

3.0 Affected Environment & Environmental Consequences

This chapter describes the components of the physical, biological, cultural, and experiential environment that exist in the area where construction of a new route for bicyclists is proposed. This chapter also identifies the potential impacts that are likely to occur if the various alternatives described in this document were implemented.

This chapter is organized by resource type, and the expected environmental consequences for each alternative are described in each resource subsection.

3.1 Physical Environment

This section describes the non- biological environment in the project area.

3.1.1 Geological Resources

The project area is located on the Canadian Shield in an area with exposed bedrock that formed during the late Archean Period. The dominant rock type in the area is Precambrian Era biotite schist, a metamorphic rock that formed over 2.5 billion years ago.

The exposed Precambrian bedrock in Voyageurs National Park is among the oldest in North America. The park's geological conditions are considered significant due to their extreme antiquity and the information they provide about the building of the North American continent through the accretion of multiple terranes through the effects of plate tectonics.

The park's geological conditions are listed in the enabling legislation as being one of three nationally significant resources that warrant designation of the area as a national park.

Bedrock outcrops in the project area were modified through blasting and other rock removal activities during the construction of the road linking Highway 11 to the Rainy Lake Visitor Center.

3.1.2 Methodology

The park used the following criteria to determine the intensity of impacts to geological resources.

Negligible Impact: impacts to park geologic features are not detectable based on standard scientific methodologies

Minor Impact: impacts to park geologic features would occur primarily in areas of previous disturbance. Only geologic features that are common in the project area, the park and the surrounding area would be affected.

Moderate Impact: impacts to park geologic features would include modification or removal of previously unmodified bedrock outcrops.

Only geologic features that are common in the project area, the park and the surrounding area would be affected.

Major Impact: impacts to park geologic features would occur in previously undisturbed areas and would include modification or removal of geologic features that are unique to the project area, the park, or the surrounding area.

Impairment: unique geologic features that are uncommon outside of the project area would be lost through modification or removal.

3.1.2.1 Alternative A (No- Action)

There would be no new modification or change to the park's geologic resources under this alternative.

3.1.2.2 Alternative B (Bike Lane Alternative)

There would be minor impacts to geologic features under this alternative. Bedrock outcrops would be modified through blasting or use of heavy equipment to remove rock along both sides of the current park entrance road. Most outcrops are of Precambrian biotite schist, which is common in the project area, the park and the surrounding area.

Previous rock removal occurred during the construction of the road. Under this alternative the road corridor would be widened an additional six to nine feet on each side to accommodate the installation of six foot wide bike lanes on both sides of the road with appropriate setbacks for visibility and safety.

To maintain adequate drainage and slope stability the entire roadway would be widened in many areas. This work would occur primarily in the previously disturbed road corridor, but some previously undisturbed areas adjacent to the road would also be affected.

3.1.2.3 Alternative C (Combination Bike Trail Alternative)

There would be moderate impacts to geological resources under this alternative. Bedrock outcrops would be modified through blasting or use of heavy equipment to remove rock along portions of the north side of the current entrance road, and also in sections of forest on the north side of the road that would be developed for a new bike trail. Most outcrops are of Precambrian biotite schist, which is common in the project area, the park and the surrounding area.

Previous rock removal occurred during the construction of the road. Under this alternative the road corridor would be widened an additional 22- 100 feet on the north side to accommodate the installation of a 10- 12 foot wide bike trail on portions of the north side of the road.

Rock would also be removed in previously undisturbed lands on the north side of the road to accommodate a 10- 12 foot wide paved bicycle trail through an approximately 22- 100 foot wide cleared area.

3.2 Biological Environment

This section describes the living environment in the project area. This includes native plant communities, wildlife and wildlife habitat.

3.2.1 Native Plant Communities

Voyageurs National Park is located at the southern edge of the boreal forest and northern edge of the mixed hardwood forest type. Species common to both forest types are found throughout the park, and also in the area surrounding the existing park entrance road (Figure 3.2, page 35).

The project area includes upland forests dominated by trembling aspen, dry rock ridges, and moist depressions with black ash. A white cedar swamp exists at the west end of current entrance road.

Two hundred and forty plant species were observed in the project area during a recent plant survey (Appendix B). No Endangered, Threatened or Special Concern plant species were found.

3.2.2 Methodology

The park used the following criteria to determine the intensity of impacts to native plant communities.

Negligible Impact: there would be no measurable or perceptible changes in plant community size, species composition, structure or ecological function.

Minor Impact: impacts would be measurable or perceptible, but would be localized within a relatively small area and of short duration. There would be no permanent changes to plant community size, species composition, structure or ecological function. The majority of impacts would occur in or near previously disturbed areas.

Moderate Impact: impacts would be measurable or perceptible, but would be localized within a relatively small area. There would be minor reductions in the size of native plant communities in the project area, but this change would not result in the loss of any particular native plant community in the park or in the project area. Species composition, richness and ecological functions would not be lost. Most impacts would occur in previously undisturbed areas.

Major Impact: project activities would result in a permanent reduction in the size of native plant communities. One or more native plant communities would no longer be present in the project area or elsewhere in the park. There would be a loss of native plant species, or permanent alteration of plant community composition, structure or ecological function.

Impairment: project activities would result in the permanent loss of native plant communities in the project area, or the loss of rare plant species found only in the project area and not elsewhere in the park or surrounding landscape.

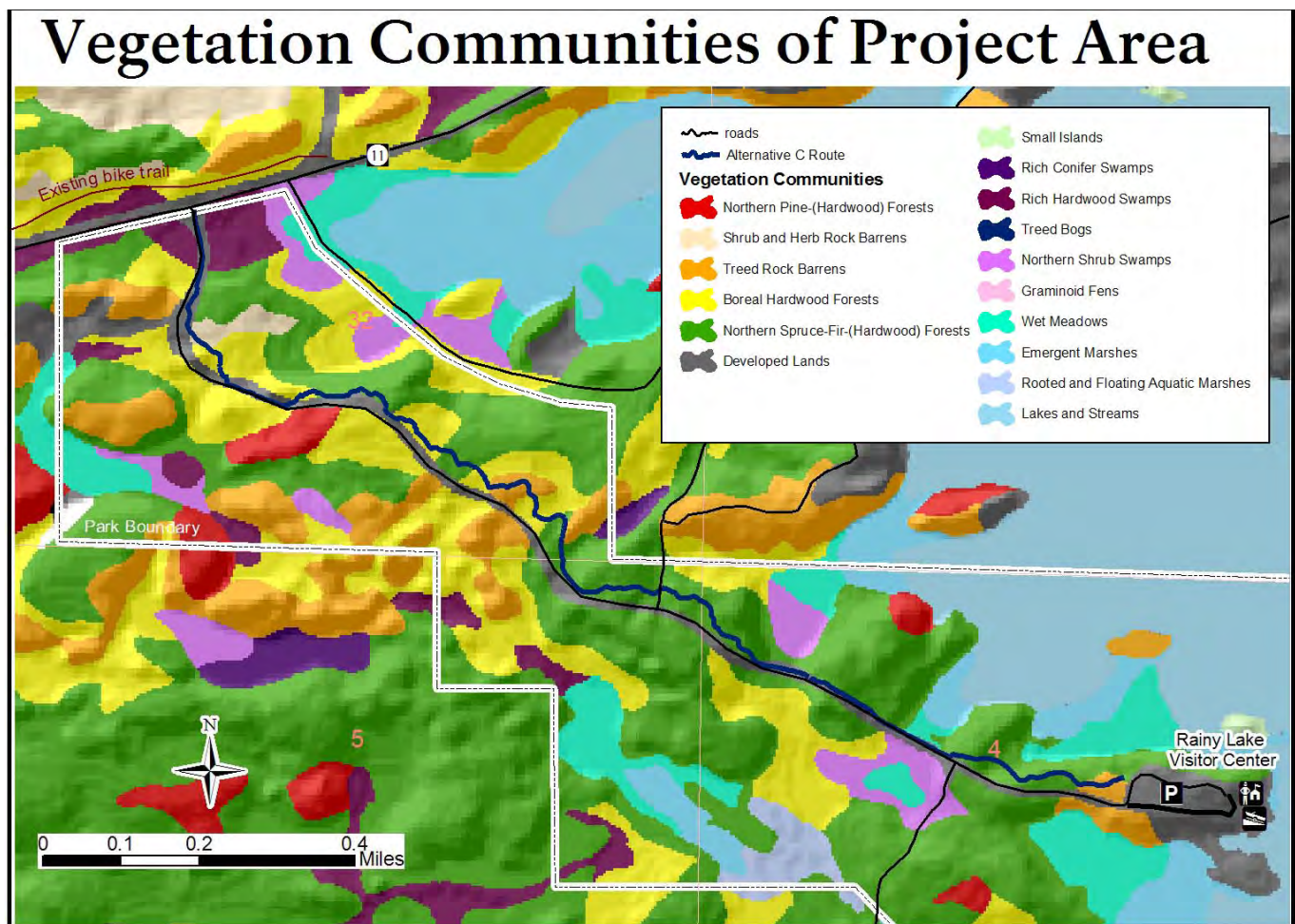


Figure 3.2 Vegetation types found in the project area

3.2.2.1 Alternative A (No- Action)

Native plant communities would be unaltered under this alternative.

3.2.2.2 Alternative B (Bike Lane Alternative)

There would be a minor impact to native plant communities under this alternative. Impacts would occur primarily in the previously disturbed road corridor. Approximately 2.3 acres would be cleared to construct bike lanes on both sides of the road. Impacts specific to wetland and exotic plant species are addressed separately in this document. Additionally, moderate impacts may occur in the 31.5 acre parcel of land that may be removed from park ownership through a land exchange with the state of Minnesota. This land may be subject to timber harvest, which would impact this tract, but would not be expected to result in the permanent loss of any plant species or vegetation community types in the area.

3.2.2.3 Alternative C (Combination Bike Trail Alternative)

There would be minor to moderate impacts to native plant communities under this alternative. Native plant communities would be affected in both the previously disturbed road corridor and the undeveloped forest on the north side of the road. Approximately 5.7 or more acres would be cleared to construct a combination bike trail, including land along the road and within the undeveloped forest on the north side of the road. Impacts specific to wetland and exotic plant species are addressed separately in this document. Additionally, moderate impacts may occur in the 31.5 acre parcel of land that may be removed from park ownership through a land exchange with the state of Minnesota. This land may be subject to timber harvest, which would impact this tract, but would not be expected to result in the permanent loss of any plant species or vegetation community types in the area.

3.2.3 Wetlands

Voyageurs National Park contains 218,000 acres of land and waters. Of these, approximately 33,357 acres of land have been identified as wetlands. The project area for the proposed bicycle trail is located adjacent to Krause Bay on Rainy Lake. The current park entrance road was constructed to move the primary travel corridor out of adjacent Krause Bay wetlands, although some areas along the current road contain wetland characteristics or vegetation types.

A wetland delineation (Appendix C) was performed by the Koochiching County Soil and Water Conservation District to identify wetlands in the project area and provide data to define affected wetland types and the extent of wetland area likely to be disturbed under each alternative. Wetlands identified in this

delineation include types 2, 4, 6 and 7 as defined in “Wetlands of the United States, USFWS Circular 39”.

Current wetland mapping from the National Wetland Inventory (NWI) was also consulted; however this mapping often fails to recognize forested wetlands, making field identification necessary. No soil mapping information is available for this area, as the Koochiching Soil Survey is currently being conducted.

Wetland types found in the project area include:

- Inland fresh meadows where there is typically no standing water but soils are waterlogged within a few inches of the surface. Vegetation common to this wetland type includes grasses, sedges, rushes and broad- leaved plants.
- Deep fresh marshes that typically have between ½ to 3 feet of standing water during the growing season. Typical vegetation in this wetland type includes cattails, reeds, bulrushes, spikerushes, and wild rice.
- Shrub swamps with waterlogged soil and up to six inches of standing water. Vegetation may include alders, willows, buttonbush, dogwoods, and swamp privet.
- Wooded swamps where soil is waterlogged within a few inches of the surface during the growing season, and may have up to one foot of standing water. Trees common to this wetland type include tamarack, arborvitae, black spruce, balsam, red maple, and black ash.

3.2.4 Methodology

The park used the following criteria to determine the intensity of impacts to wetlands in the project area.

Negligible Impact: wetlands would not be impacted or the impacts would be at the lower levels of detection.

Minor Impact: impacts to wetlands would be detectable and relatively small in terms of area and nature of the change. However, wetland processes, functions and integrity would remain unaffected.

Moderate Impact: impacts to the wetlands defining attributes would be readily apparent. Wetland processes, function and integrity may be temporarily affected.

Major Impact: impacts to the wetlands defining attributes would be readily apparent and permanent. There would be permanent loss of wetland processes, function and integrity.

Impairment: impacts to wetlands in the project area would result in the permanent loss of wetland processes, function and integrity in the project area with additional impacts and losses to wetland processes, function and integrity throughout the park and surrounding area.

3.2.4.1 Alternative A (No- Action)

There would be no new modification or change to the wetlands under this alternative.

3.2.4.2 Alternative B (Bike Lane Alternative)

There would be minor impacts to wetlands under this alternative. Wetlands would be modified in several locations along the park entrance road if bike lanes are constructed. Preliminary estimates suggest that approximately 7,200 square feet of wetlands would require gravel fill. This would be needed in areas where the proposed trail base is below the current water level. The gravel fill would be used to raise the wetland bottom above the water level.

In areas where the wetland bottom is generally not flooded the vegetation would be cut flush with the ground surface. Fabric and select grading material would be placed over these areas.

Scattered portions of wetland with standing water would require gravel fill prior to placing fabric and/or select granular fill. This method was used by Koochiching County for the existing bike lane along Highway 11.

All wetlands that would be modified under this alternative are located adjacent to the existing road corridor.

A total of approximately 0.76 acres of identified wetlands would be affected by this alternative. Wetland types impacted include approximately 0.41 acres of wooded swamp, 0.13 acres of shrub swamp, 0.17 acres of deep fresh marsh, and .05 acres of inland fresh meadow.

There would be negligible loss of fish and wildlife habitat under this alternative. There would be no expected impact to biotic functions in terms of native species richness or habitat diversity.

No new impacts to hydrologic functions are anticipated since all modifications to wetlands would occur in or adjacent to the previously disturbed road corridor.

There would be increased cultural value for the wetlands in the project area due to enhanced opportunities for recreation and interpretation in the project area.

There would be no loss in research or scientific values related to wetlands. There is the potential for economic benefit associated with increased visitation and tourism to the area as a result of improved access to the northern entrance of the park on Rainy Lake for bicyclists and pedestrians.

3.2.4.3 Alternative C (Combination Bike Trail Alternative)

There would be minor impacts to wetlands under this alternative. Wetlands would be modified along the park entrance road and in undeveloped areas separate from the park road if a combination bike trail is constructed.

Preliminary estimates suggest that approximately 14,400 square feet of wetlands would require gravel fill. This would be needed in areas where the proposed trail base is below the current water level. The gravel fill would be used to raise the wetland bottom above the water level. Culverts would be placed to maintain surface- flow hydrologic conditions, where appropriate.

In areas where the wetland bottom is generally not flooded the vegetation would be cut flush with the ground surface. Fabric and select grading material would be placed over these areas.

Scattered portions of wetland with standing water may require gravel fill prior to placing fabric and/or select granular fill. This method was used by Koochiching County for the existing bike lane along Highway 11.

Wetlands adjacent to the existing road corridor and in previously undeveloped areas would be affected under this alternative.

A total of approximately 1 – 1.22 acres of identified wetlands would be affected by this alternative. Wetland types impacted would include approximately 0.43 acres of wooded swamp, 0.05 acres of shrub swamp, 0.63 acres of deep fresh marsh, and 0.11 acres of inland fresh meadow.

There would be negligible loss of fish and wildlife habitat under this alternative. There would be no expected impact to biotic functions in terms of native species richness or habitat diversity.

Only negligible impacts to hydrologic functions are anticipated since most modifications to wetlands would occur in or adjacent to the previously disturbed road corridor, and those that occur in undeveloped areas represent a small fraction of the wetland habitat in the project area, the park, and the surrounding area.

No measurable changes to ground water recharge or discharge, water supply, erosion or sediment control are expected as a result of proposed project activities.

There would be increased cultural value for the wetlands in the project area due to enhanced opportunities for recreation and interpretation in the project area.

There would be no loss in research or scientific values related to wetlands. There is the potential for economic benefit associated with increased visitation and tourism to the area as a result of improved access to the northern entrance of the park on Rainy Lake for bicyclists and pedestrians.

3.2.5 Exotic Plant Species

Over 100 exotic plant species have been identified within Voyageurs National Park. Of these, a few highly invasive species have negatively impacted native plant communities throughout the park.

One of the most aggressive exotic plants found in the project area is Canada thistle (*Cirsium arvense*). This perennial weed has spread rapidly along roadsides, trails, and other developed areas. Local gravel and fill supplies have been found to contain an abundant seed source of Canada thistle, leading this plant to appear in nearly every area where gravel and fill materials have been imported in the park.

National park staff actively manage the park's entrance roads to eliminate Canada thistle by mowing existing plants prior to plant maturation and seed production to prevent spread. Additionally, NPS staff have been selectively treating existing thistle plants with herbicide to eliminate them from park entrance roads. This combined effort has resulted in a noticeable decrease in thistle density and abundance in the entrance road corridor over the last year (2006).

3.2.6 Methodology

The park used the following criteria to determine the intensity of impacts related to exotic plant species in the project area.

Negligible Impact: there would be no changes in exotic plant presence, abundance or distribution in the project area.

Minor Impact: there would be no new species of exotic plants introduced as a result of project activities. The potential for an increase in the abundance or distribution of exotic plant species presently found in the project area is possible. Increased exotic plant infestations would be limited to the previously disturbed park road corridor. Monitoring and treatment of increased exotic plant infestations would bring the project area back to pre- construction levels within three years.

Moderate Impact: there would be no new species of exotic plants introduced as a result of project activities. The potential for an increase in the abundance or distribution of exotic plant species presently found in the project area is possible. Increased exotic plant infestations would be possible in the previously disturbed road corridor and also in previously undeveloped native plant communities as a result of project activities. Monitoring and treatment of increased exotic plant infestations would bring the project area back to pre- construction levels within three years.

Major Impact: New species of exotic plants not previously found in the project area may be introduced as a result of project activities. Existing populations of exotic plants are likely to spread into previously uninfested areas. It is likely that native plant communities would be negatively impacted and that monitoring and treatment of exotic plants would be required for more than three years to return the project area to pre- construction condition in terms of exotic plant presence, abundance and distribution.

Impairment: New species of exotic plants not previously found in the project area may be introduced as a result of project activities. Existing populations of exotic plants are likely to spread into previously uninfested areas. It is likely that native plant communities would be permanently impacted and that monitoring and treatment of exotic plants would be required for more than five years to return the project area to pre- construction condition in terms of exotic plant presence, abundance and distribution.

3.2.6.1 Alternative A (No- Action)

Exotic plant management would continue in the existing road corridor.

3.2.6.2 Alternative B (Bike Lane Alternative)

There would be minor impacts related to exotic plants under this alternative. Exotic plant species would continue to be managed along the road corridor. The park would continue to treat roadside Canada thistle through regular mowing and the annual treatment of targeted plants with an approved herbicide.

Under the bike lane alternative there would be newly disturbed land immediately adjacent to the existing entrance road. It is likely that new exotic plant seeds would be introduced with the importation of gravel and fill materials. It is also likely that aggressive exotic plant species would germinate and spread in the newly disturbed area.

Park staff would likely see a temporary increase in Canada thistle, but would not necessarily need to increase exotic plant management activities beyond what is occurring now in the road corridor to adequately manage any new infestations.

There is the potential for a minor to moderate impact to the small tract of land that may be removed from park ownership to facilitate a land exchange with the state of Minnesota. This parcel may be harvested for timber, and this may result in the introduction or spread of exotic plant species in this area.

3.2.6.3 Alternative C (Combination Bike Trail Alternative)

There would be moderate impacts related to exotic plant species under this alternative. Exotic plant species would continue to be managed along the road corridor. The park would continue to treat roadside Canada thistle through regular mowing and the annual treatment of targeted plants with an approved herbicide.

Under the combination bike trail alternative there would be newly disturbed land immediately adjacent to the existing entrance road and also in the previously undeveloped forest on the north side of the road.

It is likely that new exotic plant seeds would be introduced with the importation of gravel and fill materials. It is also likely that aggressive exotic plant species would germinate and spread in the newly disturbed areas.

Exotic plant management activities would need to increase to prevent invasive plants from encroaching along the newly developed bike trail. This would include mowing along the trail and selectively treating new populations of targeted invasive species with an approved herbicide. This would require the commitment of additional maintenance and resource management staff time and funds to support exotic plant management activities, particularly in the newly opened and developed trail sections in the forested area away from the entrance road.

There is the potential for a minor to moderate impact to the small tract of land that may be removed from park ownership to facilitate a land exchange with the state of Minnesota. This parcel may be harvested for timber, and this may result in the introduction or spread of exotic plant species in this area.

3.2.7 Wildlife

Voyageurs National Park is home to a diverse assemblage of animal species. Wildlife commonly seen in the project area includes whitetail deer, red fox, squirrels, snowshoe hare, and many species of resident and migratory birds. Gray wolves, Canada lynx and bald eagles have also been documented in the park, but are not known to reside in the project area due to the proximity of residential and resort development nearby and lack of suitable habitat in the road corridor.

3.2.8 Methodology

The park used the following criteria to determine the intensity of impacts related to native wildlife species in the project area.

Negligible Impact: there would be no observable or measurable impacts to native species of wildlife, their habitats, or the natural processes sustaining them. Impacts would be of short duration and well within natural fluctuations.

Minor Impact: impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long- term effects on native species, their habitats, or the natural processes sustaining them.

Population numbers, population structure, genetic variability, and other demographic factors for species might have small, short- term changes, but long- term characteristics would remain stable and viable. Occasional responses to disturbance by some individuals could be expected, but without interference to feeding, reproduction, or other factors affecting population levels. Impacts would be outside critical reproduction periods for sensitive native species.

Moderate Impact: breeding animals of concern are present; animals are present during particularly vulnerable life- stages, such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park unit.

Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability for short periods of time. Population numbers, population structure, genetic variability, and other demographic factors for species might have short- term changes, but would be expected to rebound to pre- impact numbers and to remain stable and viable in the long- term. Frequent responses to disturbance by some individuals could be expected, with some negative impacts to feeding, reproduction, or other factors affecting short- term population levels.

Sufficient habitat would remain functional to maintain viability of all native species. Some impacts might occur during critical periods of reproduction or in key habitat for sensitive native species.

Major Impact: Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or be permanent.

Population numbers, population structure, genetic variability, and other demographic factors for species might have large, short- term declines, with long- term population numbers significantly depressed. Frequent responses to disturbance by some individuals would be expected, with negative impacts to feeding, reproduction, or other factors resulting in long- term decrease in population levels. Breeding colonies of native species might relocate to other portions of the park.

Key ecosystem processes might be disrupted in the long term or permanently. Loss of habitat might affect the viability of at least some native species.

Impairment: Some of the major impacts described above would be an impairment of park resources if their severity, duration and timing resulted in the elimination of a native species or significant population declines in a native species, or they precluded the park's ability to meet recovery objectives for listed species.

3.2.8.1 Alternative A (No- Action)

Wildlife and wildlife habitat would be unaltered under this alternative.

3.2.8.2 Alternative B (Bike Lane Alternative)

There would be minor impacts to native species of wildlife under this alternative. Individual animals may be temporarily disturbed by noise related to construction of bike lanes under this alternative. It is not expected that widening the current road corridor would result in any individual animal mortality, nor is it expected that this would result in any measurable impacts to populations of native wildlife species living adjacent to the existing park road.

3.2.8.3 Alternative C (Combination Bike Trail Alternative)

There would be minor impacts to native species of wildlife under this alternative. Individual animals may be temporarily disturbed by noise related to construction of a combination bike lane under this alternative. It is not expected that trail construction would result in any individual animal mortality, nor is it expected that this would result in any measurable impacts to populations of native wildlife species living adjacent to the existing park road. It is possible that construction of the separate bike trail through the previously undeveloped forest on the north side of the road may displace some individual animals to similar habitat in the surrounding area immediately adjacent to the newly constructed trail.

3.2.9 Threatened & Endangered Species

A biological assessment (Appendix A) was conducted to determine if any of the alternatives considered in this document would have an effect on federally protected Threatened or Endangered species. A determination was made that the construction of bike lanes or a combination bike trail may effect, but was unlikely to adversely affect protected species.

DESCRIPTION OF LISTED SPECIES and EFFECTS

Bald eagle

Population status: Abundance and productivity of breeding eagles has been recorded in Voyageurs National Park and some adjacent areas since

1973. The number of breeding pairs in the park area has varied around 50 in recent years.

Nesting habitat: The closest active (2005) nests to the project area are located in Black Bay, more than two and a half kilometers from the proposed project area. There are two other nests that were active in 2005 that are within three and a half kilometers of some portion of the project area. Bald eagles in Voyageurs National Park prefer nesting in large white pines more than 100 meters from shore on isolated islands or points adjacent to islands. No active bald eagle nests have been observed within two and a half kilometers of the project area since monitoring began in 1973.

Foraging habitat: The project area contains virtually no foraging habitat for eagles within the boundaries of federally- owned land. Though the entire project area is bounded by Black Bay (Rainy Lake) and contains more than three and a half kilometers of shoreline within the defined boundaries of the Park, all of this shoreline is more than one and a half kilometers from the nearest eagle nests, which is the commonly accepted maximum foraging distance for breeding eagles in northern climates.

Gray wolf

Population status:

Wolf abundance in recent years within Voyageurs National Park has stabilized around 46- 55 animals in six to eight packs. Tracking surveys and casual observations by park staff and visitors during winter in 2005 suggest that at least one pack of three to four wolves contains the proposed project area within their territory.

Prey habitat:

White- tailed deer are the primary prey for gray wolves in VNP. Within the federally- owned portion of the project area, foraging habitat for white- tailed deer is minimal, as no significant habitat disturbance has occurred in the last 20 years. Thermal cover for over- wintering deer, in the form of dense conifer such as balsam fir or spruce, is also limited.

Critical Habitat

The project area is not within the designated critical habitat for wolves (the boundary starts on the east side of Black Bay, just across from the Rainy Lake Visitor Center).

The vast majority of lands utilized by resident wolves would remain unaffected by the proposed construction activities in the project area. Further, wolves in Minnesota readily adapt to human presence, as evidenced by the existence of a wolf pack that currently uses this semi-

developed area. The increased human use expected along the bike trail corridor would have a negligible effect on wolves.

Canada lynx

Population status:

Lynx tracking surveys in the project area by park staff from 2004- 2006 have not produced any verified evidence of lynx presence. However, park staff did collect DNA evidence of a female lynx in March 2003 near the Rainy Lake Visitor Center and other verified sightings were reported in the area in 2002 and 2003. Therefore, there is a possibility that at least one Canada lynx may be using the project area as part of their territory.

Lynx Habitat

Based on habitat use patterns observed in an ongoing study of lynx ecology in the Superior National Forest, lynx prefer habitats with dense understory cover as primary foraging habitat (Moen et al. 2004). Active dens of female lynx located in the Superior National Forest in recent years have been in mature stands with some large trees in both upland and lowland areas, and typically in areas that experienced some windthrow. All of the project area has been designated as Critical Lynx Habitat by the USFWS.

Despite several confirmed sightings of lynx in or near the project area from 2002- 2004, no confirmed or unconfirmed sightings have been reported since. However, this should not be interpreted to mean one or more lynx are not presently using the area but instead that we have not been able to verify their presence since 2004.

Preliminary evidence from radio- collared lynx in northeastern Minnesota suggests that lynx move regularly across roads (even paved, two- lane highways) and trails (snowmobile, hiking, etc).

Suitable denning habitat for lynx in the project area, defined as mature stands of trees with recent evidence of wind- throw, does not exist within the project area. The proposed project would not adversely modify lynx critical habitat because of the location of the proposed bike trail along an existing disturbance corridor (i.e., paved road) and the extremely small acreage of habitat that would be affected by construction. No other construction is currently planned within the project area.

3.2.10 **Methodology**

The park used the following criteria to determine the intensity of impacts related to threatened and endangered species in the project area.

Negligible Impact: there would be no observable or measurable impacts to native species of wildlife, their habitats, or the natural processes sustaining

them. Impacts would be of short duration and well within natural fluctuations.

Minor Impact: impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long- term effects on listed species, their habitats, or the natural processes sustaining them.

Population numbers, population structure, genetic variability, and other demographic factors for species might have small, short- term changes, but long- term characteristics would remain stable and viable. Occasional responses to disturbance by some individuals could be expected, but without interference to feeding, reproduction, or other factors affecting population levels. Impacts would be outside critical reproduction periods for sensitive native species.

Moderate Impact: Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the range of natural variation. Frequent responses to disturbance by some individuals could be expected, with some negative impacts to feeding, reproduction, resting, or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the park resulting in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers or habitat in the park would remain functional to maintain the viability of the species in the park.

Major Impact: Impacts on native species, their habitats or the natural processes sustaining them would be detectable, would be expected to be outside the range of natural variability, and would be permanent. Frequent responses to disturbance by some individuals would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a decrease in park population levels. Impacts would occur during critical periods of reproduction or in key habitats in the park and result in direct mortality or loss of habitat that might affect the viability of a sensitive species. Local population numbers, population structure, and other demographic factors might experience large declines.

Impairment: The action would contribute substantially to the deterioration of a federally listed species or critical habitat in Voyageurs National Park.

3.2.10.1 Alternative A (No- Action)

There would be no impacts to threatened or endangered species related to this alternative.

3.2.10.2 Alternative B (Bike Lane Alternative)

There would be negligible to minor impacts to threatened or endangered species under this alternative. It is expected that bald eagles would be unaffected by the proposal. Any wolves or Canada lynx present in the project area during bike lane construction may be temporarily displaced to the surrounding area, but construction would not be likely to result in injury or mortality to any individuals, and it would have no population level impacts or measurable impacts to critical habitat.

3.2.10.3 Alternative C (Combination Bike Trail Alternative)

There would be negligible to minor impacts to threatened or endangered species under this alternative. It is expected that bald eagles would be unaffected by the proposal. Any wolves or Canada lynx present in the project area during bike trail construction may be temporarily displaced to the surrounding area, but construction would not be likely to result in injury or mortality to any individuals, and it would have no population level impacts or measurable impacts to critical habitat.

3.3 Experiential Environment

This section describes the experiential environment in the project area. This includes visitor safety, recreation, and visitor experience.

3.3.1 Visitor Safety

Visitor safety is always a primary concern when evaluating management decisions in the park. This assessment reviews the safety of visitors accessing the Rainy Lake Visitor Center from Highway 11 and the existing bicycle trail that parallels the highway.

3.3.2 Methodology

The park used the following criteria to determine the intensity of impacts related to visitor safety in the project area.

Negligible Impact: impacts to visitor safety would not be measurable or perceptible.

Minor Impact: impacts to visitor safety would be perceptible. Impacts to visitor safety would be realized through a minor increase or decrease in the potential for accidents along the Rainy Lake Visitor Center entrance road.

Moderate Impact: impacts to visitor safety would be measurable and perceptible. Impacts to visitor safety would be realized through a moderate increase or decrease in the potential for accidents along the Rainy Lake Visitor Center entrance road.

Major Impact: Impacts to visitor safety would be substantial, either through the elimination of potential hazards or in the creation of new areas with a high potential for serious accidents.

3.3.2.1 Alternative A (No- Action)

There would be a moderate to major negative impact to visitor safety under this alternative. Automobile drivers, bicyclists and pedestrians currently share the same narrow, winding road that connects Highway 11 to the Rainy Lake Visitor Center. There is currently no separate bike lane and the existing road shoulder is too narrow in many places to adequately accommodate this use.

Automobile drivers frequently cross into the oncoming traffic lane in order to pass bicyclists and pedestrians. This is unsafe because in many places drivers cannot see if another vehicle is approaching from the opposite direction.

Multiple vehicle collisions and collisions between automobiles and bicyclists or pedestrians are possible, although none have occurred to date.

3.3.2.2 Alternative B (Bike Lane Alternative)

There would be moderate beneficial impacts to visitor safety under this alternative. The potential for bicycle/automobile collisions would be reduced as a result of the wider travel corridor and the addition of bike lanes on both sides of the road. Multiple vehicle collisions would be less likely to occur since the addition of bike lanes would provide adequate space for automobiles to safely pass bicyclists and pedestrians without crossing over into oncoming traffic lanes. Multiple bicycle collisions and bicycle/pedestrian collisions would also be unlikely since traffic would be one-way only in the bike lanes, moving with the flow of traffic on both sides of the road.

Automobile collisions with bicyclists and pedestrians would still be possible, but the risk would be substantially reduced due to the design speed of the road and the construction of a six foot wide paved bike lane on each side of the road with

adequate setbacks and clearance to provide for visibility and safety requirements.

3.3.2.3 Alternative C (Combination Bike Trail Alternative)

There would be moderate to major positive impacts to visitor safety under this alternative. Automobile collisions with bicyclists or pedestrians would be less likely to occur because most bicyclists and pedestrians would use the newly constructed separate bike trail. It is possible that multiple bicycle or bicycle/pedestrian collisions may occur since these uses would be combined with two-way traffic shared on one trail on the north side of the road only.

People who continued to use the narrow road shoulder for bicycling and walking would experience the same safety concerns as currently exist under the No Action alternative. Likewise, multiple vehicle collisions would be less likely to occur, but would still be possible if drivers continue to cross into the oncoming traffic lane to pass bicyclists and pedestrians using the narrow road shoulder instead of the separate bike trail.

3.3.3 Recreation Resources

The Rainy Lake Visitor Center is the northern gateway to Voyageurs National Park. Local residents and park visitors use the entrance road to access the public boat launch, picnic area, hiking, snowshoe and cross-country ski trails located near the park visitor center. In addition to providing automobile access, people regularly use the existing park road for jogging, dog walking, hiking, and bicycling.

3.3.4 Methodology

The park used the following criteria to determine the intensity of impacts related to recreation in the project area.

Negligible Impact: changes in recreation opportunities would not be measurable or perceptible.

Minor Impact: impacts to the availability of recreation resources in the project area would be perceptible. A slight increase in use of the area for recreation would be expected, although no new uses would occur.

Moderate Impact: impacts to the availability of recreation resources in the project area would be measurable and perceptible. A slight to moderate increase in recreational use of the area would be expected, including the creation of new recreation opportunities that either did not previously

exist, or else existed in a sub- standard format. New recreation opportunities would be created for primarily one season.

Major Impact: impacts to the availability of recreation resources in the project area would be measurable and perceptible. A moderate to large increase in recreational use of the area would be expected, including the creation of new recreation opportunities that either did not previously exist, or else existed in a sub- standard format. New recreation opportunities would be created for more than one season.

3.3.4.1 Alternative A (No- Action)

Recreation opportunities would be unchanged. Automobile drivers, bicyclists, and pedestrians would continue to share the same narrow and winding entrance road.

3.3.4.2 Alternative B (Bike Lane Alternative)

There would be moderate positive impacts to recreation opportunities under this alternative. Bicyclists would continue to access the Rainy Lake Visitor Center by sharing the road with automobiles. People would continue to walk their dogs along the park road. In the winter the park would continue to track the Oberholtzer Trail for use by snowshoers, and the Voyageurs- Tilson Connector Trail would continue to be groomed for use by cross- country skiers.

It is likely that people would enjoy road- side recreation to a greater extent if the travel corridor was widened, as proposed under the bike lane alternative.

Visitation to the area would likely increase due to improved access for bicyclists and pedestrians accessing the park from the existing bike trail that parallels Highway 11.

3.3.4.3 Alternative C (Combination Bike Trail Alternative)

There would be moderate to major positive impacts to recreation opportunities under this alternative. Bicyclists would access the Rainy Lake Visitor Center using the newly constructed bike trail, although some may continue to use the existing road shoulder. People would be allowed to walk their leashed dogs on the new trail, although some may continue to walk their dogs along the park road.

In the winter the park would continue to track the Oberholtzer Trail for use by snowshoers, and the Voyageurs- Tilson Connector Trail would continue to be

groomed for use by cross- country skiers. Although the new bike trail would not be maintained during the winter months it would be open to people traveling on snowshoes or cross-country skis.

It is likely that people would enjoy the visitor experience provided by a separate trail apart from the park entrance road used by automobile drivers.

Visitation to the area would likely increase due to improved access for bicyclists and pedestrians accessing the park from the existing bike trail that parallels Highway 11.

3.3.5 Visitor Experience

The existing park entrance road provides an aesthetically pleasing route through a variety of vegetation types with seasonal variety due to the changing color of deciduous tree leaves in autumn and the abundant spring growth of herbaceous plants each spring and summer. Frequent scenic outcrops of Precambrian bedrock provide visual interest and access to one of the park's significant resources. Krause Bay is visible on the north side of the road and small wetlands may be seen and enjoyed along the road in several places.

The current road provides a pleasant experience except when the narrow corridor is being shared by multiple modes of travel simultaneously. For example, when two automobile drivers who are towing boats traveling in opposite directions must pass a group of pedestrians and a bicyclist in an area with limited space and visibility, visitor experience may be negatively impacted.

3.3.6 Methodology

The park used the following criteria to determine the intensity of impacts related to visitor experience in the project area.

Negligible Impact: changes in visitor experience would not be measurable or perceptible.

Minor Impact: Visitors would likely be aware of the effects associated with changes proposed along the Rainy Lake Visitor Center entrance road, however these changes would be slight and of short duration (limited primarily to times when heavy equipment was present or during construction).

Moderate Impact: Visitors would be aware of the effects associated with the proposed changes along the Rainy Lake Visitor Center entrance road. These changes would noticeably alter the road corridor, and would be

long- term in nature. However, these changes would not eliminate the presence of an aesthetically pleasing travel route for motorists, bicyclists or pedestrians entering the park along this route.

Major Impact: Visitors would be aware of the effects associated with the proposed changes along the Rainy Lake Visitor Center entrance road. These changes would noticeably alter the road corridor, and would be long- term in nature. These changes would degrade the aesthetic value of the road for motorists, bicyclists or pedestrians entering the park along this route. Examples of degradation include loss of views to native plant communities, the addition of large, obtrusive manmade elements (guard rails, walls, barricades), or the elimination of views of surrounding wetlands and Krause Bay.

3.3.6.1 Alternative A (No- Action)

The potential for a moderate to major impact to visitor experience may occur under this alternative if the state- owned lands present along the current park entrance road to the Rainy Lake Visitor Center are logged.

3.3.6.2 Alternative B (Bike Lane Alternative)

There would be minor impacts to visitor experience under this alternative. The road would be modified, some rock outcrops would be removed and the travel corridor would be widened. Care would be taken to maintain an aesthetically pleasing entrance that retained views of the surrounding forest, ancient rock outcrops and of Krause Bay.

There would be improvements to visitor experience related to the creation of adequate space for people sharing the road, whether traveling by automobile, bicycle, or on foot.

Impacts to visitor experience would be avoided under this alternative if state- owned lands adjacent to the proposed bike lanes are acquired by the NPS, and are not subject to timber harvest or open to hunting.

3.3.6.3 Alternative C (Combination Bike Trail Alternative)

There would be minor to moderate impacts to visitor experience under this alternative. The road would be modified, several large rock outcrops would be removed and the travel corridor would be substantially widened in several areas. Other areas of the road would be unchanged where the trail enters the forested lands to the north.

Care would be taken to maintain an aesthetically pleasing entrance that retained views of the surrounding forest, ancient rock outcrops and of Krause Bay.

There would be improvements to visitor experience related to the creation of a separate trail for bicyclists and pedestrians that could potentially be used for year- round travel, although it would be un- maintained in winter.

Impacts to visitor experience would be avoided under this alternative if state- owned lands adjacent to the proposed bike trail are acquired by the NPS, and are not subject to timber harvest or open to hunting.