this “sod” would be stockpiled and replaced over the sand borrow area.

Katmai Bear safety protocol would be followed. From our past experience, having spent four summers on the island, bear encounters and nesting birds this late in the year and any marine mammal hauling out are not likely. Project work would be conducted in mid August, which should be late enough not to cause disruption to nesting coastal birds.

2.3 Environmentally Preferable Alternative

The environmentally preferable alternative causes the least damage to the biological and physical environment; also meaning the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. The NPS believes the proposed action alternative (B) best addresses NEPA policies in Section 101 (b) and CEQ regulations at 40 CFR 1505.2 (Q6a) because it would best preserve an important archeological resource

and fulfill NPS trustee responsibilities to protect this resource for future generations. Adverse effects to other natural resources would be negligible to minor compared to the potential major loss of significant archeological material.

2.4 Description of Alternatives and Actions Considered But Eliminated from Detailed Study

The NPS considered the following alternatives but dismissed them with concise rationale.

2.4.1 Full Data Recovery Project

For the purpose of this decision, the NPS has dismissed the alternative to complete a full data recovery project at the site because the agency lacks funding and lacks the rationale to complete such a project. Preserving the remaining site intact is judged to be the prudent and cost effective approach until 1) less invasive and more effective data recovery techniques are developed and 2) the data recovered from the site to date can be fully analyzed. Completing the archeological data recovery at the site is estimated to cost several hundred thousands of dollars at this remote site.

2.4.2 Use of Heavy Equipment and Solid Seawalls to Protect the Site

Other protective measures using heavy mechanical equipment to install a large rock revetment of cement sea walls have also been rejected because such alternatives would adversely impact the wilderness character of the area and would not meet the interagency Minimum Tool/Minimum Requirements review criteria to protect the archeological resources and its wilderness character and values. Furthermore, such an installation would exceed the agency funds now available to protect the site, and it would attract mariners and others visitors to the site and increase the potential for vandalism.

Table 2.1 Summary of Alternative Impacts

Impact Topic/Alternative	Alternative A – No Action	Alternative B – Install Gabion Wall Sea Break
Archeological Resources	long term major adverse impacts on the significant site	long term beneficial effects on significant archeological site
Coastal Resources	minor impacts to coastal resources, except taking no action to protect the archeological site would result in long term adverse effects to a significant coastal archeological site	minor impacts to coastal physical and biological resources, but potential long term beneficial effects on a significant coastal archeological site
Visual Resources	minor short term effects on the scenic and visual quality	minor long term effect on the scenic and visual resources
Wilderness	no new impacts to wilderness character	minor long term effects on Mink Island
Wildlife	no impacts to wildlife	minor adverse impacts on bald eagles and brown bear

3.0 AFFECTED ENVIRONMENT

3.1 Archeological Resources

There are many archeological sites within the Amalik Bay District NHL, including several sites on Mink Island, which were found during NPS investigations conducted during the data recovery at site XMK-030. No sites are located where the project would take place (Figure 3.1) The Mink Island site is the oldest-known and best-preserved archeological site on the Katmai coast, which area has been affected by glaciers and sea level changes due to tectonic movements and volcanism. A sequence of occupation floors separated by volcanic tephra span 7,600 to 500 calibrated radiocarbon years. Several 1,000-year-old burials have eroded from the site. In a region where faunal preservation is generally poor, this site contains a large, well-preserved invertebrate and vertebrate faunal assemblage, an unparalleled proxy record for climate change covering most of the Holocene. Vandals have done extensive damage to the younger component of the site (the component containing the burials), but this has slowed after the NPS spent 4 years conducting data recovery excavations, from 1997-2000. This site is only 15 feet above mean high tide and is directly hit by storm events.

The Mink Island site is significant as the oldest dated site along the Katmai coast. The site, occupied intermittently for the past 7,600 years, has produced information that will help redefine the culture history in the Gulf of Alaska region. Abundant and well-preserved invertebrate and vertebrate remains inform both climate change and prehistoric lifeways. Exquisite preservation of seven occupation floors dating between 7,600 and 4,000 years and careful micro-stratigraphic excavation has provided a snapshot of prehistoric lifeways at an unprecedented level of detail (See Figure 3.2). A number of living surfaces and storage facilities less than 1,000 years in age were also documented. The material evidence recovered is providing important data related to trade networks, ideology, subsistence strategies, and social complexity. The Mink Island site is the cornerstone of the determination that Amalik Bay is of National Historic Landmark status (listed on the National Register as a NHL in 2005). Subsequent to the excavation of a small portion of Mink Island, the NPS made it a priority to nominate the area as a NHL.

3.2 Coastal Resources

The Amalik Bay is subject to a large tidal range of about 19 feet, which is not as extreme as in Turnagain Arm or Seldovia, Alaska, in the Cook Inlet region to the north. The maximum high tide is about +15.6 feet above the zero foot datum, and the maximum low tide drops to about -3.6 feet. The minimum tidal height is about +8.3 feet, and the minimum low tide is about +6.5 feet (NOAA 2006 Tide Charts for Seldovia, corrected for Katmai bays). The mean high tide, and therefore the park boundary with the State of Alaska Department of Natural Resources, is about 12 feet. At the highest tides the sea may reach the lower reaches of the beach rye grass. At low tide, Mink Island is connected to another unnamed island to the west via a rocky wave-cut platform with tide pools. Project archeologists estimated the mean high tide from four summers of work at the site to be at the upper edges of the popping wrack seaweed (*Fucus* sp.)



Figure 3.1. View looking north of the project area, defined by the white Visqueen draped over the edge of the failing slope in the mid-ground. Project work would be done on the upper beach and on the bedrock below the site, and archeological deposits would not be impacted.



Figure 3.2. This photo shows the unexcavated, intact site stratigraphy dating from 7,600 to 4,000 years ago and comprised of over 20 layered living surfaces, shelters and dwellings. The erosional cut is now about one meter from this deposit.

The Mink Island site is located on the western side of a tombolo formation between the main portion of the island and a rocky headland (see Figure 3.3). The tombolo (bar connecting two parts of the island) is low in elevation and oriented essentially east-west. Driftwood piles up on the north-facing and south-facing shores in the beach rye grasses along the spine of the bar. Storms, particularly violent winter storms, produce large waves in the Shelikof Straits, which may exceed 20-feet. Between 1950 and 2006 the 14 largest winter storms in the Kodiak/Alaska Peninsula area with wind speeds over 100 knots occurred since 2000 (<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>). Large waves from these storms deposit the large logs along the tombolo. The storms are generally funneled from south to north or north to south in the Shelikof Straits. Winds may exceed 70 mph in the Shelikof Straits and sometimes local williwaws off the mountain passes along the Alaska Peninsula exceed 100 mph.

A rocky rib extends immediately south of the site into the bay. The lower intertidal zone of the crescent bay to the southeast of the site is covered with large boulders. The middle to upper intertidal zone has cobbles and boulders covered with popping rack seaweed, and other biota. The upper intertidal zone has a band of finer material and then cobbles and small boulders. The supra-tidal zone has driftwood logs, beach rye grasses, and some finer gravels and sands. The eastern side of the crescent bay exhibits erosional features along the face of the grassy slopes. The upper and western parts of the bay appear to be accretion zones, at least during some periods of the year. See appendix D for map of beach sediment classes and locations.

3.3 Scenic/Visual Resources

The project is located in Amalik Bay and is within designated park wilderness and the Amalik Bay Archeological District, National Historic Landmark. Visitors to the Bay include commercial fishermen and recreational users, brought to the Bay in cruise ships and by small commercial operators for bear viewing. A few independent visitors come to the Bay to kayak and camp. Mink Island is located at the outer bay, along Shelikof Strait and is not a visitor destination due to difficult access and rough water, limited wildlife viewing opportunities, etc. On a sunny day, one can see the outline of the Kodiak Island group to the east, and the spectacular glacier-draped peaks of Mt. Denison, Snowy Mountain, and Mt. Katmai to the northwest (see Figure 3.1). The island is treeless and supports a few willow and birch shrubs. In the spring and into the summer, the south end of the island is blanketed in a wide variety of wildflowers.

Two tents are in the lower right of Figure 3.3, where the temporary camp for the project would be. The project location is on the small bedrock projection in the mid-ground, at the far end of the prominent beach.



Figure 3.3. View from the south end of the island looking northwest across Mink Island at the headland that divides Kinak Bay to the right in the background and Amalik Bay to the left. The tip of Snowy Mountain is in the center of the far-background.

3.4 Wilderness Character/Values

The Wilderness Act of 1964 (P.L. 88-577) describes wilderness as an area “untrammelled by man...retaining its primeval character and influence without permanent improvements ...[with] outstanding opportunities for solitude or a primitive and unconfined type of recreation.” Most of Katmai National Park was designated as wilderness with the passage of ANILCA in 1980. Wilderness is managed in accordance with the Wilderness Act except as otherwise expressly provided for in ANILCA. Mink Island was included in the wilderness designation for lands above mean high tide. Wilderness character, including the elements of untrammelled, undeveloped, natural, and opportunities for solitude and described in the Wilderness Act, are currently intact. Mink Island is completely undeveloped and contains no visible signs of modern humans except for beach debris/trash that washes up on the shorelines and the existing stabilization materials at the archeological site.

3.5 Wildlife/Habitat

3.5.1 Birds

Off the Katmai coast, the quantity and distribution of coastal and sea birds varies seasonally. Surf scoters (*Melanitta perspicillata*), harlequin ducks (*Histrionicus histrionicus*), pelagic cormorants (*Phalacrocorax pelagicus*), and the common mallard (*Anas platyrhynchos*) are fairly common. Other species present include the Pacific loon (*Gavia pacifica*), horned grebe (*Podiceps auritus*), and white-winged scoter (*Melanitta fusca*). Additional coastal species which can be cited are the black oystercatcher (*Haematopus bachmani*), black turnstone (*Arenaria melanocephala*), greater yellowlegs (*Tringa melanoleuca*), and western sandpiper (*Calidris mauri*).

No seabird colonies have been recorded on Mink Island (USFWS North Pacific Seabird Colony Database 2006) or have been seen by researchers at the project site (J. Schaaf, pers. comm.; H.S. Kim, pers. comm.).

A bald eagle (*Haliaeetus leucocephalus*) nest has been recorded on the south side of Mink Island (USFWS Bald Eagle Nest Database 1990, GIS layer). The nest site is located approximately 400 m away from the project area.

3.5.2 Fish

No anadromous fish runs have been recorded on Mink Island. Bivalves and various coastal ocean fish occur around the island below mean high tide.

3.5.3 Mammals

Mammals expected to be on Mink Island include the mouse (family Muridae), shrew (*Sorex* spp.), ground squirrel (*Spermophilus undulatus*), red fox (*Vulpes fulva*), mink (*Mustela* sp.), weasel (*Mustela* spp.), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), and river otter (*Lutra canadensis*).

Brown bears (*Ursus arctos*) have been seen on Mink Island (J. Schaaf, pers. comm.). Females with older cubs have been seen near the project site.

3.5.4 Threatened and Endangered Wildlife

The federally-listed threatened Steller's eiders (*Polysticta stelleri*), are known to winter on the Alaska Peninsula eastern coast, although specific locations in Katmai National Park have not been documented (USFWS 2004).

The federally-listed threatened sea otter (*Enhydra lutris*) population is present on the Katmai coast. Sea otters are found in the vicinity of Mink Island but are rarely seen. J. Schaaf (pers. comm.) reported seeing a single sighting of several sea otters during 1997-2000 and 2003.

The federally-listed endangered Steller's sea lion (*Eumetopias jubatus*) has critical habitat off the Katmai coast and includes the project area. The nearest sea lion haul out is located west of the project area on Takli Island (Fritz and Stinchcomb 2005). Mink Island has not been identified as a sea lion haulout and no sea lions have been seen on the island (J. Schaaf, pers. comm.).

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Chapter 1, Purpose and Need for Action.

4.1 Impacts of Alternative A – No Action

4.1.1 Impacts on Archeological Resources

The no-action alternative would have an adverse impact on archeological site XMK-030. Without revetment, the site's failing slope would continue to erode and significant scientific information would be lost. If the project is not done, the NPS would continue to place sandbags at the base of the failing slope as cyclic maintenance, to slow the wholesale loss of the intact archeological deposits at the lower midden at the base of the failing slope. In the short term, no action would result in continuing and adverse impacts to the archeological site. In the long term, the adverse impacts would increase to potentially major proportions as the narrow buffer remaining between the site and the waves is lost.

Conclusions: The no-action alternative would result in short term minor impacts to the significant archeology site and long term major impacts to the site. Over the long term, the no-action alternative could result in the impairment to the significant archeology site XMK-030.

4.1.2 Impacts on Coastal Resources

The no-action alternative would have a minor impact on coastal resources. Natural forces of wind, sea waves, and rain would continue to affect this location. Sea level changes from climate change, tsunamis from tectonic subsidence in the region, or volcanic eruptions would accelerate coastal changes in this area. Burlap sacks filled with sand and placed at the face of the back-filled archeology site in summer 2000 have since failed and released their contents into the sea. The sacks have decomposed by now, and the local sand material has virtually no impact on the island. Erosion of the unprotected surface fine materials at the archeology site are likely to continue or accelerate over time. Major adverse impacts to the significant coastal archeology site could occur.

In terms of coastal zone management, taking no prudent and feasible action to protect the archeology site may be construed as inconsistent with the approved Kodiak Island Borough Coastal Management Program (CMP), which states in part, "prehistoric archeological sites ... shall be identified and preserved to the extent feasible and prudent."

Conclusions:

The no-action alternative would result in minor impacts to coastal resources, except taking no action to protect the archeological site could result in potential major adverse

effects to the significant coastal archeology site. The no-action alternative would not result in the impairment of park coastal resources and processes, however, major impacts could occur to the significant coastal archeology site.

4.1.3 Impacts on Scenic/Visual Resources

The no-action alternative would result in no change to the scenic and visual resources of the proposed project area. Continued erosion of the site would expose cultural artifacts on the eroding slope, which would be an attractant to those engaging in illicit artifact collecting. Degrading burlap sand bags would be exposed to the elements until they are washed away or decomposed, resulting in minor short term impacts to the foreground visual quality at Mink Island.

Conclusions:

The no-action alternative would result in minor short term effects on the scenic and visual quality of the area. The no-action alternative would result in no impairment to park scenic and visual resources.

4.1.4 Impacts on Wilderness

No new impacts to wilderness character and values would occur as no new structure would be installed. The untrammelled nature of wilderness on Mink Island would not be affected since coastal processes would continue unaltered and the naturalness of the island would be restored in the near future as storms remove the sand bags and Visqueen currently in place at the archeological site.

Cumulative Impacts: There are two existing structures and one proposed structure along the coastal areas of the Katmai wilderness. The Amalik Bay cabin is about 6 miles northwest of the archeology site, the U.S. Coast Guard has a navigation aid station site above Cape Gull about 15 miles north of the project site, and the Swikshak shack (a former ADFG structure) is about 50 miles north of the site. The NPS is also considering a ranger station in the Hallo Bay area about 30 miles north of the site. These structures have localized, long term effects on the park's coastal wilderness values, and the no-action alternative would not change these effects.

Conclusion: There would be no new impacts to wilderness character under this alternative and no impairment of park wilderness resources or values.

4.1.5 Impacts on Wildlife

Under the no-action alternative, annual monitoring of the Mink Island monitoring site would continue, but no new coastal physical reinforcement activities would occur at Mink Island. In this alternative, no wildlife would be affected by the project activities.

Conclusions:

The no-action alternative would result in no impacts to wildlife, and there would be no impairment of wildlife resources under this alternative.

4.2 Effects of Alternative B – NPS Proposed Protective Gabion Wall

4.2.1 Impacts on Archeological Resources

The proposed project phase 1 would have a beneficial effect on archeological site XMK-030 by impeding erosion and slowing loss of the site. This would preserve the site for recovery of scientific information in the future when investigative methods are superior to those available now. Sites being lost through erosion elsewhere within the Amalik Bay Archeological District NHL and along the Katmai coast are situated such that revetment is not an option. Archeological values at the other sites would simply be lost with the passage of time. With rising sea levels and increased storminess, we are witnessing the extinction of coastal archeological sites.

The project would have a minor effect on the slumped sediments bearing cultural remains from the eroding site adjacent to the immediate project area. Any artifacts encountered during the emplacement of the revetment would be collected according to standard archeological procedures. These cultural materials would be in secondary, erosional contexts and the project would not disturb *in situ* cultural deposits. Finally, the project would stabilize the failing site slope for several years to decades, and it would deter illicit artifact collecting.

Conclusions:

The proposed action alternative would have a moderate beneficial effect on archeological site XMK-030. The proposed action alternative would not result in the impairment to park archeological resources.

4.2.2 Impacts on Coastal Resources

The proposed project phase 1 would have negligible to minor impacts on physical and biological coastal resources and a potential major beneficial effect on coastal archeological resources in the project area. The first phase of the project would move about 25 cubic yards of large cobbles and 6 cubic yards of sand from the supra-tidal zone to the face of the archeology site. Wave action during extreme storm events would deflect off the protective gabion wall and sand bag splash guard above. Water filtering through the gabion baskets would wash out across the top of a geo-textile barrier, thereby reducing chance of erosion at the face of the site. Because the area beneath the proposed gabion wall is mostly wave cut bedrock, impacts to the strata and biota would be minimal here. During large storms, reflected waves would be canceled by larger incoming waves before damage could be done in adjacent areas. Undercutting and slumping of the exposed archeology site would be eliminated for several years or decades. Because rock for the gabion baskets and sand for the bags would be obtained across a broad reach of

the supra-tidal area from thousands of cubic yards of available material, the impacts to natural functions from these materials along the coast of this island would be negligible to minor.

There is a minor concern that swashing of waves around the arc of the bay could get behind the gabion wall and accelerate erosion of at the base of the archeological site. This is the reason for the sand bag splash guard, geotextile cloth, and phase 2 of the project (not yet funded). After monitoring, the NPS may decide phase 2 would be needed to further protect the unique archeology site. Phase 2 would erect extended gabion baskets to the east of the site to prevent wave wash around behind phase 1.

Phase 2 of the project, if needed, would borrow an additional 35 cubic yards of rock cobbles to fill gabion baskets. No sand would be borrowed for this phase of the project. This phase could reflect wave energy during major storms from the western side of the tombolo (low sandy ridge connecting two parts of the island.) This could either result in erosion of rocky cobbles from the toe of the gabion wall or deposition of fine materials and cobbles at its toe. Ideally the toe of the phase 2 gabion wall would be toed into the beach slope cobbles to minimize erosion or deposition at the lower end of the gabion wall. Should driftwood logs roll up behind the gabion wall, they would serve to further reduce wave action on the upper portions of the beach during extreme events.

Should any portion of the gabion wall fail, the NPS would seek to replace the failed baskets, possibly reposition them for better results, and refill the baskets with native material readily available in the supra-tidal zone of the island.

In terms of coastal zone management, the project would be located above mean high tide and should not require a State Tidelands permit or require an individual permit from the U.S. Army Corps of Engineers. The project would not require a USACE permit because it occurs outside the jurisdiction of the USACE; the project would not occur in the waters of the USA (Medrick Northrop, pers. comm). See also Appendix B for a Coastal Negative Determination.

Conclusions:

The proposed protective gabion wall and sandbag system on Mink Island would have negligible to minor impacts to coastal physical and biological resources. The project would have a major beneficial effect on the coastal archeological resources at the site. The proposed project would not result in the impairment to park coastal resources.

4.2.3 Impacts on Scenic/Visual Resources

The proposed project phase 1 would have negligible to minor impacts on the scenic and visual resources of the island for several years and perhaps decades. The gabion baskets would be of a dark wire mesh and filled with local beach cobbles. The rock for the armoring at the toe of the gabion wall would be of local origin, and the sandbags for the splash apron would be brown or black, so the revetment would blend in with the surroundings. The revetment would not be visible from a boat approaching from the

north, west or east sides of the island. The revetment would be visible from the water on the south/southwest side once a boat got close to the island. The gabion wall would be about 18ft by 6 ft, a very small area relative to the entire island, so from an aerial perspective, the visual impacts would be minimal. The structure could be seen from an aircraft flying low directly across the island, otherwise, it would not be detected from the air.

The scenic and visual impacts from removal and transport of the source material for the gabion and sandbag fill would be negligible and would leave no visible trace. The structure would be in place for many years and checked annually or biannually to repair gabion baskets as needed.

Conclusions:

This alternative would have a minor long term effect on the scenic and visual resources of the area. The proposed action alternative would not result in the impairment to park scenic and visual resources.

4.2.4 Impacts on Wilderness

The placement of a man-made structure intended for long term archeological site protection would have minor effects on aspects of wilderness character. The localized, contained nature of the structure would affect less than one acre of the island, and a very small portion of the 3,473,000 acre Katmai National Park wilderness. The untrammelled nature of wilderness on the island would be impacted because natural erosion from coastal processes would be altered to protect the archeological site for an extended period of time. There would be minor effects on the undeveloped condition and naturalness of the island, although using natural beach rock materials and limited man-made metal mesh would make the structure less obtrusive. Opportunities for solitude would be affected for any possible visitors to the island if they came upon the structure, but this island is not a visitor destination due to limited access, weather conditions, and limited recreational opportunities. Impacts to wilderness character would have a long duration due to the uncertainty of future options for research. See appendix C for a Wilderness Minimum Requirements Decision Document.

Cumulative Impacts: There are three existing structures and one proposed structure along the coastal areas of the Katmai wilderness. The Amalik Bay cabin is about 6 miles northwest of the archeology site, the U.S. Coast Guard has a navigation aid station site above Cape Gull about 15 miles north of the project site, and the Swikshak shack (a former ADFG structure) is about 50 miles north of the site. The NPS is also considering a ranger station in the Hallo Bay area about 30 miles north of the site. These structures have localized, long term effects on the park's coastal wilderness values, and the proposed action alternative would add a minor additional effect.

Conclusion: The impacts to wilderness character and values (untrammelled, undeveloped, natural and opportunities for solitude) would be minor but long term on Mink Island. There would not be an impairment of park wilderness resources as a result of this action.

4.2.5 Impacts on Wildlife

A bald eagle nest is located 400 m away from the project site and would be unlikely to be affected by project activities. Both project activities and final wall construction would not be expected to affect the bald eagles. If an undocumented bald eagle nest is found at the project site, however, project activities may need to be postponed until after the young have fledged from the nest. Close proximity to the project site for an undocumented bald eagle nest could also postpone the project if project activities would appear to be disturbing nesting eagles.

Brown bears are known to occasionally be around the project site. If they were seen during project implementation, project work would cease until they have left the area. Project personnel would follow the Katmai Bear Management Plan (2006). The final wall construction would not be expected to adversely affect bears, although they may initially investigate the novel structure in their environment.

Threatened and Endangered Species

The federally-listed threatened Steller's eider primarily uses the Alaska Peninsula as a wintering area. Because this project would occur in August, the project is unlikely to affect the eiders. Thus, this alternative is not likely to adversely affect Steller's Eiders. U.S. Fish and Wildlife Service has concurred with this determination (see Appendix D).

The federally-listed threatened sea otter is rarely seen in the proximity of Mink Island (one sighting of several animals over five archeological field seasons—1997-2000, 2003). Given that all of the project work will be done above mean high tide and outside of the otter's primary foraging habitats, this alternative is not likely to adversely affect the threatened sea otters. U.S. Fish and Wildlife Service has concurred with this determination (see Appendix D).

The federally-listed endangered Steller sea lion has critical habitat off the Katmai coast and the nearest known haul out area is Takli Island, located west of Mink Island. Mink Island is not known as a sea lion haul out and no sea lions have been seen on the island (J. Schaaf, pers. comm.) Furthermore, all of the project work is located above mean high tide. From these three factors, this alternative would not affect the Steller sea lion. National Marine Fisheries Service/NOAA has concurred with this determination for this alternative (see Appendix D).

Conclusions:

The proposed project would have no adverse impacts on threatened and endangered wildlife and actions would be taken to mitigate any adverse impacts on bald eagles and brown bears if they were to be on the island during project construction. This alternative would not impair wildlife resources important to the values for Katmai National Park and Preserve.

5.0 CONSULTATION AND COORDINATION

The NPS has consulted with the Greg Risdahl of the U.S. Fish and Wildlife Service and Dana Seagars of the National Marine Fisheries Service for informal consultation on threatened and endangered species in the project area. The project archeologist and her staff are consulting with the Alaska State Historic Preservation Office. For coastal resources, project personnel consulted with Jim Renkert of the Alaska Coastal Management Program and Medrick Northrop of the U.S. Army Corps of Engineers Regulatory Branch. None of these consultations resulted in the perceived adverse impacts to any resources requiring further consultation or a permit. The NPS also consulted with Orson Smith, University of Alaska Coastal Engineer on June 6, 2006. Professor Smith thought the gabion wall idea with added sand bag and geotextile splash and wash protection was a reasonable solution for the problem.

The NPS is releasing the EA for 30-day public review between June 26 and July 26, 2006. Press releases were sent out at the time the EA was released, and the EA was mailed to a standard stakeholder list for such projects in Katmai National park and Preserve.

This EA was prepared by:

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APPENDICES

- A. ANILCA 810 Evaluation**
- B. Coastal Negative Determination**
- C. Wilderness Minimum Requirements Decision Document**
- D. Threatened and Endangered Species Consultations**

APPENDIX A

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

I. INTRODUCTION

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Lands Conservation Act (ANILCA). It evaluates the potential restrictions to subsistence activities which could result from the installation of a gabion rock revetment to protect the Mink Island archeology site XMK-030 in Katmai National Park.

II. EVALUATION PROCESS

Section 810(a) of ANILCA 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 would involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps would be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA Section 203 states in part:

"...Hunting shall be permitted in areas designated as national preserves under the provisions of this Act. Subsistence uses by local residents shall be allowed in national preserves and, where specifically permitted by this Act, in national monuments and parks. ..."

ANILCA Section 1313 states in part:

“A National Preserve in Alaska shall be administered and managed as a unit of the National Park System in the same manner as a national park except as otherwise provided in this Act and except that the taking of fish and wildlife for sport purposes and subsistence uses, and trapping shall be allowed in a national preserve under applicable State and Federal law and regulation.”

When Congress passed ANILCA in 1980, it expanded the national park system in Alaska by creating new parks, monuments, and preserves and making additions to existing units. In establishing these new park areas, ANILCA Title II states the purposes for which Congress created each unit and the outlines the human uses and activities that may be permitted.

Katmai National Monument was expanded by the addition of an area containing approximately one million and thirty-seven thousand acres of public land. Approximately three hundred and eight thousand acres of additional public land was established as Katmai National Preserve. The monument was re-designated as "Katmai National Park". The park and preserve were created by ANILCA, section 202(2), for the following purposes:

“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.”

ANILCA and National Park Service regulations authorize subsistence uses within Katmai National Preserve and prohibit subsistence uses on federal lands within Katmai National Park.

ANILCA Section 810 (a) further requires that the potential for significant restriction of subsistence uses by a proposed action be evaluated on:

“...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.”

III. PROPOSED ACTION ON FEDERAL PUBLIC LANDS

The NPS proposes install a gabion rock revetment with a sand bag splash guard to protect the significant Mink Island Archeology site XMK-030 from ongoing erosion. The site was excavated between 1997 and 2000 and the excavated face was backfilled with sand bags and sod. This protective cover, however, has since been washed away by winter storms, and the 7,000 year old site needs a more substantial protective structure. Comprehensive descriptions and locations of the proposed revetment can be found in chapter 2 of the environmental assessment.

IV. AFFECTED ENVIRONMENT

Subsistence uses, as defined by ANILCA, means "The customary and traditional use 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 collecting berries, edible plants, and wood or other materials.

Regional subsistence activities include seasonal gathering of wild edible plants and berries, hunting, trapping and fishing. Salmon, caribou, moose, brown bear, beaver, snowshoe hare, fox, lynx, mink, wolf, wolverine, sea and land otters, waterfowl, and ptarmigan constitute the major subsistence resources used by local rural residents.

For comprehensive descriptions of the “Affected Environment” pertinent to subsistence uses see the appropriate “Final General Management and Land Protection Plan”, Final Environmental Impact Statement Wilderness Recommendation and “Subsistence Management Plan for Katmai National Park and Preserve.

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

V. SUBSISTENCE USES AND NEEDS EVALUATION

Potential Impacts to Subsistence Users

To determine the potential impacts on existing subsistence activities for the proposed action, three evaluation criteria were analyzed relative to existing subsistence resources.

- the potential to reduce important subsistence fish and wildlife populations by (a) reductions in number, (b) redistribution of subsistence resources, or (c) habitat losses;
- what affect the action might have on subsistence fisherman or hunter access;
- The potential for the action to increase fisherman or hunter competition for subsistence resources.

1. The potential to reduce populations:

(a) Reduction in Numbers:

The proposed action is not expected to significantly reduce wildlife species in the study area. The slight disturbances to wildlife would be highly localized and not affect the species populations as a whole. Any population redistribution would be so small that no change would occur to the ongoing regional subsistence pattern. Natural cycles would continue.

(b) Redistribution of Resources:

The proposed action is not expected to significantly redistribute or displace or stress any subsistence wildlife resources.

(c) Habitat Loss:

The proposed action is not expected to cause the loss of beneficial or critical habitat for subsistence species such as salmon, caribou, moose, furbearers, and waterfowl. The proposed

action would not manipulate subsistence habitats or result in development of a scale that would have any measurable impacts on subsistence resources.

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:

The proposed action is not expected to significantly change current subsistence use patterns. Access for subsistence uses within NPS areas is granted pursuant to ANILCA, sections 811(a) (b) and 1110(a). ANILCA allows access within Alaska conservation system units by certain specified means, including motorboats, for traditional activities.

3. Increase in Competition:

The proposed action is not anticipated to result in increased competition for subsistence resources on Federal public lands in the study area. Provisions of ANILCA, the Federal Subsistence Board, and NPS regulations provide the tools for adequate protection of fish and wildlife populations while ensuring a subsistence priority for local rural residents.

VII. AVAILABILITY OF OTHER LANDS

No other lands outside the NPS have been considered for this project. The proposed action is consistent with NPS mandates.

VIII. OTHER ALTERNATIVES

A “no action alternative” would leave the Mink Island Archeology site unprotected from winter storms and vandalism. This alternative was rejected in favor of the proposed action alternative because it would not improve viability and maintenance. No other alternatives were considered in this analysis since the proposed action is both site and project-specific.

IX. FINDINGS

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

APPENDIX B

Negative Determination For The Mink Island Archeological Resources Protection Project Katmai National Park and Preserve

The NPS is considering installing a small rock-filled gabion wall and sand bags at the toe of the Mink Island Archeological site (XMK-030) to protect this oldest known archeological site from coastal erosion. The project would be located above mean high tide on NPS managed lands. Rock and sand material used to fill the gabion baskets and sand bags would also be obtained from NPS property above mean high tide. Indirect effects of the project could affect the intertidal zone below mean high tide.

A detailed project description for the Mink Island Archeological Resources Protection Project in Katmai National Park and Preserve is provided in the attached environmental assessment. The EA is also available on the NPS Planning, Environment and Public Comment web site (<http://parkplanning.nps.gov>).

The ACMP Coastal Zone Boundaries of Alaska Map #58, Mt. Katmai, shows that lands and waters in the project area fall within the coastal zone of the state of Alaska and Kodiak Island Borough. The Kodiak Island Borough has an approved Coastal Management Plan (CMP). The project site is located in Katmai National Park and Preserve, which is administered by the U.S. National Park Service and is defined as outside the coastal zone. Indirect effects of the project, such as reflected wave energy, may affect the intertidal zone below mean high tide, which is State owned land.

The following section details the NPS Negative Determination analysis, which determines that the project would have no direct effects on any coastal use or resource and is consistent with enforceable policies to the maximum extent practicable. In determining effects, the NPS followed 15 CFR 930.33(a)(1) and has included an evaluation of the relevant enforceable policies of the ACMP (11 ACC 112) and the Kodiak Island Borough district policies. State standards included for analyses are coastal development; subsistence: coastal habitats; and prehistoric and archaeological resources. The project facilities would be located wholly on lands under federal jurisdiction, which are outside the coastal zone, but adjacent to state lands.

As documented in the *Mink Island Archeological Resources Protection Project* (EA) the proposed project would have negligible to minor adverse environmental impacts, which mostly would not extend beyond the national park boundary. A major beneficial effect could accrue to archeological resources on the island.

Alaska Coastal Management Program Relevant Policies:

11 AAC 112.200. Coastal development.

Analysis: The small rock gabion and sand bag revetment in the supra-tidal zone (above high tide) on the south side of Mink Island would be the only modern human development on the Takli Island complex. A small cabin exists at the north end of Amalik Bay about 6 miles away. The small protective wall would have no effect on coastal development uses or resources, except to protect the adjacent archeological site.

11 AAC 112.270. Subsistence.

Analysis: Katmai National Park is closed to subsistence uses along the wilderness coast. Subsistence is only allowed in the Katmai National Preserve far to the north and in limited cases for red fish on Naknek Lake far to the west. The proposed action would not affect regional subsistence uses or resources.

11 AAC 112.300. Habitats.

Analysis: Construction of the gabion wall would affect less than one tenth acre of previously disturbed lands. Affected habitat would be confined to federal park lands above mean high tide and would have little to no effect on coastal habitat uses or resources below mean high tide. Less than 18 cubic yards of rock cobbles and sand would be removed by hand tools and transported by wheelbarrow from the supra-tidal zone to fill gabion baskets, and no more than 6 cubic yards of sand would likewise be removed primarily from supra-tidal areas to fill sand bags. Area mapping and aerial photographs indicate thousands of cubic yards of appropriate materials are available to complete the site protection project so that impacts would be negligible to minor on coastal processes.

11 AAC 112.320. Historic, prehistoric, and archeological resources.

Analysis: An archeological data recovery project and surveys have been conducted at Mink Island most recently between 1997 and 2000. Should historic properties be discovered during project implementation, work in the discovery area will be stopped and procedures would be followed as described in the regulations in 36 CFR 800.13. There would be no effect on historic, prehistoric, and archeological uses or resources other than to protect the oldest known archeological site on the Katmai coast to the extent feasible and prudent. The NPS has conferred with various hydraulic and coastal engineers to confirm the proposed project as feasible and reasonable.

Relevant enforceable policies of the Kodiak Island Borough CMP are described below.

1. Resource Identification under Archeological/Historical Resources

Analysis: See response to **11 AAC 112.320.**

2. Habitat Protection under Resource Enhancement and Protection

Analysis: See response to **11 AAC 112.300. Habitats.**

Conclusion: The NPS has determined that the Mink Island Cultural Resources Protection Project in Katmai National Park would have minor to no adverse effects on coastal uses or resources and a beneficial effect to preserve archeological resources to the extent feasible and prudent.

APPENDIX C

Minimum Requirements Decision for Mink Island EA

STEP ONE: Determine if any administrative action is necessary.

1. Describe the action:

The National Park Service (NPS) is considering the installation of rock-filled wire baskets (gabions) in designated wilderness in summer of 2006 to protect the oldest known archeological site at Mink Island on the coast of Katmai National Park and Preserve. The Mink Island Archeological Site (XMK-030) is the oldest dated site on the Katmai coast with occupations spanning over 7,000 years. This site is located within the Amalik Bay Archeological District National Historic Landmark (NHL) on the National Register of Historic Places. The site is open and exposed to seas of the Shelikof Strait. Pursuant to reports of erosion and vandalism and evaluation of site significance, the NPS conducted archeological data recovery at this site between 1997 and 2000. At the end of this four-year project, excavated areas subject to coastal storms were backfilled with biodegradable sand-filled bags and covered with biodegradable geotextile material to protect the site and encourage revegetation at the site. Annual site visits revealed by 2003 that most of the sand bags were gone and washed into the sea after winter storms. Storm surges have been eroding the island, which was formerly much larger in size, for thousands of years, and a significant portion of the remnant archeological site is currently in imminent danger of being washed away in the next few major storms coupled with high tide events. Burials dating back from the last millennium that were eroding from the site have been removed, but additional scattered human remains have been observed on the present erosional surface. The project would anchor to bedrock and interlock rock gabions with hand labor and using local beach rock to fill the wire baskets to protect the remaining site from storm events. The site would remain stable and cultural deposits would be preserved for the future. This action would preserve the site for recovery of scientific information in the future when investigative methods are superior to those available now. Sites being lost through erosion elsewhere within the Amalik Bay Archeological District NHL and along the Katmai coast, are situated such that revetment is not an option. They will simply be lost with the passage of time. With rising sea levels and increased storminess, we are witnessing the extinction of coastal archeological sites.

2. Other special provisions of law or policy:

In 1942 the islands off the Katmai coast were added to the park by Presidential Proclamation No. 2564 "... for the proper care, management, and protection of the objects of scientific interest" There are no special provisions of the wilderness legislation that provide for structures in the Katmai wilderness. There are no laws that specifically mandate the protection of this archeological site from erosion, although under the National Historic Preservation Act (NHPA) of 1964, this area was designated as the Takli Island Archeological District to delineate the significance of the archeological resources. National Park Service policies (NPS 2001 Management Policy) state in Section 5.3 "The NPS will employ the most effective concepts, techniques, and

equipment to protect cultural resources against theft, vandalism, deterioration, environmental impacts and other threats without compromising the integrity of the resources.” Section 5.3.5.1.2 addresses stabilization of archeological resources; “Archeological resources subject to erosion, slumping, subsidence, or other natural deterioration will be stabilized using the least intrusive and destructive methods.” Section 6.3.8 addresses cultural resources in wilderness; “Cultural resources ... within wilderness will be protected and maintained according to the pertinent laws and policies governing cultural resources, using management methods that are consistent with the preservation of wilderness character and values.” The State Historic Preservation Officer will also be consulted for compliance with the NHPA.

3. Describe options outside of wilderness:

This archeological site exists within the wilderness as do all other significant cultural sites along the Katmai coast. There are no options outside of wilderness for this action.

4. Is it necessary to take administrative action to preserve wilderness character, as described by the qualities of untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation?

No.

5. Are there other unique components that reflect the character of this wilderness?

The rich and complex human history of the coast of Katmai represented by this site is a unique and integral part of the wilderness values for this area. The NPS has already extracted a significant amount of information from this site so that the loss of the contiguous and more complete data would be a greater loss than that of a completely undocumented site.

6. Is it necessary to take administrative action in support of the public purposes for wilderness (as stated in Sec. 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation and historical use?

This action would support the scientific and educational purposes of the Wilderness Act. The scientific information to be gathered at this site still has great potential to add to the understanding of the coastal history of the Gulf of Alaska and to the values contributed by the Katmai wilderness. Education in the local communities that have cultural ties to this part of the state regarding their cultural history would be helpful in promoting park and wilderness protection with local residents.

Conclusion: Is any administrative action necessary?

Yes. Compliance with policies, the loss of scientific information, and the loss of significant cultural resources warrant action on Mink Island.

STEP TWO: Determine the minimum activity

Alternative A: No action. Leave in place the current stabilization of sand bags and visqueen and slowly let erosional processes remove them and continue to erode the archeological site.

Effects on Wilderness Character and other wilderness resources: No new impacts to wilderness character and values would occur as no new structure would be installed. The untrammled nature of wilderness on Mink Island would not be affected since coastal processes would continue unaltered and the naturalness of the island would be restored in the near future as storms removed the sand bags and visqueen currently in place at the archeological site. The loss of the archeological data would negatively affect the heritage and cultural resources of the Katmai wilderness.

Alternative B (proposed action): This action would stabilize the eroding site until additional research could be accomplished to fully excavate the site or when we have investigative methods superior to those available now. This would be Phase 1 of a possible two Phase process. It is a simple revetment system combining wire gabion baskets filled with local beach cobbles from the upper intertidal zone, with rock reinforcement at the toe, a sandbag splash apron on the failing slope behind the gabions, all underlain by a filter fabric. A stepped gabion basket wall, 18 feet (ft) long, 6 ft deep and 6 ft high would be constructed in the archeological excavation cavity, in front of the failing slope of the site. The wall would be constructed with 9 baskets 6 ft x 3 ft x 3 ft in size and tied with wire securely together to form one solid unit. If the unit is well tied together, there would no need to bolt the basal gabions to the bedrock. Should the need arise to bolt the gabions to the bedrock, hand drills would be used and rock putty would be used to set the bolts. A sandbag spray apron would be placed on the failing slope behind the gabion wall. A filter cloth or geotextile to allow for drainage while protecting fine-grained sediments below the revetment from erosion would underlie the gabion wall and spray apron. Large local cobbles of about 6 inches diameter would be placed on the bedrock at the toe of the gabion wall. Galvanized steel gabion baskets measuring 6 ft x 3ft x 3ft would be filled with local beach cobbles, which occur in a wide variety of sizes and are plentiful on the immediate beach above mean high tide. If 9 gabions are used, that would require 18 cubic yards of rock fill. The toe reinforcement would require an additional 6-7 cubic yards of rock. The sandbags would be of a strong fiber weave or of a neutral colored poly and filled with local sand, available above the cobble beach. We estimate 4 -6 cubic yards of sand would be used to fill the sandbags. The filter fabric or geotextile of a type recommended by the hydraulic engineers would underlie the gabion wall and sandbag splash apron. Wooden planks would be placed over the beach cobbles for transporting the rock via wheel barrows to the project site. In the past, sizeable milled planks have been found in the driftwood debris on the island and may be used to augment the planks needed to be purchased and transported to the site. Materials, supplies, and crew would be shipped to Kodiak and transported to the site from Kodiak via floatplane (requiring 3-4 Beaver loads). If there is an opportunity to bring the flat gabion baskets to

the project site via boat from Homer, and if this has an economic advantage, this option would be timed to coincide with the arrival of the crew to help with offloading.

A crew of 5 to 6 people would camp on the island, in an off-site area for the duration of the project (10-12 days). The camp would follow established park protocols and regulations for camping in wilderness, bear safety, and wildlife encounters. If ranger support is available in Amalik Bay during the project, fresh water would be collected from a near mainland stream. Otherwise, the water would be brought in with the rest of the supplies. The project field personnel would consist of volunteer archeologists who participated in the earlier data recovery efforts at the site and who are aware of park protocol with regard to minimum impact requirements and best practices in wilderness, likely wildlife encounters (brown bear), and site sensitivities. The small tent camp, of 10 days duration would be established off the archeological site and Leave No Trace (LNT) practices would be used.

Effects on Wilderness Character and other wilderness resources:

The placement of a manmade structure intended for long term archeological site protection would have minor effects on aspects of wilderness character. The localized, contained nature of the structure would affect only a very small portion of the island, and an even smaller portion of the Katmai National Park wilderness. The untrammled nature of wilderness on the island would be moderately impacted because natural erosion from coastal processes would be altered to protect the archeological site for an extended period of time. There would be minor effects on the undeveloped condition and naturalness of the island, although using natural beach rock materials and limited man-made metal mesh will make the structure less obtrusive. Opportunities for solitude would be affected for any possible visitors to the island if they came upon the structure, but this island is not a visitor destination due to limited access, weather conditions and limited recreational opportunities. Impacts to wilderness character would have a long duration due to the uncertainty of future options for research.

Alt. B Selected: This alternative would combine the protection of the information still available at the site with the least intrusive method for stabilization. The loss of the contiguous and more complete archeological data would be a greater loss than that from a completely undocumented site. Work would be done by hand using mostly natural materials to blend in with the site. The resulting structure would be unobtrusive and blend with the natural environment.

Prepared by Judy Alderson, Regional Wilderness Coordinator

Recommended by Jeanne Schaaf, Chief of Cultural Resources, Katmai NP&P

Approved by _____, Acting Superintendent, Katmai NP&P

APPENDIX D

THREATENED AND ENDANGERED SPECIES CONSULTATION

Hi Bud & Jeanne,

I just consulted with Greg Risdahl from USFWS regarding the threatened Steller's eider and threatened sea otters with respect to the Mink Island rock gabion/sand bag project.

The threatened Steller's eider primarily uses the Katmai coast as a wintering area, and the August project date is unlikely to affect them. Therefore, the determination I've made is that the project is "not likely to adversely affect" Steller's eiders.

The best information that we have for sea otters is a single sighting (of several animals) by Jeanne Schaaf's crew during their surveys from 1997-2000 and in 2003. Given that all of the work will be done above mean high tide and outside of the otter's primary foraging habitats, I have determined that the project is "not likely to adversely affect" the threatened sea otters.

Greg Risdahl of the Anchorage US Fish and Wildlife Service has concurred with both determinations on a phone call made today, June 6, 2006.

If you need more documentation, please email me.

Sharon

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NPS Coastal Biologist Sharon Kim consulted with Dana Seagars from NMFS/NOAA regarding the endangered Steller sea lion with respect to the Mink Island rock gabion/sand bag project.

The federally-listed endangered Steller sea lion has critical habitat off the Katmai coast and the nearest known haul out area is Takli Island, located west of Mink Island. Mink Island is not known as a sea lion haul out and no sea lions have been seen on the island. Furthermore, all of the project work is located above mean high tide. From these three factors, I have determined that this project is not likely to adversely affect the Steller's sea lion.

Dana Seagars from National Marine Fisheries Service/NOAA has concurred with this determination for the project on a phone call made today, June 7, 2006. Kim copied Seagar on this email so that he can forward this email to his records department.