Draft Environmental Assessment for The Meyers Road Reconstruction Project

Apostle Islands National Lakeshore

United States Department of the Interior
National Park Service

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1.0 INTRODUCTION

Meyers Beach is a very popular visitor use area on the western end of the mainland unit of the park. Meyers Road provides the only land access to Meyers Beach through the park, as well as access to the regionally known sea caves and a popular mainland trail. Over 30,000 visitors a year use Meyers Road to access this part of the park. When the conditions are ideal for winter sea cave viewing (this varies yearly) visitation can exceed 500 people per day on weekends. During warmer months, a large number of kayakers launch from Meyers Beach to view the sea caves or travel to various islands, including a high number of guided trips. The increased use of this area has lead to overcrowded parking conditions; problems with traffic flow, especially when trailers carrying multiple kayaks need to load or unload; increased erosion due to run-off from the road; declining road conditions; and insufficient vault toilet facilities.

1.1 Purpose and Need

In 1989, a General Management Plan (GMP) was approved for the Apostle Islands National Lakeshore. The Meyers Road area (10 acres) was identified in the GMP as one of the park's development zones. Development zones are used to provide park facilities to serve the needs of park management and visitors. NPS provided facilities in the 1990's at Meyers Beach that included a single vault toilet, a small picnic area, a gravel topped parking area for 10 -15 cars and stairway access to the beach. Greatly increased visitor use has resulted in facilities that can no longer accommodate visitor and resource protection needs.

Current problems include: (1) traffic congestion and very poor traffic flow; (2) insufficient sized parking area; (2) declining condition of gravel road and increasing erosion along road and embankment; (3) non-accessible and insufficiently sized vault toilet. Alternatives described in this Environmental Assessment would correct, to varying degrees, the problems described above. Specific proposed actions include the following:

1. Expand the parking area and improve the road conditions. The existing parking area is inadequate for current use and does not allow for adequate traffic flow, resulting in congestion and potential safety hazards for pedestrians. The road condition is poor and requires frequent maintenance.

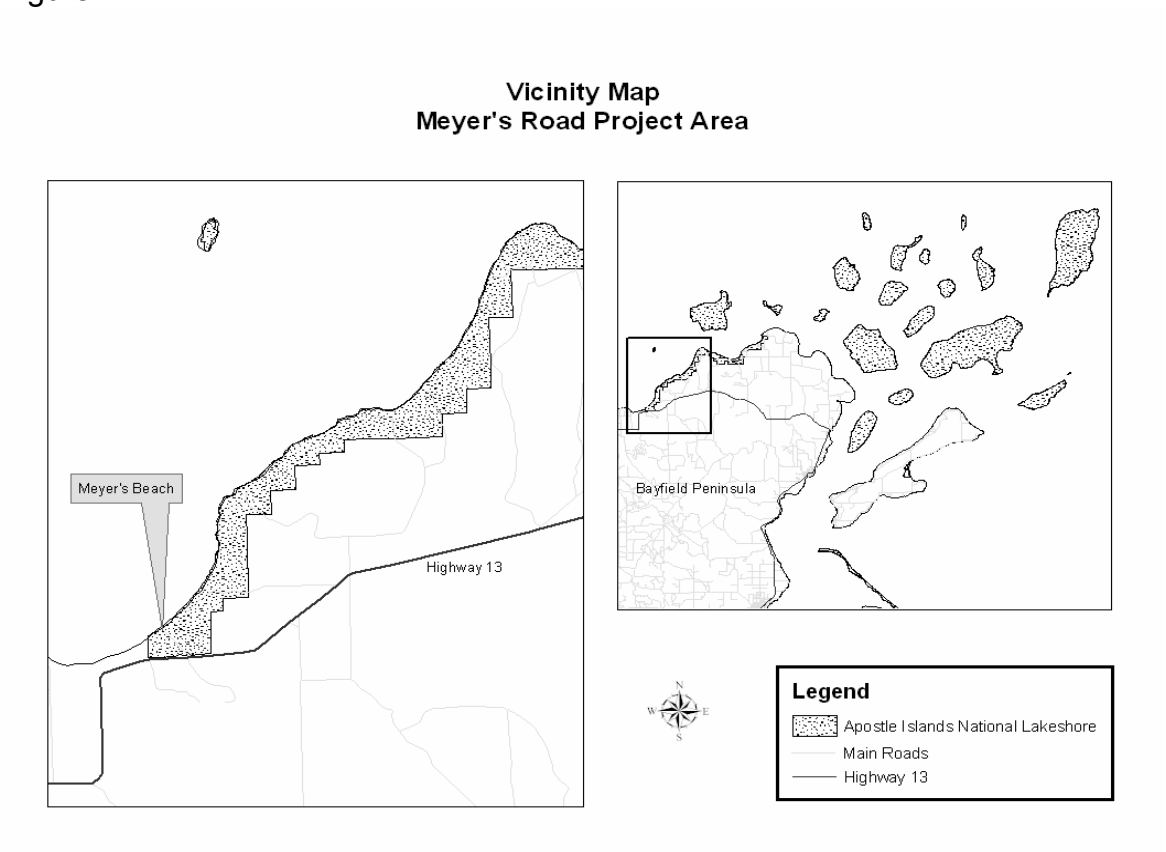
2. Halt erosion and stabilize the slope adjacent to the road and cul-de-sac. Erosion has increased along the road, especially on the west side, and near the edge of the cul-de-sac. Presently there are no erosion control structures or control measures in place.

3. Replace the existing vault toilet with a double vault toilet that is accessible to people with disabilities. The new vault toilet would also include a changing

area. Because of the large amount of kayak use, the vault toilet is often tied up by people using it as a changing room.

4. Improve interpretive exhibits and bulletin boards to provide park, regional, safety, recreational and other miscellaneous information.

Figure 1.



2.0 BACKGROUND

2.1 Project Background and Scope

The 12-mile long mainland unit is a narrow (usually less than 0.25 mile wide) strip on the northwest shore of the Bayfield Peninsula and is located within the Apostle Islands National Lakeshore. The region is approximately 80 miles east of Duluth, Minnesota and 20 miles north of Ashland, Wisconsin. The park was established September 26, 1970, by Public Law 91-424. This enabling legislation charges the NPS with conserving and developing geographic, scenic, scientific, and historic resources of 20 of the 22 Apostle Islands and a segment of the mainland lakeshore of northern Wisconsin for inspiration, education, recreational use, and public enjoyment. In 1986, Long Island was added to the park.

The park includes 69,372 acres, of which 27,232 acres are submerged (park boundaries extend 0.25 mile from the shore of the mainland and from each island). There are 42,140 acres of land above the high water line, 2,592 acres on the mainland and 39,572 acres on the islands. The southwestern half of the mainland area contains the highest cliffs in the region, and the spectacular, sheer sandstone walls are crowned with northern hardwood forest.

When the park was established in 1970, the project area was within the park's legislative boundary, however, it wasn't until 1980 that the NPS purchased the parcel of land that included the Meyers Road and beach area. In 1988, the Town of Bayfield donated Meyers Road to the National Park Service with the provision that it continue to be used as a road. When the Meyers Beach property was acquired, there was a house and garage in the existing parking area. These structures were removed in the late 1980's.

Meyers Road on the west side and Little Sand Bay Road on the east are the two primary visitor access points to Lake Superior along the mainland unit of the park. Meyers Road is the access point for the beginning of the park's mainland trail and a primary parking and kayak launch area for island and sea cave visitors. In the winter months, the sea caves become ice caves with beautiful ice formations and are a very popular visitor attraction. When lake ice conditions allow visitors to hike or ski to the caves, visitor use is often very heavy and parking frequently spills out onto the nearby state highway, resulting in potential safety hazards. Recent regional and national media attention has identified the Meyers Beach area as a main gateway for visiting the park's natural attractions, resulting in increased use and resulting pressure on existing facilities. The trailhead for the Lakeshore Trail is adjacent to the Meyers Road parking lot. Approximately four and a half miles of the Lakeshore Trail have been completed, from the Meyers Road trailhead to a backcountry campsite about a half-mile northeast of the end of Engholm Road. This trail may eventually be expanded to

run the length of the mainland unit (about 12 miles). Overlooks of the mainland sea caves begin about 1.8 miles from the Meyers Road trailhead.

Existing development includes a gravel parking lot, picnic area and vault toilet. The gravel parking lot accommodates 10-15 cars, and is located on the east side of the road, approximately 260 feet south of the bluff's edge (top of stairway). There is a small picnic area and single vault toilet adjacent to the north side of the parking lot that is approximately 0.4 acres in size. Collectively, the existing road, parking, picnic and vault toilet area are approximately 1.0 acre. On the north edge of the existing cul-de-sac and bluff edge is an access stairway down to the beach. A bulletin board that provides visitors with park and safety information is adjacent to the entrance to the stairway. In the summer, visitor information focuses on the location of the sea caves and kayaking, whereas in the winter, visitor information focuses on ice conditions and traveling over the ice. The trailhead is located near the northeast edge of the parking lot. Adjacent to the trailhead, visitor information about the park and trail is provided through an interpretive exhibit that includes a bulletin board and two wayside exhibit panels.

Overhead utilities, including electric and phone lines, were buried by Bayfield Electric Cooperative in 2000. In 2001, power supply and junction pedestals were installed underground along the west side of the road. The phone line crosses underneath Meyers Road approximately 100 feet north of Highway 13. There is a displaced remote radio system and traffic counter located on the west side of the road. A pre-existing well was capped according to Wisconsin Department of Natural Resources (DNR) specifications during the mid 1990's and a new well was installed in 1998 approximately 60 feet southwest of the existing parking area.

Planning for redesigning the parking area and widening Meyers Road began in 1999, but funding constraints delayed the project. Through this Environmental Assessment process, the original project design was re-evaluated in light of increased visitor use and action alternatives that accommodate current average visitor use levels were developed.

2.2 Compliance with Federal or State Regulations Requirements

This Environmental Assessment (EA) has been prepared to evaluate the impacts of the reasonable alternatives described in Section 3.0. The EA is prepared in accordance with the *National Park Service's Director's Order No. 12 - Conservation Planning, Environmental Impact Analysis, and Decision Making,* its accompanying handbook, and the provisions of the National Environmental Policy Act of 1969 (NEPA) (PL 91-190,42 USC 4321-4247). Detailed procedures for developing this document comply with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508). Proposed actions may have an impact on the environment, therefore an EA has been prepared to address all compliance issues, analyze

alternatives and assess the possible impacts of these proposed actions, and prescribe mitigation measures, if necessary. If, after reviewing the *EA* and comments resulting from the public review process, the Regional Director concludes that implementation of the plan's preferred alternative would result in significant impacts to the environment; an *Environmental Impact Statement (EIS)* would be prepared. If not, a *Finding of No Significant Impact (FONSI)* would be prepared. Upon approval of the final *FONSI* or *EIS*, a final *EA* for the Meyers Road Reconstruction Project would be printed. The following requirements and procedures have guided compliance actions for this project:

- Section 7 of the Endangered Species Act which requires consultation with the U.S. Fish and Wildlife Service on any issues impacting endangered species.
- Section 307 of the Coastal Management Act requiring a consistency determination through Wisconsin's coastal zone management program.
- Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0067831.1: Storm Water Discharges Associated with Construction Activities Disturbing five or More Acres under Chapter 283, Wis. Stats., Chapter NR 216, Wis. Admin. Code in January 2000, which expires in 2005.

2.3 Relationship to Other Actions and Plans

The alternatives proposed in Section 3.0 would be implemented in a limited area around Meyers Road. Plans that include the Meyers Road area include the park's Long-Range Interpretive Plan, the General Management Plan and the Wilderness Suitability Study. The park's Long-Range Interpretive Plan proposes to provide information panels and bulletin cases at the trailhead for the Lakeshore Trail and at the top of the stairway leading to Meyers Beach. The current General Management Plan (1989) is scheduled to be updated beginning in FY 2005. A Wilderness Suitability Study is nearing completion; the project area is not within proposed wilderness. There are no other park planning projects in the vicinity of Meyers Road nor have any recent actions been taken by the NPS in the vicinity of Meyers Road.

3.0 ALTERNATIVES

3.1 Actions Common to All Alternatives

Under all of the action alternatives (A, B and C):

- The parking lot area would be expanded to provide parking spaces for 24 standard sized vehicles and three oversized vehicles or vehicles with trailers.

- The shoulder width of the road would be increased on the southwest side, providing parking for approximately 50 standard sized vehicles.

- A gravel walkway on the north edge of the parking area would be constructed.

- The existing picnic area would be relocated because the current location would become part of the parking area.

- The vault toilet would be relocated because the existing location would become part of the parking area and replaced with one that is larger and accessible according to ADA (Americans with Disabilities Act) Standards.

- New wayside exhibit clusters and bulletin boards would be installed at both the trailhead and stairway access to provide park, area, regional and safety information.

- Erosion control measures, including the use of a drainage and filtration system that includes a rip-rap catchment basin on the upper part of the bluff, would be implemented and installed to prevent further slope and gully erosion.

3.2 Description of Alternatives

Four alternatives will be analyzed in this EA. The No Action alternative would be a continuation of current conditions and management. Alternatives A, B and C are all action alternatives that differ from each other primarily in the placement of the new vault toilet and picnic area. In addition, Alternative C includes a phase 2, under which an overflow, gravel topped parking area would be constructed.

3.2.1 No Action Alternative

Under this planning alternative, current management of the Meyers Road area would continue. Existing development includes a gravel road and parking lot, picnic area, vault toilet, stairway to access the beach, trailhead, and interpretive exhibits (fig. 1). The existing unchanged facilities would continue to serve park

visitors to the greatest extent possible. Increased maintenance of these facilities would be necessary over time in order to continue the existing level of service.

3.2.2. Alternative A – Gravel Road and Parking Area

This alternative includes the Actions Common to all Alternatives, but differs from the other action alternatives in the following ways:

- The surface of the road and parking lot would remain gravel. As compared to existing conditions, the number of parking spaces would be increased from 10-15 standard sized vehicles to approximately 24 in the parking area and up to 50 additional standard sized vehicles along the side of the road. In addition, there would be three additional parking spaces for oversized vehicles.

- A new double handicapped accessible vault toilet would be installed in an existing cleared area east of the present parking lot (fig. 2). This location is the same under Alternatives A and B. It is more than twice as far from the stairway that accesses the beach and slightly further from the trailhead than the location identified in Alternative C. It is also further from the location of the current vault toilet described under the No Action alternative.

- The picnic area would be moved into the woods, close to the road, east of the existing parking lot and well (fig. 2). The new picnic area would be similar in size to the existing picnic area; a walkway would be constructed over a small ravine to prevent natural resource impacts. Similar to the vault toilet, this location for the picnic area is further from the stairway and trailhead than locations identified for the No Action alternative, Alternative B and Alternative C. In this alternative the vault toilet and picnic area would be located in the same general area.

The total area impacted for this alternative would be approximately 3.4 acres; this includes 2.4 acres of new soil and vegetation disturbance and 1.0 acre of existing disturbance.

Figure 1. No Action Alternative

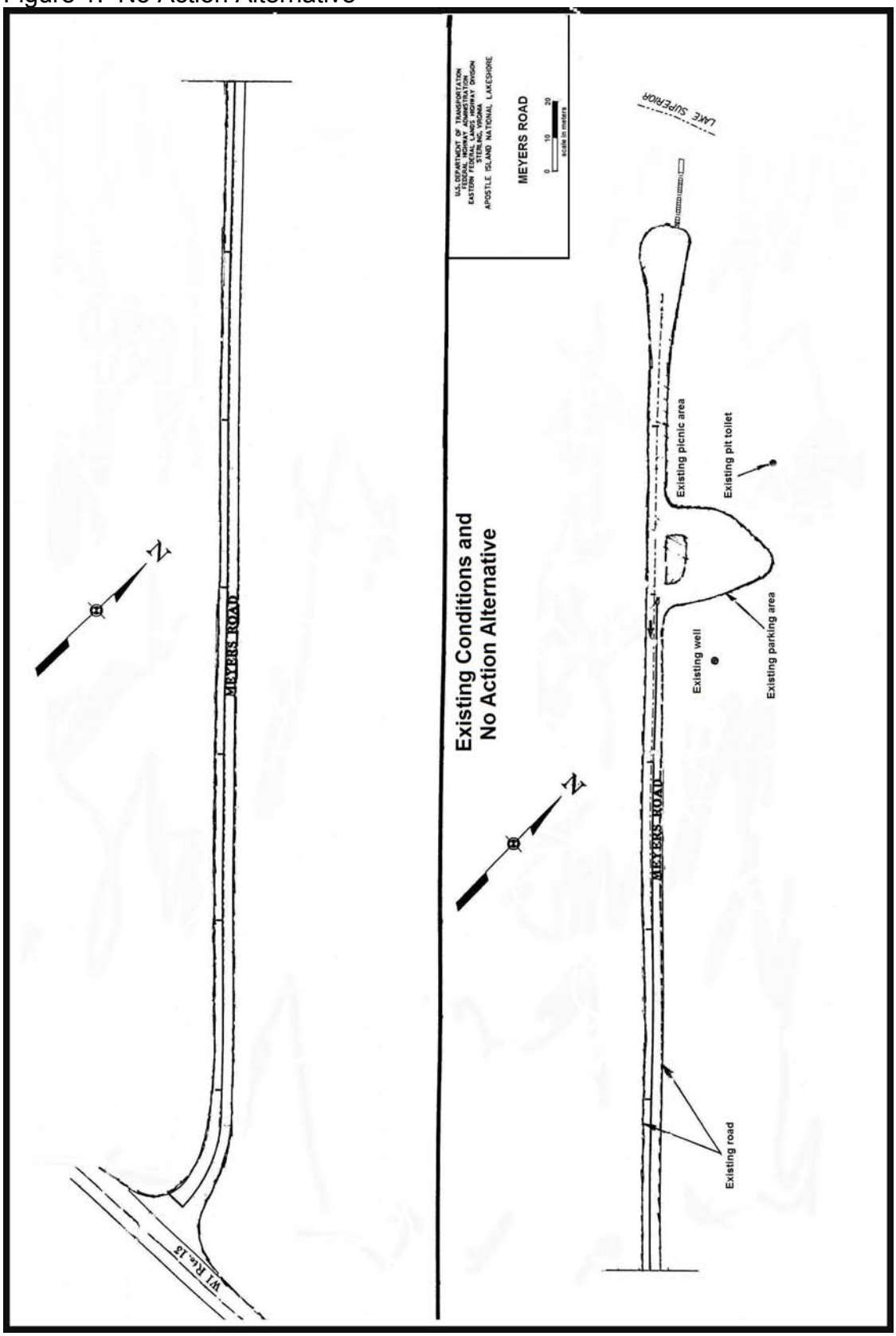
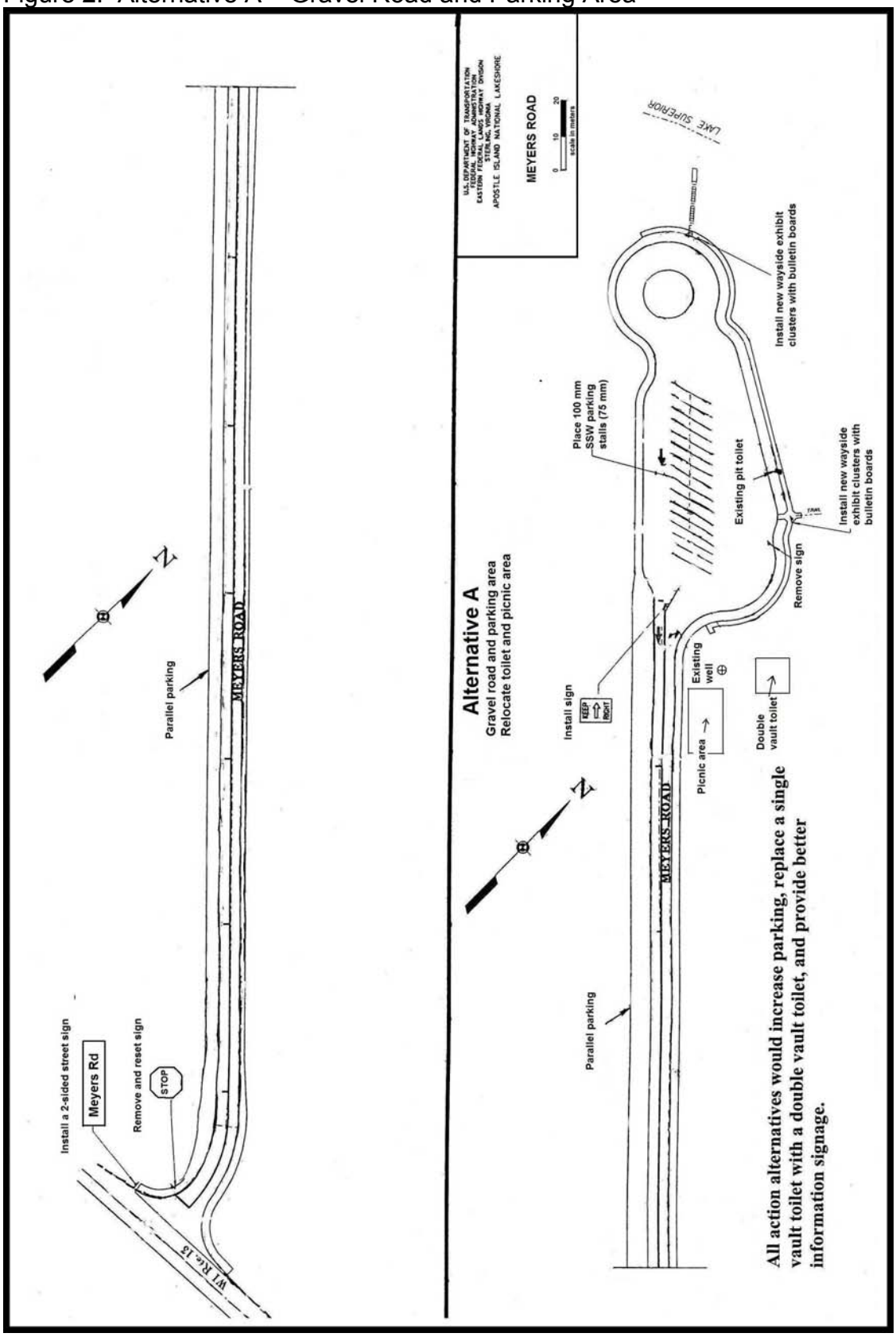


Figure 2. Alternative A – Gravel Road and Parking Area



3.2.3 Alternative B – Pave Parking Area and Road, Separate Comfort Station from Picnic Area

This alternative includes the Actions Common to all Alternatives and differs from the other action alternatives in the following ways:

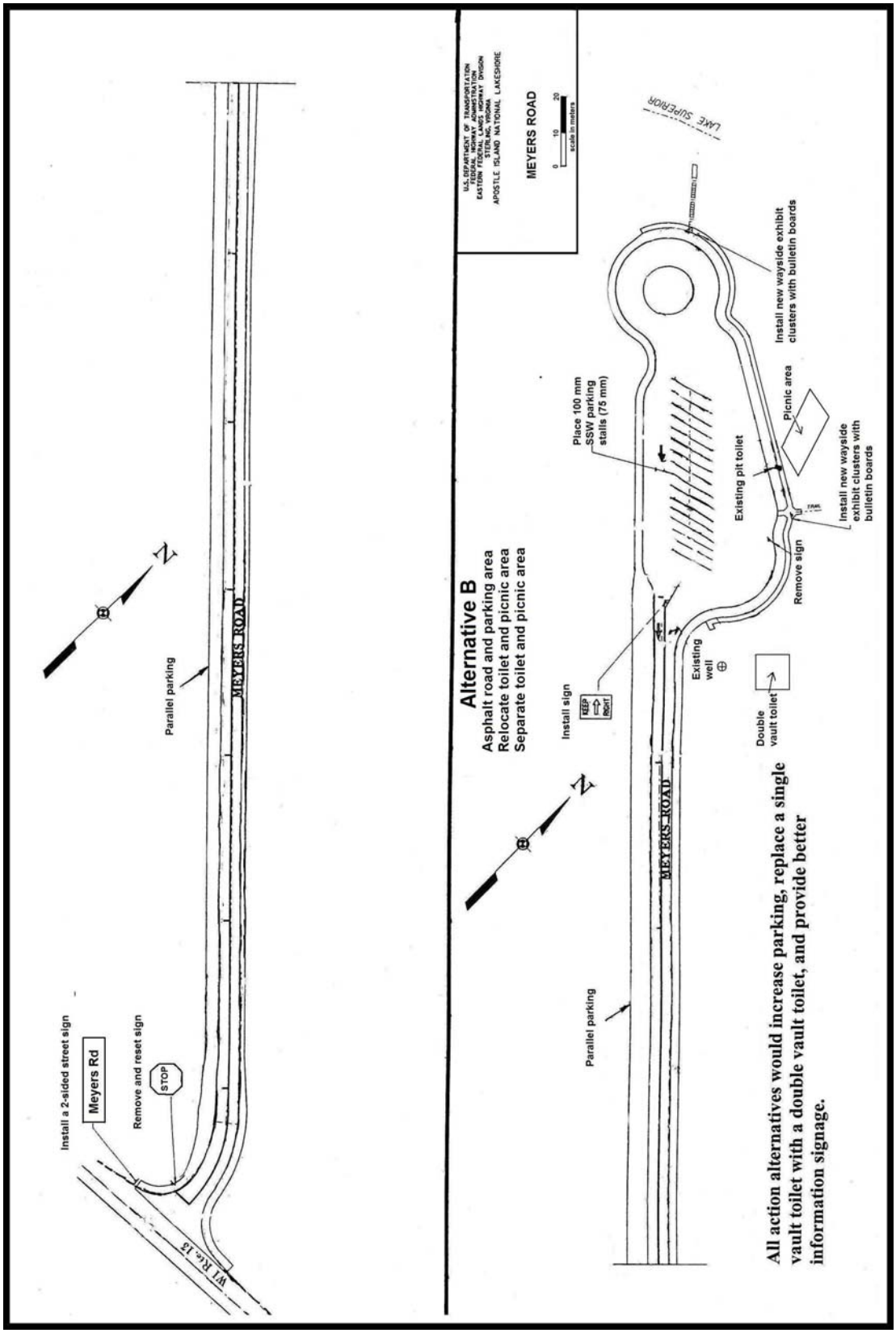
- Compared to Alternative A, the road and parking lot would be paved. This portion of Alternative B is the same as the proposal in Alternative C. Compared to existing conditions, the number of parking spaces would increase from 10-15 standard sized vehicles to 24 in the parking area and approximately 50 additional standard sized vehicles along the side of the road. In addition, there would be three additional parking spaces for oversized vehicles.

- The new handicapped accessible double vault toilet would be placed in an existing cleared area east of the present parking lot (fig. 3). This is the same location proposed under Alternative A. The toilet would be approximately twice as far from the stairway that accesses the beach and slightly further from the trailhead compared to the location identified in Alternative C or the current vault toilet described under the No Action alternative.

- The picnic area would be placed north-northeast of the existing parking area in the alders and forest, 75' from the edge of the lakeshore bluff (fig. 3). This location is similar in distance from the stairway and closer to the trailhead than the current picnic area.

- Under this alternative, the vault toilet and picnic area would be separated to minimize potential smells from the vault effecting people using the picnic area. The total area impacted for this alternative would be approximately 3.4 acres, the same as under Alternative A; this includes 2.4 acres of new soil and vegetation disturbance and 1.0 acre of existing disturbance.

Figure 3. Alternative B – Pave Parking Area and Road, Separate Comfort Station from Picnic Area



3.2.4 Alternative C – Pave Parking Area and Road, Locate Amenities Close to Stairway and Trailhead, include Overflow Parking (Preferred Alternative)

This alternative includes the Actions Common to all Alternatives and differs from the other action alternatives in the following ways:

- This alternative is similar to Alternative B, the road and parking lot would be paved. Compared to existing conditions, the number of parking spaces would be increased from 10-15 standard sized vehicles to 24 in the parking area and approximately 50 additional standard sized vehicles along the side of the road. In addition, there would be three additional parking spaces for oversized vehicles.

- Under this alternative, the new handicapped accessible double vault toilet would be placed approximately 75 feet from the bluff edge (fig. 4). Of all of the locations being considered, this location is closest to the stairway that leads to the beach and to the trailhead of the Lakeshore Trail. It is also closer to both the stairway and trailhead than the location of the current vault toilet described under the No Action alternative.

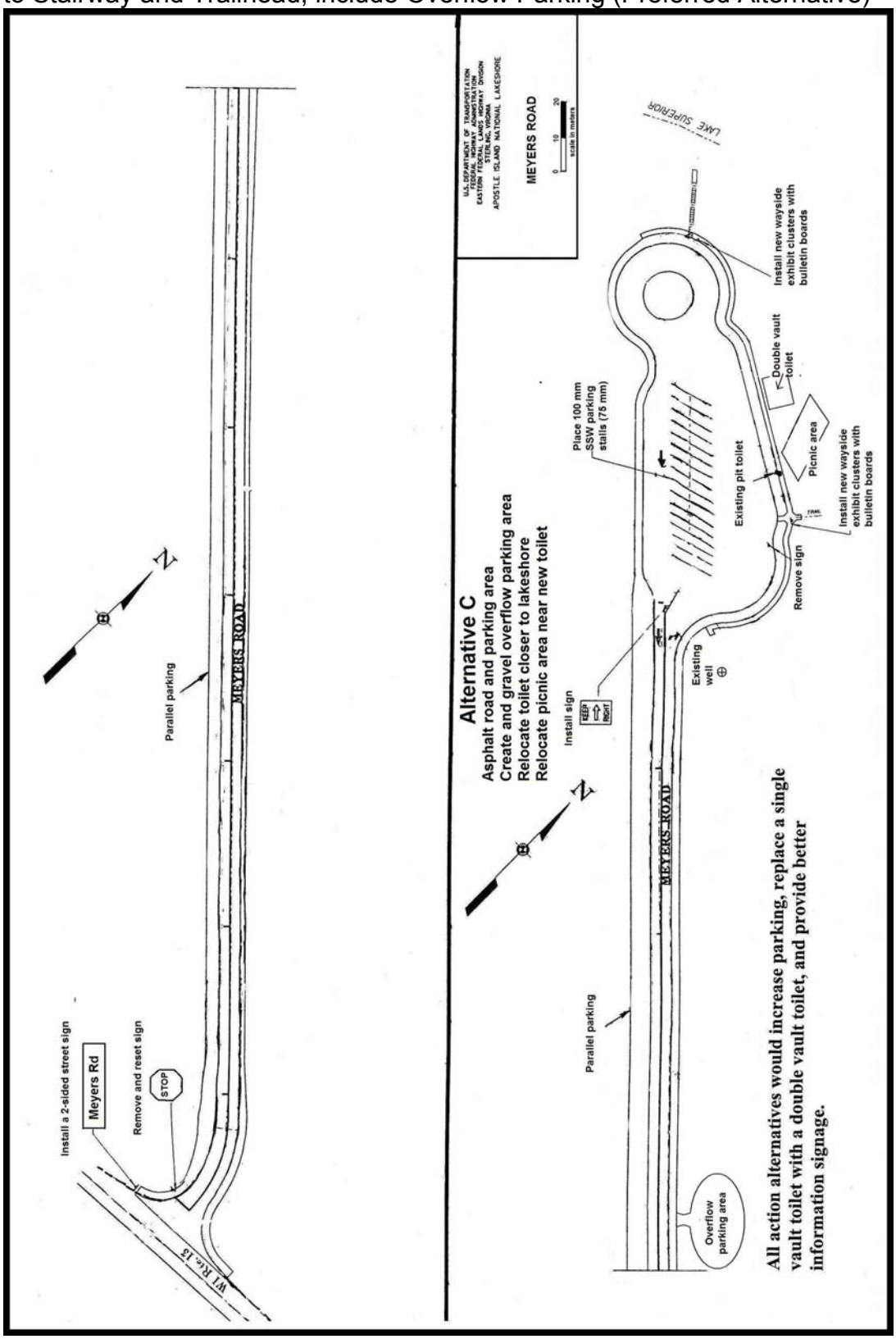
- The picnic area would be placed north-northeast of the existing parking area in the alders and forest, approximately 75' from the edge of the lakeshore bluff, near the vault toilet (fig. 4). This location is similar in distance from the stairway and closer to the trailhead than the current picnic area.

- Under this alternative, the vault toilet and picnic area would be placed in a way that would make both directly accessible from the parking lot.

- Alternative C also includes the option of developing a gravel surfaced overflow parking area as a Phase II of this project. This parking area would be located on the north side of the road near the current utility right-of-way. The parking area would be approximately 0.25 acres in size.

The total area impacted for this alternative would be approximately 3.65 acres; this includes 2.65 acres of new soil and vegetation disturbance and 1.0 acre of existing disturbance.

Figure 4. Alternative C – Pave Parking Area and Road, Locate amenities Close to Stairway and Trailhead, include Overflow Parking (Preferred Alternative)



3.3 Alternative Comparison Matrix

	No action	*Alternative A*	*Alternative B*	*Alternative C*
Road width	No change	Increased graveled shoulder width on SW side that would accommodate up to 50 standard sized vehicles.	Increased graveled shoulder width on SW side that would accommodate up to 50 standard sized vehicles.	Increased graveled shoulder width on SW side that would accommodate up to 50 standard sized vehicles.
Road surface	Gravel	Gravel	Paved	Paved
Future overflow parking area	No	No	No	Yes
Parking area	No change 10 – 15 cars	Approx. 24 standard sized vehicles, approx. 3 oversized vehicles.	24 standard sized striped/marked parking spaces; 3 oversized spaces.	24 standard sized striped/marked parking spaces; 3 oversized spaces.
Picnic area	No change	Move picnic to forest area southeast of existing parking lot.	Move picnic area to alder thicket & forest, 75' back from edge of bluff.	Move picnic area to alder thicket & forest, 75' back from edge of bluff.
Vault toilet facility	No change	Build a double vault toilet in clearing east of existing parking lot.	Build a double vault toilet in clearing east of existing parking lot.	Build a double vault toilet approx. 75' from edge of bluff in alder thicket area northwest of existing picnic area.
Exhibit kiosks	No change	Education & Information panels at beach access & trailhead.	Education & Information panels at beach access & trailhead.	Education & Information panels at beach access & trailhead.

Alternative Considered but Dismissed

Two alternatives were considered, but dismissed. The first alternative would have been to implement the plans developed in 1999. This would have improved traffic flow and resulted in a paved surface. However, the parking area would have only accommodated 16 standard sized vehicles and 2 oversized vehicles and parking along the side of the road would have been limited to 9 standard sized vehicles. Due to greatly increased visitation, this plan would have been inadequate before it was completed and was therefore not considered a feasible alternative.

The park also considered the possibility of limiting visitor use. Building an entrance station and gate would have been necessary, as well as staffing the entrance station. This would have resulted in more development, higher long-term costs, and would not have solved problems associated with traffic flow and current erosion problems.

3.4 IMPACT TOPICS SELECTED FOR ANALYSIS

3.4.1 Geology, Soils, and Topography

Expansion of the road and parking area, as well as relocating both the vault toilet and picnic area would result in a larger area of soil compaction and increased runoff. There would also be potential increases in soil erosion and compaction during construction activities.

3.4.2 Water Quality

The project area is adjacent to Lake Superior. Runoff, from both current and proposed developments, has the potential to impact water quality.

3.4.3 Wetlands

There are scattered poorly drained soils and small incidental (artificial) wetlands within the project area.

3.4.4 Ecological Resources (Flora and Fauna)

Expansion of the road and parking area would require vegetation clearing and impacts to associated habitat. Construction activities would also have the potential of impacting wildlife populations.

3.4.5 Visitor Use and Experience

Meyers Beach is a primary visitor use area. Proposed developments would better accommodate visitor needs and increase visitor safety.

3.4.6 Socioeconomics

Daily guided trips leave the Meyers Beach area. Changes to access could adversely impact kayak outfitters that guide these trips, however, changes in parking and improvements to traffic flow could provide beneficial impacts.

3.5 IMPACT TOPICS ELIMINATED FROM FURTHER EVALUATION

3.5.1 Floodplains

Executive Order (EO) 11988 "Floodplain Management" requires the NPS, as well as all federal agencies, to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values of floodplains. The closest streams are 1/8 mile to the southwest and 1/3 mile northeast of the project area. Since there are no floodplains within the project area, this topic can be eliminated from further evaluation.

3.5.2 Prime and Unique Farmlands

There are no prime or unique farmlands located in the park. The project area has not been, and is not now, in agricultural production.

3.5.3 Solid and Hazardous Waste

The project area does not currently have any solid or hazardous waste, nor is there a history of solid or hazardous waste storage within the project area.

3.5.4 Regional Air Quality

Some temporary air emissions from construction equipment and fugitive dust from the handling and placement of fill would occur with any of the action alternatives. However, any impacts would be highly localized and temporary with negligible impacts on regional air quality.

3.5.5 Environmental Justice

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations. Minority or low income populations would be treated the same way under all of the alternatives considered in this EA. None of the alternatives being considered would have a disproportionately high and adverse effect on any minority or low-income population or community.

The Red Cliff Band of Lake Superior Ojibwe has reservation lands that include a portion of the mainland unit of the park, however, the Meyers Road project area is approximately 3 ½ miles west of the reservation boundary. The project area is, however, within ceded territory under the Treaty of 1842. Tribal representatives are being included in early review of this EA. None of the alternatives would affect treaty-reserved rights.

3.5.6 Cultural Resources

There are no known cultural resources within the project area. No historic structures or landscapes are present. An archeological survey conducted by the Midwest Archeological Center in 1999 determined the area to be devoid of potential archeological interest. There are also no known ethnographic resources within the project area. If, however, previously undiscovered archeological resources are found during construction, all work in the immediate vicinity of the discovery will be halted until the resources could be identified and documented.

3.5.7 Museum Collections

There are no museum collections housed at Meyers Beach, nor will any of the collections located on the mainland be impacted in any way by the proposed action, therefore museum collections will not be considered as an impact topic.

3.5.8 Soundscape Management

In accordance with NPS *Management Policies* (2001) and Director's Order #47, *Sound Preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and duration of human-caused sound considered acceptable varies among NPS units depending upon the level of surrounding development.

Hauling material and operating construction equipment would result in human-caused sound; however, the noise impacts from construction operations would only last during construction and be similar with all action alternatives. Following construction activities the area would revert back to its pre-construction soundscape, therefore soundscape management was dismissed as an impact topic.

3.5.9 Lightscape Management

In accordance with NPS *Management Policies* (2001), the NPS strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human-caused light. The construction activities within the proposed action would take place primarily during daylight hours and would not call for any additional, permanent lighting at Meyers Beach. Any temporary or new light sources would be designed to

keep light on the intended subject and out of the night sky. Therefore, lightscape management was dismissed as an impact topic.

3.6 MITIGATION MEASURES

3.6.1 Soil Erosion/Sedimentation

The Meyers Beach road reconstruction project specifications require strict erosion control measures for the life of the project. These erosion control measures apply to all action alternatives. The park will insure that the contractor coordinates the installation, use and removal of erosion and sediment control measures with roadway construction activities to insure, effective and continuous erosion an sediment control. Prior to any clearing, grubbing and excavation, the contractor will be required to construct perimeter controls to ensure that disturbed sediment does not leave the project site. Parameter controls include silt fence, earth diversion berms, temporary v-ditch with plastic liner and temporary riprap. Where possible the contractor will install permanent culverts before beginning rough grading and divert off site drainage through completed culverts as a soon as possible. Permanent turf will be established on finished slopes and ditches. Culvert entrances and exits will be stabilized with vegetation or rip-rap before routing drainage through completed culverts.

After completion of the roadway construction and landscaping, the contractor will finish grading, pave, riprap and apply permanent turf establishment to any remaining ditches. Where necessary the contractor will replace eroded topsoil and reapply permanent turf establishment, inspect, clean and repair all culvert outlet protection, riprap basins and stabilized channels. Perimeter silt fence and inlet protection will be removed only after all vegetation on upslope areas is well established. Further detail is provided in this project's Erosion Control Plan (FHA 2000).

Any revegetation effort for erosion control will use site-adapted native seed and/or plants. If needed for immediate stabilization, temporary annual ground cover that would not persist (e.g., annual rye) may be used; this would be done in conjunction with native vegetation that would persist over the long-term.

3.6.2 Exotic Vegetation

In order to prevent the introduction and minimize the spread of exotic vegetation and noxious weeds, the following mitigation measures would be incorporated into all action alternatives:

- Use of hay for erosion control measures will be prohibited due to the likelihood of weed seeds in hay.
- If straw were utilized for erosion control measures it will be state-certified weed-free straw.
- All landscaping efforts will utilize native plants.
- Monitoring and follow-up treatment of exotic vegetation on revegetated areas will occur for two to three years following construction. Follow-up treatment could include mechanical, biological, chemical, and/or additional revegetation treatments.

3.7 Environmentally Preferred Alternative

The environmentally preferred alternative is defined as "the alternative that will promote the national environmental policy as expressed in Section 101 of the National Environmental Policy Act." Section 101 states that "…it is the continuing responsibility of the Federal Government to…

(1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
(2) Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
(3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
(4) Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
(5) Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life's amenities.
(6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Two of the above goals did not make a difference in determining the environmentally preferred alternative. Goals 4 and 6 were found to be not applicable to this project.

The no action alternative would result in the minimum amount of new natural resource disturbance, but it would not correct current erosion problems. It would also not resolve problems associated with traffic flow, visitor safety and congestion. It therefore would not fulfill criterion 2, 3, and 5 as well as the action alternatives.

Among the action alternatives, all represent a balance between minimizing impacts to natural resources and improving visitor experience and safety. They are all fairly equal in relation to the above criteria. Alternative C, the park's Preferred Alternative, would fulfill criterion 3 and 5 slightly better than

Alternative's A and B by more conveniently locating visitor facilities and providing the option of additional parking, if needed. Therefore, Alternative C is the environmentally preferred alternative.

4.0 AFFECTED ENVIRONMENT

4.1 Geology, Soils and Topography

The Apostle Islands and Bayfield Peninsula area is part of the Mid-Continental Rift Geologic Province. The park is underlain by three sandstone formations of the 2,600-foot thick Bayfield group. Lake Superior, as well as the other Great Lakes were sculpted by repeated glaciation, with the last glacier (Wisconsan) retreating some 10,000 years ago. The Apostle Islands are primarily formed from glacial till overlying sandstone bedrock.

The park, by its nature, is shaped by wave and wind energy generated by Lake Superior. Coastal features along this stretch of the park include sandstone cliffs, clay cliffs, and sandscapes. A vegetated clay bluff slopes down to the lake at the end of Meyers Road.

The soils of the project area are primarily a combination of the Portwing and Herbster series. Portwing typically comprises 50% of areas with this map unit while Herbster typically covers 30 percent. The remaining 20% consists of one to a few of several soil series. Portwing is a very deep, moderately well drained soil that is found on till plains (NRCS OSD 2001). This fine textured soil profile consists of silt loam over clay. Portwing has a perched water table resulting in surface saturation for at least one month up to 3 months a year at a depth of 1 to 2.5 feet. Herbster is a very deep, somewhat poorly drained soil on till plains. This profile consists of silt loam over silty clay loam and clay. The Herbster series also has a perched water table at least one month a year, but at a depth of 0.5 to 1.5 feet (NRCS OSD 2000). Neither soil type is considered to be a hydric soil. Hydric soils can indicate wetland conditions.

4.2 Water Quality

The project site is located on a bluff above Lake Superior. A stairway leads visitors down the bluff to Meyers Beach. Water quality in the Meyers Beach area, as well as the rest of Apostle Islands NL, reflects the general oligotrophic (low nutrient) character of Lake Superior. There appears to be little impact from human activities on water quality within the park. Annual bacteriological monitoring is conducted on the mainland at Little Sand Bay and Stockton Island in Presque Isle Bay. No samples have exceeded State water quality standards. Water quality monitoring was conducted in 1996 (LSERC, 1997) at five Lake Superior sites and three lagoons. The closest sampling site to Meyers Beach is located on the west side of Sand Island. Sampling results indicate high water quality. Surface and shallow water temperatures ranged from 52 to 64° F while deeper water temperatures ranged from 39 to 47° F. Oxygen was at or near saturation at all depths. Total phosphorus and nitrogen varied from <0.01 to 0.01 mg/L and <0.01 mg/L, respectively. Secchi disc depths averaged 29 feet.

Lake water is not currently used at this location for potable purposes. Overland flow of surface water in the project area flows into drainage ditches and ravines that may contain low volumes of sediment that discharges down the bluff onto the beach area.

Two streams and one intermittent stream/drainage lie close to, but outside the project area. Saxine Creek is approximately 1/8 of a mile west and southwest of the construction zone. An unnamed stream enters Lake Superior approximately 1/3 of a mile northeast of the project area. An intermittent stream or drainage is located approximately 1/16 of a mile east northeast of the project area.

4.3. Wetlands

Executive Order (EO) 11990 "Protection of Wetlands" requires federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands. This order further requires federal agencies to avoid undertaking or providing assistance to new construction in wetlands unless the head of the agency finds that there is no practicable alternative.

A wetland determination of the project area was conducted in November of 2003 (Gafvert 2003). Some very small scattered areas were found that contain “somewhat poorly drained” hydric soils. There is a small wetland area with hydric soils but no standing water within a swale just south of the existing parking lot (Gafvert 2003). This swale feeds into a minor ravine to the northeast. There are some poorly drained areas and very small incidental (artificial) wetlands within the small ditch along the west side of Meyers Road that were created as a result of the road and poor drainage. There is a 20’ x 35’ wetland, approximately 10 feet from the road edge within the power line right-of-way on the northeast side of the road. There is also an area dominated by speckled alder. Although speckled alder is considered an obligate wetland species, this is an area where alder has become established due to disturbance, removal of tree species and lack of evapotranspiration and not because of wetland conditions.

4.4 Ecological Resources (Flora)

Pre-settlement vegetation on the mainland unit was most likely eastern hemlock (*Tsuga canadensis*), yellow birch (*Betula alleghaniensis*), and white cedar (*Thuja occidentalis*) with smaller amounts of balsam fir (*Abies balsamea*), white birch, and white pine (Judziewicz 1993). It is unknown what specific community type was present in the Meyers Road project area at that time. Today 72% of the park is classified as northern hardwood forest including the project area (Burkman 2004) and the area has been more specifically characterized as a paper birch/red maple forest (Ventura and He 1986). The forested area adjacent to Meyers Road has been previously logged several times. A site visit in 2003 found not only those two species but the following trees and shrubs; balsam fir

(*Abies balsamea*), white spruce (*Picea glauca*), northern white cedar, white pine (*Pinus strobus*), trembling aspen (*Populus tremuloides*), green ash (*Fraxinus pennsylvanica*), mountain maple (*Acer spicatum*), red elderberry (*Sambucus racemosa*), red osier dogwood (*Cornus stolinifera*), willow species (*Salix sp*.), bush honeysuckle (*Diervilla lonicera*), wild rose (*Rosa blanda*), wild raspberry (*Rubus strigosus*), dwarf raspberry (*Rubus pubescens*) and a stand of speckled alder (*Alnus rugosa*). Herbaceous species found include bracken fern (*Pteridium aquilinum*), tansy (*Tanacetum vulgare*), rue anemone (*Anemonella thalictroides*), prickly lettuce (*Lactuca serriola),* panicled aster (*Aster lanceolatus*), purple stemmed aster (*Aster puniceus*), late goldenrod (*Solidago gigantea*), scouring rush (*Equisetum scirpoides*), wool grass (*Scirpus cyperinus*), reed canary grass (*Phalaris arundinacea*), and quack grass (*Agropyron repens*).

Section 7(a) of the Endangered Species Act of 1973 (16 U.S.C. 1521 *et.seq.*) requires federal agencies to insure that any action authorized, funded or carried out by such agencies not jeopardize the continued existence of any federally-listed threatened or endangered species. There are no Federally listed plant species within the park. However, the following plants occur within the park and are on the *Wisconsin State Threatened and Endangered Species List* (WDNR 2004).

Common Name	**Scientific Name**	**Status**
Lake cress	*Armoracia lacustris*	Endangered
Moonwort grape-fern	*Botrychium lunaria*	Endangered
Common butterwort	*Pinguicula vulgaris*	Endangered
Satiny willow	*Salix pellita*	Endangered
Mountain-cranberry	*Vaccinium vitis-idaea*	Endangered
Fairy slipper	*Calypso bulbosa*	Threatened
Beautiful sedge	*Carex concinna*	Threatened
Coast sedge	*Carex exilis*	Threatened
Lenticular sedge	*Carex lenticularis*	Threatened
Michaux's sedge	*Carex michauxiana*	Threatened
Drooping sedge	*Carex prasina*	Threatened
Broad-leafed twayblade	*Listera convallarioides*	Threatened
Tea-leaved willow	*Salix planifolia*	Threatened
Marsh grass-of-parnassus	*Parnassia palustris*	Threatened
Plains ragwort	*Senecio indecorus*	Threatened
Spike trisetum	*Trisetum spicatum*	Threatened

The only listed species that occur on the mainland unit are *Vaccinium vitis-idaea, Pinguicula vulgaris,* and *Broad-leafed twayblade*. None of these species occur in the Meyers Road Project Area.

Plant species important to the Ojibwe, such as sweet grass (*Hierochloe odorata*), are known to occur on the mainland unit of the park. Past inventories did not find sweet grass in the Meyers Road area, however, prior to any construction, a survey will be conducted for sweet grass and other culturally important species.

4.5 Ecological Resources (Fauna)

The mammals present on the mainland are those typical of the northern forest and the transition zone, representing about 25 species (Appendix A). White-tailed deer and black bear are the largest species and of the greatest interest to visitors. There is a deer yard at Sand Point, approximately 6.5 miles east of Meyers Road. In this area, vegetation, especially cedar, has been impacted from overbrowsing. Deer are absent or transient in most of the park, although some of the islands had historically high deer populations and there are currently deer populations on Sand, Oak and Basswood Islands. Moose are rare in the area, but Wisconsin Department of Natural Resources personnel reports an eastward movement of these animals across northern Wisconsin from Minnesota. In 1995 remains of a moose were found on Stockton Island and a moose was sited on north the tip of Long Island in 2002 (Doolittle 2002).

The bird life of Apostle Islands National Lakeshore is rich and varied, with a species list of more than 230 (Appendix B). Over 75% of these are migratory, but the nesting and summer resident population includes more than 150 species. Seventy-nine species have been recorded during breeding bird surveys conducted in the mainland unit of the park.

Reptile and amphibian species are relatively rare in this northern habitat. Records indicate at least seven species of frogs and toads, five species of salamanders, and three species of snakes and turtles are present in the park (Appendix C). The greatest concentrations of most of the amphibians and reptiles are found in and around wetland areas. Presently there is a small wetland just east of Meyers Beach outside the project area.

The closest site-specific information for the Lake Superior nearshore fish community at Meyers Beach is from Little Sand Bay. In the Little Sand Bay fish community, round whitefish and white and longnose suckers represent the greatest numbers and biomass. Most trout and salmon are juvenile fish foraging in the area. Lake trout are common in the deeper, colder water but brown and brook trout frequent inshore areas (Appendix D).

Section 7(a) of the Endangered Species Act of 1973 (16 U.S.C. 1521 *et.seq.*) requires federal agencies to insure that any action authorized, funded or carried out by such agencies not jeopardize the continued existence of any federally-listed threatened or endangered species.

The following federally listed species occur within Apostle Islands National Lakeshore (*U.S. Fish and Wildlife Service Threatened and Endangered Species System TESS* 1/21/2004):

Common Name	**Scientific Name**	**Federal Status**
bald eagle	*Haliaeetus leucocephalus*	Threatened
gray wolf	*Canis lupus*	Threatened
piping plover	*Charadrius melodus*	Endangered

Yearly overflights are conducted for bald eagle productivity and nesting success. There is a nest just east of the Sand River on the mainland unit that was successful in 2003. This nest is approximately 6.5 miles from the project area. The bald eagle has been removed from the State list of Threatened and Endangered Species and is in the process of being delisted from the Federal list.

The eastern timber wolf, which occurs in Bayfield County, is on the list of endangered species. There has been recent timber wolf (Federally and State threatened) sign documented near Sand Point, to the west of Little Sand Bay.

The only location where piping plover have nested is on Long Island. There is no suitable habitat on the mainland unit.

The following animals are known to inhabit Apostle Islands National Lakeshore and are currently on the *Wisconsin State Threatened and Endangered Species List* (2004).

Common Name	**Scientific Name**	**State Status**
Piping plover	*Charadrius melodus*	Endangered
Common tern	*Sterna hirundo*	Endangered
Forster's tern	*Sterna forsteri*	Endangered
Caspian Tern	*Sterna caspia*	Endangered
Red-necked grebe*	*Podiceps grisegena*	Endangered
Loggerhead shrike*	*Lanius ludovicianus*	Endangered
Red-shouldered hawk	*Buteo lineatus*	Threatened
Osprey	*Pandion haliaetus*	Threatened
Gray wolf	*Canis lupus*	Threatened

*Recorded during migration.

The project area does not provide important habitat for any of these species. Section 7 consultation was begun on December 22, 2003. A pre-public review copy of this Environmental Assessment sent to the U.S. Fish and Wildlife Service (FWS) on March 22, 2004. A letter dated April 12, 2004 by the FWS concurred

with the NPS' determination of no effect to federally-listed threatened or endangered species or designated critical habitat for those species.

4.7 Visitor Use and Experience

Apostle Islands National Lakeshore's mainland unit includes 2,592 acres and 12 miles of shoreline along the Bayfield peninsula from Saxine Creek to Little Sand Bay. This is the only portion of the park that is readily available to visitors who do not have the time, money, equipment, skill, and/or desire to travel to the islands by boat. The mainland unit provides opportunities for these visitors to experience many of the features and resources that make the park a special place.

The Meyers Beach area at the west end of the mainland unit has shown a steady increase in use and now exceeds Little Sand Bay in popularity. Road counters on Little Sand Bay Road and Meyers Road indicate that more people visited Meyers Beach (20,296) from January – October 2003 than visited Little Sand Bay (17,453). Meyers Beach on Mawikwe Bay is less than a half mile off state Highway 13 at the end of Meyers Road. A stairway leads from the top of the bluff at the end of Meyers Road down to the beach, providing access for sea kayaking, swimming, picnicking, and walking along the beach. Meyers Beach is a popular launch point for kayakers making day trips to the mainland sea caves. A small parking lot, picnic area and a single vault toilet are located near the end of Meyers Road. The trailhead for the Lakeshore Trail is adjacent to the Meyers Beach parking lot. The trail and beach are popular places for dog owners to exercise their pets. The surface of Mawikwe Bay is often covered with ice for several weeks in late winter. When ice conditions allow, visitors flock to Meyers Beach to walk, ski or snowshoe across the frozen lake to view the ice formations at the mainland sea caves. On busy weekends, cars fill the parking lot and line Meyers Road out to the highway.

Part of the visitor experience is visual quality or aesthetics of an area, natural sounds and night skies, all of which are intangible resources. Lake Superior and views of undeveloped shoreline greatly enhance the visual quality and aesthetics from Meyers Beach, at the bottom of the bluff from Meyers Road. Natural sounds include waves lapping along the shore, birds singing and frogs calling. There are no lights or other intrusions to the night sky at Meyers Beach.

4.8 Socioeconomics

Although the park is located in both Ashland and Bayfield Counties Wisconsin, park Headquarters is located in Bayfield County with a population of a little more than 15,000 (U.S. Census, 2000). The city of Bayfield is one of 19 incorporated towns and villages within Bayfield County and has a population of approximately 700 year-round residents. Bayfield's economy is heavily dependent upon tourism associated with the park. Per capita income in the county was $16,407 in 2000 compared to the Wisconsin state average of $22,271 (US Census, 2000). The

largest components of the Bayfield County economy in 2000 were educational and social services (22.4 percent), construction and retail trade (10.3 percent and 10.6 percent, respectively), and manufacturing (9.1 percent) with a county unemployment rate of 10.0 percent. The median value of a home in Bayfield County was $86,200 in 2000 (U.S. Census, 2000). Demographically, the majority of the population in Bayfield County is Caucasian (88.5 percent), however Native Americans, with 9.4 percent of the population, make up the second largest ethnic group. Other represented ethnic groups are African-Americans (0.1 percent), Hispanic (0.5 percent), and Asian-Americans (0.3 percent).

Meyers Beach is an important access point for kayakers, including kayak outfitters. In 2003, there were twenty-one commercial outfitters operating within the park. Day trips to the sea caves are very popular and are scheduled on a daily basis between Memorial Day and Labor Day. The Meyers Beach area is also used as an access point for multi-day trips to the Apostle Islands.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Intensity, Duration and Type of Impact

The evaluation of alternatives took into account whether the impacts would be negligible, minor, moderate, or major. Duration of impacts was evaluated based on the short- or long-term nature of alternative-associated changes on existing conditions. More exact interpretations of intensity and duration are given for each resource area examined. Professional judgment is used to reach reasonable conclusions as to the intensity and duration of potential impacts. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative.

5.2 Cumulative Analysis

The CEQ regulations, which implement NEPA, require an assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

Prior to acquisition by the park, the project area was cleared for a seasonal residence, including a house and garage. After acquisition, the house and garage were removed and the park constructed a 10-15 car graveled parking area, a small picnic area and single vault toilet. This construction, along with the pre-existing road, collectively totals 1.0 acre of disturbed area. Current proposed actions would impact an additional 2.4 to 2.65 acres.

This project would improve existing access, parking, visitor facilities and safety, however, it is designed to accommodate current use levels. As a result, significantly higher levels of visitation, and their associated impacts, are not expected.

No additional development in the project area is planned for the foreseeable future. Therefore, cumulative impacts are limited to disturbance of 3.4 to 3.65 acres for alternatives A, B and C, most of which is in a previously disturbed area.

5.3 Impairment Analysis

NPS Management Policies (NPS 2001) requires an analysis of potential effects to determine whether or not actions would impair the park resources or values. The fundamental purpose of the NPS, as established by the 1916 Organic Act and reaffirmed by the General Authorities Act (16 USC 1), as amended, includes a mandate to conserve park resources and values. NPS managers must always seek ways to avoid or minimize to the greatest degree practicable, actions that

would adversely affect park resources and values. However, the laws do give NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of the park, so long as the impact does not constitute impairment of the affected resources and values. Although Congress has given NPS the management discretion to allow certain impacts within the park, that discretion is limited by the statutory requirement that NPS must leave the park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

A prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment. Impairment may result from NPS activities in managing the park from visitor activities or from activities undertaken by concessionaires, contractors, and any other operators inside the park. Impairment of resources can also occur from activities outside park boundaries. An impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon 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 or to opportunities for enjoyment of the park.
- Identified as a goal in the park General Management Plan or other relevant NPS planning documents.

Impairment determination - After evaluating the natural and cultural resource impacts of the three alternatives considered in this document, none of the impacts were found to be of sufficient intensity to constitute an impairment of park resources and values. In addition, potential impacts tend to be very localized and most are short-term. All adverse impacts were found to be moderate or lower in intensity and are not anticipated to be of sufficient magnitude to warrant a finding of impairment of park resources.

5.4 Impacts on Geology, Soils and Topography

5.4.1 Methodology

Impact analysis focused on the effects of alternatives on soil erosion and compaction.

Basis of Analysis

- **Soil Erosion -** The impact analysis is discussed in terms of erosion resulting from current as well as future proposed actions. The primary erosion would result from runoff.

- **Soil Compaction -** The impact analysis is discussed in terms of the alternatives impacting soil compaction.

Intensity:

- **Negligible -** Soil erosion and compaction would not be affected or the effects would be below or at the lower level of detection. Any effects would be slight and no long-term effects to soils would occur.
- **Minor -** The effects to soils would be detectable. Effects to soil erosion and compaction would be small, as would the area affected.
- **Moderate -** The effect on soil erosion and compaction would be readily apparent, likely long-term, and result in a change to the soil character over a relatively wide area.
- **Major -** The effect on soil erosion and compaction would be readily apparent, long-term, and substantially change the character of the soils over a large area that may extend outside the park boundaries.

Duration:

- **Short-Term -** Lasting only during the construction period or no longer than two years post-construction.
- **Long-Term -** Essentially a permanent post-construction impact.

5.4.2 No Action Alternative

Analysis - Under the no action alternative, the amount of runoff resulting from the current road and parking area would remain the same, as would the total amount of disturbed soil. The existing road is concentrating overland storm runoff along the west side of the road, resulting in erosion and ravine development on the bluff face. The erosion that is occurring as a result of runoff on the west side of the road as well as off the bluff edge would continue.

Conclusion - This alternative would have a minor, short-term and long-term, adverse impact on soil erosion in a very localized area. Impacts to soil compaction would be negligible.

Impairment - Impairment would not occur due to the very localized nature of the area impacted.

5.4.3 Alternative A

Analysis - Under Alternative A, the amount of developed surface area would increase from approximately 1 to 3.4 acres (e.g., road, parking lot, picnic area, vault toilet). Soil compaction would be greatly increased beneath graveled surfaces, with the highest compaction beneath the road and parking area. The amount of runoff would correspondingly increase with the size of the road and

parking area. Erosion control measures would be installed to handle associated runoff and prevent erosion. The new vault toilet would be located in an existing disturbed area east of the present parking lot. The picnic area would be located in an area of new disturbance just southeast of the existing parking lot and would result in a moderate amount of soil compaction as a result of visitor trampling. A swale that feeds a small wetland would need to be crossed to access the picnic area from the parking area. To alleviate potential impacts from visitor traffic, a plank walkway would be installed.

Conclusion - Long-term moderate adverse impacts to soil compaction would occur in graveled surfaces and minor to moderate adverse impacts would occur as a result of visitor traffic. There would be short-term, minor to moderate adverse impacts on soil erosion as a result of construction prior to vegetation being re-established. Although the amount of runoff would increase, because of erosion control measures there should be a net decrease in the current rate of erosion, both along the sides of the road and along the bluff. This would result in a long-term minor beneficial impact. A graveled surface would result in less runoff that a paved surface.

Impairment - Impairment would not occur due to the very localized nature of the area impacted.

5.4.4 Alternative B

Under Alternative B, the amount of developed surface area would increase from approximately 1 to 3.4 acres (e.g., road, parking lot, picnic area, vault toilet). The majority of this area would be paved. Soil compaction would be greatly increased beneath the paved surface and increased along the graveled road shoulders and walkway. The amount of runoff would increase both as a result of paving and with the size of the road and parking area. Erosion control measures would be installed to handle associated runoff and prevent erosion. The new vault toilet would be located in an existing disturbed area east of the present parking lot. The picnic area would be located in an area of new disturbance that would be in alders and a forested area northeast of the existing vault toilet.

Conclusion - Directly beneath paved surfaces, there would be long-term moderate adverse impacts to soil compaction. Long-term moderate adverse impacts would occur in the non-paved graveled surfaces and minor to moderate adverse impacts would occur as a result of visitor traffic. There would be short-term, minor to moderate adverse impacts on soil erosion as a result of construction prior to vegetation being re-established. The amount of runoff would be higher than current levels, as a result of paving and an increased compacted area, however, because of erosion control measures there should be a net decrease in the current rate of erosion, both along the sides of the road and along the bluff, resulting in a long-term minor beneficial impact.

Impairment - Impairment would not occur due to the very localized nature of the area impacted.

5.4.5 Alternative C

Analysis - The impacts to both soil compaction and erosion would be the same as those described under Alternative B, with the potential for an addition 0.25 acres of disturbance as a result of an overflow graveled parking area. The picnic and vault toilet would be located in an area of new disturbance that would be in alders and a forested area northeast of the existing vault toilet together.

Conclusion - Directly beneath paved surfaces, there would be long-term adverse moderate impacts to soil compaction. Long-term adverse moderate impacts would occur in the non-paved graveled surfaces and minor to moderate adverse impacts would occur as a result of visitor traffic. There would be short-term, minor to moderate adverse impacts on soil erosion as a result of construction prior to vegetation being re-established. The amount of runoff would be higher than current levels, as a result of paving and an increased compacted area, however, because of erosion control measures there should be a net decrease in the current rate of erosion, both along the sides of the road and along the bluff, resulting in a long-term minor beneficial impact.

Impairment - Impairment would not occur due to the very localized nature of the area impacted.

5.5 Impacts on Water Quality

5.5.1 Methodology

Impact analysis focused on potential impacts to nearshore waters of Lake Superior. There are no streams within or adjacent to the project area. None of the construction alternatives involve the placement of dredge or fill material into the waters of the United States. Therefore, a section 404 (Clean Water Act) permit from the U.S. Army Corps of Engineers would not be needed.

Basis of Analysis:

- **Potential for Water Quality Impacts -** Alternative impacts are qualitatively discussed in terms of possible water quality degradation.

Intensity:

- **Negligible -** Water quality would not be affected, or changes would be either non-detectable or if detected, would have effects that would be considered slight and localized.

- **Minor -** Changes in water quality would be measurable, although the changes would be small and the effects would be localized. No mitigation measure associated with water quality would be necessary.
- **Moderate -** Changes in water quality would be measurable but would be relatively local. Mitigation measures associated with water quality would be necessary and the measures would likely succeed.
- **Major -** Changes in water quality would be readily measurable, would have substantial consequences and would be noticed on a regional scale. Mitigation measures would be necessary, with no guarantee of success.

Duration:

- **Short-Term -** Lasting only during the construction period or no longer than two years.
- **Long-Term -** Essentially a permanent post-construction impact.

5.5.2 No Action Alternative

Analysis - Under the No Action alternative, the amount of erosion currently resulting from road runoff would continue and potentially increase if visitors continue to park along the side of the road. The existing road is concentrating overland storm runoff along the west side of the road, resulting in erosion and ravine development on the bluff face. Runoff, especially during larger storm events, may increase turbidity and impact water quality in a very localized area.

Conclusion - Negligible to minor short- and long-term water quality impacts would continue to occur from road runoff and increased erosion due to visitor traffic. These impacts would be limited to a very localized area.

Impairment - Impacts would be expected to be negligible to minor, primarily short-term (during storm events) and very localized. As a result, impairment would not occur.

5.5.3 Alternative A

Analysis - During the construction phase, ground disturbance would result in increased erosion and potential runoff into Lake Superior. These impacts would be minimized through the use of mitigating measures outlined in the Erosion and Control Plan (FHA 2000). Techniques include standard erosion control measures such as silt fences, earth diversion berms, temporary V-ditches with plastic liners, temporary riprap, mulch application, temporary and permanent turf, shape earthwork, check dams along graded ditches and revegetation. The current erosion occurring on the west side of the road and future runoff would be addressed through the use of a drainage and filtration system that includes a rip-rap catchment basin on the upper part of the bluff (COE 1999). Filtered runoff is only expected to reach Lake Superior during major storm events. The amount of

runoff expected under Alternative A would be greater than under the No Action alternative due to the increased size of the road and parking area. It would be less, however, than Alternatives B and C, because of its graveled, rather than paved, surface.

Conclusion - Implementation of Alternative A is expected to have minor short-term and very localized adverse impacts to Lake Superior water quality during construction. Long-term impacts are expected to be negligible and very localized.

Impairment - Impacts to nearshore water quality would be expected to be negligible to minor, primarily short-term (during construction) and very localized. As a result, impairment would not occur.

5.5.4 Alternatives B and C

Analysis - Similar to Alternative A, ground disturbance during construction would result in increased erosion and potential runoff into Lake Superior. These impacts would be minimized through the use of mitigating measures outlined in the Erosion Control Plan (FHA 2000). Both Alternatives B and C use a paved surface for both the road and parking area, which would result in a higher amount of runoff than the graveled surface proposed under Alternative A. Alternatives B and C would have a higher amount of runoff than under the No Action alternative, however, the amount of runoff to Lake Superior should be decreased because future runoff, as well as the current erosion occurring on the west side of the road would be addressed through the use of a drainage and filtration system that includes a rip-rap catchment basin on the upper part of the bluff. Filtered runoff is only expected to reach Lake Superior during major storm events.

Conclusion - Implementation of Alternative B or C is expected to have minor short-term and very localized adverse impacts to nearshore water quality. Long-term impacts are expected to be negligible and also very localized.

Impairment - Impacts to nearshore water quality would be expected to be negligible to minor, primarily short-term (during construction) and very localized. As a result, impairment would not occur.

5.6 Impacts on Wetlands

5.6.1 Methodology

Impact analysis focused on potential impacts to wetland resources.

Basis of Analysis:

- **Potential for Wetland Impacts -** Alternatives are qualitatively discussed in terms of wetland related impacts.

Intensity:

- **Negligible -** Wetlands would not be affected or the effects to the resource would be below or at the lower levels of detection. No long-term effects to wetlands would occur and any detectable effects would be slight. No U.S. Army Corps of Engineers 404 permit would be necessary.
- **Minor -**The effects to wetlands would be detectable and relatively small in terms of area and the nature of the change. A U.S. Army Corps of Engineers 404 permit would not be required. No long-term effects to wetland function would be occur.
- **Moderate -** The alternative would result in effects to wetlands that would be readily apparent, including a long-term effect on wetland vegetation, such that an U.S. Army Corps of Engineers 404 permit could be required. Wetland functions would not be affected in the long-term.
- **Major -** Effects to wetland would be observable over a relatively large area, would be long-term, and would require a U.S. Army Corps of Engineers 404 permit. The character of the wetland would be changed so that the functions typically provided by the wetland would be substantially changed.

Duration:

- **Short-Term -** Lasting only during the construction period or no longer than two years.
- **Long-Term -** Essentially a permanent post-construction impact.

5.6.2 No Action Alternative

Analysis - Under the no action alternative, the small wetlands that occur within the project area would not be disturbed.

Conclusion - No impacts would occur to wetland resources.

Impairment - No impacts would occur, therefore there would be no impairment.

5.6.3 Alternative A

Analysis - Under Alternative A, very small discontinuous incidental (artificial) wetlands that have resulted from the road and poor drainage would be disturbed as a result of road widening, grading and reditching. A drainage system would be installed along the side of the road to allow proper drainage and filtration of runoff. The proposed location of the picnic area would require visitor to cross the drainage of a small wetland area (no standing water). A plank walkway would be installed to mitigate potential impacts from visitor traffic.

Conclusion - The loss of the very small (5-12 ft^2) discontinuous wetlands located in the ditch adjacent to the existing road would result in negligible to minor long-term adverse impacts on wetland functions and values. According to the NPS procedural manual for wetland protection (NPS 77-1), actions impacting artificial wetlands may be excepted from the Statement of Findings requirements of Sections 5.3D and 5.3E and the compensation requirements of Section 5.2C if the anticipated wetland loss or degradation is determined to be minimal; the anticipated project impacts fit this exception requirement. Placing the picnic area just south of the existing parking lot would be expected to have negligible long-term adverse impacts on the adjacent small wetland area.

Impairment - Impairment would not occur because impacts to wetland function would be negligible to minor and localized.

5.6.4 Alternative B

Analysis - Similar to Alternative A, incidental (artificial) small wetlands that have resulted from the road and poor drainage would be disturbed as a result of road widening, grading and reditching under Alternative B. A drainage system would be installed along the side of the road to allow proper drainage and filtration of runoff.

Conclusion - The loss of the very small (5-12 ft^2) discontinuous wetlands located in the ditch adjacent to the existing road would result in negligible to minor long-term adverse impacts on wetland functions and values. According to the NPS procedural manual for wetland protection (NPS 77-1), actions impacting artificial wetlands may be excepted from the Statement of Findings requirements of Sections 5.3D and 5.3E and the compensation requirements of Section 5.2C if the anticipated wetland loss or degradation is determined to be minimal; the anticipated project impacts fit this exception requirement. Placing the picnic area just south of the existing parking lot would be expected to have negligible long-term adverse impacts on the adjacent small wetland area.

Impairment - Impairment would not occur because impacts to wetland function would be negligible to minor and localized.

5.6.5 Alternative C

Analysis - Similar to Alternatives A and B, incidental (artificial) small wetlands that have resulted from the road and poor drainage would be disturbed as a result of road widening, grading and reditching under Alternative C. A drainage system would be installed along the side of the road to allow proper drainage and filtration of runoff. The planned location for the overflow parking area is near the power line right-of-way; however, a final location will be chosen that avoids any impacts to the small wetland that occurs within the right-of-way near the road.

Conclusion - The loss of the very small (5-12 ft^2) discontinuous wetlands located in the ditch adjacent to the existing road would result in negligible to minor long-term adverse impacts on wetland functions and values. According to the NPS procedural manual for wetland protection (NPS 77-1), actions impacting artificial wetlands may be excepted from the Statement of Findings requirements of Sections 5.3D and 5.3E and the compensation requirements of Section 5.2C if the anticipated wetland loss or degradation is determined to be minimal; the anticipated project impacts fit this exception requirement. Placing the picnic area just south of the existing parking lot would be expected to have negligible long-term adverse impacts on the adjacent small wetland area.

Impairment - Impairment would not occur because impacts to wetland function would be negligible to minor and localized.

5.7 Impacts on Ecological Resources (Flora), including T&E Species

5.7.1 Methodology

Impact analysis focused on the native vegetation communities that occur within the project area.

Basis of Analysis -

- **Vegetation Disturbance -** Alternative impacts are evaluated based on the extent of disturbance to the native vegetation communities existing in the Meyers Road and surrounding area.
- **Endangered Species Impacts -** Alternative impacts are evaluated based on the disturbance and/or removal of state or federal threatened or endangered fauna.

Intensity:

- **Negligible -** No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be

short-term, on a small scale, and no species of special concern would be affected.

- **Minor -** The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Species of special concern would not be affected.
- **Moderate -** The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population in the long-term and over a relatively large area. Some species of special concern could also be affected.
- **Major -** The alternative would have a considerable long-term effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the park.

Duration:

- **Short-term -** Lasting only during the construction period or no longer than two years.
- **Long-term -** Essentially a permanent post-construction impact.

5.7.2 No Action Alternative

Analysis - Under the No Action alternative, no additional impacts to vegetation would occur. The current amount of trampling due to visitor traffic would continue and may increase if visitation increases.

Conclusions - Negligible short- and potentially long-term impacts would be expected to occur to vegetation within the project area under the No Action alternative.

Impairment - Any impacts that would occur to vegetation within the area would be negligible and not cause impairment.

5.7.3 Alternatives A and B

Analysis - Under Alternatives A and B, approximately 2.4 acres would be cleared. All of the clearing would be on top of the bluff and set back from the bluff edge. The project area was part of a recreational property prior to becoming part of the park and had a house and garage that were subsequently removed. The vegetation that would be impacted is primarily second or third growth northern hardwood forest, the most common vegetation type within the park. No species of special concern, including Federal or State listed species, would be effected. Impacts to individual native species populations are expected to be negligible. A survey will be conducted for sweet grass and other culturally important species. Under Alternative A, the picnic area (0.05 acres) would be located in an area of second growth hardwood forest. Under Alternative B, the picnic area would be located in an area of second growth hardwood forest and

alders. The alders are not within a wet area, but occur as a result of disturbance on clay soils. The vault toilet would be located in an already disturbed area.

Conclusions - Adverse minor impacts would be short- and long-term, affecting some individual native plants, but a relatively minor portion of the species' population and restricted to a very small geographic area. No species of special concern would be adversely impacted. If any species of cultural significance occur within the project area, appropriate mitigation measures, such as transplanting, would be taken.

Impairment - Impairment would not occur because a very limited area would be affected and no species of special concern would be impacted.

5.7.4 Alternative C

Analysis - Under Alternative C, approximately 2.65 acres would be cleared. In addition to the clearing done under Alternatives A and B, Alternative C includes an overflow parking area (approx. 0.25 acres). The vegetation that would be impacted is primarily second or third growth northern hardwood forest, the most common vegetation type within the park. No Federal or State listed species occur within the project area. A survey will be conducted for sweet grass and other culturally important species. The picnic area (0.05 acres) would be located in an area of second growth hardwood forest and alders.

Conclusions - Minor impacts would be short- and long-term, affecting some individual native plants, but a relatively minor portion of the species' population and restricted to a very small geographic area. No species of special concern would be adversely impacted. If any species of cultural significance occur within the project area, appropriate mitigation measures, such as transplanting, would be taken.

Impairment - Impairment would not occur because a very limited area would be affected and no species of special concern would be impacted.

5.8 Impacts on Ecological Resources (Fauna), including T&E Species

Methodology

Impact analysis focused on native wildlife existing in the northern hardwood forest community in the area surrounding Meyers Road and fish species and populations occurring in adjacent nearshore waters of Lake Superior. Wildlife includes mammals, birds, and amphibians and reptiles.

Basis of Analysis -

- **Disturbance to Fauna -** Alternative impacts are evaluated based on the extent of disturbance to wildlife and fish species and populations.
- **Species of Special Concern -** Alternative impacts are evaluated based on the disturbance and/or removal of species of special concern, including state or federal threatened or endangered fauna.

Intensity:

- **Negligible -** Native wildlife and fish species would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the wildlife or fish species' population. Sensitive species, including Federally or State listed species, would not be effected.
- **Minor -** Effects to native wildlife and fish would be detectable, although the effects would be localized, and would be small and of little consequence to the species' population. A few individuals of a sensitive species may be effected or there may be very localized impacts to their habitat. The change would have minimal consequences to the species or habitat function.
- **Moderate -** Effects to native wildlife and fish would be readily detectable, long-term and localized, with consequences at the population level. Effects to sensitive species would result in measurable effects on: (1) a relatively moderate number of individuals, (2) the existing dynamics between multiple species, or (3) a relatively large habitat area. However, the sensitive species' population would remain viable within the park.
- **Major -** Effects to native wildlife and fish would be obvious, long-term, and would have substantial consequences to wildlife and fish populations in the region. Effects would have drastic and permanent consequences for a sensitive species population, dynamics between multiple species, or almost all available critical or unique habitat are within the park. There would be risk of extirpation from the park.

Duration:

- **Short-term -** Lasting only during the construction period or no longer than two years.
- **Long-term -** Essentially a permanent post-construction impact.

5.8.1 No Action Alternative

Analysis - Under the No Action alternative, no additional habitat would be disturbed. During high visitor use periods, primarily during the summer months, wildlife may avoid the immediate area.

Conclusion - Negligible short-term adverse impacts to wildlife or aquatic resources are anticipated under the No Action alternative.

Impairment - Wildlife and aquatic resources would not be impacted, therefore, impairment would not occur.

5.8.2 Alternatives A, B, and C

Analysis - Under all three action alternatives a very small area (2.4-2.65 acres) would be disturbed by road and parking area expansion, impacting a small amount of wildlife habitat. There are no anticipated impacts to fish communities in Lake Superior or to sensitive species. The project area does not provide important habitat for Federal or State listed species, nor are any listed species known to occur within the project area.

Conclusion - The action alternatives would result in a negligible short-term adverse impact to local wildlife populations. Effects would be localized and would be small and of little consequence to the species population. No adverse impacts are expected to sensitive species, including Federally or State listed species, or fish species.

Impairment - Impairment would not occur because impacts would be negligible to minor and localized. Also, there would be no impact on Federal or State listed species.

5.9 Impacts on Visitor Use and Experience

Methodology

Impact analysis focused on visitor use and experiences in the Meyers Beach area.

Basis of Analysis -

- **Visitor Use-** Alternative impacts are evaluated based on how the project will negatively or positively effect visitor use.
- **Visitor Experiences -** Alternative impacts are evaluated based on potential changes to visitor experiences, including aesthetics.

Intensity:

- **Negligible -** Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.

- **Minor -** Changes in visitor use and/or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
- **Moderate -** Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes
- **Major -** Changes in visitor use and/or experience would be readily apparent and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Duration:

- **Short-term -** Lasting only during the construction period or no longer than two years.
- **Long-term -** Essentially a permanent post-construction impact.

5.9.1 No Action Alternative

Analysis - Under the No Action alternative, visitor use and experiences would only change as a result of changes in the number of visitors using the Meyers Road area. Congestion and poor traffic flow would continue to be a problem during busy times of the year. There would also continue to be visitor safety concerns primarily associated with traffic congestion.

Conclusion - The No Action alternative would not result in changes to visitor use and experiences. Minor to moderate short- and long-term adverse impacts to visitor use and experience would continue as a result of congestion and poor traffic flow.

Impairment - This alternative would not result in changes to visitor use and experiences, therefore, impairment would not occur.

5.9.2 Alternatives A, B and C

Analysis - All action alternatives would result in providing a larger and better designed parking area, improving traffic flow, decreasing congestion, and providing a larger and higher quality toilet and changing room. Under Alternative A, improvements in traffic flow and decreases in congestion would be less than under Alternatives B and C because gravel surfaces cannot be easily marked.

Under Alternative C, the toilet and picnic area are the closest, and therefore most convenient, to visitors using either the stairway or the trailhead.

All action alternatives would include a drainage system that would require construction of a rip-rapped outlet in the upper portion of the slope. Both of these actions would effect visual quality.

Conclusions – Improvements to visitor facilities are expected to have a minor to moderate long-term beneficial impact on visitor use and experiences. Alternatives B and C would have a somewhat greater beneficial impact than Alternative A because paved surfaces are easier to mark. Alternative C would have the highest beneficial impact because the toilet and picnic area locations would be the most convenient to visitors.

Adverse impacts on visual quality associated with construction of the drainage system and outlet are expected to be minor to moderate and short-term, becoming unnoticeable with time as vegetation fills in.

Impairment - All action alternatives are expected to have a beneficial impact on visitor use and experiences, therefore, impairment would not occur.

5.10 Socioeconomic Impacts

Methodology

Impact analysis focused on access and economic contribution of the Meyers Beach area to local economies.

Basis of Analysis -

- **Access –** Alternative impacts are evaluated based on how project alternatives would affect access.
- **Economics-** Alternative impacts are evaluated based on how the project will negatively or positively effect local economies.

Intensity:

- **Negligible -** Economic and socioeconomic conditions would not be affected or effects would not be measurable.
- **Minor -** The effect on socioeconomic conditions would be small but measurable, and would affect a small portion of the population. Few effects could be discerned outside of the Bayfield area.
- **Moderate -** The effect on socioeconomic conditions would be readily apparent and likely long-term. Any effects would result in changes to socioeconomic conditions on a Bayfield Country scale.
- **Major -** The effect on socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions in the region.

Duration:

- **Short-term -** Lasting only during the construction period or no longer than two years.
- **Long-term -** Essentially a permanent post-construction impact.

5.10.1 No Action Alternative

Analysis - Under the No Action alternative, there would be no change in socioeconomic factors.

Conclusion - The No Action alternative would not result in changes to socioeconomic factors. No impacts would be expected.

Impairment - There would not be changes to socioeconomic factors under this alternative, therefore, impairment would not occur.

5.10.2 Alternatives A, B and C

Analysis - Under all three action alternatives, Meyers Beach via Meyers Road would be inaccessible during the construction period. Under Alternative A, the construction period is expected to be 6-7 weeks. Under Alternatives B and C, the construction period is expected to be 7-8 weeks.

Conclusions - Closure of Meyers Road during the shoulder seasons (September-October and April-May) would have a negligible short-term adverse impact on users, including commercial outfitters. Closure of Meyers Road during the primary visitor season (June-August) would cause a minor short-term adverse impact, primarily impacting kayak outfitters that utilize the Meyers Beach area. The park would make every effort to avoid closing Meyers Road during the primary visitor season and to keep the road open on weekends during the construction period. Long-term minor to moderate beneficial impacts would occur as a result of improved traffic flow, parking, and ease of loading and unloading equipment and passengers.

Impairment - Adverse impacts to socioeconomic factors would be negligible to minor and short-term. Beneficial impacts would be minor to moderate and long-term. Therefore, impairment would not occur under these alternatives.

5.11 Impact Comparison Matrix

Impact Topics	*No Action*	*Alternative A*	*Alternative B*	*Alternative C*
Geology, Soils and Topography	No change. Continued minor impacts on soil erosion.	Long- and short-term minor to moderate adverse impacts.	Long- and short-term minor to moderate adverse impacts.	Long- and short-term minor to moderate adverse impacts.
Water Quality	No change. Continued impacts from runoff.	Minor short-term impacts during construction.	Minor short-term impacts during construction.	Minor short-term impacts during construction.
Wetlands	No change.	Negligible to minor wetland related impacts.	Negligible to minor wetland related impacts.	Negligible to minor wetland related impacts.
Ecological Resources (Flora – including T&E species)	No change.	Minor impacts limited to a very small geographic area (2.4 acres). No impacts on T&E species.	Minor impacts limited to a very small geographic area (2.4 acres). No impacts on T&E species.	Minor impacts limited to a very small geographic area (2.65 acres). No impacts on T&E species.
Ecological Resources (Fauna – including T&E species)	No change.	Negligible to minor localized (2.4 acres) impacts on local wildlife populations. No impacts on T&E species.	Negligible to minor localized (2.4 acres) impacts on local wildlife populations. No impacts on T&E species.	Negligible to minor localized (2.65 acres) impacts on local wildlife populations. No impacts on T&E species.
Visitor Use and Experience	No change. Continued congestions and problems with traffic flow.	Minor to moderate adverse short-term impacts. Moderate beneficial impacts due to improved visitor facilities.	Minor to moderate adverse short-term impacts. Moderate beneficial impacts due to improved visitor facilities.	Minor to moderate short-term adverse impacts. Moderate beneficial impacts due to improved visitor facilities.
Socioeconomics	No change.	Negligible to minor adverse short-term impacts. Negligible beneficial long-term impacts.	Negligible to minor adverse short-term impacts. Negligible beneficial long-term impacts.	Negligible to minor adverse short-term impacts. Negligible beneficial long-term impacts.

6.0 UNAVOIDABLE ADVERSE EFFECTS

Alternatives A & B would result in 3.1 acres disturbance of soil and vegetative clearing.

Alternative C would result in 3.4 acres disturbance of soil and vegetative clearing that also includes the future overflow parking area.

6.1 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES INCLUDING ENERGY RESOURCES

Implementation of any of the action alternatives would result in the irreversible (permanently non-recoverable) commitments of resources, such as fuels and non-recyclable construction materials. During construction, vehicles used to transport both materials and workers to the site would consume fossil fuels. There would also be energy expended to manufacture materials required during construction.

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APPENDIX A

Mammals of the Apostle Islands National Lakeshore

Common Name	**Scientific Name**
Red Fox	*Vulpes fulva*
Coyote	*Canis latrans*
Eastern Timber Wolf	*Canis lupus*
Black Bear	*Ursus americanus*
Mink	*Mustela vison*
River Otter	*Lutra canadensis*
Longtail Weasel	*Mustela frenata*
Shorttail Weasel	*Mustela erminea*
Fisher	*Martes pennanti*
Striped Skunk (only Long Island and mainland)	*Mephitis mephitis*
Raccoon (only Long Island and mainland)	*Procyon lotor*
Porcupine (only mainland)	*Erethizon dorsatum*
Woodchuck (only mainland)	*Marmota monax*
Beaver	*Castor canadensis*
Muskrat	*Ondatra zibethica*
Red Squirrel	*Tamiasciurus hudsonicus*
Gray Squirrel (only mainland)	*Sciurus carolinensis*
Flying Squirrel (only mainland)	*Glaucomys sabrinus*
Eastern Chipmunk (only Long Island and mainland)	*Tamias striatus*
Least Chipmunk (only Long Island and mainland)	*Eutamias millimus*
Snowshoe Hare	*Lepus americanus*
Cottontail Rabbit	*Sylvilagus floridanus*
White-tailed Deer	*Odocoileus virginianus*
Moose (very rare)	*Alces alces*
Masked Shrew	*Sorex cinereus*
Shorttail Shrew	*Blarina brevicauda*
Deer Mouse	*Peromyscus maniculatus*
Meadow Jumping Mouse	*Zapus hudsonicus*
Woodland Jumping Mouse	*Napaeozapus insignis*
Redback Vole	*Clethrionomys gapperi*
Meadow Vole	*Microtos pennsylvanicus*
Little Brown Bat	*Myotis lucifugus*
Big Brown Bat	*Eptesicus fuscus*
Red Bat	*Lasiurus borealis*
Hoary Bat	*Lisiurus cinereus*
Silver-haired Bat	*Lasionycteris noctivagans*
Keen Bat	*Myotis keeni*

APPENDIX B

Breeding Birds of the Mainland Unit, Apostle Islands National Lakeshore

Alder Flycatcher
American Bittern
American Crow
American Goldfinch
American Redstart
American Robin
Bald Eagle
Bank Swallow
Barn Swallow
Bay-breasted Warbler
Belted Kingfisher
Black-and-white Warbler
Black-capped Chickadee
Black-throated Blue Warbler
Black-throated Green Warbler
Blackburnian Warbler
Blackpoll Warbler
Blue Jay
Broad-winged Hawk
Brown Creeper
Brown-headed Cowbird
Canada Warbler
Cape May Warbler
Cedar Waxwing
Chestnut-sided Warbler
Chimney Swift
Chipping Sparrow
Common Grackle
Common Loon
Common Merganser
Common Raven
Common Yellowthroat
Double-crested Cormorant
Downy Woodpecker
Eastern Kingbird
Eastern Pewee
Eastern Phoebe
Evening Grosbeak
Golden-crowned Kinglet
Gray Catbird
Great Blue Heron
Great Crested Flycatcher
Great Gray Owl
Hairy Woodpecker
Hermit Thrush
Herring Gull
Indigo Bunting
Killdeer
Least Flycatcher
Magnolia Warbler
Mallard
Marsh Wren
Mourning Warbler
Nashville Warbler
Northern Flicker
Northern Oriole
Northern Parula
Northern Waterthrush
Ovenbird
Palm Warbler
Philadelphia Vireo
Pileated Woodpecker
Pine Siskin
Pine Warbler
Purple Finch
Red-breasted Merganser
Red-breasted Nuthatch
Red-eyed Vireo
Red-winged Blackbird
Rose-breasted Grosbeak
Ruby-crowned Kinglet
Ruffed Grouse
Scarlet Tanager
Sedge Wren
Solitary Vireo
Song Sparrow
Spotted Sandpiper
Swainson's Thrush
Swamp Sparrow
Tennessee Warbler
Tree Swallow
Veery
Whip-poor-will
White-breasted Nuthatch
White-throated Sparrow
Wilson's Warbler
Winter Wren
Wood Duck
Wood Thrush
Yellow Warbler
Yellow-bellied Flycatcher
Yellow-bellied Sapsucker
Yellow-rumped Warbler

APPENDIX C

Reptiles and Amphibians of the Apostle Islands National Lakeshore

Common Name	**Scientific Name**
Common Garter Snake	*Thamnopsis sirtalis*
Red-Bellied Snake	*Storeria occipitomaculata*
Painted Turtle	*Chrysemys picta picta*
Mudpuppy	*Necturus maculosus*
Tiger Salamander	*Ambystoma tigrinum*
Blue-Spotted Salamander	*Ambystoma laterale*
Spotted Salamander	*Ambystoma marculatum*
Red-Backed Salamander	*Plethodon cinereus*
Four-Toed Salamander	*Hemidactylium scutatum*
American Toad	*Bufo americanus*
Common Tree Frog	*Hyla cinerea*
Spring Peeper	*Hyla crucifer*
Leopard Frog	*Rana pipiens*
Wood Frog	*Rana sylvatica*
Green Frog	*Rana clamitans*

APPENDIX D

Fish of the Apostle Islands National Lakeshore Region

Common Name	**Scientific Name**
Rainbow Trout	*Salmo gairdneri*
Brown Trout	*Salmo trutta*
Brook Trout	*Salvelinus foutinalis*
Lake Trout	*Salvelinus namaycush*
Walleye	*Stizostedion vitreum v.*
Northern Pike	*Esox lucius*
Yellow Perch	*Perca flavescens*
Small Mouth Bass	*Micropterus dolomieui*
Rock Bass	*Ambloplites rupestris*
Smelt	*Osmerus mordax*
Lake Whitefish	*Coregonus clupeaformis*
Lake Herring	*Coregonus artedii*
Round Whitefish	*Prosopium cylindraceum*
Longnose Sucker	*Catostomus catostomus*
White Sucker	*Catostomus commersoni*
Burbot	*Lota lota*
Coho Salmon	*Oncorhynchus kisutch*
Bloater	*Coregonus hoyi*
Kiyi	*Coregonus kiyi*
Shortjaw Cisco	*Coregonus zenithieus*
Pygmy Whitefish	*Prosopium coulteri*
Ninepine stickleback	*Pungitius pungitius*
Trout-perch	*Percopsis omiscomaycus*
Johnny Darter	*Etheostoma nigrum*
Slimy Sculpin	*Cottus cognatus*
Mottled Sculpin	*Cottus bairdi*
Spoonhead Sculpin	*Cottus ricei*
Emerald Shiner	*Notropis athernoides*
Spottail Shiner	*Notropis hudsonius*
Lake Chub	*Couesius plumbeus*
Lake Sturgeon	*Acipenser fulvescens*
Sea Lamprey	*Petromyzon marinus*
Alewife	*Alosa pseudoharengus*
Brook Stickleback	*Culea inconstans*
Longnose Dace	*Rhinichthys cataractae*
Deepwater Sculpin	*Myoxocephalus thompsoni*
Eurasian Ruffe	*Gymnochephalus cernuus*
Logperch	*Percina caprodes*
Black Bullhead	*Ictalurus melas*
Carp	*Cyprinus carpio*