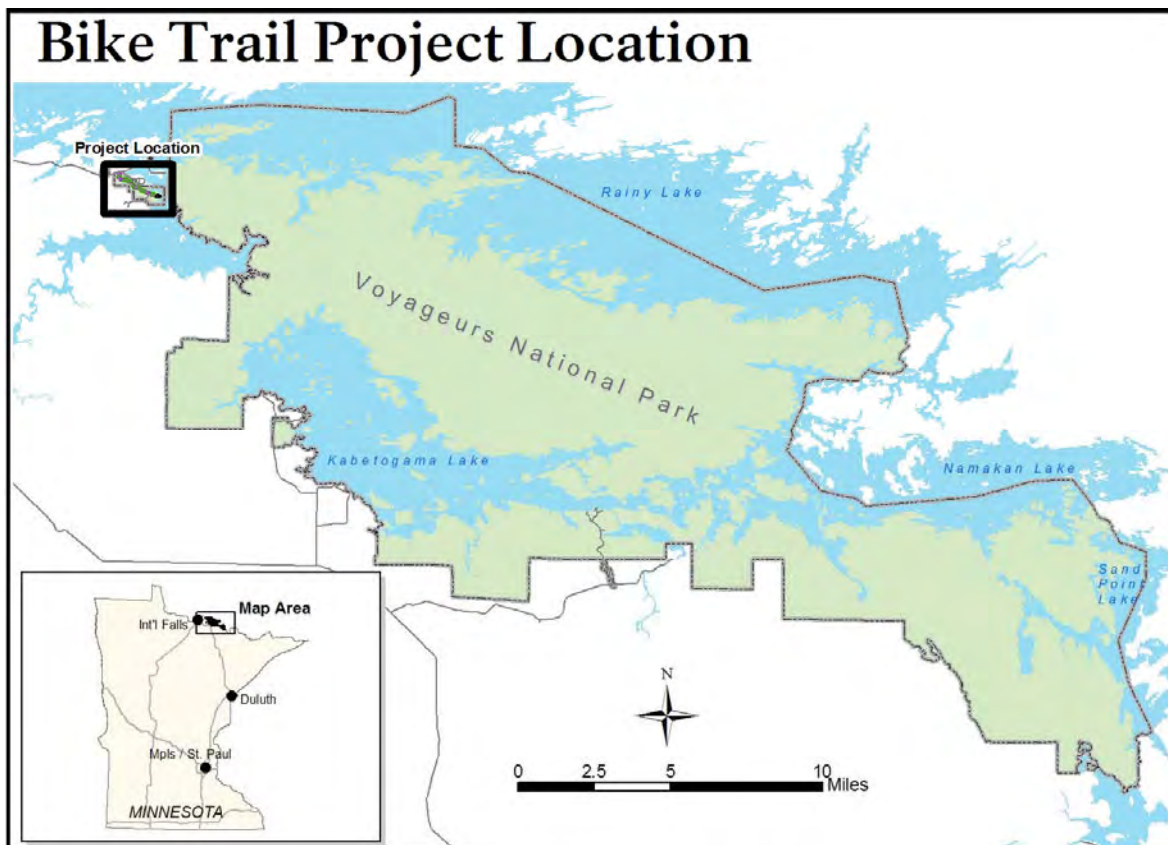


Rainy Lake Visitor Center Bicycle Trail Environmental Assessment

January 31, 2007



Cover Sheet

Proposed Action: Voyageurs National Park proposes to construct a bicycle trail connecting the existing bike path along Highway 11 with the park's Rainy Lake Visitor Center.

Type of Statement: Environmental Assessment (EA)

Lead Agency: Department of the Interior, National Park Service

Cooperating Agencies: Federal:
United States Fish & Wildlife Service (FWS)
Army Corps of Engineers
State of Minnesota:
Department of Natural Resources (DNR)
Koochiching County:
Water & Soil Conservation District
Environmental Services
Highway
Lands & Forestry

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Abstract: *Voyageurs National Park proposes to construct a bicycle path linking the community of International Falls, MN to the park's northern entrance by extending an existing bike path that parallels Highway 11 to the park's Rainy Lake Visitor Center. Additionally, the park proposes to pursue legislative change that would facilitate a land exchange between the National Park Service and the State of Minnesota in order to consolidate land ownership along the park's northern entrance to the Rainy Lake Visitor Center to avoid conflicting land use adjacent to the proposed bike path. This document was written to assist the park decision maker by assessing three different alternative approaches to meeting the goal stated above, and to comply with the National Environmental Policy Act and National Historic Preservation Act.*

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1.0 Purpose of and Need for Action

1.1 Introduction

1.1.1 Background

Voyageurs National Park contains 218,000 acres of land and waters managed by the National Park Service (NPS) to protect the outstanding scenery, geological conditions, and a portion of the historic route of the voyageurs during the North American Fur Trade period over two- hundred years ago.

The northern entrance to Voyageurs National Park is located on Rainy Lake, which is commonly accessed by people arriving by automobile from Highway 11, traveling east from the community of International Falls. A road links Highway 11 with the park's Rainy Lake Visitor Center and adjacent public boat launch ramp.

At this time, bicyclists, pedestrians and automobile drivers access the visitor center and launch ramp by sharing a narrow and winding road that includes several areas with poor visibility. The current situation poses a safety risk for people traveling on the current road because bicyclists and pedestrians are often difficult to see until the approaching motor vehicle is very close. Drivers also frequently cross into the oncoming traffic lane to pass bicyclists and pedestrians. This is especially dangerous in areas where vehicles approaching from the opposite direction are difficult or impossible to see.

Land ownership in the road corridor leading to the park's Rainy Lake Visitor Center currently includes both federal lands managed by the NPS and state lands managed by Koochiching County. State lands have been considered for logging and would typically be open to hunting and trapping. Neither of these activities is consistent with management of the surrounding park lands and would be likely to detract from the visitor experience of people entering the park here.

1.1.2 Proposal

Voyageurs National Park proposes to construct a bicycle route that would provide improved access for bicyclists and pedestrians entering the park's Rainy Lake Visitor Center from Highway 11. The park proposes to pursue legislative change that would allow for a land exchange between the NPS and the State of Minnesota to consolidate land use in the entrance road corridor to avoid conflicting land uses adjacent to the proposed bike path.

1.1.3 Purpose & Need

The purpose in taking the proposed actions is to alleviate visitor safety concerns related to automobiles sharing the same narrow road as bicyclists and pedestrians, and to provide for a positive visitor experience for people accessing Voyageurs National Park via the park's northern entrance corridor on Rainy Lake.

1.1.4 Project Objectives

The park proposes to address this situation while meeting the following goals:

- Provide safe access to the Rainy Lake Visitor Center from Highway 11 for pedestrians, bicyclists and automobile drivers.
- Provide a bicycle route that is designed for recreational users (including families traveling with young children).
- Connect the community of International Falls to Voyageurs National Park by extending the existing bicycle path along Highway 11 to the park's Rainy Lake Visitor Center.
- Avoid land use conflicts adjacent to the proposed bike path by acquiring state lands in the corridor between Highway 11 and the park's northern entrance and Rainy Lake Visitor Center.
- Protect park resources by minimizing impacts related to trail construction.
 - a. Avoid or reduce impacts to wetlands in the project area
 - b. Prevent the establishment or spread of exotic plant species due to proposed construction activity
 - c. Ensure an aesthetically pleasing access route for visitors entering the park via the Rainy Lake Visitor Center road
 - d. Avoid or reduce impacts to the park's biological, cultural, physical and experiential resources by minimizing the extent of new disturbed ground, protecting native vegetation, adhering to identified Best Management Practices for wetlands protection and exotic species prevention, by retaining a visually pleasing road corridor; and minimizing the alteration of previously undisturbed wetlands, geological features and plant communities.

1.2 Related Documents

The proposal to construct a bicycle route to enhance visitor access to the Rainy Lake Visitor Center was identified in the park's General Management Plan (2002), which states:

Bicycle and Pedestrian Access.

Bike lanes or separate paths will be developed along entrance roads to the park's visitor centers. Park staff will pursue the development of trail connections or linkages to existing lanes/paths outside the park. An additional shoulder will be needed in some areas to provide for safe routes.

1.3 Scoping

1.3.1 Internal Scoping

Voyageurs National Park staff established an interdisciplinary team to review the proposed bicycle trail project, to identify alternatives and potential impacts and mitigation activities. Information about the proposed trail was shared with park staff and was open for comments.

1.3.2 Public Scoping

A 30 day public scoping period was announced on August 5, 2006. Information about the proposed bike path was published in the local newspaper and on the National Park Service Planning, Environment and Public Comment (PEPC) website.

The park informed Indian tribes by letter on February 14, 2005 of anticipated planning for bike trail access along the Rainy Lake Visitor Center entrance road.

The park informed the State Historic Preservation Officer (SHPO) of anticipated planning for the bike trail at annual meetings on April 27- 28, 2005 and March 30, 2006.

No public comments were received during the initial public scoping period.

This environmental assessment will be made available for a 30 day public review and comment period. Substantive comments will be considered in our decision making process.

1.4 Issues Considered in this Analysis

The park has identified the following issues related to construction of a bicycle path to the RLVC.

- **Geologic Resources** – the park’s enabling legislation identified the unique geological conditions present in the park as one of the reasons for establishing Voyageurs National Park. Construction of a bike trail would necessitate removal or alteration of Precambrian bedrock outcrops along the proposed path.
- **Wetlands** – construction of a bike path connecting the trail on Highway 11 with the Rainy Lake Visitor Center would require alteration and filling of wetlands.
- **Exotic species** – construction of a bike route would require the importation of fill materials. Local sources of gravel and soil are contaminated with several species of noxious weeds. It is possible that construction of a bike path would introduce weeds into the park or enlarge the extent of current infestations.
- **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.

- **Threatened & Endangered Species** – Voyageurs National Park is habitat for the federally listed Gray Wolf, Bald Eagle and Canada lynx. The park has prepared a Biological Assessment (appendix A) of the potential for negative impacts to these species and has found that the proposed project may affect, but is unlikely to adversely affect these species. The United States Fish & Wildlife Service has concurred with these findings.
- **Visitor Experience** – the alteration of the park entrance to the Rainy Lake Visitor Center would change the current visual landscape along the park road by altering road contours, sight- lines and adjacent rock outcrops and vegetation.
- **Recreation Resources** – the construction of a new bike path would provide an improved recreation resource for pedestrians and those accessing the park by bicycle.
- **Visitor Safety** –the construction of a new bike path would improve visitor safety by providing a better means for pedestrians, bicyclists and automobile drivers to access the Rainy Lake Visitor Center.
- **Land Ownership** –consolidation of land ownership in the project area is needed to avoid incompatible land uses along the northern entrance road to the park and the Rainy Lake Visitor Center adjacent to the proposed bike path. A land exchange is proposed that would allow the park to acquire state lands near the proposed trail, but would also remove a small disconnected parcel of land along Highway 11 from park ownership, opening this land to potential development. An archeological survey and other resource inventories of the land to be transferred out of federal ownership would occur prior to any land exchange between the park and the state of Minnesota.

I.4.1 Issues Identified but Removed from Further Consideration

The following issues were identified, but removed from further consideration in the Environmental Assessment.

- **Air Quality** – blasting and grading activities would require the use of heavy equipment and explosives. This would result in the temporary introduction of dust and other particulate matter during trail construction, however these changes in air quality would be minimal, localized and of short duration.
- **Natural Sound** – the use of heavy equipment and explosives would result in loud noises during trail construction, temporarily affecting the natural soundscape in the park and surrounding area. Although changes to natural sound would be noticeable during project activity, the potential for impact would be minimal and of short duration.
- **Rare plants** – Voyageurs National Park has conducted a rare plant survey (appendix B) of the alternate routes being considered for construction of a

new bicycle path. No rare plant species were found in the project area, although suitable habitat for Torrey's manna- grass and clustered bur-reed is present. Both are species of concern.

- **Cultural Resources-** No historic sites, structures or cultural landscapes are located within the project area, and no known archeological or ethnographic resources. An archeological investigation was conducted in 2006 (Appendix D).

1.5 Required Permits and Consultation

- Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies take into account the effects of their actions on properties listed or eligible for listing in the National Register of Historic Places. Section 110 of the NHPA directs federal agencies to identify, evaluate, protect and nominate eligible properties to the National Register. The NHPA also requires that American Indian tribes participate in review when an undertaking or project may have an effect on historic properties of religious or cultural significance to Indian tribes.
- The National Park Service entered into a park- specific Programmatic Agreement (PA) with the Advisory Council on Historic Preservation and the Minnesota State Historic Preservation Officer in 2005 for activities related to Section 106 in Voyageurs National Park. The PA requires that the park inform Indian tribes and the State Historic Preservation Officer annually of upcoming projects and ask if they have an interest in consulting.
- U.S. Fish & Wildlife Service, Section 7 consultation for Threatened & Endangered Species
- Army Corp of Engineers, Section 404 Permit for alteration of wetlands
- Minnesota Wetlands Conservation Act

2.0 Alternatives

Chapter 2 describes three alternatives (potential actions) that the park may take to address the proposal to construct a bike trail connecting the existing path on Highway 11 to the Rainy Lake Visitor Center.

This includes the No Action Alternative, which defines conditions in the project area now, and provides a baseline against which other alternatives may be compared. Alternatives B and C both describe reasonable approaches to meeting the need for a bicycle route connecting the existing Highway 11 bicycle trail to the Rainy Lake Visitor Center and consolidating land ownership in the project area.

A summary of the environmental consequences for the three primary alternatives is located at the end of this chapter.

2.1 Alternative A: No Action Alternative – Do not construct a new bicycle path, do not consolidate land ownership along the entrance road to the Rainy Lake Visitor Center.

- 2.1.1 **Visitor Access** under this alternative would continue as it is presently. There would be no connecting trail from the Highway 11 bike path to the Rainy Lake Visitor Center. Automobile drivers, bicyclists, and pedestrians would enter the park using the same narrow and winding road corridor. No bike lanes or separate bike path would be constructed.

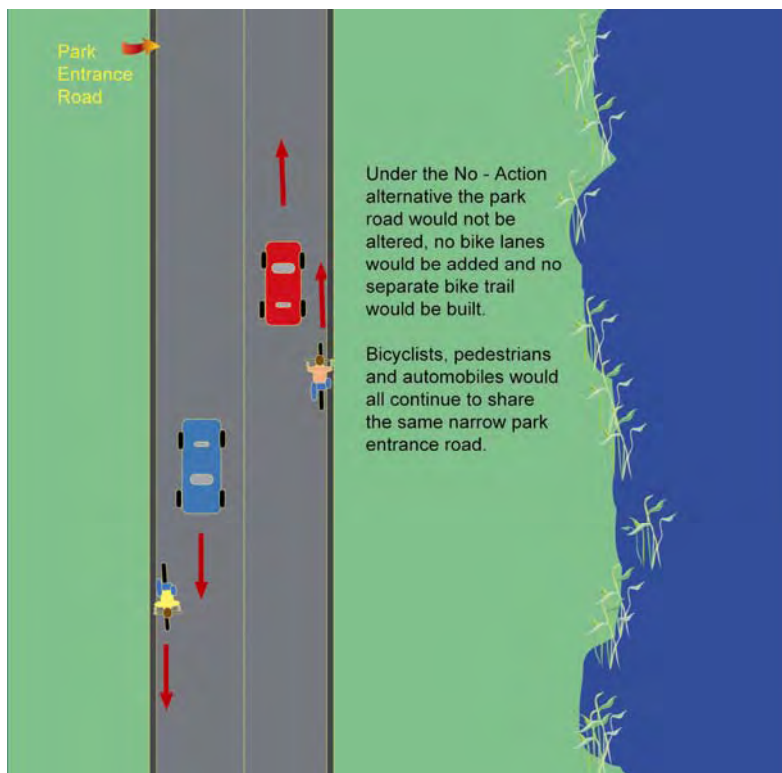


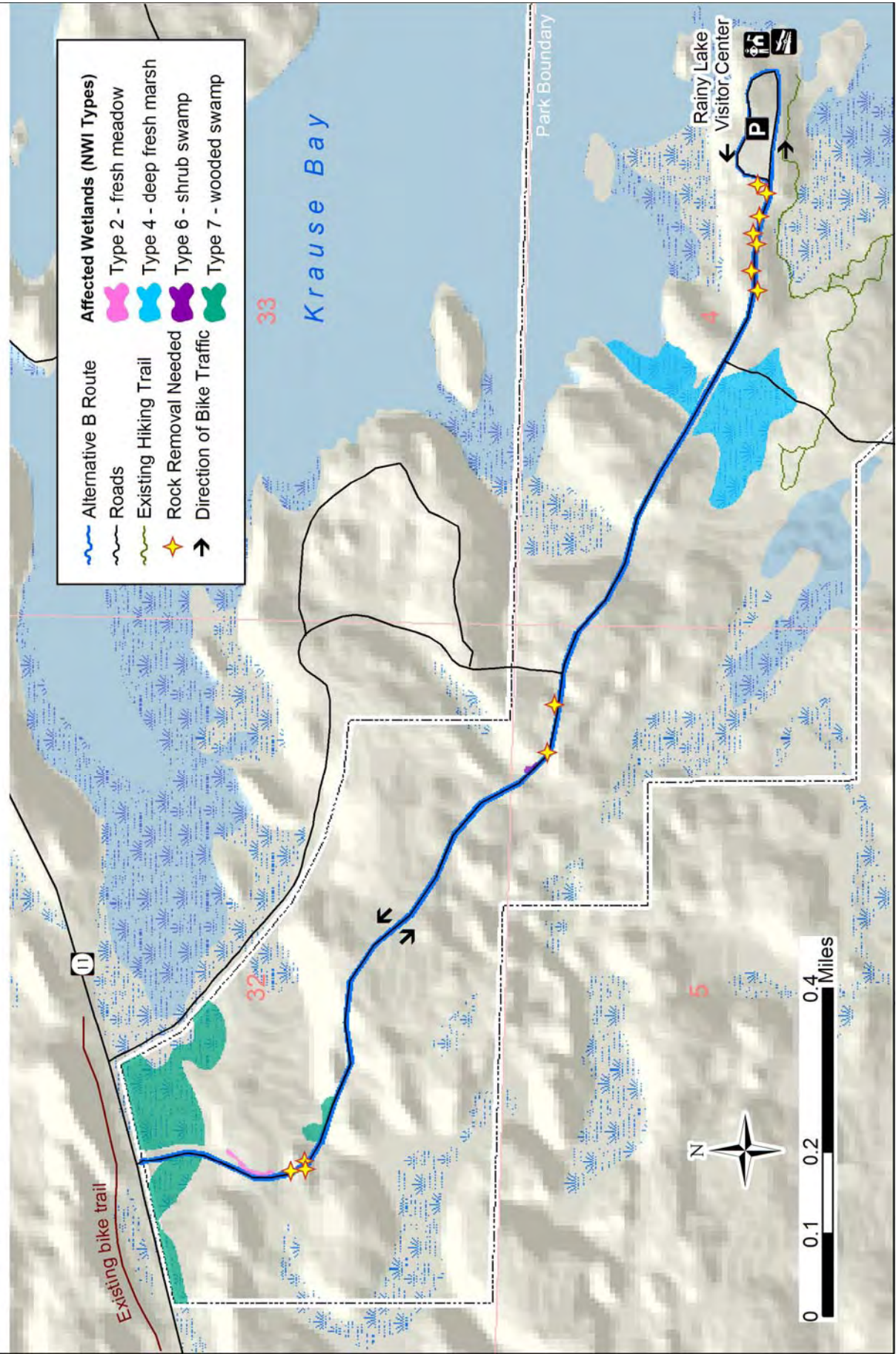
Diagram showing existing conditions & direction of traffic on entrance road (not to scale).

- 2.1.2 **Land Ownership** along the park entrance road would continue to be a mixture of federal land managed by the National Park Service and state land managed by Koochiching County.

This would allow for non- federal land along the park entrance to be managed in ways that are potentially inconsistent with adjacent park-managed land. Potential incompatible land uses include active timber management (logging) of state land along the park entrance road, and hunting and trapping within the state tracts that are adjacent to park lands where hunting and trapping are prohibited.

- 2.1.3 **New Construction** would not occur under this alternative. No bike lanes or separate bike trail would be built.
- 2.1.4 **Maintenance Requirements** would be unaltered under this alternative. No new trail would be built.
- 2.1.5 **Mitigation Requirements** would not take place, because no new actions would occur.

Alternative B



- 2.2 **Alternative B: Bike Lane Alternative** – The park would construct six- foot wide bike lanes on both sides of the road connecting Highway 11 east with the park’s Rainy Lake Visitor Center if this alternative is selected. This route would be approximately 1.9 miles long.

Under this alternative the park would seek to avoid incompatible land use adjacent to the proposed bike lanes by acquiring state lands in the park entrance corridor. A tract of non- contiguous federal land located along Highway 11 may be transferred to the state to facilitate acquisition of the desired land parcels in the proposed project area.

- 2.2.1 **Visitor Access** under this alternative would provide bicyclists and pedestrians with a substantially wider, paved route along the existing entrance road coming from, and returning to, the Highway 11 bike trail. Bike lanes would be constructed on both sides of the park entrance road to allow bicyclists and pedestrians to travel with the flow of automobile traffic. Automobile access would remain the same, although motorists would no longer share the same lane as bicyclists and pedestrians, and should not feel the need to cross into oncoming traffic to avoid bicyclists or pedestrians. Bike lanes would be open to pedestrians (including people walking dogs), bicyclists, and other non- motorized forms of travel (i.e. roller blades).
- 2.2.2 **Land Ownership** would be consolidated along the park entrance road should the bike lane alternative be selected. The park would acquire state owned land currently managed by Koochiching County. The park would potentially acquire the desired tracts through a land exchange.

The land tracts that the park would acquire are numbers 69- 134 and 69- 130. Both parcels are currently state owned and administered by Koochiching County. The parcel currently owned by the National Park Service that may be exchanged is tract number 68- 120.

The park’s enabling legislation does not currently allow for the United States to acquire state lands through any method other than donation. If the bike lane alternative is selected, the park would move forward with the county to pursue a legislative change that would allow for the park to acquire lands within the present park boundary (including tracts 69- 130 and 69- 134) through a land exchange, rather than solely through outright donation by the state.

Tract 69- 130 includes approximately 1200 feet of the park entrance road to the Rainy Lake Visitor Center. This tract divides the park lands adjacent to the road. If these lands remain in state ownership it is likely that hunting would occur and also that the land would be available for timber

harvesting. Tract 69- 134 is a smaller tract in the entrance area not visible from the road.

Tract 69- 120 is currently owned by the National Park Service, but is separated from the main park boundary. This tract straddles Highway 11. If this park land tract is exchanged for state lands along the entrance road it would no longer be managed by the National Park Service, potentially opening this area to hunting or timber management in accordance with the laws and regulations that govern state lands.

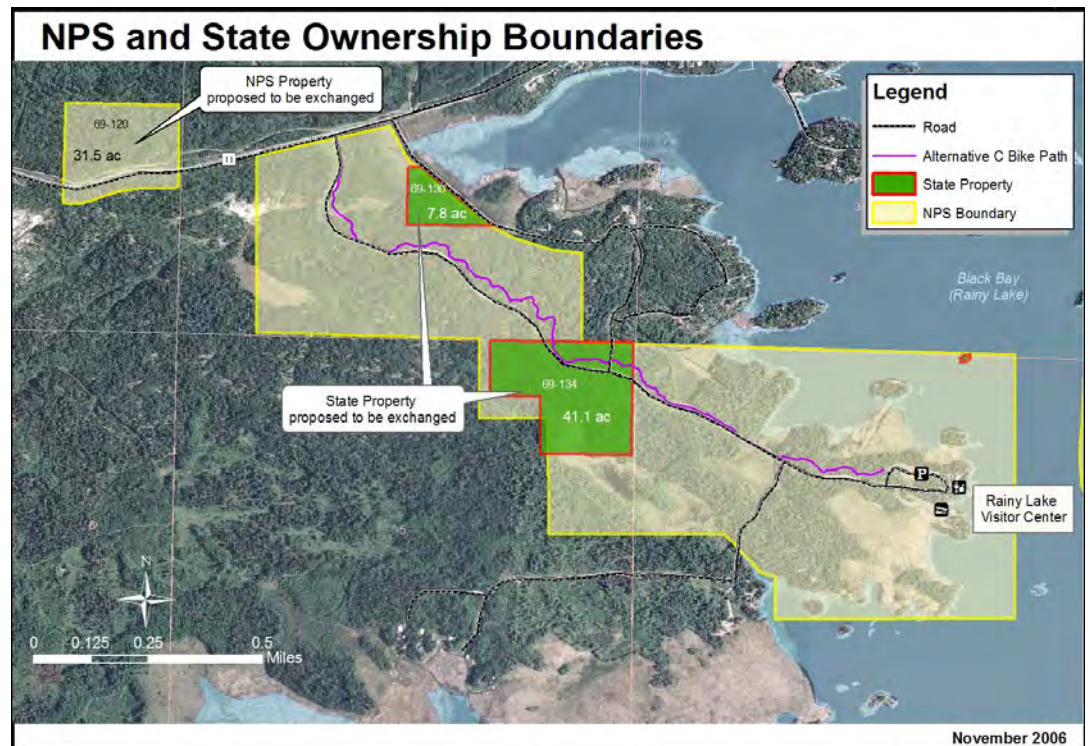


Figure 2.2 showing land ownership and acreage of parcels proposed for acquisition and exchange in the project area

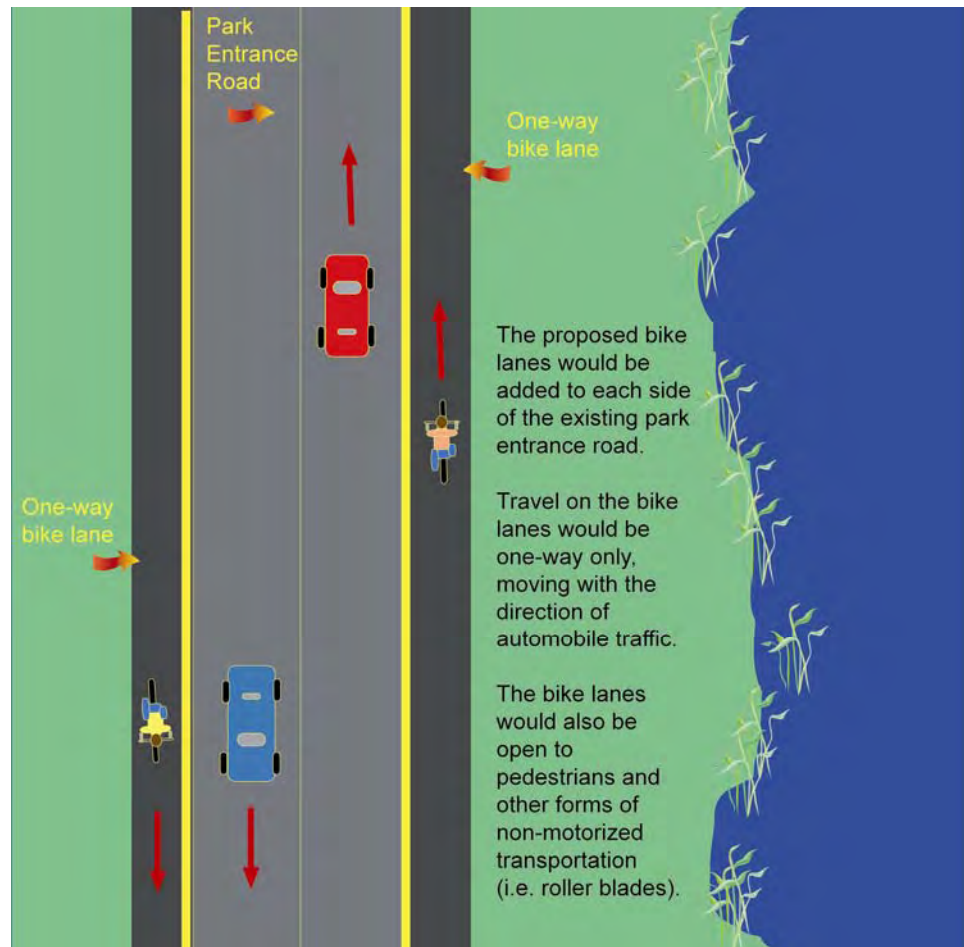
- 2.2.3 **New Construction** would occur in the current entrance road corridor if the Bike Lane Alternative is selected. The design would address Minnesota Department of Transportation (MNDOT) - Bicycle Transportation Planning and Design Guidelines. Variations to the standards would be pursued that reduce impacts to the park environment and maintain safety. The park would present these variations to MNDOT for review and approval.

Construction would include widening the current road corridor, including the removal of vegetation within the proposed bike lane area, and also the removal of several outcrops of Precambrian bedrock through the use of blasting or heavy equipment.

This would be necessary in areas where there is not currently sufficient space to provide a six- foot wide paved bike lane with an additional one-

foot wide gravel shoulder. Additional rock removal would be necessary beyond the bike lane on each roadside to provide additional space for visibility and safety requirements. Construction would also require filling and cutting to maintain the required bike lane elevations.

Bike lanes would be built on both sides of the road along the primary travel corridor, but would only be built on the right- side of the one- way loop that allows access to the Rainy Lake Visitor Center parking lot. A bike lane is not proposed for the road leading to the Rainy Lake boat launch ramp.



Bike Lane diagram showing direction of traffic on entrance road and on 6 foot wide, one-way bike lanes (not to scale).

To maintain adequate drainage and slope stability the road way would be widened in many areas. In some cases this may require disturbing areas that have been previously undisturbed. Additional drainage measures would be required throughout the project including culverts and drainage swales to maintain surface hydrology.

Construction of bike lanes would necessitate the filling of roadside wetland areas, particularly in places where the trail base is below the

current water level. Fill would be used in low-lying areas. Fill would come from areas in the immediate project area where rock removal was required, and also from approved sources in the local area.

If the Bike Lane Alternative is selected the park would acquire all necessary permits from the Army Corps of Engineers and other regulatory agencies with permitting authority related to the modification of wetlands.

Six feet of new road surface would be paved on each side of the current entrance road. The newly paved surface would be delineated and signs would be installed to designate the newly constructed bike lane areas.

- 2.2.4 **Maintenance Requirements** would be minimally expanded under the Bike Lane Alternative. Mowing requirements would be the same during the warm season, but there would be additional snow plowing required if the park decided to keep the bike lanes open during the winter and/or early Spring months.

- 2.2.5 **Mitigation Requirements**
The park would conduct mitigation measures to compensate for all impacted wetland areas. Mitigation measures would include adherence to NPS Best Management Practices as defined in *Procedural Manual #77-1: Wetland Protection*. This includes the following:

- 1) **Effects on hydrology:** Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on.
- 2) **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements.
- 3) **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
- 4) **Effects on fauna:** Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
- 5) **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
- 6) **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in

wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.

- 7) **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
- 8) **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
- 9) **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
- 10) **Native Plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
- 11) **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures (if such structures are included in the final trail design). Placing a boardwalk at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.
- 12) **Endangered Species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat.
- 13) **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places.

The park would seek to avoid impacts to wetlands first, would minimize unavoidable impacts to the extent practicable, and would compensate on a 1:1 basis for wetlands modified as a result of constructing bike lanes. Compensation would be accomplished by rehabilitating impacted wetlands in the park through the removal of purple loosestrife and Canada thistle in these areas. Annual maintenance of targeted wetlands would occur for a period of no less than three years.

Additionally, all bike trail construction activities would be conducted in accordance with the park's Exotic Plant Best Management Practices. This includes requiring contractors and park staff to clean all tools and equipment prior to conducting work in the project area to ensure that noxious weed seeds are not accidentally introduced to the project site.

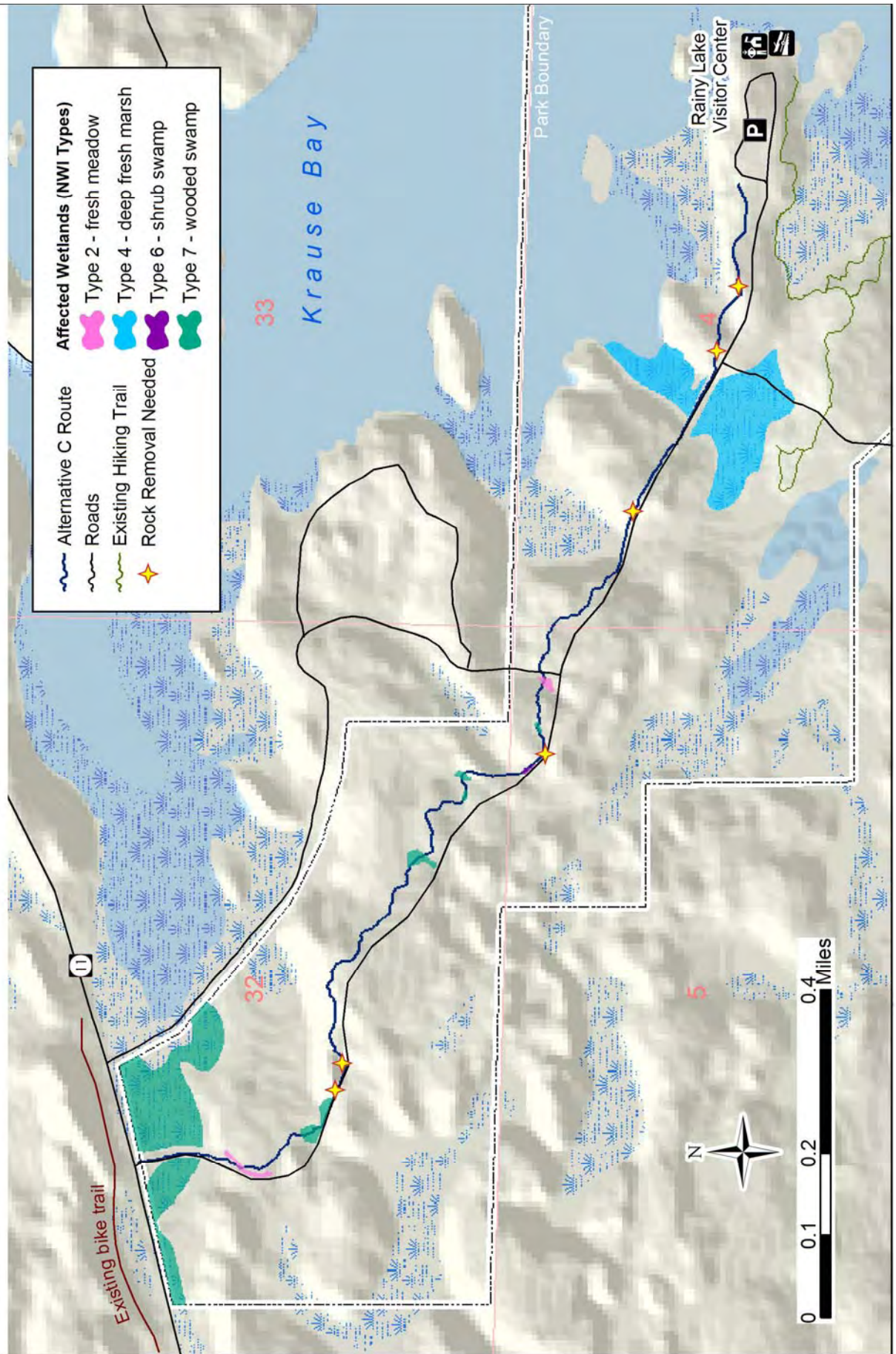
Disturbed areas would be re-seeded using an approved native plant seed mix or by using native vegetation from the surrounding project area. Minnesota Department of Transportation seed mixes would not be used. They have been found to contain undesirable species of non-native grasses and other invasive plants.

Adherence to Exotic Plant Best Management Practices reduces the risk of new infestations, but there would remain an increased need to treat the area for roadside exotic plant species. Fill materials used to construct the new bike lanes are likely to contain noxious weed seeds. Additionally, the newly disturbed ground in the project area would be susceptible to exotic plant invasions until native plants have successfully established in the area.

The park maintenance and resource management staff would coordinate a roadside mowing schedule and herbicide treatment plan to prevent new exotic plant infestations and to minimize the spread of existing noxious weed populations.

Monitoring construction for archeological resources and educating work crews about the need to protect any archeological or historic resources encountered during construction would take place to prevent impacts to previously unidentified cultural resources.

Alternative C



2.3 **Alternative C: Construct Combined Bike Trail (NPS Preferred Alternative).**–
This alternative describes the construction of a combination bike trail on the north side of the current park entrance road.

The proposed trail would include a 10- 12 feet wide paved bike trail that would parallel the existing entrance road in some areas to avoid steep grades and large bedrock outcrops, and would otherwise be routed through the presently undeveloped land on the north side of the road. The paved surface area required under this alternative is wider than what is proposed for bike lanes because bicycle travel would be moving in both directions on this one path.

Additional shoulder, drainage and safety separation distances of 12- 38 feet would also be constructed adjacent to the proposed bike trail, both adjacent to the entrance road and also to the north (*see map of Alternative C, page 20*).

Although constructing a combined bike trail on the south side of the current park road is also an option, with similar impacts as the proposed route on the north side of the road, the park has chosen to evaluate trail construction on the north side due to the area's greater aesthetic values in terms of natural light, open forest and opportunities for views of Krause Bay.

As in Alternative B, the park would seek to avoid incompatible land use adjacent to the proposed bike trail by acquiring state lands that currently bisect the road leading to the Rainy Lake Visitor Center. A tract of non- contiguous park land located along Highway 11 may be removed from federal ownership to facilitate transfer of the desired land parcel along the park's primary northern entrance route.

- 2.3.1 **Visitor Access** under this alternative would provide bicyclists and pedestrians with a two- way paved route that would travel along the existing entrance road and into the forested area on the north side of the road. The new bike trail would be connected to the Highway 11 bike trail.

Automobile access would remain the same as under the no- action alternative. This is due to the fact that some cyclists and pedestrians prefer to travel along primary road corridors rather than use designated bike trails. This use has been frequently observed on Highway 11 although a separate bike path parallels most of this route.

It is likely most cyclists and pedestrians would choose to use the newly constructed separate trail, but those that did not would face the same safety concerns as currently exist since no bike lane or road shoulder exists along the park entrance road, and none would be constructed under this alternative.

Under this alternative the bike trail would begin at the Highway 11 intersection with the park entrance road. The bike trail would end at the northwest side of the Rainy Lake Visitor Center parking lot where the current cross- country ski trail connecting to the Tilson Bay trail network begins.

A small area would be developed with bike racks to allow visitors to lock up their bicycles before continuing to the visitor center on foot. Existing bike racks would be maintained near the entrance doors to the visitor center for people who choose to ride their bicycles through the current parking lot to the front doors of the visitor center.

Snowmobiles would not be permitted on the new bike path. Most non-motorized forms of transportation that are currently used on the existing Highway 11 bicycle trail would be allowed (i.e. roller blades). People would be allowed to walk leashed dogs on the trail. It is expected that pet owners would clean- up after pets.

- 2.3.2 **Land Ownership** would be consolidated along the park entrance road should the combination bike trail alternative be selected. Just as in Alternative B, the park would seek to avoid incompatible land uses adjacent to the proposed bike trail by acquiring state owned lands currently managed by Koochiching County in the project area. The park would potentially acquire the desired tracts through a land exchange.

The land tracts that the park would acquire are numbers 69- 134 and 69- 130. Both parcels are currently state owned and administered by Koochiching County (figure 2.1). The parcel currently owned by the National Park Service that may be exchanged is tract number 68- 120.

The park's enabling legislation does not currently allow for the United States to acquire state lands through any method other than donation. If the combination bike trail alternative is selected, the park would move forward with the state to pursue a legislative change that would allow for the park to acquire lands within the present park boundary (including tracts 69- 130 and 69- 134) through a land exchange, rather than solely through outright donation by the state.

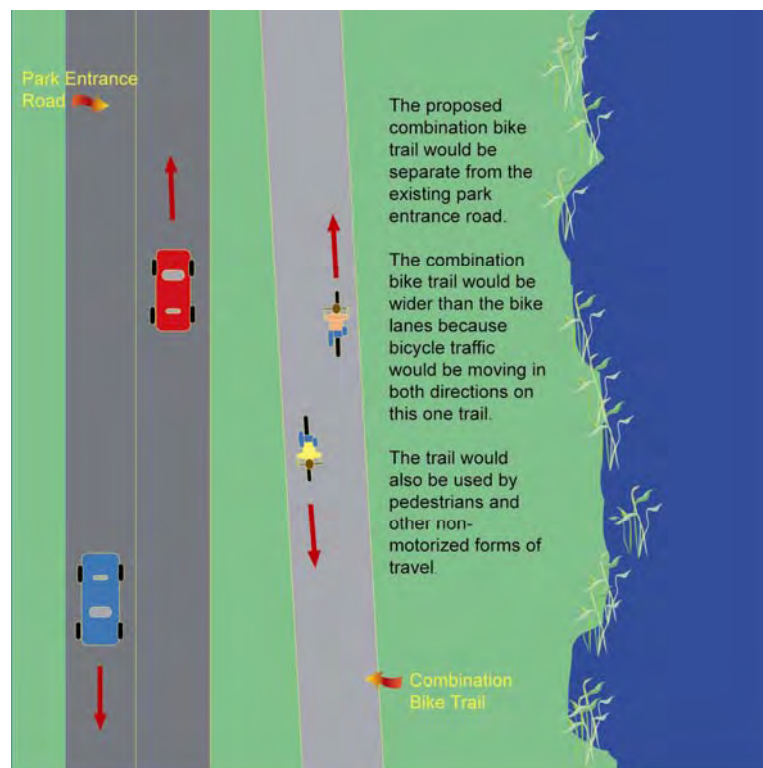
Tract 69- 130 includes approximately 1200 feet of the park entrance road to the Rainy Lake Visitor Center. This tract divides the park lands adjacent to the road. If these lands remain in state ownership it is likely that hunting would occur and also that the land would be available for timber harvesting. National Park Service regulations would not apply. Tract 69- 134 is a smaller tract in the entrance area not visible from the road.

Tract 69- 120 is currently owned by the National Park Service, but is separated from the main park boundary. This tract straddles Highway 11. If this park land tract is exchanged for state lands along the entrance road it would no longer be managed by the National Park Service, potentially opening this area to hunting or timber management in accordance with the laws and regulations that govern state lands.

- 2.3.3 **New Construction** would occur in portions of the current entrance road corridor and in the presently undeveloped lands to the north of the road if the Combination Bike Trail Alternative is selected. The design would address Minnesota Department of Transportation - Bicycle Transportation Planning and Design Guidelines.

Construction would include widening the current road corridor in several locations, including the removal of vegetation and also the removal of several outcrops of Precambrian bedrock through the use of blasting or heavy equipment. The roadside cleared area would be from 22 to 50 feet wide.

This would be necessary to avoid more extensive blasting, cuts, and fills in areas of extreme elevation changes located further away from the existing highway. Additional rock removal may be necessary beyond this to provide additional space for roadside visibility and safety requirements.



Combination Bike Trail diagram showing direction of traffic on entrance road and on 10 – 12 ft. wide, two-way trail (not to scale).

The Combination Bike Trail option would also require the removal of rocks, trees and other vegetation in the undeveloped forest north of the park entrance road to allow for the construction of a separate paved bike trail in this area. The cleared area would be approximately 24 feet wide and would impact approximately 5.3 – 5.7 acres. This alternative requires a wider paved surface than the bike lane alternative because travel on the combination bike trail would be two- way, as opposed to the bike lanes which would provide one- way travel on both sides of the road. Additional cleared areas adjacent to the paved bike trail are required to provide appropriate sight distances for visitors using the trail.

Wetlands would be filled in places where the proposed trail base is below the current water level. Gravel fill would be used to fill low- lying areas. Gravel would come from areas in the immediate project area where rock removal was required and also from approved gravel sources in the local area.

Construction would also require filling and cutting to maintain required bike trail elevations. Additional drainage measures would also be required throughout the project, including culverts and drainage swales.

If the Combination Bike Trail Alternative is selected the park would acquire all necessary permits from the Army Corps of Engineers and other regulatory agencies with permitting authority related to the modification of wetlands.

Safety related measures would include signing and the maintenance of adequate separation distances to ensure bike rider safety.

Additional bicycle parking is planned near the end of the trail at the edge of the existing parking lot. From there, bicyclists would walk along new and existing pathways to the Rainy Lake Visitor Center.

- 2.3.4 **Maintenance Requirements** would be expanded under the Combination Bike Trail Alternative. Mowing requirements would increase in the newly developed sections of trail away from the park road. This would be added to the existing seasonal trail clearing and maintenance schedule.

The new bike trail would not be maintained during the winter months. It would be open to visitors for snowshoeing and skiing, but would not be tracked or groomed. If new funding becomes available in the future the newly constructed trail would be re- evaluated for winter maintenance and management for winter sports.

2.3.5 Mitigation Requirements

The park would conduct mitigation measures to compensate for all impacted wetland areas. Mitigation measures would include adherence to NPS Best Management Practices as defined in *Procedural Manual #77-1: Wetland Protection*. This includes the following:

- 14) **Effects on hydrology:** Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on. (Culverts would be placed, as appropriate to maintain surface hydrology).
- 15) **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements.
- 16) **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
- 17) **Effects on fauna:** Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
- 18) **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
- 19) **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
- 20) **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
- 21) **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities

- during construction must be returned to their pre- existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
- 22) **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
 - 23) **Native Plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
 - 24) **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures (if such structures are included in the final trail design). Placing a boardwalk at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.
 - 25) **Endangered Species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat.
 - 26) **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places.

The park would seek to avoid impacts to wetlands first and would minimize unavoidable impacts to the extent practicable, and would compensate on a 1:1 basis for wetlands modified as a result of constructing bike lanes. Compensation would be accomplished by rehabilitating impacted wetlands in the park through the removal of purple loosestrife and Canada thistle in these areas. Annual maintenance of targeted wetlands would occur for a period of no less than three years.

Additionally, all bike trail construction activities would be conducted in accordance with the park's Exotic Plant Best Management Practices. This includes requiring contractors and park staff to clean all tools and equipment prior to conducting work in the project area to ensure that noxious weed seeds are not accidentally introduced to the project site.

Vegetation would not be cleared beyond the footprint of the fill in any wetland. Disturbed areas would be re- seeded using an approved native

plant seed mix or by using native vegetation from the surrounding project area. Minnesota Department of Transportation seed mixes would not be used. They have been found to contain undesirable species of non- native grasses and other invasive plants.

Adherence to Exotic Plant Best Management Practices reduces the risk of new infestations, but there would remain an increased need to treat the area for roadside exotic plant species. Fill materials used to construct the new bike trail are likely to contain noxious weed seeds. Additionally, the newly disturbed ground in the project area would be susceptible to exotic plant invasions until native plants have successfully established in the area.

The park maintenance and resource management staff would coordinate a trail mowing schedule and herbicide treatment plan to prevent new exotic plant infestations and to minimize the spread of existing noxious weed populations.

Monitoring construction for archeological resources and educating work crews about the need to protect any archeological or historic resources encountered during construction would take place to prevent impacts to previously unidentified cultural resources.

2.4 **Environmentally Preferred Alternative**

The environmentally preferred alternative is the alternative that would best promote the national environmental policy expressed in the National Environmental Policy Act (NEPA) (Sec. 101 (b)). This includes alternatives that:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
- 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.
- Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Simply put, the environmentally preferred alternative is defined by the Council on Environmental Quality as:

“...the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ 1981)

Alternative B: Construct Bike Lanes is the environmentally preferred alternative. This option addresses visitor access and safety needs while minimizing the impact to park resources by focusing impacts adjacent to the existing road corridor. The project footprint for this alternative is less than half that of Alternative C, which would require construction in previously undeveloped forests to the north of the current entrance road.

Although Alternative A: the no- action alternative would result in no new impacts to the environment, the existing negative impacts to visitor safety prevent this alternative from best meeting the criteria defined above.

Although Alternative B is the environmentally preferred alternative, it is not the NPS preferred alternative. In considering visitor safety and experience, the management team at Voyageurs National Park has determined that Alternative C would provide the greatest benefit to park visitors while having acceptable impacts to a small portion of the park environment.

Specifically, Alternative C would decrease the likelihood of an accident occurring between multiple automobiles and between automobiles and bicycles by providing a physically separate trail for each mode of transportation. Additionally, the visitor experience would be expected to provide greater recreational opportunities for bicyclists and pedestrians, particularly families traveling with young children who would not be comfortable traveling in the same road corridor as automobiles (as would occur under Alternative B).

2.5 Summary Comparison of Alternatives (Project Objectives)

	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Project Objectives			
Provide safe access for automobile drivers, bicyclists and pedestrians	Automobile drivers, bicyclists and pedestrians share same narrow and winding road. No separate bike lane or trail.	A six foot wide, one-way paved bike lane is added to both sides of the park road, providing increased space for automobile drivers, bicyclists and pedestrians	<p>Bicyclists and pedestrians would have the choice of using a separate bike trail (with travel both into and out of the visitor center area sharing the same paved trail on the north side of the road) or may continue to use the existing road shoulder. Not all safety concerns would be alleviated.</p> <p>A separate trail would provide enhanced recreation opportunities for families walking or bicycling with young children.</p>
Avoid incompatible land uses adjacent to the proposed bike route and along the existing park entrance road.	A mixture of federal and state ownership of lands would potentially allow logging, hunting and trapping to occur on state lands located in the midst of park-owned land at the Rainy Lake Visitor Center entrance road	The National Park Service would pursue legislative change to allow acquisition of state-owned lands in the project area through a mutually agreeable land exchange to avoid incompatible land use near the bike lanes	The National Park Service would pursue legislative change to allow acquisition of state-owned lands in the project area through a mutually agreeable land exchange to avoid incompatible land uses near the bike trail

2.6 Summary Comparison of Alternatives (Environmental Consequences)

	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Environmental Consequences			
Geologic Resources	No new disturbance or modification of geologic resources	<p>Direct Impact: Modification and removal of Precambrian bedrock outcrops in the previously disturbed road corridor area</p> <p>Indirect Impact: removal of bedrock outcrops would alter the visual experience for people traveling along the road.</p>	<p>Direct Impact: Modification and removal of Precambrian bedrock outcrops in the previously disturbed road corridor area and in previously undisturbed lands on the north side of the entrance road</p> <p>Indirect Impact: removal of bedrock outcrops would alter the</p>

Geologic Resources (continued)		Cumulative Impact: Rock outcrops in the project area were previously modified during construction of the entrance road. Some outcrops would be further modified under this alternative. A small number of previously unaltered outcrops near the road may also be affected.	visual experience for people traveling along the road. This alternative would not have as many locations along the road that required rock removal, but in many cases a substantially larger volume of rock would be affected due to increased setback requirements. Cumulative Impact: Rock outcrops in the project area were previously modified during construction of the entrance road. Some outcrops would be further modified under this alternative. Some previously unaltered outcrops near the road and in the forest to the north would also be affected.
	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Native Plant Communities / impacts from Exotic Plant Species	No project related changes to native plant communities	Direct Impact: Removal of native plants in approximately 2.3 acres of roadside area where bike lanes would be constructed Indirect Impact: Likely increase in non-native invasive plants in the newly disturbed areas adjacent to the new bike lanes Land removed from NPS ownership to facilitate a land exchange with the state may be at increased risk of exotic plants depending on the new land management practices implemented (i.e. logging) Cumulative Impact: Minimal cumulative impact related to addition of disturbed area and likely increase in	Direct Impact: Removal of approximately 5.7 + acres of native plants, including roadside areas & previously undeveloped forest to the north of the road Indirect Impact: Likely increase in non-native, invasive plants in the newly disturbed areas adjacent to the new bike trail, near the road & in the forest Land removed from NPS ownership to facilitate a land exchange with the state may be at increased risk of exotic plants depending on the new land management practices implemented (i.e. logging) Cumulative Impact: Cumulative impacts would occur due to the

		exotic plant species. Mitigation measures would be implemented to minimize impact.	increase in newly disturbed land and the increase in areas requiring additional management and mitigation efforts to avoid impacts to native plant communities.
	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Wetlands	No new modification or filling of wetlands	<p>Direct Impact: Modification and filling of approximately .76 acres of wetlands adjacent to the current road corridor</p> <p>Indirect Impact: Loss of plant and animal habitat in modified wetland areas.</p> <p>Cumulative Impact: No cumulative impacts expected due to small footprint and implementation of wetland mitigation measures.</p>	<p>Direct Impact: Modification and filling of approximately 1.2 acres of wetlands, including roadside wetlands & wetlands in previously undisturbed areas</p> <p>Indirect Impact: Loss of plant and animal habitat in modified wetland areas.</p> <p>Cumulative Impact: No cumulative impacts expected due to small footprint and implementation of wetland mitigation measures.</p>
Wildlife	No project related changes to wildlife or wildlife habitat	<p>Direct Impact: No direct impacts expected.</p> <p>Indirect Impacts: Temporary disturbance of wildlife due to construction activity</p> <p>Cumulative Impact: Modification or loss of approximately 2 acres of roadside wildlife habitat</p>	<p>Direct Impact: No direct impacts expected.</p> <p>Indirect Impacts: Temporary disturbance of wildlife due to construction activity</p> <p>Cumulative Impact: Modification or loss of approximately 5 acres of roadside & forested wildlife habitat</p>
Federally listed Threatened & Endangered Species	No project related changes to wildlife or wildlife habitat	<p>Direct Impact: No direct impacts expected.</p> <p>Indirect Impacts: Temporary disturbance of wildlife due to construction activity</p> <p>Cumulative Impact: Modification or loss of approximately 2 acres of roadside wildlife habitat</p>	<p>Direct Impact: No direct impacts expected.</p> <p>Indirect Impacts: Temporary disturbance of wildlife due to construction activity</p> <p>Cumulative Impact: Modification or loss of approximately 5 acres of roadside & forested wildlife habitat</p>

	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Visitor Safety	<p>No change</p> <p>Continuing negative impact to visitor safety due to potential for accidents resulting from shared use of narrow and winding road by automobile drivers, bicyclists and pedestrians.</p>	<p>Direct Impact: Construction of bike lanes would provide a route specifically for safe use by bicyclists.</p> <p>Indirect Impacts: Increased safety for automobile drivers who would no longer have to share the road with bicyclists and pedestrians.</p> <p>Cumulative Impact: Decreased likelihood of accidents between automobiles and bicyclists or between multiple automobiles traveling in opposite directions.</p>	<p>Direct Impact: Construction of combination bike trail would provide a route specifically for safe use by bicyclists and pedestrians, although some may continue to use the existing road corridor.</p> <p>Indirect Impacts: Increased safety for automobile drivers who would not have to share the same road corridor with bicyclists and pedestrians as often.</p> <p>Cumulative Impact: Decreased likelihood of accidents between automobiles and bicyclists or between multiple automobiles traveling in opposite directions.</p>
Recreation Resources	<p>No change</p>	<p>Direct Impact: Construction of bike lanes would provide improved access for bicyclists & pedestrians entering the park from the Highway 11 Bike Trail</p> <p>Indirect Impacts: Increased access for people traveling to the park from International Falls and surrounding area by bicycle.</p> <p>Cumulative Impact: Improvements to visitor access result in increased visitor enjoyment of park resources and recreation opportunities.</p>	<p>Direct Impact: Construction of combination bike trail would provide improved access for bicyclists and pedestrians entering from the Highway 11 bike trail</p> <p>Trail would not be managed for winter recreation, but would be open for use by people on snowshoes & cross-country skis</p> <p>Indirect Impacts: Increased access for people traveling to the park from International Falls and surrounding area by bicycle.</p> <p>Cumulative Impact: Improvements to visitor access result in increased visitor enjoyment of park resources and recreation opportunities.</p>

	Alternative A: No Action	Alternative B: Bike Lanes	Alternative C: Combination Bike Trail
Visitor Experience	<p>Indirect Impacts:</p> <p>Logging and hunting on state owned lands adjacent to the current park entrance road may result in a negative visitor experience for people accessing the park through the Rainy Lake Visitor Center and boat launch ramp</p>	<p>Direct Impact:</p> <p>Construction of bike lanes would require widening of the entire road corridor to allow construction of six-foot wide paved bike lanes on each side of the road. This would involve modification and removal of bedrock outcrops in some areas.</p> <p>Indirect Impacts:</p> <p>Increased sight distances would be achieved, making the road safer, but potentially altering the current aesthetic of the narrow and winding park road.</p> <p>Incompatible land use on state owned lands would be avoided if these parcels are acquired by the NPS, resulting in an improved visitor experience for people driving on the park entrance road or bicycling or walking along the proposed bike lanes</p> <p>Cumulative Impact:</p> <p>Improvements to visitor experience due to improved safe access for bicyclists and pedestrians.</p>	<p>Direct Impact:</p> <p>Construction of combination bike trail would require widening portions of the road corridor to provide for the construction of a ten to 14-foot wide paved bike trail that was visible from the road in several locations. This would involve substantial modification and removal of bedrock outcrops in some areas.</p> <p>Indirect Impacts:</p> <p>Increased sight distances would be achieved, making the road safer, but potentially altering the current aesthetic of the narrow and winding park road.</p> <p>Incompatible land use on state owned lands would be avoided if these parcels are acquired by the NPS, resulting in an improved visitor experience for people driving on the park entrance road or bicycling or walking on the proposed bike trail</p> <p>Cumulative Impact:</p> <p>Improvements to visitor experience due to improved safe access for bicyclists and pedestrians.</p>

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.

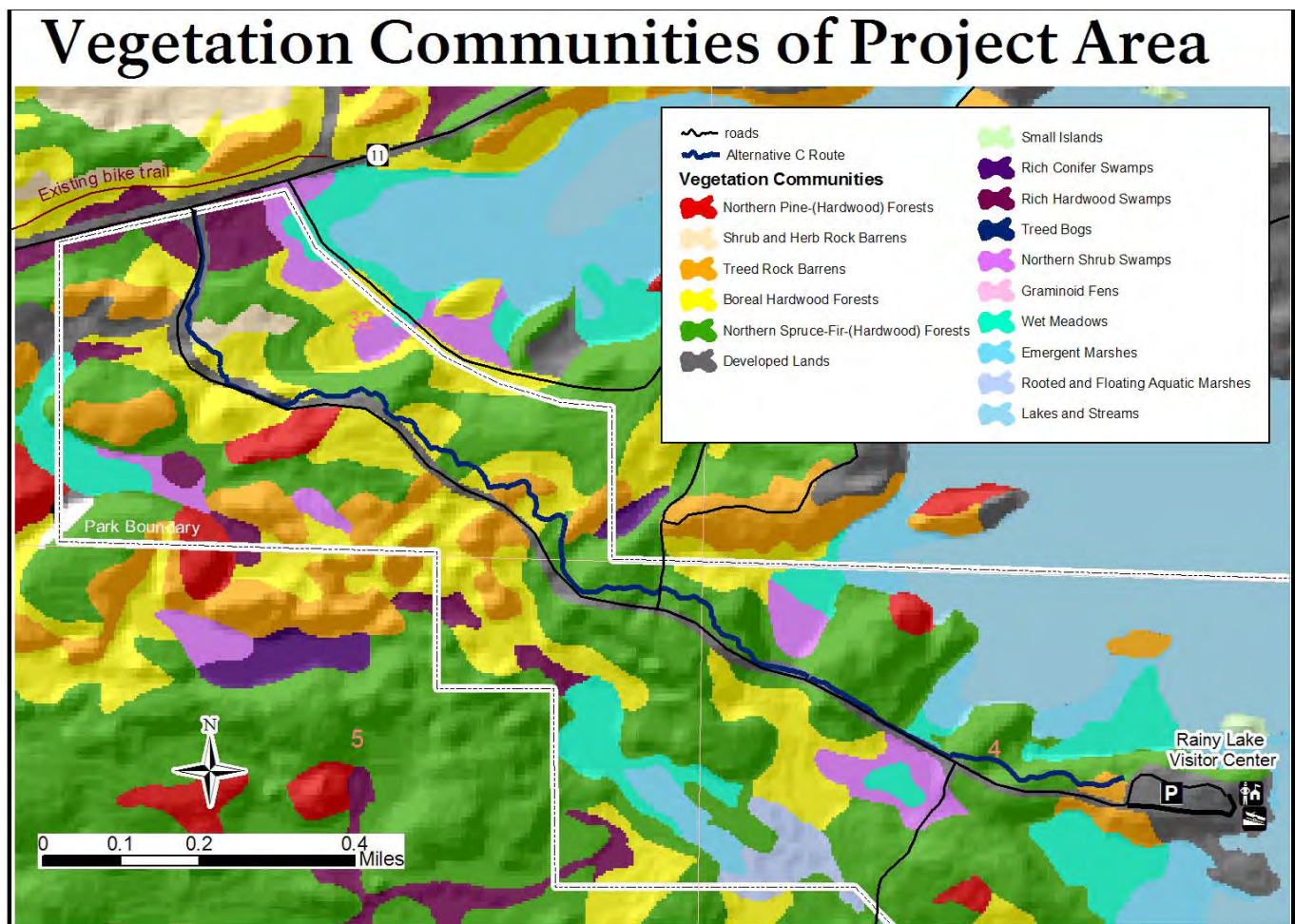


Figure 3.2 Vegetation types found in the project area

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.

4.0 Consultation and Coordination

Federal Agencies & Tribes:

United States Environmental Protection Agency
United States Fish & Wildlife Service
United States Geological Survey
United States Army Corp of Engineers

Bad River Band of Lake Superior Chippewa
THPO, Bad River Band Historic Preservation Office
Lac Courte Oreilles Ojibwe Tribe
Lac du Flambeau Band of Lake Superior Chippewa
THPO, Lac du Flambeau Historic Preservation Office
Grand Portage Band of Minnesota Chippewa Tribe
Fond du Lac Band of Minnesota Chippewa Tribe
Department of Cultural Resources, Fond du Lac
Leech Lake Band of Minnesota Chippewa Tribe
THPO, Leech Lake Historic Preservation Office
White Earth Band of Minnesota Chippewa Tribe
THPO, White Earth Biology Department
Mille Lacs Band Assembly
THPO, Mille Lacs Band Historic Preservation Office
Red Cliff Band of Lake Superior Chippewa
THPO, Red Cliff Historic Preservation Office
St. Croix Chippewa Indians of Wisconsin
Red Lake Band of Chippewa
Turtle Mountain Band of Chippewa
THPO, Turtle Mountain Historic Preservation Office
Devils Lake Sioux Indian Community
Upper Sioux Indian Community
Prairie Island Indian Community
Shakopee Mdewakanton Sioux Indian Community
Bois Forte Band of Ojibwe

State Agencies:

Minnesota State Historic Preservation Officer
Minnesota Department of Natural Resources
Minnesota Department of Transportation

Local Agencies:

Koochiching County Board of Commissioners
Koochiching County Soil & Water Conservation District

Koochiching County Environmental Services
Koochiching County Highway Division
City of International Falls, City Council
City of Ranier, City Council

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**Federally Listed
Threatened and Endangered Species
Biological Assessment**

for the

**Rainy Lake Bike Trail Extension:
Voyageurs National Park**

July 18, 2006

**Voyageurs National Park
3131 Hwy 53 S
International Falls, MN 56649**

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DESCRIPTION OF PROPOSED ACTION

Voyageurs National Park (VOYA), in cooperation with local and county governments, proposes to expand a scenic bike trail along the Rainy Lake Visitor Center Road, Koochiching County, MN. The bike trail right- of- way, i.e., area of impact, will be less than 30' (~10m). The bike trail will be an asphalt surface approximately 5' wide. At present (July 18, 2006), there are three proposed alternatives for bike trail extension: 1) a trail winding through the woods on the north side of the road, 2) a trail winding through the woods on the south side of the road, and 3) a trail running along an expanded shoulder of the existing road. Some filling of wetlands and blasting of rock will be required under all three alternatives. The effects of all three alternatives on the three federally listed species for VOYA are considered similar and are not treated separately in this biological assessment.

DESCRIPTION OF PROJECT AREA

The project area is a 200ha (500ac) tract of NPS- owned land acquired in the 1980s to allow construction and access to a NPS visitor center and marina on Rainy Lake (Figure 1). This tract lies to the south of MN State Highway 11 and Koochiching County Road 96 (paved) bisects the tract. Two township roads spur off of CR96.

VOYA currently maintains both a hiking/snowshoe trail (Oberholtzer Trail) and cross- country ski trail that connects to a State- operated ski trail (Tilson Ski Trail) to the west. Both of the trails originate near the Rainy Lake Visitor Center.

Vegetation community composition in the project area is quite representative of the vegetation elsewhere in Voyageurs National Park. Spruce- fir- aspen forest types are predominant with pine- dominated systems occurring on some of the drier or rocky sites (Figure 2). As with most of the rest of the forested land in Voyageurs National Park, forests in the project area have been heavily impacted by historic logging. These forests were further altered up until the NPS acquired the land as this land was managed for timber production by the State of Minnesota. Two small wetland complexes are wholly contained within the project area, though only one, a fen complex surrounded by an alder swamp, actually falls within the impact zone along the current road corridor.

DESCRIPTION OF LISTED SPECIES and EFFECTS

Bald eagle

Population status: Abundance and productivity of breeding eagles has been recorded in VOYA waters and some adjacent areas since 1973. Number of breeding pairs in this study area has varied around 50 in recent years (Voyageurs National Park, unpubl. data).

Nesting habitat: The closest active (2005) nests to the project area are located in Black Bay, >2.5km distant (Figure 3). There are 2 other nests that were active in 2005 that are within 3.5km of some portion of the project area. Bald eagles in Voyageurs National Park prefer nesting in supercanopy white pines <100m from shore on isolated islands or points adjacent to islands (Grim and Kallemeyn 1995, Lee Grim, Voyageurs National Park, pers. comm.). No active bald eagle nests have been observed within 2.5km of the project area since monitoring began in 1973 (Grim and Kallemeyn 1995). We therefore consider potential nesting habitat within the project area and adjacent areas as minimal.

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 3.5km of shoreline within the defined boundaries of the Park, all of this shoreline is >1.5km from the nearest eagle nests, the commonly accepted maximum foraging distance for breeding eagles in northern climates (Mahaffy and Frenzel 1987, Livingston et al. 1990, Lee Grim, Voyageurs National Park, pers. comm.).

Determination of Effect: Not Likely to Adversely Affect

There were no active bald eagle nests within a 2.5km radius of the proposed project area in 2005, and potential nesting habitat is minimal within the impact area. Because of this, and the fact that no eagle foraging habitat will be directly affected by the proposed project, the immediate and cumulative effects on eagles are expected to be insignificant.

Gray wolf

Population status:

Wolf abundance in recent years within VOYA has stabilized around 46- 55 animals in 6 to 8 packs (Fox 2001; Fox 2006). Tracking surveys and casual observations by VNP staff and visitors during Winter 2005 suggest that at least one pack of 3- 4 wolves contains the project area within their territory (Fox 2006).

Prey habitat:

White- tailed deer (*Odocoileus virginianus*) 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 overwintering deer, in the form of dense conifer such as balsam fir or spruce, is also limited (Figure 2).

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).

Determination of Effect: Not Likely to Adversely Affect

The relative size of wolf territories to the project area, and more specifically to the impact area, is rather large, i.e., the vast majority of the territory utilized by resident wolves will remain unaffected by the construction and use of the bike trail. Further, wolves in Minnesota readily adapt to human presence, evidenced by the existence of a wolf pack that currently uses this semi- developed area, and therefore the increased human use expected along the bike trail corridor should have a negligible effect on wolves. The immediate effects and cumulative effects on wolves are expected to be insignificant.

Canada lynx

Population status:

Lynx tracking surveys in the project area by VOYA staff during Winters 2004- 2006 have not produced any verified evidence of lynx presence. However, VNP 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 (Figure 4). 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 (Ron Moen, Natural Resources Research Institute, 2006, pers. comm.). All of the project area has been designated as Critical Lynx Habitat by the USFWS.

Determination of Effect: Not Likely to Adversely Affect

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; Ron Moen, Natural Resources Research Institute, pers. comm.). Therefore, the impact of a narrow, paved bike trail along an existing road corridor to lynx movements is considered discountable.

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

of homes and seasonal cabins adjacent to the project area (i.e., outside of NPS boundaries) is expected to increase over the next 10- 20 years. Cumulative impacts are considered discountable.

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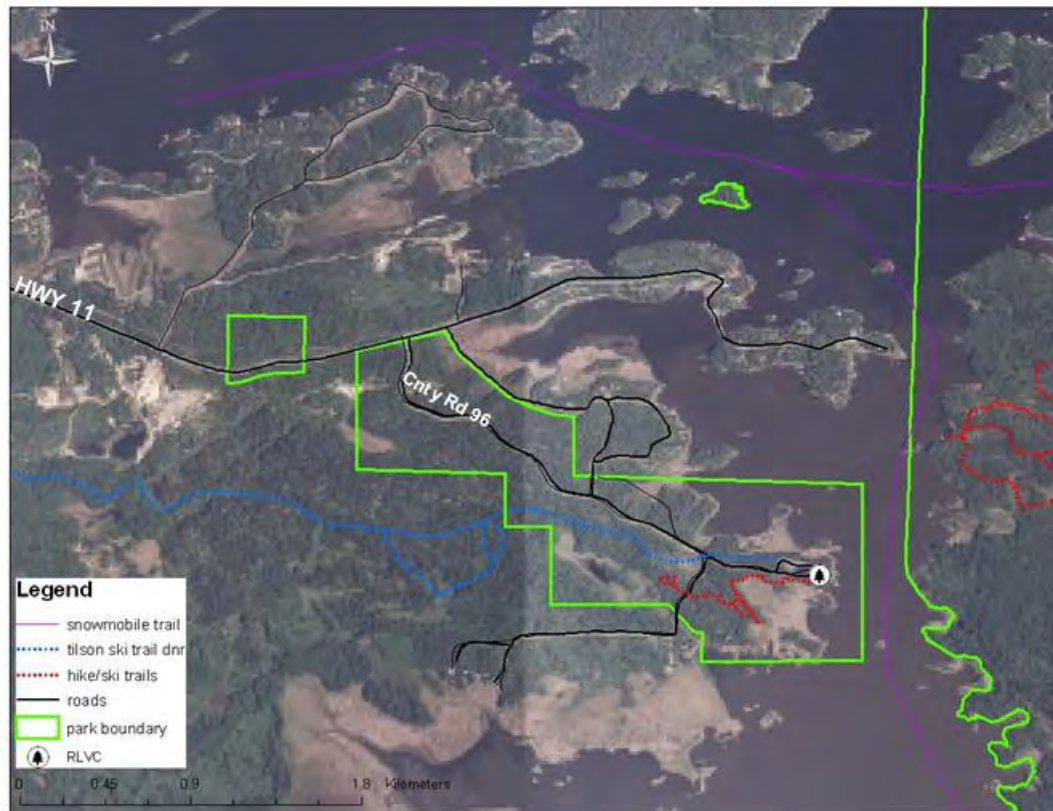


Figure 1. Aerial photo of project area for Rainy Lake Visitor Center Bike Trail extension showing location of visitor center, county and township roads, and trails.

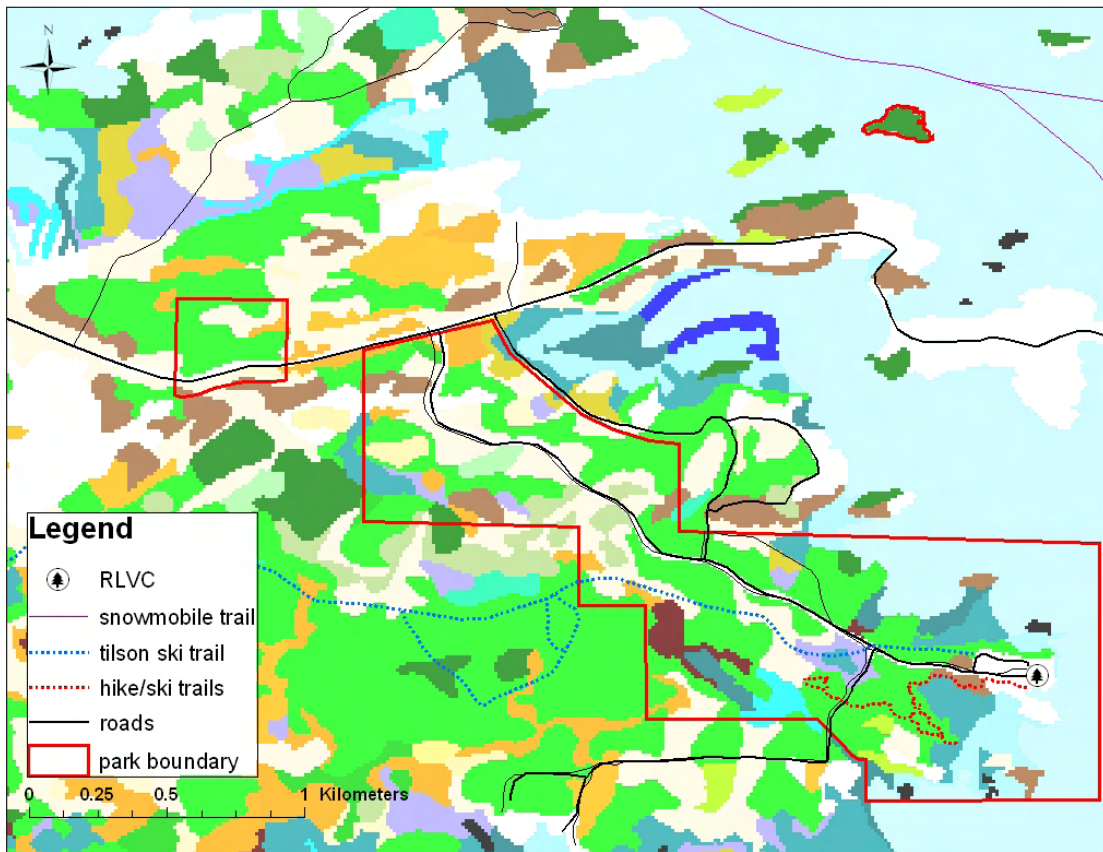


Figure 2. Forest vegetation associations in project area for Rainy Lake Visitor Center Bike Trail extension. See attached legend.

Legend for Figure 2

	Leatherleaf - Sweet Gale Shore Fen
	Leatherleaf Bog
	Black Spruce Bog
	Northern Sedge Poor Fen
	Tamarack Scrub Poor Fen
	Lakes, Ponds, and Streams (non-NVCS)
	Midwest Cattail Deep Marsh
	Midwest Pondweed Submerged Aquatic Wetland Association
	Mosaic (3 saturated Dwarf-shrubland Associations AND 3 wetland Herbaceous Associations)
	Mosaic/Complex (5 wetland Herbaceous Associations)
	Mosaic/Complex (7 wetland Herbaceous Associations)
	Wild Rice Marsh
	Northern Water Lily Aquatic Wetland
	Eastern Reed Marsh
	Freshwater Bulrush Marsh
	Speckled Alder Swamp
	Aspen - Birch / Boreal Conifer Forest AND/OR Aspen - Birch - Red Maple Forest
	Trembling Aspen - Balsam Poplar Lowland Forest
	Mixed Aspen Rocky Woodland
	Paper Birch / Fir Forest
	Bog Birch - Willow Shore Fen
	Dogwood - Pussy Willow Swamp
	Boreal Hazelnut - Serviceberry Rocky Shrubland
	Black Ash - Mixed Hardwood Swamp
	Northern Bur Oak Mesic Forest
	Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland
	Black Spruce / Alder Rich Swamp
	Black Spruce / Feathermoss Forest
	Black Spruce / Labrador Tea Poor Swamp
	Black Spruce / Leatherleaf Semi-treed Bog
	Boreal Pine Rocky Woodland
	Jack Pine / Balsam Fir Forest
	Jack Pine / Lichen Rocky Barrens
	Mosaic (Jack Pine / Balsam Fir Forest Association AND Quaking Aspen - Paper Birch Forest Alliance)
	Northern Tamarack Rich Swamp
	Red Pine / Blueberry Dry Forest
	Spruce - Fir - Aspen Forest AND/OR Black Spruce - Aspen Forest
	Spruce - Fir / Mountain Maple Forest
	White Cedar - (Mixed Conifer) / Alder Swamp
	White Cedar - Black Ash Swamp
	White Cedar - Boreal Conifer Mesic Forest
	White Cedar - Yellow Birch Forest
	White Pine - Aspen - Birch Forest AND/OR Red Pine - Aspen - Birch Forest
	White Pine / Mountain Maple Mesic Forest
	Canada Bluejoint Eastern Meadow
	Small Island with Vegetation

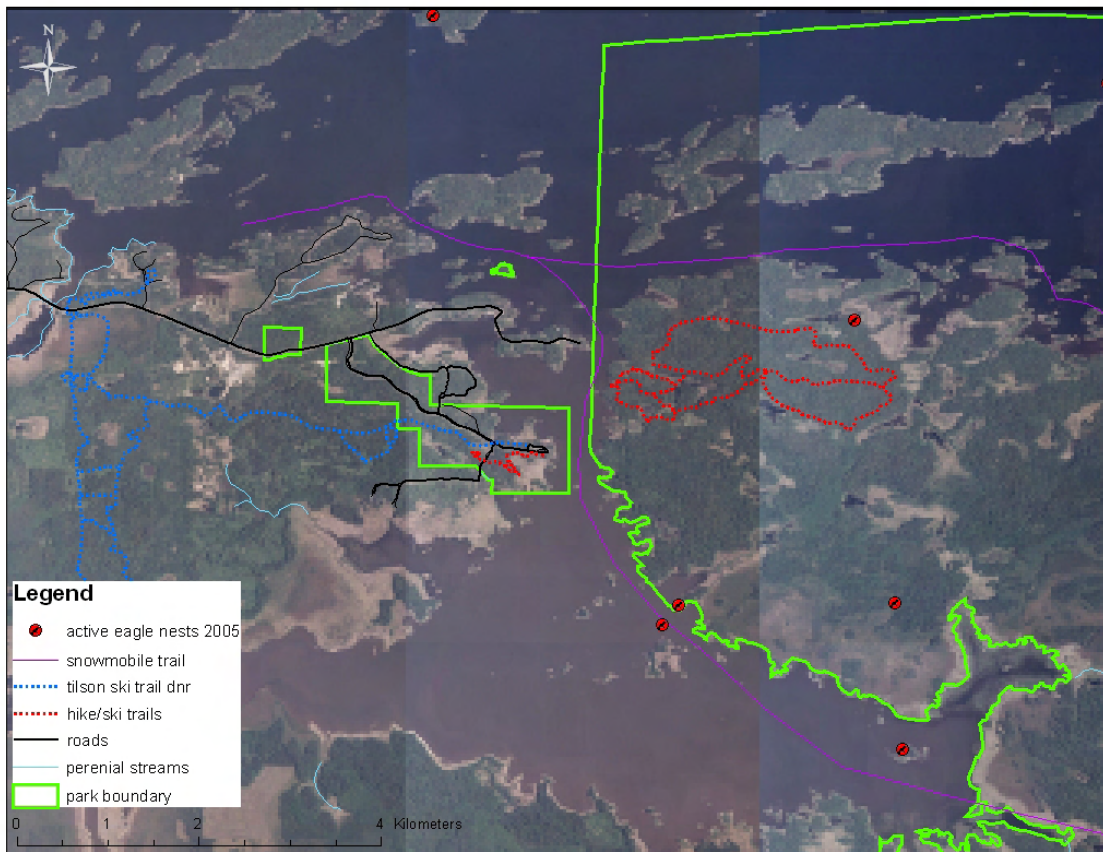


Figure 3. Active bald eagle nests in 2005 in immediate vicinity of project area for Rainy Lake Visitor Center Bike Trail extension. The closest active nests to any portion of the project area is >2.5km.

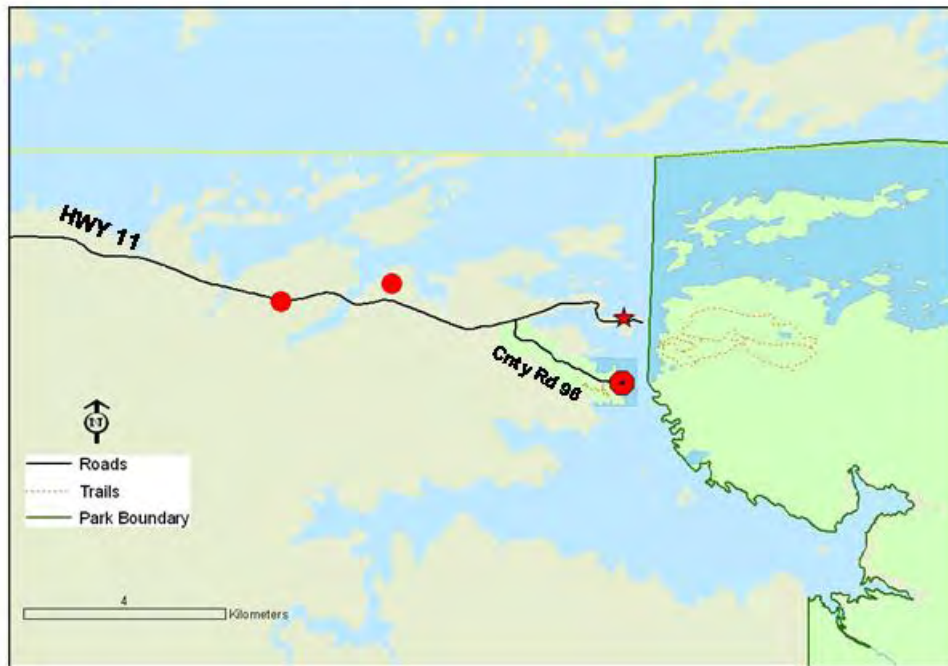


Figure 4. Verified (circles) and unverified (star) sightings of Canada lynx near the project area in 2002- 2003.

July 31, 2006

Steve Windels
Terrestrial Ecologist
Voyageurs National Park
3131 Highway 53
Int'l Falls MN 56649- 8904

Re: Plant Survey on Bicycle Trail

I completed the survey of the proposed bicycle trail on July 26 – 27 2006, including the three alternative routes (Figure 1):

- (i) North of the Rainy Lake Visitor's Center access road
- (ii) South of the Rainy Lake Visitor's Center access road
- (iii) On the Rainy Lake Visitor's Center access road right- of- way

I followed the flagged lines, searching for plants in a zone extending about 5 – 10 m on either side of the line.

The road passes mainly through upland trembling aspen – dominated forest on clay soil, alternating with dry rock ridges and moist depressions with black ash. A white cedar swamp is at the west end of the both the north and south routes.

Two hundred and forty plant species were observed on the proposed bike trail. I found no Endangered, Threatened and Special Concern plant species. A list of eleven Endangered, Threatened and Special Concern plants known to occur in Voyageurs National Park is included in Appendix 2. Although none of these species was observed, potential habitat for *Torreyochloa pallida* and *Sparganium glomeratum* exists at the west end of the trail in the white cedar swamp.

Two species apparently new for the park were discovered (see Harris and Foster 2003):

- (i) *Tanacetum vulgare*, a non- native invasive upland species at several locations,
- (ii) *Scirpus hattorensis*, a native sedge sometimes lumped with *Scirpus atrovirens*

Sincerely,

Allan Harris

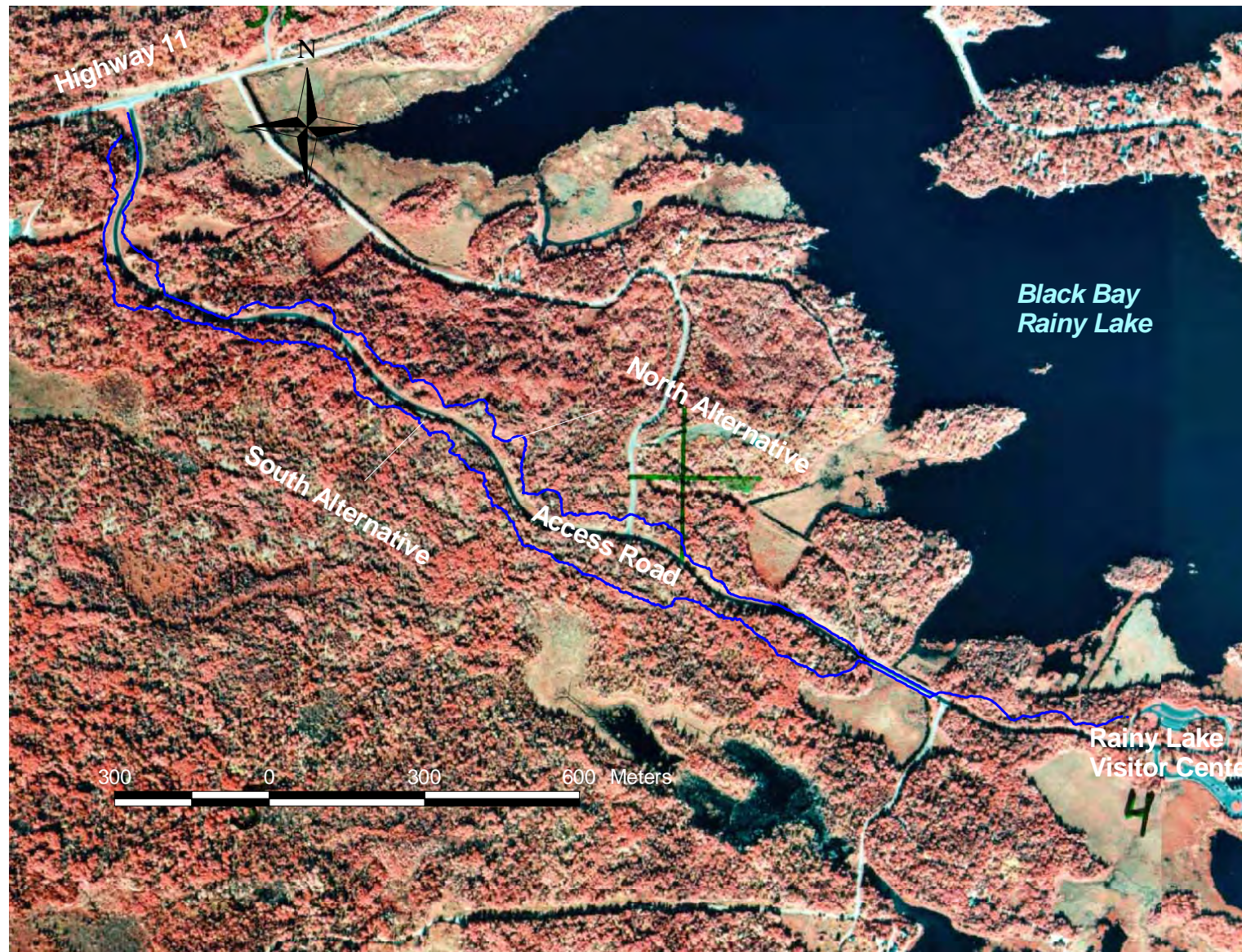


Figure 1. Map of bicycle trails. Blue lines represent the North and South alternatives. Background is colour infrared photography.

Appendix 1. Vascular plant species observed on proposed bicycle trail, Voyageurs National Park July 26 – 27 2006. “North”, “south” and “road” refer to the three alternative trail locations.

	North South Road		
FAMILY EUISETACEAE	Horsetail Family		
<i>Equisetum arvense</i>	Field Horsetail	X	X
<i>Equisetum fluviatile</i>	Water Horsetail	X	X
<i>Equisetum hyemale</i>	Rough Horsetail	X	X
<i>Equisetum pratense</i>	Meadow Horsetail	X	
<i>Equisetum sylvaticum</i>	Woodland Horsetail	X	X X
FAMILY DENNSTAEDTIACEAE	Bracken Fern Family		
<i>Pteridium aquilinum</i>	Bracken Fern	X	X X
FAMILY DRYOPTERIDACEAE	True Fern Family		
<i>Athyrium filix-femina</i>	Lady Fern	X	X
<i>Dryopteris carthusiana</i>	Spinulose Shield-fern	X	X
<i>Dryopteris cristata</i>	Crested Shield-fern	X	X
<i>Gymnocarpium dryopteris</i>	Oak Fern	X	X
<i>Matteuccia struthiopteris</i>	Ostrich Fern	X	
<i>Onoclea sensibilis</i>	Sensitive Fern	X	
FAMILY OPHIOGLOSSACEAE	Succulent Fern Family		
<i>Botrychium virginianum</i>	Rattlesnake Fern		X
FAMILY POLYPODIACEAE	Polypody Family		
<i>Polypodium virginianum</i>	Rock Polypody	X	X
FAMILY THELYPTERIDACEAE	Marsh Fern Family		
<i>Phegopteris connectilis</i>	Northern Beech Fern	X	X
FAMILY LYCOPODIACEAE	Clubmoss Family		
<i>Lycopodium annotinum</i>	Stiff Clubmoss	X	X
<i>Lycopodium clavatum</i>	Running Pine	X	X
<i>Lycopodium dendroideum</i>	Treelike Clubmoss	X	X
<i>Lycopodium obscurum</i>	Tree Clubmoss	X	X
FAMILY CUPRESSACEAE	Juniper Family		
<i>Juniperus communis</i>	Ground Juniper		X
<i>Thuja occidentalis</i>	Eastern White Cedar	X	X X
FAMILY PINACEAE	Pine Family		
<i>Abies balsamea</i>	Balsam Fir	X	X X
<i>Picea glauca</i>	White Spruce	X	X
<i>Picea mariana</i>	Black Spruce	X	X
<i>Pinus resinosa</i>	Red Pine	X	X
<i>Pinus strobus</i>	Eastern White Pine	X	X

FAMILY ALISMATACEAE

Alisma triviale
Sagittaria latifolia

FAMILY CYPERACEAE

Carex arctata
Carex bebbii
Carex brunnescens
Carex castanea
Carex deweyana
Carex disperma
Carex gracillima
Carex hystericina
Carex intumescens
Carex lacustris
Carex leptalea
Carex leptonervia
Carex pedunculata
Carex projecta
Carex retrorsa
Carex stipata
Carex tenera
Carex trisperma
Scirpus cyperinus
Scirpus hattorianus

FAMILY IRIDACEAE

Iris versicolor

FAMILY JUNCACEAE

Juncus filiformis
Luzula acuminata

FAMILY LILIACEAE

Clintonia borealis
Maianthemum canadense
Streptopus lanceolatus
Trillium cernuum
Uvularia grandiflora

FAMILY ORCHIDACEAE

Corallorhiza striata
Platanthera psycodes

FAMILY POACEAE

Agrostis gigantea
Agrostis scabra

Water Plantain Family

Northern Water-plantain X
 Broadleaf Arrowhead X

Sedge Family

Black Sedge X X
 Bebb's Sedge X X X
 Brownish Sedge X X
 Chestnut-colored Sedge X
 Short-scale Sedge X
 Softleaf Sedge X
 Graceful Sedge X
 Porcupine Sedge X
 Bladder Sedge X X
 Lake-bank Sedge X X
 Bristly-stalk Sedge X
 Finely-nerved Sedge X
 Longstalk Sedge X
 Necklace Sedge X
 Retorse Sedge X
 Stalk-grain Sedge X X
 Slender Sedge X X
 Threeseeded Sedge X X
 Cottongrass Bulrush X X X
 Mosquito Bulrush X X

Iris Family

Blueflag X X

Rush Family

Thread Rush X
 Hairy Woodrush X X

Lily Family

Blue Bead-lily X X
 Wild-lily-of-the-valley X X
 Rose Twisted-stalk X X
 Nodding Trillium X X
 Large-flowered Bellwort X

Orchid Family

Striped Coralroot X
 Small Purple-fringed Orchid X X

Grass Family

Black Bentgrass X X X
 Rough Bentgrass X X X

<i>Bromus ciliatus</i>	Fringed Brome	X	X	
<i>Bromus inermis ssp. inermis</i>	Awnless Brome	X	X	X
<i>Calamagrostis canadensis</i>	Blue-joint Reedgrass	X	X	X
<i>Cinna latifolia</i>	Slender Wood Reedgrass	X	X	
<i>Danthonia spicata</i>	Poverty Oatgrass	X	X	
<i>Elymus repens</i>	Creeping Wild-rye			X
<i>Elymus trachycaulus</i>	Wild-rye	X	X	X
<i>Elymus trachycaulus</i>	Slender Wheatgrass	X	X	X
<i>Elymus virginicus</i>	Wild-rye	X		
<i>Eragrostis pectinacea</i>	Western Love Grass		X	X
<i>Festuca arundinacea</i>	Tall Fescue	X		X
<i>Festuca rubra</i>	Red Fescue	X	X	X
<i>Glyceria canadensis</i>	Canada Mannagrass	X	X	X
<i>Glyceria striata</i>	Fowl Mannagrass	X	X	
<i>Hordeum jubatum</i>	Foxtail		X	X
<i>Milium effusum</i>	Tall Millet-grass		X	
<i>Oryzopsis asperifolia</i>	White-grained Mountain-ricegrass		X	
<i>Oryzopsis pungens</i>	Slender Mountain-ricegrass	X	X	
<i>Panicum acuminatum</i>	Panicgrass	X	X	
<i>Panicum capillare</i>	Old Witch Panicgrass		X	X
<i>Panicum xanthophysum</i>	Slender Dichanthelium	X	X	
<i>Phalaris arundinacea</i>	Reed Canary Grass	X	X	X
<i>Phleum pratense</i>	Meadow Timothy	X	X	X
<i>Phragmites australis</i>	Common Reed	X		X
<i>Poa palustris</i>	Fowl Bluegrass	X		
<i>Poa pratensis</i>	Kentucky Bluegrass	X	X	X
<i>Schizachne purpurascens</i>	Purple Oat	X	X	
<i>Setaria pumila</i>	White Foxtail		X	X

FAMILY TYPHACEAE

<i>Typha angustifolia</i>
<i>Typha latifolia</i>

Cat-tail Family

Narrow-leaved Cattail	X		X
Broad-leaf Cattail	X		

FAMILY ACERACEAE

<i>Acer rubrum</i>
<i>Acer saccharinum</i>
<i>Acer spicatum</i>

Maple Family

Red Maple	X	X	
Silver Maple	X		
Mountain Maple	X	X	

FAMILY ANACARDIACEAE

<i>Rhus glabra</i>

Sumac Family

Smooth Sumac	X	X	X
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FAMILY APIACEAE

<i>Cicuta bulbifera</i>
<i>Cicuta maculata</i>
<i>Osmorhiza claytonii</i>
<i>Sanicula marilandica</i>

Parsley Family

Bulb-bearing Water-hemlock	X		
Spotted Water-hemlock	X		
Hairy Sweet-cicely	X	X	
Black Snake-root	X		

<i>Sium suave</i>	Hemlock Water-parsnip			X
<i>Zizia aurea</i>	Common Alexanders	X		X
FAMILY APOCYNACEAE	Dogbane Family			
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	X	X	X
FAMILY ARALIACEAE	Ginseng Family			
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	X	X	
<i>Aralia racemosa</i>	American Spikenard	X	X	
FAMILY ASCLEPIADACEAE	Milkweed Family			
<i>Asclepias syriaca</i>	Common Milkweed		X	
FAMILY ASTERACEAE	Sunflower Family			
<i>Achillea millefolium</i>	Seaside Yarrow	X	X	X
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	X	X	X
<i>Anaphalis margaritacea</i>	Pearly Everlasting	X	X	X
<i>Chrysanthemum leucanthemum</i>	Oxeye Daisy	X	X	X
<i>Cirsium arvense</i>	Creeping Thistle	X	X	X
<i>Cirsium vulgare</i>	Bull Thistle	X		X
<i>Conyza canadensis</i>	Canadian Horseweed	X	X	X
<i>Doellingeria umbellata</i>	Parasol Whitetop			X
<i>Doellingeria umbellata.</i>	Flat-top White Aster			X
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	X	X	X
<i>Eupatorium maculatum</i>	Spotted Joepyeweed	X		X
<i>Eupatorium perfoliatum</i>	Common Boneset	X		X
<i>Eurybia macrophylla</i>	Large-leaf Wood-aster	X	X	X
<i>Euthamia graminifolia</i>	Flat-top Fragrant Goldenrod	X		
<i>Hieracium kalmii</i>	Kalm's Hawkweed	X	X	X
<i>Lactuca canadensis</i>	Canada Lettuce	X	X	
<i>Matricaria matricarioides</i>	Pineapple-weed Chamomile		X	X
<i>Petasites frigidus</i>	Sweet Coltsfoot	X	X	
<i>Solidago canadensis</i>	Canada Goldenrod	X	X	X
<i>Solidago nemoralis</i>	Gray-stemmed Goldenrod	X	X	X
<i>Sonchus arvensis</i>	Sowthistle	X	X	X
<i>Symphyotrichum ciliolatum</i>	Lindley's Aster	X		
<i>Symphyotrichum lanceolatum</i>	Western Panicked Aster	X	X	X
<i>Symphyotrichum lateriflorum</i>	Starved Aster	X	X	X
<i>Symphyotrichum puniceum</i>	Swamp Aster	X		
<i>Tanacetum vulgare</i>	Common Tansy	X		X
<i>Taraxacum officinale</i>	Brown-seed Dandelion	X		X
<i>Tragopogon dubius</i>	Meadow Goat's-beard	X	X	X
FAMILY BALSAMINACEAE	Touch-me-not Family			
<i>Impatiens capensis</i>	Spotted Jewel-weed	X	X	
FAMILY BETULACEAE	Birch Family			

<i>Alnus incana</i>	Speckled Alder	X	X	
<i>Betula papyrifera</i>	Paper Birch	X	X	X
<i>Corylus cornuta</i>	Beaked Hazelnut	X	X	
FAMILY BRASSICACEAE	Mustard Family			
<i>Barbarea vulgaris</i>	Yellow Rocket			X
FAMILY CAMPANULACEAE	Harebell Family			
<i>Campanula aparinoides</i>	Marsh Bellflower	X		
<i>Campanula rotundifolia</i>	American Harebell	X		
FAMILY CAPRIFOLIACEAE	Honeysuckle Family			
<i>Diervilla lonicera</i>	Northern Bush-honeysuckle	X	X	X
<i>Linnaea borealis</i>	Twinflower	X	X	
<i>Lonicera canadensis</i>	American Fly-honeysuckle	X	X	
<i>Lonicera hirsuta</i>	Hairy Honeysuckle	X		
<i>Viburnum rafinesquianum</i>	Downy Arrowwood	X	X	
FAMILY CARYOPHYLLACEAE	Pink Family			
<i>Cerastium fontanum</i>	Common Mouse-ear Chickweed	X		
<i>Silene antirrhina</i>	Sleepy Catchfly	X	X	X
<i>Silene latifolia</i>	Bladder Campion			X
<i>Stellaria longifolia</i>	Longleaf Stitchwort	X		
FAMILY CHENOPODIACEAE	Goosefoot Family			
<i>Chenopodium album</i>	Goosefoot			X
FAMILY CORNACEAE	Dogwood Family			
<i>Cornus canadensis</i>	Bunchberry	X	X	
<i>Cornus rugosa</i>	Roundleaf Dogwood	X	X	
<i>Cornus stolonifera</i>	Red-osier Dogwood		X	
FAMILY ERICACEAE	Heath Family			
<i>Arctostaphylos uva-ursi</i>	Bearberry	X	X	
<i>Ledum groenlandicum</i>	Common Labrador Tea	X		
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	X	X	
<i>Vaccinium caespitosum</i>	Dwarf Huckleberry			X
<i>Vaccinium myrtilloides</i>	Velvetleaf Blueberry	X	X	
FAMILY FABACEAE	Pea Family			
<i>Amphicarpaea bracteata</i>	American Hog-peanut	X		
<i>Lathyrus venosus</i>	Smooth Veiny Peavine	X	X	
<i>Lotus corniculatus</i>	Birds-foot Trefoil	X		X
<i>Medicago lupulina</i>	Black Medic		X	X
<i>Melilotus alba</i>	White Sweetclover	X	X	X
<i>Melilotus officinalis</i>	Yellow Sweetclover			X
<i>Trifolium arvense</i>	Rabbit-foot Clover			X

<i>Trifolium campestre</i>	Low Hop Clover	X	X	X
<i>Trifolium hybridum</i>	Alsike Clover	X		
<i>Trifolium pratense</i>	Red Clover	X	X	X
<i>Vicia americana</i>	American Purple Vetch	X	X	
<i>Vicia cracca</i>	Tufted Vetch			X
FAMILY FAGACEAE	Beech Family			
<i>Quercus ellipsoidalis</i>	Northern Pin Oak	X	X	
<i>Quercus macrocarpa</i>	Mossy-cup Oak	X	X	
FAMILY GENTIANACEAE	Gentian Family			
<i>Halenia deflexa</i>	Spurred Gentian	X		
FAMILY GROSSULARIACEAE	Currant Family			
<i>Ribes hirtellum</i>	Smooth Gooseberry	X		X
<i>Ribes hudsonianum</i>	Northern Black Currant	X		
<i>Ribes triste</i>	Swamp Red Currant	X	X	
FAMILY LAMIACEAE	Mint Family			
<i>Galeopsis tetrahit</i>	Brittle-stem Hempnettle	X	X	
<i>Lycopus uniflorus</i>	Northern Bugleweed	X		
<i>Mentha arvensis</i>	Corn Mint	X	X	X
<i>Prunella vulgaris</i>	Self-heal	X	X	X
<i>Scutellaria lateriflora</i>	Mad Dog Skullcap	X		X
<i>Stachys palustris</i>	Marsh Hedge-nettle	X		X
FAMILY OLEACEAE	Olive Family			
<i>Fraxinus nigra</i>	Black Ash	X	X	X
FAMILY ONAGRACEAE	Evening-primrose Family			
<i>Epilobium angustifolium</i>	Fireweed	X	X	X
<i>Epilobium ciliatum</i>	Hairy Willow-herb		X	
<i>Epilobium leptophyllum</i>	Linear-leaved Willow-herb	X		X
FAMILY PLANTAGINACEAE	Plantain Family			
<i>Plantago major</i>	Nipple-seed Plantain		X	X
FAMILY POLYGONACEAE	Buckwheat Family			
<i>Polygonum achoreum</i>	Leathery Knotweed		X	X
<i>Polygonum amphibium</i>	Water Smartweed	X		
<i>Polygonum cilinode</i>	Fringed Black Bindweed		X	X
<i>Polygonum lapathifolium</i>	Dock-leaf Smartweed	X		
<i>Polygonum punctatum</i>	Dotted Smartweed			X
<i>Polygonum sagittatum</i>	Arrow-leaved Tearthumb	X		
<i>Rumex acetosella</i>	Dock	X		X
<i>Rumex crispus</i>	Curly Dock	X		X
<i>Rumex orbiculatus</i>	Water Dock	X		

FAMILY PRIMULACEAE

Lysimachia ciliata
Trientalis borealis

Primrose Family

Fringed Loosestrife X
 Northern Starflower X X

FAMILY PYROLACEAE

Chimaphila umbellata
Orthilia secunda
Pyrola asarifolia

Wintergreen Family

Common Wintergreen X
 One-side Wintergreen X X
 Pink Wintergreen X

FAMILY RANUNCULACEAE

Actaea rubra
Anemone canadensis
Aquilegia canadensis
Caltha palustris
Ranunculus acris
Ranunculus hispidus

Buttercup Family

Red Baneberry X X
 Canada Anemone X
 Wild Columbine X
 Marsh Marigold X X
 Tall Butter-cup X X X
 Bristly Buttercup X

FAMILY RHAMNACEAE

Rhamnus alnifolia

Buckthorn Family

Alderleaf Buckthorn X

FAMILY ROSACEAE

Fragaria vesca
Fragaria virginiana
Geum aleppicum
Potentilla norvegica
Potentilla recta
Prunus virginiana
Rosa acicularis
Rubus idaeus
Rubus pubescens
Spiraea alba

Rose Family

Woodland Strawberry X
 Virginia Strawberry X X X
 Yellow Avens X X X
 Norwegian Cinquefoil X X
 Sulphur Cinquefoil X X
 Choke Cherry X
 Prickly Rose X X
 Common Red Raspberry X X X
 Catherinettes Berry X X
 Narrow-leaved Meadow-sweet X

FAMILY RUBIACEAE

Galium asprellum
Galium boreale
Galium trifidum
Galium triflorum

Bedstraw Family

Rough Bedstraw X X
 Northern Bedstraw X
 Small Bedstraw X X
 Sweet-scent Bedstraw X X

FAMILY SALICACEAE

Populus balsamifera
Populus grandidentata
Populus tremuloides
Salix bebbiana
Salix discolor
Salix exigua
Salix humilis
Salix lucida

Willow Family

Balsam Poplar X X X
 Large-tooth Aspen X
 Trembling Aspen X X X
 Bebb's Willow X X X
 Pussy Willow X
 Sandbar Willow X
 Tall Prairie Willow X X
 Shining Willow X X

FAMILY SANTALACEAE*Comandra umbellata***FAMILY SAXIFRAGACEAE***Mitella nuda***FAMILY SCROPHULARIACEAE***Melampyrum lineare**Verbascum thapsus**Veronica scutellata***FAMILY TILIACEAE***Tilia americana***FAMILY ULMACEAE***Ulmus americana***FAMILY VITACEAE***Parthenocissus quinquefolia***Sandalwood Family**

Umbellate Bastard Toad-flax

X

Saxifrage Family

Naked Bishop's-cap

X

X

Figwort Family

American Cow-wheat

X

X

Great Mullein

X

X

Marsh-speedwell

X

Linden Family

American Basswood

X

Elm Family

American Elm

X

X

Grape Family

Virginia Creeper

X

Appendix 2. Endangered, Threatened, and Special Concern vascular plants known to occur in Voyageurs National Park. (Minnesota DNR; <http://www.dnr.state.mn.us/ets/index.html>).

Scientific Name	Common Name	Status	Habitat
<i>Caltha natans</i>	floating marsh-marigold	Endangered	Streams
<i>Crassula aquatica</i>	pigmyweed	Threatened	Aquatic
<i>Fimbristylis autumnalis</i>	autumn fimbristylis	SC	Beaches
<i>Juniperus horizontalis</i>	creeping juniper	SC	Mafic Bedrock Shores
<i>Littorella uniflora</i>	American shore-plantain	SC	Aquatic
<i>Minuartia dawsonensis</i>	rock sandwort	SC	Mafic Bedrock Shores
<i>Potamogeton vaseyi</i>	Vasey's pondweed	SC	Aquatic
<i>Ranunculus lapponicus</i>	Lapland buttercup	SC	Peatlands
<i>Sparganium glomeratum</i>	clustered bur-reed	SC	Black Ash swamps
<i>Subularia aquatica</i>	awlwort	Threatened	Aquatic
<i>Torreyochloa pallida</i>	Torrey's manna-grass	SC	Riparian areas, swamps

Appendix C:

Voyageurs National Park Bike Trail Wetland Delineation

This wetland delineation has been completed as requested by the park and its staff. This delineation can be used in the identification of wetland areas along two proposed bike trail routes of Voyageurs National Park. Field work for this delineation was conducted September 15, 2006 and September 20, 2006 for route 1, and October 5, 2006 for the second route option. Field work was conducted by Ryan Heinen of the Koochiching SWCD and Patty Burns of the NRCS Soil Survey.

Methods

A routine wetland delineation was conducted on site as plant community boundaries, elevation and soil types encountered were easily identified and well defined. Sample plots were conducted along the proposed trail route at points containing wetland signatures. For each wetland area sample plots were taking on the upland sides of a wetland as well as in the wetland itself. An area was determined to be wetland if all components of hydric vegetation, hydric soils and hydrology or indications of hydrology were met as defined in the 1987 Corps of Engineers Wetland Manual. Incidental wetland areas were not included in this delineation, although only a few were encountered in the road ditch.

Results and Discussion

The landscape of the delineation area is located in the Northern Superior Uplands section of Minnesota. The area contains glacially scoured bedrock and thin discontinuous deposits of coarse loamy till and numerous lakes. The section has high relief and rugged topography from the underlying bedrock. (MN DNR 2003) Vegetation consists of red and white pine, maple, balsam fir and aspen on the uplands and black spruce, white cedar, black ash, alder and willow in the wetland areas. The delineation was conducted along two proposed routes. Route 1 is proposed on the north and east side of Hwy 96 and route 2 follows Hwy 96 to the Rainy Lake Visitor Center.

Wetland boundary points were selected based on a variety of reasons including changes in vegetation, presence of hydric soils, elevation rises, and exposed bedrock. Soils and vegetation information was taken at all applicable plots, unless unnecessary, as in the case of exposed bedrock where the lack of soil automatically makes the area upland. At each end of a wetland boundary a red flag with a specific plot number was placed in the ground. These flags were then marked with the use of GPS (See Figure 1. for location of wetland boundary points or Table 1. can be consulted for GPS coordinates of specific wetland boundary flags). For areas of the proposed trail that follow the road, delineation from the bottom of the road ditch and out away from the road was conducted. Any wetlands marked in this area should be considered wetland from the bottom of the ditch and out away from the road. Any impacts to these areas will depend upon the trail width and necessary road ditch extensions.

Wetlands identified in this delineation include types 2, 4, 6 and 7 as defined in "Wetlands of the United States, USFWS Circular 39". (See Appendix B, "Descriptions of Wetland Types as found in chapter 8420 of the Minnesota Board of Water and Soil Resources Wetland Conservation Act Rules" for definitions of wetland types). Current wetland mapping from the National Wetland Inventory (NWI) was consulted and is shown in Figure 1, however

because this mapping often fails to recognize forested wetlands, it should only be used to identify areas wetlands may be present. Field identification is necessary to confirm or deny NWI mapping. No soil mapping information is available for this area, as the Koochiching Soil Survey is currently being conducted.

Route 1 Wetlands- See Figure 1. for location of specific wetlands. Data forms are also attached in Appendix A which can be used to identify vegetation, hydrology, and soils for specific wetland areas.

W01- W02: This wetland starts near the intersection of Hwy 11 and 98. This is a type 7 wetland running along Hwy 98 for approximately 122 meters. White cedar, black ash, willow, balsam fir are some of the species found in the wetland. The wetland ends as the elevation rises and hydric soils end. This wetland is located in both route 1 and route 2. *See data plot sheet W01, W01- wet, W02.*

W03- W04: This is a small type 2 wetland running approximately 20 meters along the proposed bike trail. Vegetation includes lake sedge, narrow leaf cattail and giant reed grass. This wetland ends at the point bedrock rises up creating a sharp boundary. *See data plot sheet W03U, W03W, W04U.*

W05- W06: This is a type 7 wetland running approximately 40 meters along the trail, dominated by black ash, red maple, and Canada blue joint. Wetland boundaries were chosen at a point where dominate wetland vegetation begins and where the trail connects with the Hwy 98. *See data plot sheet W05W.*

W07- W08: This is a type 7 wetland, approximately 41 meters in length. Dominate vegetation includes black ash, wool grass, Canada blue joint grass and balsam fir. Exposed bedrock as well as the lack of wetland vegetation was used to determine the wetland boundary. *See data plot sheet W06U, W07W, W08U.*

W09- W11: This is a type 7 wetland approximately 24 meters in length. Dominate vegetation found in the wetland includes black ash, quaking aspen, red osier dogwood and Canada blue joint. Wetland boundary was chosen as wetland vegetation became dominate and as hydric soil was encountered. *See data plot sheet W09- wet, W10U.*

W12- W13: This is a type 7 wetland approximately 20 meters in length. Dominate vegetation found in the wetland includes black ash, black spruce, lake sedge, Canada blue joint and balsam fir. Obvious boundaries of exposed bedrock, along with the presents of wetland vegetation were used to determine the edges of the wetland. *See data plot sheet W12- wet.*

W14- W15: This is a type 7 wetland approximately 18 meters in length. Dominate vegetation includes black spruce, balsam fir, quaking aspen, Canada blue joint and red osier dogwood. Bedrock and vegetation were used to identify the wetland boundary. *See data plot sheet W14- wet.*

W16- W17: This is a type 2 wetland approximately 11 meters in length located adjacent to Town Rd 461. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and Town Rd 461 provides the end of the wetland. *See data plot sheet W16- wet.*

016- 017: This is a type 6 wetland approximately 32 meters in length. The wetland is located at the bottom of the road ditch. The wetland is part of both routes and may not be impacted due to it distance from the road due to the long steep road ditch. The dominate vegetation in the wetland is tag alder, and willow. Steep rises in exposed bedrock provide the wetland boundary. *See data plot sheet 016- wet.*

018- 019: This is a type 4 wetland located along Hwy 98 approximately 85 meters in length. The wetland is connected to Rainy Lake with dominate vegetation of cattail wool grass and lake sedge. Open water is present with depths greater than 12 inches in some areas. Vegetation, elevation rise and bedrock were used to determine the wetland boundary. *See data plot sheet 018 wet.*

Route 2 Wetlands- See Figure 1. for location of specific wetlands. Data forms are also attached which can be used to identify vegetation, hydrology, and soils for specific wetland areas.

W01- W02: This wetland starts near the intersection of Hwy 11 and 98. This is a type 7 wetland running along Hwy 98 for approximately 122 meters. White cedar, black ash, willow, balsam fir are some of the species found in the wetland. The wetland ends as the elevation rises and hydric soils end. This wetland is located in both route 1 and route 2. *See data plot sheet W01, W01- wet, W02.*

W03- 001: This is a type 2 wetland running approximately 78 meters along the proposed bike trail. Vegetation includes lake sedge, narrow leaf cattail and giant reed grass. This wetland ends at the point where the elevation rises up and hydric soils and vegetation *See data plot sheet W03U, W03W, 001U.*

002- 003: This is a type 7 wetland running approximately 95 meters in length. Vegetation includes black ash, white cedar, and Canada blue joint grass. Boundaries for this wetland were chosen at the point hydric vegetation begins, and rise in exposed bedrock. *See data plot sheet W05W.*

004- 005: This is a type 7 wetland running approximately 19 meters in length. This is a small depressional drainage wetland. The wetland starts at a point where sedges and wool grass start and ends as bedrock starts to rise up. Vegetation includes Canada blue joint grass, wool grass, black ash, and red osier dogwood. *See data plot sheet 004- wet.*

006- 007: This is a type 6 wetland running approximately 54 meters in length. The wetland starts as elevation drops down from bedrock and ends as bedrock rises up. Vegetation includes sphagnum moss, tag alder and willow. *See data plot sheet 006- wet.*

008- 009: This is a type 6 wetland approximately 19 meters in length. This is a very small depressional wetland, boundaries start and stop as bedrock drops and rises. Vegetation includes willow, wool grass, red osier dogwood, and white cedar. *See data plot sheet 008- wet.*

010- 011: This is a type 6 wetland approximately 34 meters in length. Boundaries start and stop as exposed bedrock rises. Vegetation in the wetland includes paper birch, white cedar, willow, and red osier dogwood. *See data plot sheet 010- wet.*

012- 013: This is a type 6 wetland approximately 14 meters in length. This is the same wetland as described in W16- W17. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and exposed bedrock defines the end of the wetland. *See data plot sheet W16- wet.*

014- 015: This is a type 7 wetland approximately 45 meters in length. Soils are very organic with vegetation being black spruce, Labrador tea, and alder dominate. Rise of the bedrock defines the wetland boundaries. *See data plot sheet 014- wet.*

016- 017: This is a type 6 wetland approximately 32 meters in length. The wetland is located at the bottom of the road ditch. The wetland is part of both routes and may not be impacted due to it distance from the road due to the long steep road ditch. The dominate vegetation in the wetland is tag alder, and willow. Steep rises in exposed bedrock provide the wetland boundary. *See data plot sheet 016- wet.*

018- 019: This is a type 4 wetland located along Hwy 98 approximately 85 meters in length. The wetland is connected to Rainy Lake with dominate vegetation of cattail wool grass and lake sedge. Open water is present with depths greater than 12 inches in some areas. Vegetation, elevation rise and bedrock were used to determine the wetland boundary. *See data plot sheet 018 wet.*

020- 021: This is a type 4 wetland located along Hwy 98 approximately 147 meters in length. This is an open water wetland with cattail, lake sedge, willow, and alder being the dominate vegetation. This is the same wetland as described in 018- 019 but it is divided by the road. *See data plot 020- wet, 021UP.*

022- 023: This is a type 6 wetland approximately 21 meters in length. This is the same wetland as described in 012- 013 and W16- W17. Dominate vegetation include Canada blue joint, cattail, reed canary, and alder. The presents of wetland vegetation marked the start of this wetland and exposed bedrock defines the end of the wetland. *See data plot sheet W16- wet.*

024- 025: This is a type 7 wetland approximately 22 meters in length. Dominate vegetation includes balsam fir, black ash, Canada anemone, paper birch, and mountain maple.

Boundaries were chosen where black ash and drainage pattern begin, and ends as bedrock rises up. *See data plot sheet 024- wet.*

026- 027: This is type 7 wetland approximately 35 meters in length. Dominate vegetation include white cedar, black ash, sphagnum moss, and lake sedge. Boundaries were chosen as bedrock drops down and rises up. A flag is located by a large white cedar to mark one of the boundaries. *See data plot sheet 026- wet.*

028- 029: This is a type 7 wetland approximately 50 meters in length. Dominate vegetation includes black spruce, balsam fir, Canada blue joint, Labrador tea, and sphagnum moss. Boundaries were chosen based one the presence of exposed bedrock. *See data plot sheet 028- wet.*

030- 031: This is a type 6 wetland approximately 42 meters in length. Dominate vegetation includes reed canary, willow, red osier dogwood, and Canada blue joint. Boundaries were chosen because of exposed bedrock, and as hydric soil and vegetation ends. *See data plot sheet 030- wet, and 031- upland.*

032- 033: This is a type 2 wetland approximately 20 meters in length. Dominate vegetation includes wool grass, reed canary, broad leaf cattail, and lake sedge. Boundaries were chosen at the point sedge growth starts and stops. *See data plot sheet 032- wet.*

034- 035: This is a type 7 wetland approximately 90 meters in length. Vegetation is dominated by black ash, white cedar, broad leaf cattail, balsam fir, and willow. Boundaries were chosen at a point of incidental fill and ends at the fill area at park sign. *See data plot sheet 034- 035.*

Conclusion

In conclusion, this report gives a description of wetland areas along the two proposed bike trails. Total wetland impacts will be dependent on the width of the bike trail and necessary extension of the road ditch for parts of the trail which follow the road. Route 1 wetland area in approximate linear meters is as follows: Type 2 wetland totals 31 linear meters, type 4 wetland totals 85 linear meters, type 6 wetland totals 32 linear meters, type 7 wetland totals 265 linear meters.

Route 2 wetland area in approximate linear meters is as follows: Type 2 wetland totals 98 linear meters, type 4 wetland totals 232 linear meters, type 6 wetland totals 216 linear meters, type 7 wetland totals 478 linear meters. Efforts to avoid these wetland areas should be taken were possible. Remember that all necessary permits need to be acquired before any work in wetlands is done. Final authority for any impacts rests with the appropriate state and federal agencies.

This delineation has been conducted by Ryan Heinen, District Technician with the Koochiching Soil and Water Conservation District. Contact Ryan Heinen at 218- 283- 1175 with any questions or Courthouse, 715 4th street, International Falls, MN 56649.

Works Cited and Consulted

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Eggers, Steve and Donald Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin, Second Edition. U.S. Army Corps of Engineers, St. Paul District.

Walton, Gary. 2005. 2005 Coastal Plant Identification, with a focus on plants found on the wetland/upland interface in Minnesota's Lake Superior Watershed. Minnesota Board of Water and Soil Resources.

Appendix D: Archeological Survey Summary

There are no known historic sites, structures, cultural landscapes, archeological or ethnographic resources in the project area. A team from the National Park Service's (NPS) Midwest Archeological Center (MWAC) under the direction of Jeffrey J. Richner, conducted an archeological inventory of the proposed bicycle path in 2006 and provided the following report:

The proposed trail would parallel the current NPS road to the Rainy Lake Visitor Center. That road leads from the junction of Highway 11 to the visitor center and other NPS developments where the road ends. Although the park had selected a preferred alternative from multiple alternate routes for the path prior to our inventory, two routes, one on each side of the NPS road, were marked with flagging tape at the time of our inventory. We examined each of the flagged routes, but our most intensive inventory effort was along the preferred route.

Maps depicting the routes, both preferred and alternate, were consulted at NPS headquarters in International Falls prior to the inventory. The route of the NPS road was inventoried with negative results in the 1980s in advance of construction of the road and the park's Rainy Lake Visitor Center. The entire visitor center development area was also inventoried in a separate effort in the 1980s with negative results. Given the negative results of those previous inventories and the character of the route of the path, it was our expectation that no archeological resources would occur within any of the proposed routes. Over 6,000 acres of archeological inventory have been conducted in similar upland settings within the park and no sites have been recorded in such settings in the past. All previously recorded sites within VOYA are located immediately adjacent to the shorelines of the park's lake system. Although the proposed bike path would pass near a shoreline segment of a bay of Rainy Lake, prior to the raising of Rainy Lake water levels in 1909 by just over an average of three feet, this shoreline would have been considerably farther from the path than it is today.

Prior to inventory we checked all available data on previous inventory coverage and site locations in the vicinity of the proposed paths. These data are curated at MWAC in the form of the Archeological Site Management Information System (ASMIS) and the data (both electronic and paper) supporting that NPS-wide database. No sites are recorded along or near the NPS road or at the visitor center or NPS fuel dock. Given this background, we did not anticipate that any sites would be present within the bike path project area.

Inventory was accomplished in August, 2006 under relatively dry, summer field conditions. Although no bare ground is exposed within the project area, other than surface exposures of bedrock, visibility for observing surface historic artifact scatters was relatively good. We began by walking both the preferred and alternate routes that were marked with flagging tape suspended in trees. The routes are gently undulating and follow the existing road prism. The routes would cross primarily over upland landforms where bedrock is at or very near the current ground surface. No surface artifacts, either isolated or in scatters, were observed during this reconnaissance effort. If historic sites were present within the project area, we would have expected that some surface indications of their former presence would have been obvious despite the relatively dense vegetation cover of second and third growth mixed coniferous and hardwood forest. After the reconnaissance inventory's negative results, we conducted an intensive inventory of the preferred route via interval shovel testing. A ten-meter interval was applied in a single, winding linear transect. The soils encountered in this effort were surprisingly variable. They ranged from the expected very shallow, rocky, silty loam of the rocky upland segments to dense gray clay in one low lying area. All soil was screened through 1/4 inch mesh hardware cloth. Results of the shovel

testing inventory were negative. No artifacts of any kind were recovered through this intensive inventory effort.

Given the previous negative inventories of the NPS road route and the development zone around the visitor center, the negative results of the bike path inventory are not surprising. In my opinion, development of the bike path, either in its preferred or alternate locations would have no impact upon archeological resources. (Jeffrey J. Richner, 2006)