Minnesota Department of Natural Resources
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August 15, 2014

Bill Storm, Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul MN 55101

Re: In the Matter of the Application of Minnesota Power for a Route Permit for the Great Northern Transmission Line Public Utilities Commission
(PUC) Docket Number: E-015/TL-14-21
DNR ERDB Number: 20130195

Dear Mr. Storm:

The Minnesota Department of Natural Resources (DNR) has reviewed the Application for a Route Permit for the Great Northern Transmission Line Project and provides the following comments regarding the application content, impact assessment that should be scoped into the upcoming Draft Environmental Impact Statement (DEIS), mineral resources, and route alternatives for further review in the DEIS.

1. Comments on the Route Permit Application

General Comment:

In general, the route permit application was well written in an objective manner and accurately describes most of the impacts associated with construction and maintenance of a high voltage transmission line (HVTL). **The route permit application should be used as a primary source of information in preparing the EIS.** The following specific comments refer to information in the route permit application and include requests for additional analysis in the EIS.

Specific Comments:

3.4.2 State Approvals

This section indicates that the project is expected to be exempt under MN Rule 8420.0420 Subpart 6, yet estimated direct wetland impacts are described as exceeding the minimum .5 acre requirement that must be met in order to qualify for the exemption. Furthermore, wetland impact estimates are based on National Wetlands Inventory Mapping (NWI) mapping and/or other offsite methods which many times underestimate actual areal extent. **The DEIS should describe wetland exemptions requirements that must be met and how the project is expected to meet those requirements.**

Many of the native plant communities in the project area also are considered *rare natural plant communities* under the Wetland Conservation Act (WCA) (MN Rule 8420.0515). Guidance on Rare Natural Plant Communities under the WCA can be found on the Board of Water and Soil Resources - BWSR webpage. **The EIS should assess impacts on rare natural plant communities and compliance with associated WCA provisions.**

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4.1.2 Border Crossing Options

This section largely describes informal early coordination efforts between Minnesota Power (the applicant) and Manitoba Hydro and resulting mutual decisions regarding preferred crossing locations. **The EIS should summarize how border crossing alternatives may be affected by Manitoba Hydro and Manitoba/Canadian government decision making and review processes.**

Alternative border crossing locations are included in Section 4 of this letter. We understand that due to constraints at the proposed border crossing, it is possible that other commenters may also provide one or more alternatives for analysis in the EIS. The following features have the possibility of being impacted by routing in the vicinity of the proposed border crossing and should be addressed in the EIS as applicable: SNAs, Watershed Protection Areas associated with SNAs and fens, High Conservation Value Forest within state forest lands, a Great Grey Owl Management Area, WMAs, MBS sites of biodiversity significance, avian impacts, and fragmentation of large block habitats.

6.10.2 Recreation Area Users

Page 6.10-7 mentions potential visual impacts to users of the Big Bog State Recreation Area and that additional study is required to determine potential impacts. DNR agrees and is concerned about visual impacts to users of both the boardwalk and the Big Bog Recreation Area Fire Tower associated with the Orange Route. **A viewshed analysis (with scaled visual renditions of what one would expect to see) should be prepared as part of the EIS for these areas as well as other recognized viewsheds.**

6.17.2 Public Waters

The DEIS should describe short and long-term impacts of crossing streams (trout streams or other) and what measures would be taken to mitigate such impacts. Any plans for alternative construction and/or right-of-way management should also be described. On other projects DNR has recommended that water crossings should be avoided to the extent possible and if they are crossed consider neck downs in clearing widths as well as preservation and maintenance of woody buffers in riparian zones as a means to lessen impacts.

6.18 Wetland Impacts

Section 6.18.2 indicates that peat soils tend to be highly compressible, that compressed peat is slow to regenerate, and that vegetation communities could be impacted if soils are compressed and sunken. The DNR agrees with this. Experience has shown that construction in peat soils often times requires multiple layers of construction matting to create a stable work surface. After these mats are removed, the peat remains sunken/compressed and the area at times re-vegetates to an ecologically unsuitable open water wetland community (many times cattails).

The EIS should describe and account for compression of peat soils in determining impacts (also relates to whether project qualifies for exemption under MN Rule Chapter 8420) and mitigation requirements. Also, these and other types of impacts to vegetation and wetlands should be addressed as part of an overall vegetation management plan and included in the EIS.

This section also mentions that the route options would cross one or more Peatland SNA Watershed Protection Areas (WPAs) and that coordination with DNR will be required to determine whether effects may occur to calcareous fens. Any increase or change in groundwater movement in the WPAs could have significant and deleterious effects upon calcareous fen and SNA integrity. Primary concerns regarding the development of utility corridors within Peatland SNA WPAs include the alteration of hydrological processes during construction/maintenance of the corridor and the introduction of invasive

exotic species into otherwise undisturbed ecosystems. **To better inform route decisions and meet the purpose of environmental review, the EIS should include assessments with enough detail to better understand potential impacts to calcareous fens and WPAs.**

Section 6.18.3 indicates that the applicant will work with the USACE to develop a mitigation approach that meets compensatory mitigation requirements of the agency. **The EIS should disclose all plans for mitigation and recognize this as an opportunity to mitigate for a variety of ecological functions that will be degraded or lost as a result of the project.**

Section 6.18.3 also indicates that BMPs such as matting, ice roads, and low ground pressure equipment will be used to the extent practical to minimize wetland impacts during construction. **The EIS should include a plan that specifies protocols for usage of matting, ice road, and low ground pressure equipment in wetlands. The plan should also identify times that – due to site conditions – work will be halted to avoid impacts and comply with protocols.**

6.19 Wildlife Impacts

Section 6.19.3 includes several mitigation measures to avoid or minimize impacts to birds. **An Avian Mitigation Plan should be developed and included as an avian impact risk mitigation strategy as part of the EIS. As part of the plan, high risk areas and areas planned for bird diverter line marking should be included.** The EIS should provide a discussion on whether guy wires may also need to be marked.

Section 6.19.3 includes mitigation actions that are currently limited to birds. **The EIS should be expanded to include mitigation items for wildlife (i.e. methods to mitigate habitat loss, conversion, degradation, and fragmentation).**

Routes will fragment large blocks of contiguous habitats, some of which will be in critical deer yard habitat. The DNR has been assisting the applicant by providing potential compensatory wetland mitigation options to offset the functional losses associated with the conversion of forested wetland impacts that will require mitigation by the United States Army Corps of Engineers (USACE) 404 permit. The DNR and Minnesota Power are working together to establish wetland preservation areas adjacent to existing WMA deer wintering areas and the DNR appreciates the applicant's patience as the Department works through the proper internal mechanisms necessary to fulfill our divisional and departmental responsibilities.

6.25 Forestry Impacts

The route permit application describes extensive direct habitat loss and conversion of forests and shrub lands to herbaceous cover (2,745 and 2,680 acres of right-of-way for the Orange and Blue routes respectively) and corresponding changes in wildlife communities. The loss of nearly 4 square miles of forested land is significant and permanent. This should be noted in the Executive Summary as well as analysis of the effect of proposed deforestation on forest industry in MN.

The net loss of these specific habitat cover types is significant. **The EIS should assess way to compensate for what are viewed as significant impacts to forest habitat functions. Following are some potential options that should be included as mitigation options in the EIS:**

- Preservation and Maintenance Options – The EIS should cite specific requirements for HVTL right-of-way maintenance and include additional options that meet minimum requirements and minimize fragmentation and/or edge type effects. Management of the proposed corridor should

be studied to see how leaving small fruiting trees, shrubs, and mechanical versus chemical vegetation management will help mitigate loss of forest cover and forest fragmentation. The DNR can work with the applicant in determining areas to implement different vegetation management concepts.

- The DNR is interested in learning about the length of time between line maintenance in forested areas, to explore the possibility of leaving species long enough to have a harvestable product at the time of maintenance.

- The EIS should include any areas where, due to elevation, a line could be spanned high enough over an area to avoid forest clearing. For example, certain wetland and riparian areas in northern Itasca County are surrounded by elevation changes that may result in a scenario where no trees would need to be cleared. Also, certain species growing in bogs may not grow to a height that requires clearing. The EIS should assess these methods of reducing clearing.

- Replacing or providing substitute habitats - DNR has been assisting the applicant by providing them potential compensatory wetland mitigation options to help offset the functional losses associated with the conversion of forested wetland impacts. This is intended to facilitate what potential United States Army Corps of Engineers (USACE) 404 permit mitigation requirements.

- We believe that the EIS provides an opportunity to identify mitigation that would mutually compensate for the loss of forested wetland functions and the extensive direct habitat loss and conversion of upland forests and shrub lands to herbaceous cover. The EIS should differentiate between the two to determine net functional loss, significance of that loss, and remaining compensatory mitigation needs.

Section 6.25.2 limits the assessment of forestry impacts to acreage lost to conversion of cover type and indicates that impacts will be minor relative to the overall acreage affected. **Since the loss of forest cover will also diminish the long-term production capacity of these lands, loss of forestry revenue should also be assessed in the EIS. This analysis should include impacts to Consolidated Conservation ("Con-Con") Lands and School Trust Lands.**

The DNR also asks that the applicant address "Danger Trees" as soon as possible and account for estimated impacts to forests. These are trees outside of the proposed ROW that may need to be removed. The DNR wishes to avoid writing special permits for removal of trees that may fall into the ROW.

<u>6.26 Mineral Resources</u>

Chapter 6 of the Route Permit Application includes a preliminary discussion of mining existing conditions, transmission line direct and indirect effects on mining, and mitigation (section 6.26 of the application). This section of the EIS might be better titled "Mining and Mineral Resources." The discussion should be expanded to address potential conflict in areas of known but undeveloped mineral occurrence. These potential conflicts include both reduction of development potential where route alternatives intersect inactive or undeveloped resource areas and reduction of mineral exploration effectiveness where high voltage lines interfere with electrical and magnetic survey techniques.

The preferred and alternative routes proposed in the application incur the necessity of crossing the known iron resource area of the Mesabi iron range, the necessity of crossing a zone of known

nonferrous mineral occurrence in NE Itasca County that is undergoing active state metallic mineral leasing and exploration, and deviation from existing corridor in NW Koochiching County to cross another zone of known nonferrous mineral occurrence. Crossings of the Mesabi iron resource area and the two mineral occurrence zones carry elevated risk for eventual mineral resource/transmission line conflict. The risks to both the transmission line applicant and mineral rights owners are significant, carrying exceptional consequence (transmission line re-routing and/or loss of economic resource) in the event of occurrence. The EIS should describe the likelihood and consequence of mineral resource/transmission line conflict for known and undeveloped mineral resource areas. The risk of mineral resource/transmission line conflict should be transferred to the transmission line applicant and not be absorbed by School Trust, Tax Forfeit Trust and other state-owned land beneficiaries. The EIS should describe mechanisms that will be used to ensure that incurred risk is transferred to the transmission line applicant, and mitigation steps (perhaps engineering considerations) that can be used now to minimize conflict in the event that rerouting becomes necessary in the event of mineral development.

Peat, Sand/Gravel Aggregate, Crushed Stone

It is likely that state-owned surface estate mineral resources (peat, sand/gravel aggregate, crushed stone, clay, etc.) may eventually be encumbered by transmission line structures. Best practice will be to avoid unnecessary impact on these resources. Once a route is finalized, state-owned lands affected by the route will be evaluated (at applicant expense) to determine if and where compensation will be required for encumbrance of surface estate mineral resources.

Metallic Minerals Outside the Mesabi Iron Range

In northwestern Koochiching County, a segment of the route (vicinity of Township 159 North, Range 27 West) deviates away from existing corridor and transects an area of recent and historical metallic mineral occurrence, leasing and exploration. Absent more significant siting factors, continuation of the route along existing corridor (Black River comparative alternative) to the southeast corner of Section 10 and then south along existing corridor would be less likely to impede future exploration for metallic mineral resources. We request that this alternative be considered included for comparative analysis in the EIS.

From the vicinity of Effie, and for the next roughly 25 miles to the southeast the preferred route and alternatives (including the Effie alternative) cross a volcanic belt that hosts known metallic mineral occurrences (gold, copper-zinc-lead, iron). All of these routes cross active state metallic mineral leases in zones having high potential to host metallic mineral resources. The zone of high mineral potential generally extends southwest into the Chippewa National Forest and northeast into the Lake Vermilion area. State-issued metallic mineral lease agreements are also surface leases when the state-owned mineral interest is coincident with state-owned surface ownership. State metallic mineral lease agreements allow for state issuance of additional leases, permits or licenses where state surface ownership is present at a mineral lease, provided that the mineral lessee is consulted and that issuance of such additional leases, permits or licenses is determined to not unduly interfere with lessee's exploration or mining development. The Department recommends that transmission line applicant, State, and mineral lessee meet together to better characterize preferred and alternative route impacts in this area and to solicit additional input from the mineral lessee on exploration and development risks, prior to DNR "unduly interfere" determination (MN Rules 6125.07, item number 5). At first glance, the Blue route has the smallest interference footprint for crossing the volcanic belt and lease area. The "Effie" alternative produces a longer interference footprint but is co-located with an existing transmission line.

Mesabi Iron Range
The applicant's route proposal to cross the Mesabi Iron Range does not encumber known state mineral resources.

The Mesabi Iron Range is an area of known iron resources, along a trend of enriched iron formation which at many other locations has been developed into economic resource. The Department would have concerns if alternative routes were proposed that would encumber state-owned mineral resources on the Mesabi Iron Range.

2. Additional impact assessments that should be scoped into the EIS

Large Block Habitats
The Route Permit Application thoroughly describes habitats species usage, direct and indirect habitats loss, habitat scarcity conversion, degradation, fragmentation, and edge effects. However large blocks of contiguous habitats still appear to be impacted. **The DEIS should assess project effects on wildlife areas, lost forested acres, and other natural features as well as describe planned compensatory mitigation measures.**

The DNR understands that some areas of large block habitats are un-avoidable and there are trade-offs with every route. **In addition to mitigation, the proposed route corridor impacts to large block habitats could be lessened with other route alternatives or alignments that utilize existing corridors.** The following resources (MBS Sites, Wildlife and Forestry) relate to large block habitat and describe in more detail our more specific areas of concern and comments.

Minnesota Biological Survey (MBS) Sites of Biodiversity Significance
Proposed routes will impact Minnesota Biological Survey (MBS) Preliminary Sites of Biodiversity Significance and Old Growth forest. The preliminary sites have not been fully designated. The document mentions the impact on Native Plant Communities specifying potential impacts to Ecologically Important Lowland Conifers (EILC); however it is unclear whether Preliminary MBS ranking was used in assessing data or route selection and what mitigation or minimization of impacts will result. **The DNR recommends avoidance of all MBS sites old growth and old growth special management zones (≥330' surrounding the entire old growth perimeter) to the extent practical.**

MBS data for much of the project area has yet to be collected or is not yet publically available through the DNR data deli. Earlier correspondence (August 8, 2012 DNR Letter) indicated the DNR Heritage Review Coordinator should be contacted for obtaining any preliminary shapefiles (see attached for MBS data status). MBS Map and Guidelines have also been previously provided to Minnesota Power.

We encourage the applicant to consider project route and alignment alternatives that would avoid direct impacts to these ecologically significant areas. The DNR has offered alternative routes to avoid these areas and offers other alternatives in this review. In some instances there may be an opportunity to place the line closer to the edge of the proposed corridor or provide a slightly wider right of way corridor to minimize impacts.

Additional Recreation Analysis
Anticipated noise levels are not indicated in the document since transformers have not been selected

yet and other engineering considerations have not been determined. Noise levels can be heard in the vicinity of substations. It would be beneficial to know if there are increased noise levels and if audible distance will be increased from the substation as a result of the project.

Proposed routing provides only one alternative near Bass (31-316) and Larson (31-317) lakes in Itasca County. The proposed line would pass between these two lakes which each have public camping facilities. The attraction to this area of the George Washington State Forest is the remoteness, old growth pine un-fragmented forests and secluded lakes. This area is depicted in the mapbook on page 41 of 94. The Executive Summary under Cultural Values indicates that tourism is not likely to be affected by the transmission line; other route alternatives and further analysis of impacts to tourism in this area also should be explained.

Alternatives Screening

Minn. Stat. 116D.04(6): "No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct."

MN Environmental Rules require that DNR and other governmental units use environmental documents as guides in issuing permits and carrying out other responsibilities (4410.0300 & 4410.7055).

In order for the EIS to be effective as a guide in decision making (and to assist in documenting compliance with the above mentioned prohibitions); it is important that the EIS clearly document screening criteria used to determined practicality and feasibility of alternatives considered.

Approach to Mitigation of Project Impacts (adapted from CEQ guidelines)

General Comments:

The EIS should describe all impacts described in the application along with additional resource impacts described in this review. For all impacts; the mitigation discussion should be expanded to describe all of the following mitigation principles in descending order of priority (current mitigation discussions in the application focus on 1-3 below):

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. *Compensating for the impact by replacing or providing substitute resources or environments.

**For impacts considered major/significant*

Specific Comments:

Third Party Independent Monitors

It is our understanding that under the current proposal; only company Environmental Inspectors (EIs) will be used. Ensuring effective communication regarding permit conditions with the various subcontractors and across the multiple spreads is an enormous enterprise.

On past large utility projects, third-party agency monitors have been used to work with and supplementing agency field presence. These monitors would also satisfy reporting expectations, help to ensure that impacts to protected resources are avoided and/or minimized.

The EIS should regard usage of independent third party environmental monitors as an overall mitigation strategy. The DNR is also interested in discussing various models of funding and oversight for a third party monitors during this environmental review and routing process.

Access to DNR Administered Lands

- **The EIS should describe any impacts to accessing state administered lands.** This transmission line should not affect public / DNR access to state land. Following existing corridors could reduce this problem.
- DNR wild rice leases exist in the vicinity of the Waskish Area. Leaseholders have expressed concerned about flights from the local airport being affected. **The EIS should assess project impacts on all airport related traffic (e.g. normal flights, agricultural chemical application, etc.).**
- Wildfire issues. More power lines running through forest land have a potential for igniting additional wildfires and therefore require a response to control them. **The EIS should acknowledge the potential for increased wildfires and necessary response actions.**

WMA Impacts

General Impacts:

The route alternative would traverse a number of DNR Wildlife Management Areas (WMAs). The EIS should describe why avoidance of each WMA is not feasible. **In order to better inform the DNR licensing process (and better meet the purpose of environmental review), we recommend that the EIS include specific information regarding the feasibility of route alternatives that avoid WMA crossings.**

Directly related, the EIS should also discuss how project routes comply with MN Rules 6135, which contain specific standards for route design. For crossings that are determined to be unavoidable (determined there is no feasible alternative route), the EIS should then assess impacts and the need for mitigation for each WMA. Following are a list of general WMA impacts that should be included in the EIS.

- Impacts to fire management/burning – Prescribed fire management is an important tool in maintaining and enhancing habitats on public lands in this area. Section 6.4.2 indicates that controlled burns are used in both Cedar Bend and Carp Swamp WMAs and that maintenance of vegetation would be accomplished by using mechanical methods rather than controlled burns. **The EIS should clarify that controlled burns are also used in Roseau Lake WMA and Roseau River WMA. The EIS should also clarify what impact to WMA management would result from the project.**

- Recreational usage
- Visual impacts

Specific WMA Uses, Resources and Impacts that should be included in the EIS:

Roseau River WMA

- RRWMA has been acknowledged to be an IBA (Important Bird Area) by Audubon.
- RRWMA contains an area of Preliminary Outstanding Biodiversity (as determined by the MN Biological Survey), which is contained largely within Pool 2 but extends to the eastern boundary or RRWMA. The primary feature of this area of outstanding biodiversity is a large fen complex, which contains rare plant and animal species associated with such habitats.
- An area of Preliminary High Biodiversity is located north and west of RRWMA headquarters. This area was an HCVF candidate, and is comprised of (1) a mix of aspen and jackpine forest with a significant component of oak and (2) a lowland conifer complex consisting of a mix of tamarack, black spruce, and white cedar with shrub inclusions of willow and alder. The proposed route of the transmission line, if within the WMA, would result in forest fragmentation detrimental to various species of forest Wildlife and would introduce invasive plant species where none currently exists.
- Another area of High Biodiversity occurs in Pools 1 East and 1 West. Waterbird assemblages that include up to 5 species of grebes, common loons, and trumpeter swan in open water areas that grade to assemblages of yellow rails and Nelson's sharptailed sparrow in the upper reaches of these pools are the primary features of this area. A transmission line near or within these habitats would have a detrimental effect on populations of species using these areas.
- The RRWMA pools are attractive to a number of species of birds during migration. Larger birds that soar into the pools from great distances and heights, such as bald eagles, Canada geese, snow geese, sandhill cranes, and American white pelicans, would be susceptible to mortality from transmission line collisions.
- A moist soils unit consisting of 6 cells containing ~110 acres was developed south and west of the headquarters in recent years. It primarily attracts ducks, geese and shorebirds and has provided a missing habitat component of shallow, food-rich wetlands in proximity to quality nesting cover. Dabbler duck production on Pool 2 has improved ever since the moist soils unit became operational. These benefits would be diminished by a transmission line nearby that would allow perch sites for predators and would fragment the shallow marsh habitat.
- A bald eagle nest exists in the middle of the moist soils unit cited above; the nest has been there for at least 15 years.
- Prescribed fire management is an important tool in maintaining and enhancing habitats on RRWMA. The transmission line would restrict the use of fire under and near the line. It is estimated that the use of fire as a management tool could be curtailed in up to 13 burn units covering ~1500 acres.
- The proposed route of the transmission line, if within the WMA, is in the heart of the most heavily used (all seasons) portion of the WMA. Hunting, deer antler shed hunting, trapping, berry picking, wildlife viewing, hiking, snowmobiling, snowshoeing, and cross-country skiing are among the activities enjoyed by the public. A controlled hunting zone for goose hunting that was developed decades ago exists along the southeastern boundary of the WMA.
- Invasive plant species, few of which are currently on the WMA (the ones that are under control) will increase within a transmission line ROW.

Roseau lake WMA

- Areas within this WMA are being considered for a large wildlife habitat enhancement/flood control project that would partially restore the historic Roseau Lake. Restoration of this lake bed would significantly increase bird and wildlife usage of this unit. Additional migrating birds may also be killed and/or injured by the additional line and tower collisions in this new location. **The EIS should consider impacts to the future planned restoration of the historic Roseau Lake.**

Great Gray Owls

The following information should be used to augment the EIS:

Great Gray Owls (Strix nebulosa) have been studied in Northern Roseau County for over 33 years. While not endangered, this owl is a nongame species of significance, both as a migrant and a breeding bird. Both breeding birds and winter visitors are present in greater numbers in this small corner of Minnesota than in any other location in the state.

A management plan was written in 1987 and updated in 2006 that provided management directions for an area that conformed to the Watershed Protection Area (WPA) of the Sprague Creek Peatland Scientific and Natural Area (SNA), and was also located within Lost River State Forest. Management recommendations included: 1) extended rotation in the lowland conifer types, 2) more intensive regular rotation management in traditional managed areas of the WPA, 3) less intensive management close to the SNA, and 4) a "reserve area" where nesting concentration was very high.

Additional Information regarding the Roseau Bog Owl Management Unit and Great Gray Owl Reserve Area can be found in plans written by Katie Haws entitled MANAGEMENT RECOMMENDATIONS FOR THE ROSEAU BOG OWL MANAGEMENT UNIT (1987) and the SPRAGUE CREEK PEATLAND WATERSHED PROTECTION AREA INTERIM MANAGEMENT PLAN FOR TIMBER AND GREAT GRAY OWLS (2006, attached).

Ecologically Important Lowland Conifers (EILCs) and Lowland Conifer Old Growth (LCOG)

The following information should be used to augment the EIS.

Currently the proposed pipeline routes cross at least 8 Ecologically Important Lowland Conifers (EILC) stands in Agassiz Lowlands and Littlefork-Vermillion Uplands Subsections; none in Chippewa Plains nor Pine Moraines subsections. It crosses at least 20 Lowland Conifer Old Growth (LCOG) provisional designated complexes (note, at least seven (7) of these are in WPAs also being crossed at that location).

The Department has a place-holder for old growth conifer forests found in lowlands. It is called Ecologically Important Lowland Conifers (EILC). We are responsible to manage these "placeholder" stands as if they are designated Old Growth (OG). Management in OG is generally not allowed. The exceptions are for management that will maintain the integrity of the old growth stand and its ecological function. Logging activities do not fit that definition and are not allowed. If roads/trails were in place through the OG stand prior to its designation and someone wants to use the road/trail again, then either an interdisciplinary team or the Regional Old Growth team makes a decision on acceptable use.

At this time, the Department is in the process of assessing and designating LCOG, which will replace EILC. Final designations will not likely be complete prior to this project going out for review. Currently, there is a set of provisional designated LCOG complexes. These provisional complexes will be "set-aside" with no management allowed until designations are finalized. Those complexes that become fully designated will follow the management guidelines in place for currently designated OG. Those

complexes that do not get designated will be released back to regular management, including standard forest management practices (unless there are other labels/designations upon these stands).
The EIS should include this updated information. Please contact DNR Regional Ecologist Becky Marty at becky.marty@state.mn.us for the most current information about EILC and LCOG.

The DNR will provide a shapefile for EILC in the St. Louis Moraines, areas being considered for LCOG in the Nashwauk Uplands, and LCOG in the Littlefork-Vermillion Uplands.

3. DNR Land and Water Crossing Licenses

The review and issuance of DNR land and water crossing licenses are coordinated by the Division of Lands & Minerals. The proposed project spans five counties in two DNR regions (NW and NE). The Lands & Minerals Regional Supervisor in Itasca and Koochiching County is Joe Rokala (218/999-7894) and the Lands & Minerals Regional Supervisor in the NW Region for Beltrami, Lake of the Woods and Roseau Counties is Cindy Buttleman (218/308-2627). When the route is more certain, we recommend that the project proposer schedule a pre-application meeting with Joe and Cindy to discuss administrative procedures for submitting the land and water crossing applications for this project.

The project proposer should allow adequate time for review and modification of the license applications. For most large projects, applicants submit draft license applications during environmental review and PUC permitting although the licenses will not be issued until those processes are complete.

The following information should be included in the license applications:

1. Length and width of each proposed state land and public water depicted on maps and plan sheets. Each crossing must be identified by legal description to the forty.

2. Clearing activities, construction methods, schedule, and staging of operations including equipment and materials storage proposed on state land or in public waters.

3. Permanent and temporary access routes to the proposed ROW crossing state land or public waters.

4. Temporary work areas on state land adjacent to the ROW that may be needed during construction. These areas should be clearly delineated and identified in the application materials.

5. Location of existing utility lines or transportation ROWs within or near the proposed ROW on state land or in public waters. Provide overview maps identifying the areas of co-location with existing utilities and a detailed map that shows the location of the Great Northern HVTL right-of-way in relation to the existing utility right-of-way on state lands.

6. State trails or Grant in Aid trails proposed to be crossed.

7. Location and design of tower structures including proposed installation methods and proposed plans for disposal of earthen materials resulting from the excavation of the tower footings.

8. Describe the conditions that would require geotechnical evaluations for tower placement on state land or public waters.
9. Construction plans that clearly describe how the licensee proposes to adapt their construction methods and schedule for different seasons and extreme seasonal weather changes in Minnesota such as extremes in snow cover, frozen conditions, extremely low temps, persistence of winter beyond normal ranges and the converse – hot, wet, and dry.

10. Restoration methods including proposed seed mixes and invasive species control measures.

11. Describe measures for minimizing rutting and the protocols for use of matting.

12. Identify the state land and public water crossings where flight diverters will be used and describe the type.

13. ROW maintenance methods and schedule on state land or in public waters.

14. ROW width needs to take into consideration current and future danger tree management.

15. ROW width needs to include the area necessary for guy wire anchors.

In addition, the project proposer should be aware of the following points related to the licensing of state land and public water crossings:

1. The licensee is responsible for invasive species management on the license area for the term of the license (50 years). The licensee must provide a plan for managing invasive species during the construction phase as well as over the license term. Because of the large amount of greenfield proposed to be crossed by this project, introduction of invasive species is a serious concern. The plan should describe methods for inventory, prevention, monitoring, and control on the license area.

2. Certain pesticides are restricted from use on certified forest lands. Written requests for herbicide or pesticide use on state lands is required and only approved herbicides will be allowed.

3. Use of native species for re-vegetation and clean weed free straw for mulch will be required on state land and public water crossings.

4. In-stream work on certain public waters (trout streams, for example) must be avoided at prescribed times to accommodate fish spawning.

5. Active nests or other features that have a no-disturbance window will need to be taken into consideration in the construction schedule.

6. The routes under review cross several types of state land including trust lands. DNR has a fiduciary responsibility to manage trust lands for the benefit of the school trust. The EIS should consider the general economic impact the power line ROW may have on the potential to generate future revenue for the trust.

7. State lands purchased with the assistance of various Federal grant programs will require mandatory federal aid review and approval before the license can be issued. Supplemental information from the applicant may be required for the federal review. If federal approval is required, additional time may be needed to process the application.

8. If a state land parcel becomes isolated due the construction of the ROW, the project proposer must provide access to the isolated state land across the ROW.

9. A monitoring fee will be assessed for DNR Lands & Minerals projected reasonable costs for monitoring the construction of the utility line and preparing special terms and conditions of the license to ensure proper construction. Independent environmental monitors may also be required during construction.

10. Permission for temporary access to the ROW across state land is considered a separate transaction and may be granted through a lease. Requests for temporary access are subject to review and approval, and in some cases may not be granted. Allow adequate time for processing access lease requests.

11. The applicant/licensee will be required to provide the licensor with as built drawings for state land and public water crossings upon completion of initial construction. The drawings for each crossing will be required to have forty lines and descriptions, utility ROW boundaries, structures and other utility improvements located on state land and public water crossings.

12. Site specific surveys and plans may be required if there are site specific resource concerns for certain crossings.

Proposed Public Water Crossings

Under Water Resources and Floodplains in the Executive Summary, the document indicates that Minnesota Power proposes to cross Grass Lake (31-144) in Itasca County and a PWI basin in Roseau County.

"Direct impacts on surface water resources likely will occur at the unnamed PWI basin in Roseau County and at Grass Lake in Itasca County. The span width of the unnamed PWI basing in Roseau County wetland is approximately 2,118 feet wide, which may require one or more structures to be placed within this basin. The span width of Grass Lake in Itasca County will be approximately 1220 feet, which may require one or more structures to be placed within this basin."

Under Minnesota Rules we are to; "avoid lakes, but where there is no feasible and prudent alternative route, minimize the extent of encroachment by crossing under the water." (Also see below).

There are regulations that limit the ability to cross public waters. Please refer to the following that pertains to these concerns. For a complete reference please refer to: LICENSES FOR UTILITY CROSSINGS OF PUBLIC LANDS AND WATERS ACCORDING TO MINNESOTA RULES CHAPTER 6135 [Rules Effective July 1, 2004].

6135.1000 **PROTECTING THE ENVIRONMENT.**

Subpart 1. **Policy.** It is essential to regulate utility crossings of public lands and waters in order to provide maximum protection and preservation of the natural environment and to minimize any adverse effects which may result from utility crossings. These standards and criteria provide a basic framework of environmental considerations concerning such a proposed crossing. The standards deal with route design, structure design, construction methods, safety considerations, and right-of-way maintenance.

Subpart 2. **Application content.** For each environmental standard listed in these parts, the applicant shall indicate whether the applicant is satisfying the standard, where applicable, or if not, why not. In dealing with route design standards, the application must, where applicable, also supply data on relevant site conditions. Except when the Commissioner determines that it is not feasible and prudent, or not in the best interests of the environment, the applicant shall comply with the following standards in designing, constructing, and maintaining utility crossings.

6135.1100 **STANDARDS FOR ROUTE DESIGN**.

Subpart 4. **Crossing public waters**. With regard to crossing of public waters:

A. avoid streams, but if that is not feasible and prudent, cross at the narrowest places wherever feasible and prudent, or at existing crossings of roads, bridges, or utilities; and
B. Avoid lakes, but where there is no feasible and prudent alternative route, minimize the extent of encroachment by crossing under the water.

Crossings on or under the beds of streams designated by the Commissioner as trout waters shall be avoided unless there is no feasible alternative. When unavoidable, maximum efforts shall be taken to minimize damage to trout habitat.

4. Route Alternatives and Segment Options Recommended for Inclusion in the EIS

As indicated in past correspondence, DNR encourages routing that would have the least amount of impacts to natural resources, outdoor recreation opportunities and sustainable commercial usages of natural resources. DNR also understands that as the MN Public Utilities Commission (PUC) permits specific routes for high voltage transmission line project (HVTLs), the PUC must consider broad range of potential impacts (beyond natural resources) and understands there are impact trades-offs with every route decision.

Prior DNR correspondence to Minnesota Power ALLETE highlighted concerns regarding new greenfield routes that increase impacts to natural resources. The Application for a Route Permit indicates that there has been an effort to avoid resources, for which the DNR is appreciative. However, in some areas it is clear that resources will be significantly impacted along the route. To provide options for mitigating impacts, the DNR provides the following route alternatives to consider for EIS analysis.

Including a variety of routes in the EIS (which provides an alternatives analysis and a way to demonstrate impact avoidance and minimization requirements) will assist decision makers in complying with requirements for avoidance and minimization (MN Stats 116D.04 Subd. 6) as well as requirements for equal consideration of environmental values, economics, and technical aspects in decision making (MN Stats 116D.03). **The DNR recommends the following routes be further analyzed in the EIS.** ***The DNR is not advocating these routes as preferred routes. We wish to review further assessment of these routes in order to fully understand their impacts on natural resources.***

Note that alignments are approximate and the DNR intends that, except where otherwise stated, the customary route width be included in the EIS for analysis and flexibility of siting.

The DNR will provide shapefiles of alternatives to EIS writers. Also, see the attached resource maps showing additional resources not depicted in the figures below.

<u>Co-Location Border Crossing Alternatives</u>

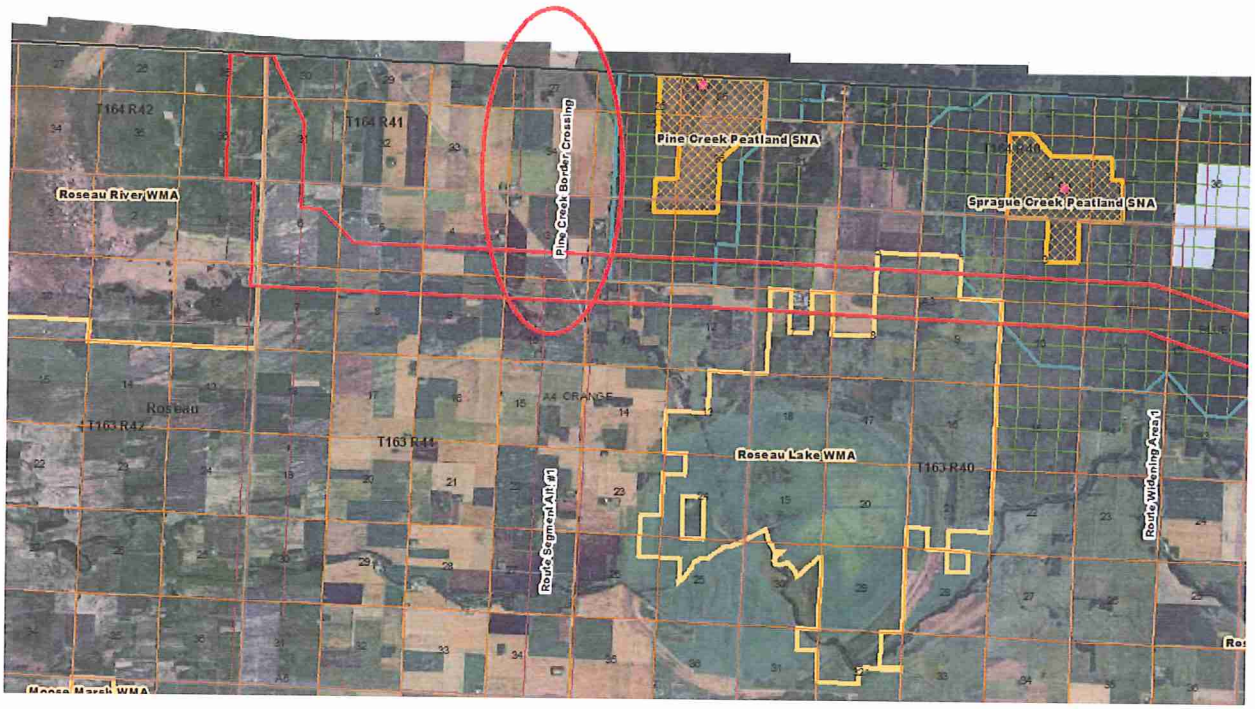
The following figure shows existing border crossing locations for a Minnkota Power 230 kV and an Excel/Manitoba Hydro Interconnect 500 kV line. Use of either of these corridors (or a combination of the two) should be included for assessment in the EIS as they would:

- Reduce overall Greenfield impacts by taking better advantage of existing corridors of disturbance (i.e. co-location).
- Avoid encroachment and associated impacts to the Roseau River and Roseau lake WMAs
- Avoid an Audubon Society Important Bird Area.
- Ecologically Significant Lowland Conifers (EILCs)
- Areas of Preliminary Biodiversity Significance ranked as Outstanding associated with Pine and Sprague Creek Peatland SNA's
- Watershed Protection Areas associated with fens in Pine Creek and Sprague Creek Peatland Scientific and Natural Areas (SNAs)

Pine Creek Border Crossing Alternative

This route segment alternative was originally considered as part of the applicant's project screening. This alternative should be carried forward for additional review in the EIS for the following reasons:

- Minimization of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Avoidance of high value resources such as WMAs, Peatland SNA WPAs, Areas of Preliminary Biodiversity Significance, HCVF, EILS, etc. (see attached Roseau County Resources Map).



Route Segment Alt. #1

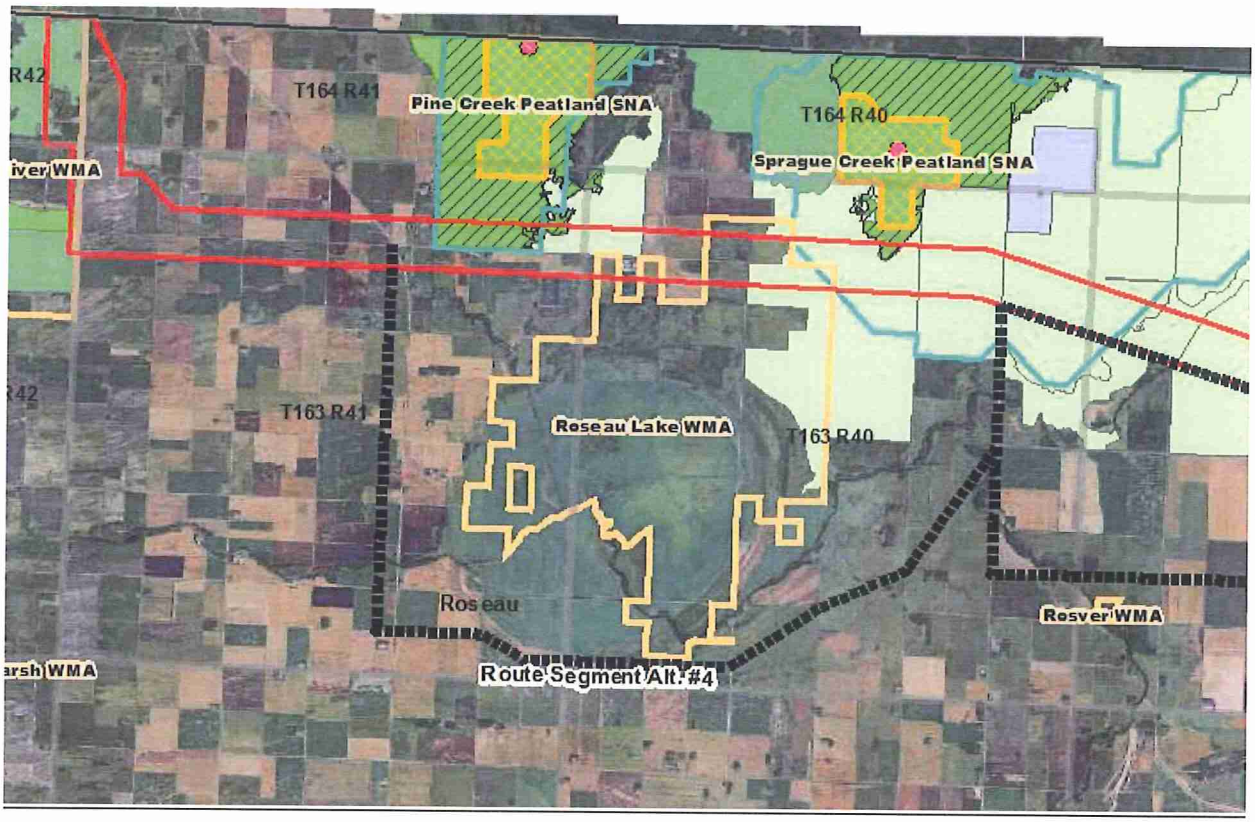
This route segment alternative was originally considered as part of the applicant's project screening. This alternative should be carried forward for additional review in the EIS for the following reasons:

- Minimization of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Avoidance of high value resources such as WMAs, Peatland SNA WPAs, Areas of Preliminary Biodiversity Significance, High Conservation Value Forests (HCVF), Ecologically Important Lowland Conifers (EILC), etc. (see attached Roseau County Resources Map).

Route Segment Alternative #1A

This route segment alternative is a variation on Route Segment Alternative #1, and is intended to provide more options in the vicinity of the border crossing to balance natural resource impacts and other important siting criteria. This alternative should be carried forward for additional review in the EIS for the following reasons:

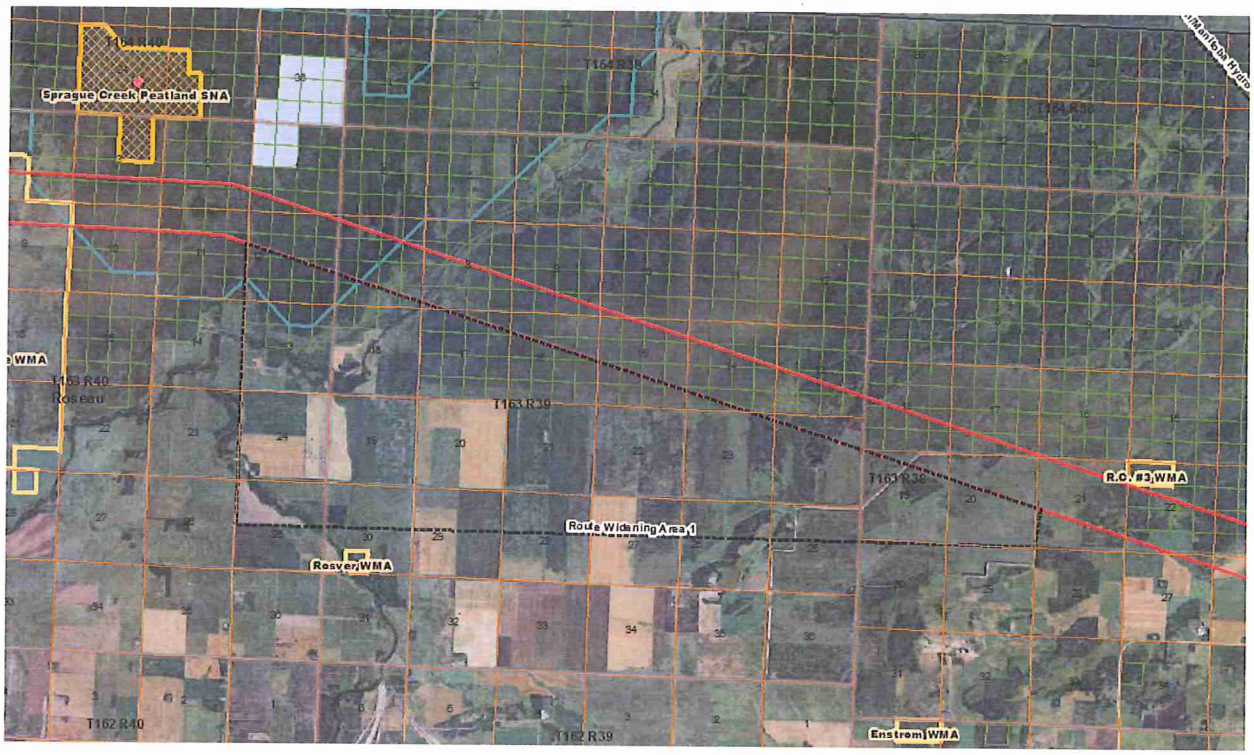
- Minimization of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Avoidance of high value resources such as WMAs, Peatland SNA WPAs, Areas of Preliminary Biodiversity Significance, HCVFs, EILCs, etc. (see attached Roseau County Resources Map).



Route Widening Area #1

This alternative should be carried forward for additional review in the EIS for the following reasons:

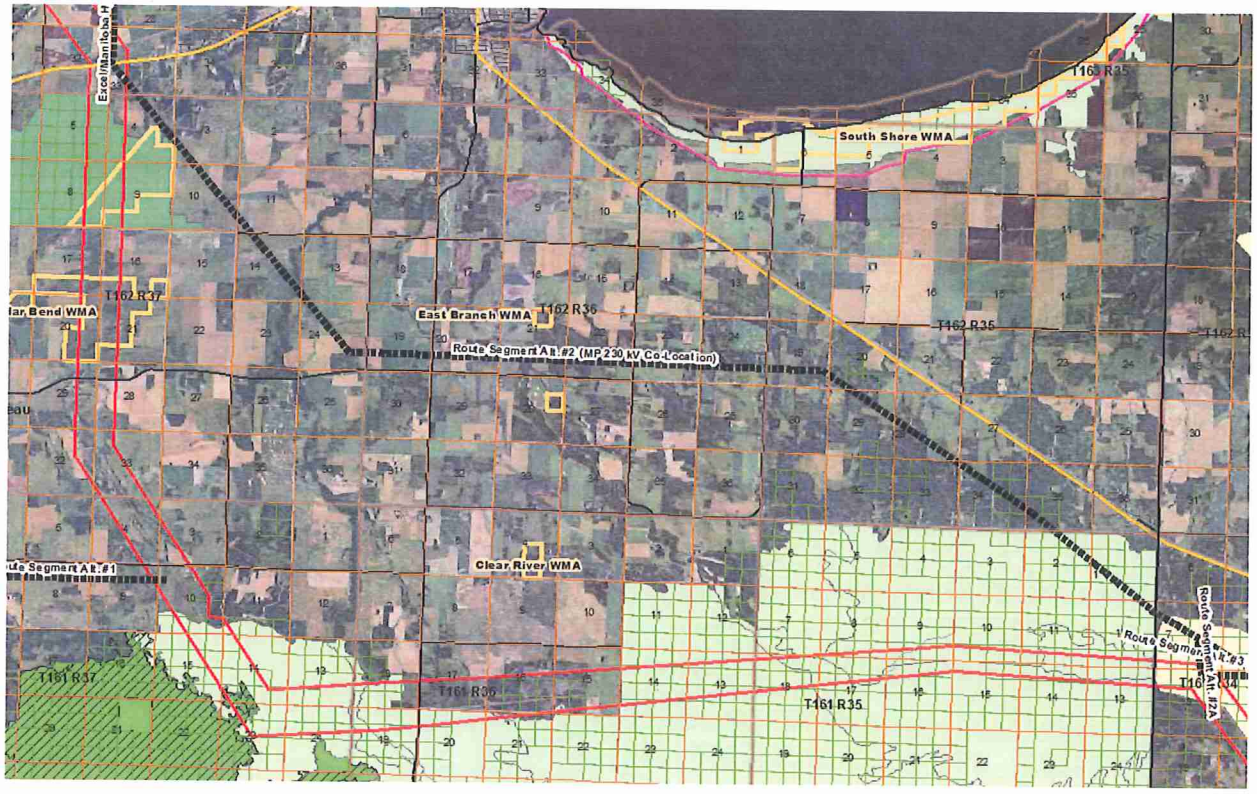
- Potential avoidance of more than 8 miles of green field routing and associated impacts (e.g. fragmentation, habitat loss, etc.).
- Allow for minimization of impacts to high value resources such Areas of Preliminary Biodiversity Significance (up to 8 miles of avoidance), Sprague Creek Peatland SNA WPA wetlands (1.5 miles), forestry lands, etc. (see attached Roseau County Resources Map).



Route Segment Alt. #2

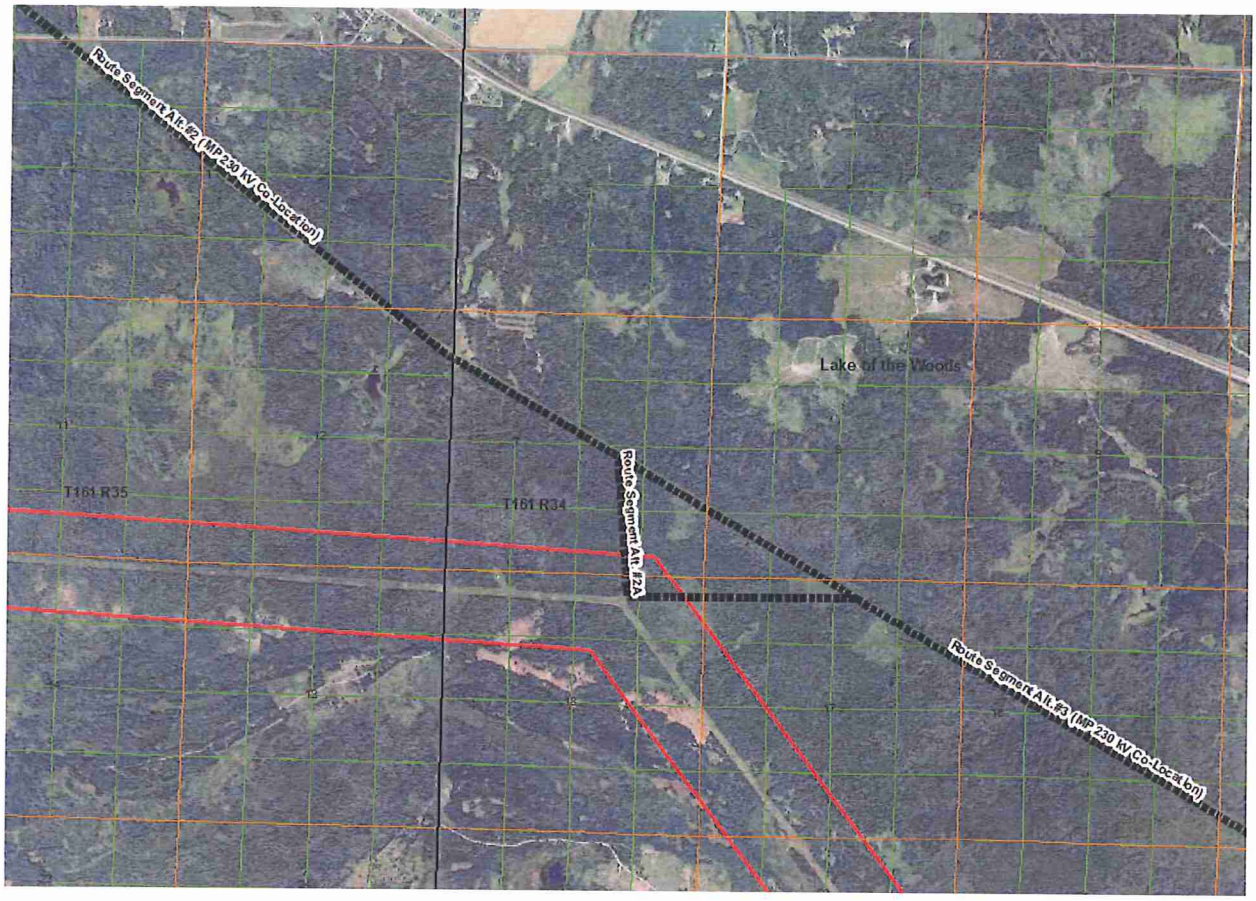
This route would begin north of Cedar Bend WMA and travel southeasterly along an existing 230kV HVTL to a point near the Roseau County and LOTW County Border. From that point is could continue southeast along route segment #3 (see below) using Route Segment Alt. 2A or re-join the applicant Blue/Orange route. This alternative should be carried forward for additional review in the EIS for the following reasons:

- Allow for minimization of impacts and further fragmentation of high value resources such Areas of Preliminary Biodiversity Significance (areas of outstanding, moderate, and high), wetlands, Cedar Bend WMA, and forestry land (~15 miles).
- An additional co-location option (would co-locate with an existing Minnesota Power 230 kV HVTL)



Route Segment Alt. #2A

Inclusion of the Route Segment Alternative provides flexibility to consideration a combination of route applicant and DNR proposed additional co-location alternatives.

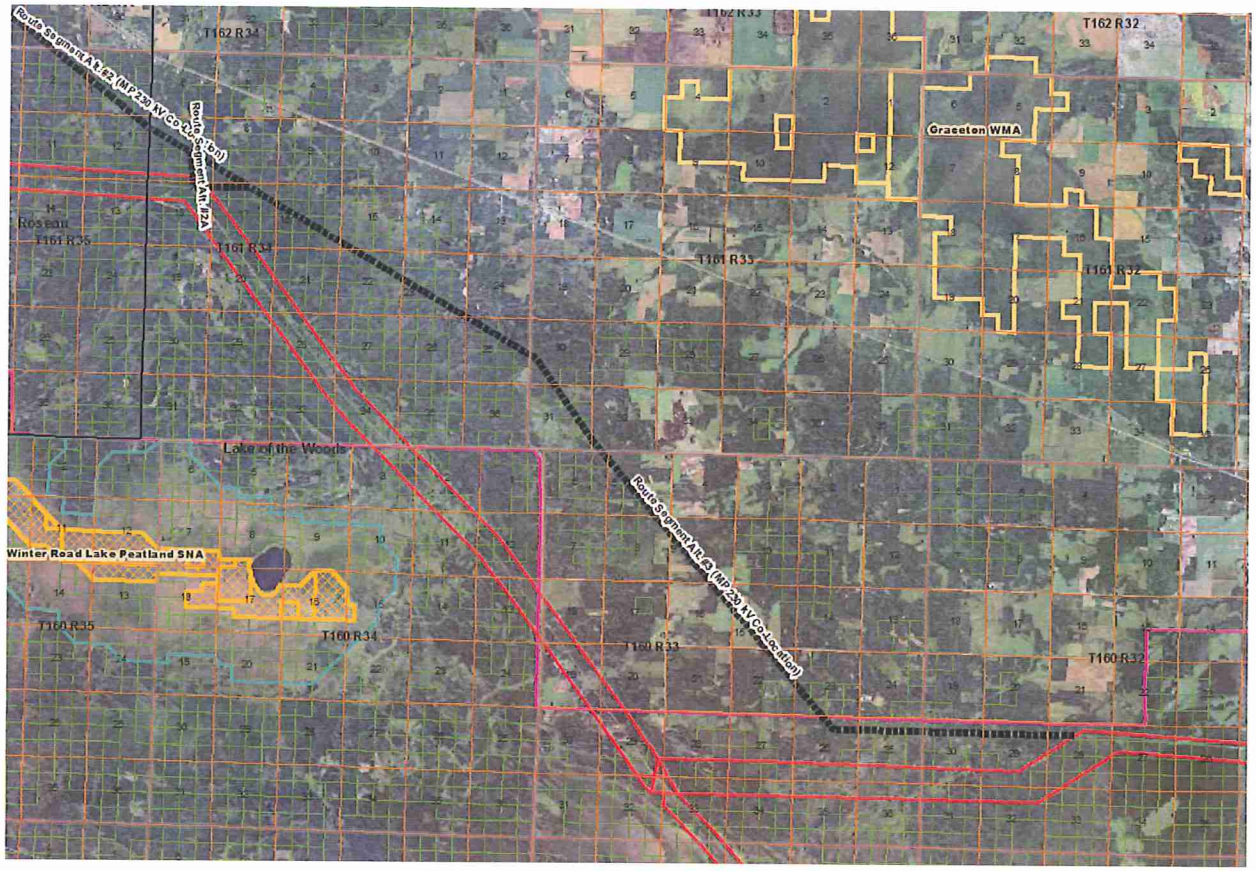


Route Segment Alt. #3

This alternative would either begin near the Roseau County and LOTW County border staring from the applicant's preferred Blue/orange Route or continue on from Route Segment Alt. #2 described above.

This alternative should be carried forward for additional review in the EIS for the following reasons:

- Continuation from Route Segment Alt. 2 into this Route Segment Alternative would avoid approximately 7 miles of green field crossing and associated impacts.
    - Applicants route includes a greenfield crossover in T160N, R33W, Sections 25-29 and T160N, R32W, Sections 28-30
- Using this route segment in combination with segment #2A would avoid approximately 6 miles of green field impacts (route segment 2A would re-introduce approximately 1 mile of greenfield impact).
- Avoidance and minimization of impacts to high value resources such as Important Bird Areas (~ 4mi. vs. 10 mi.), forestry lands.



The Effie Route

The DNR previously worked with Minnesota Power to review the Effie Route, depicted below, following an existing 230/500 kV transmission line. Minnesota Power did not carry the Effie Route forward to the application due to concerns about greater length and greater environmental impacts than the Orange or Blue routes. The DNR has reviewed a thorough point to point comparison provided by Minnesota Power and has remaining concerns regarding the proposed routes in the application in comparison to the Effie Route. The DNR would like to propose for further analysis the Effie Route discussed during early coordination for the following reasons:

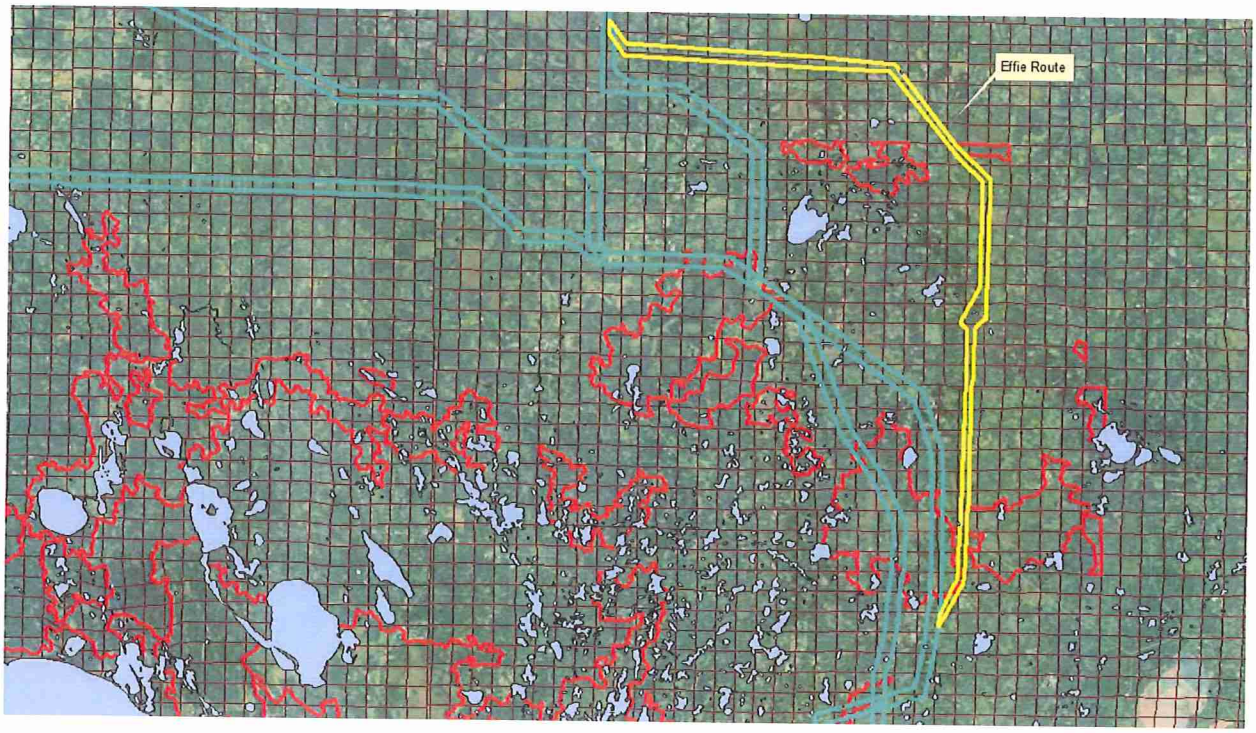
- Though the analysis previously provided describes increased impacts to natural resources and greater length, the results may not fully capture the impacts of the proposed Orange and Blue Routes due to fragmentation.
- Creating a new ROW in the area of the proposed routes may have more impact that increasing the size of the existing ROW along the Effie Route.
- Critical Habitat Impacts - The Effie Route contains the most critical habitat (i.e., this refers to USFWS critical habitat areas identified for the Canada Lynx). However, comparing the acres of critical lynx habitat impacted by each route is not an adequate comparison because the quality of the critical habitat that will be impacted is an important factor. The critical lynx habitat along the Effie Route is already degraded in quality due to the current fragmentation impacts of the existing transmission line. Whereas, the critical lynx habitat in the proposed routes is currently of higher quality because it is intact and not impacted by a transmission line corridor. The impact of a creating a new ROW through critical lynx habitat is greater than the impact of increasing the size of the ROW through critical habitat that is already impacted by a transmission line.
- Wetland Impacts – Early coordination from Minnesota Power indicated that the Blue Route, Orange Route, and Effie Route will cross through 373, 349, and 412 acres of wetlands respectively. However, comparing the acres of wetlands impacted by each route is not an adequate comparison because the type of wetland that will be impacted is an important factor. The wetlands along the Effie Route are already impacted by an existing transmission line so they are already somewhat degraded in quality. Whereas the wetlands in the two proposed routes are currently intact, unfragmented wetlands with no transmission line impacts. Impacts of a new transmission line include fragmentation of habitat, decreased habitat value for wildlife, increased conversion of habitat (i.e., changes from forested wetlands to open or shrub wetlands), and risk of introduction of invasive species. The impact of a new transmission line through intact wetlands may be greater than the impact of adding a transmission line to a wetland that is already impacted by an existing transmission line.
- Old Growth Impacts – Early coordination with Minnesota Power indicated that the Effie Route will impact 41 acres of old growth. The impacts would occur in two separate old growth areas. One old growth area is on the east side of the Effie Route and the other is on the west side of the Effie Route. These old growth areas could be avoided by expanding the ROW in the opposite direction away from the old growth areas.
- Large Blocks of Forest Impacts - Impacts to large blocks of forest would be significantly reduced with the Effie Route. The blocks of forest that the Effie Route passes through are already fragmented due to the existing transmission line. Adding a new transmission line will increase the width of the ROW and the amount of impacted area, but these areas are already degraded

due to the existing transmission line. For the two proposed routes, blocks of forest that are currently not impacted would be opened up to fragmentation and edge effects. Impacts of a new transmission line include fragmentation of habitat, reduction of core habitat in adjacent forests due to edge effects, decreased habitat value for wildlife, increased conversion of habitat (i.e., from forest to grass or shrub areas), and risk of introduction of invasive species. The impact of a new ROW on intact forests may be greater than the impact of increasing the ROW in forests that already are impacted by fragmentation effects.

- Rare Resource Impacts - The two proposed routes will cut through two preliminary MBS sites: Coon Creek (Outstanding site) and Bear-Wolf Peatland (High site). These two sites contain significant biodiversity values. MBS sites are identified based on the occurrence of rare species, rare plant communities, and intact and high quality landscapes. The biodiversity significance of these sites will be impacted by the fragmentation impacts of a transmission line.
- Recreation Impacts - The proposed route passes near two lakes with public camping facilities (Bass 31-316) and (Larson 31-317 a designated trout lake) in Itasca County.

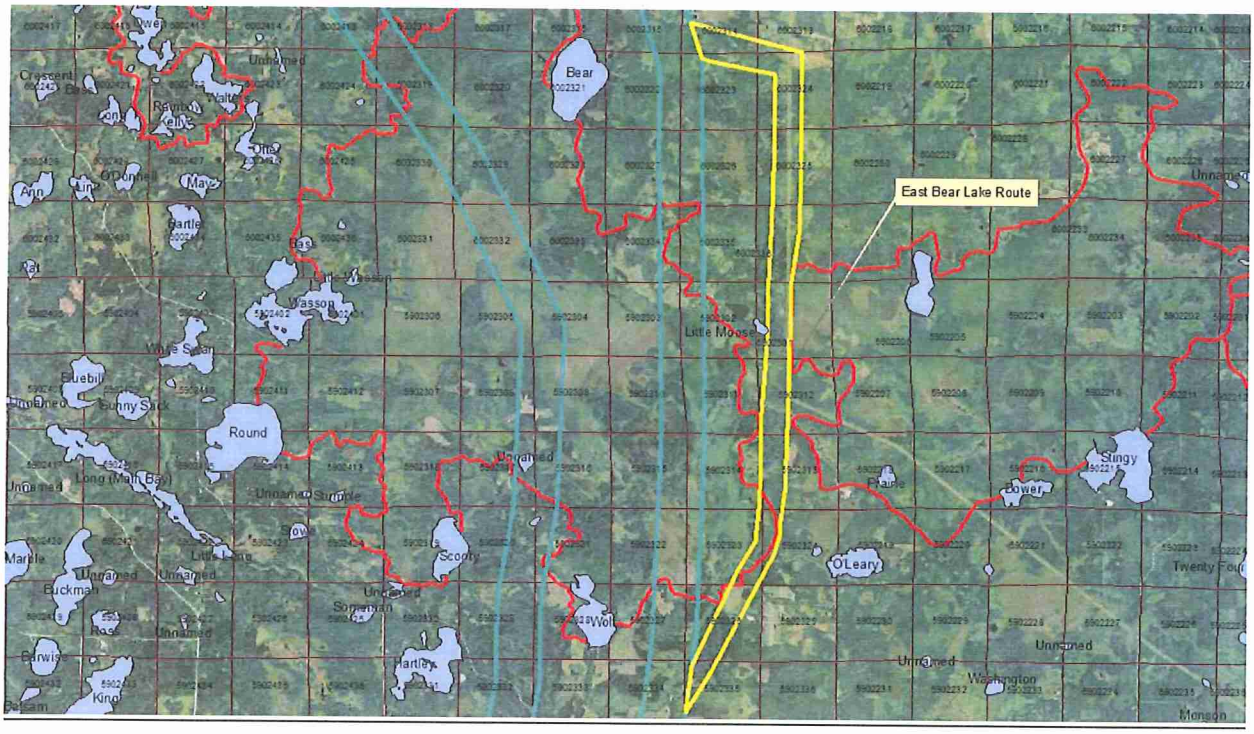
In summary, after reviewing summaries provided by Minnesota Power and GIS data, the Effie Route, following an existing transmission line, may have less impact on wildlife habitat including, impacts on wetlands, large blocks of forest, and preliminary areas of biodiversity significance. Strictly comparing number of acres impacted does not address the distinction between impacts to acres that are already degraded vs. impacts to acres that are intact and of higher quality. Therefore, the DNR recommends including the Effie Route in the EIS for further comparative analysis with the proposed routes.

The Effie Route would parrallel the 230/500kv segment near Effie, Minnesota and connect back to the Orange Route in eastern Itasca County. Note that the connection back to the Orange Route may be slightly different than what was previously analyzed by Minnesota Power because the currently described alterantive route attempts to avoid most of the Bear – Wolf Peatland Preliminary Site of Biodiversity as it connects back to the proposed Orange Route.



East Bear Lake Route

Using this connection east of Bear Lake (31-157) would nearly completely avoid a large preliminary MBS Site of high biodiversity significance (Bear-Wolf Peatland). This is approximately a 1 mile cross over to the existing 500/230 kv line and connecting back to proposed orange route right of way as described in the Effie Route alternative. A wide route width corridor is provided for flexibility. The route is in Townships 59 and 60 Range 23.

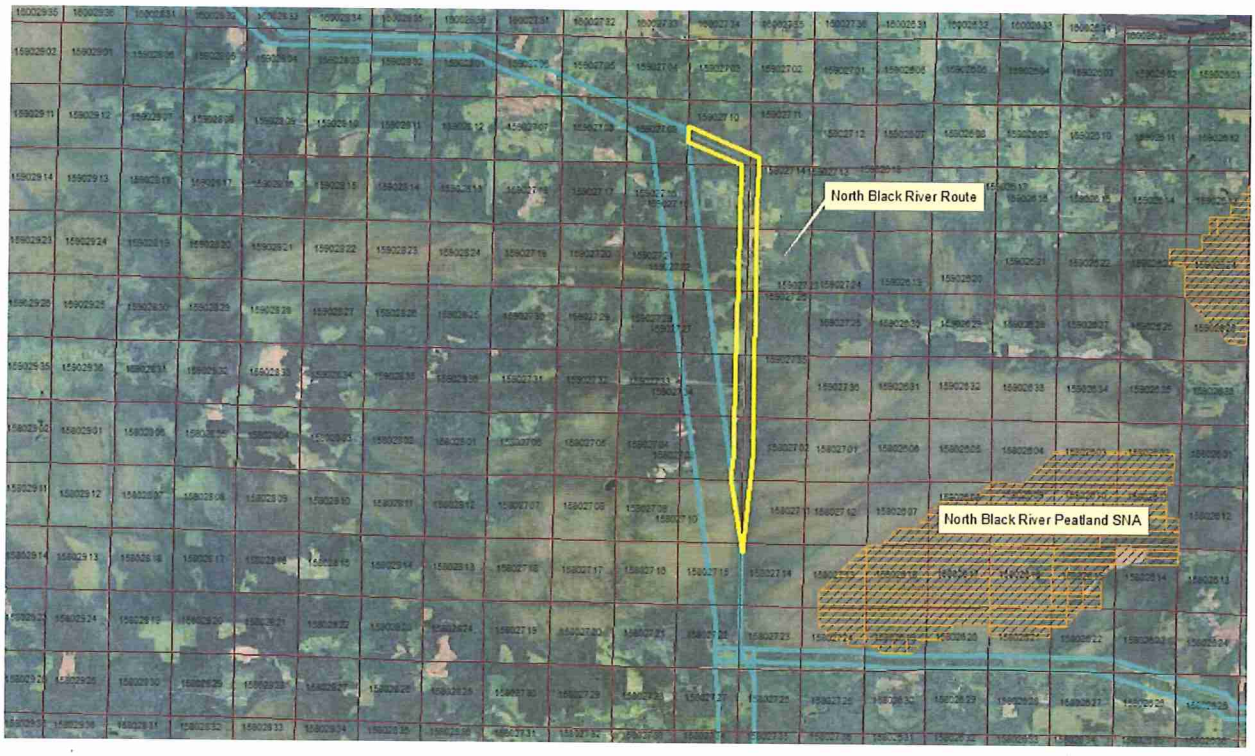


The North Black River Route

The DNR proposes analysis of the existing Minnkota Power 230 and 69 kv right of way (ROW) to minimize impacts to state owned minerals as well as fragmentation impacts to a nearby Scientific and Natural Area (SNA). The DNR has indicated Mineral concerns in this area and most recently habitat in the Watershed Proteciton Area in the adjacent SNA. Following the existing transmission route would reduce impacts to these resources.

- A six-township area in the vicinity of Township 159 North, Range 27 West has experienced repeated episodes of mineral leasing and exploration. Within this area the most frequent intercepts of mineralization have been encountered within Township 157 North, Range 27 West, and particularly within Sections 15, 16 and 21 of Township 159N, R27W, where eighteen exploratory boreholes have been drilled in parcels touching the B-0 route alternative. These boreholes, the most recent in 2011, have established at least two separate trends of zinc-copper or copper-nickel-platinum mineralization. It is very probable that exploration of these known occurrences will continue. This is the basis for the request to consider using existing corridor a mile further east of this site.

- Watershed Protection Areas (WPA) are important to adjacent SNAs and often contain similar habitat types. The Blue/Orange route crosses important habitats and is within the WPA of the North Black River SNA. The biodiversity significance of these sites would be affected by the fragmentation impacts of a transmission line. The impact of a new ROW on intact forests and wetlands is expected to be greater than the impact of increasing the ROW in areas that already are impacted by fragmentation effects. For these reasons, the DNR proposes analysis of the existing transmission line ROW. This route shown below in yellow.



Thank you for the opportunity to provide comments regarding the Great Northern Transmission Line Project. Please contact me with any questions.

Sincerely,

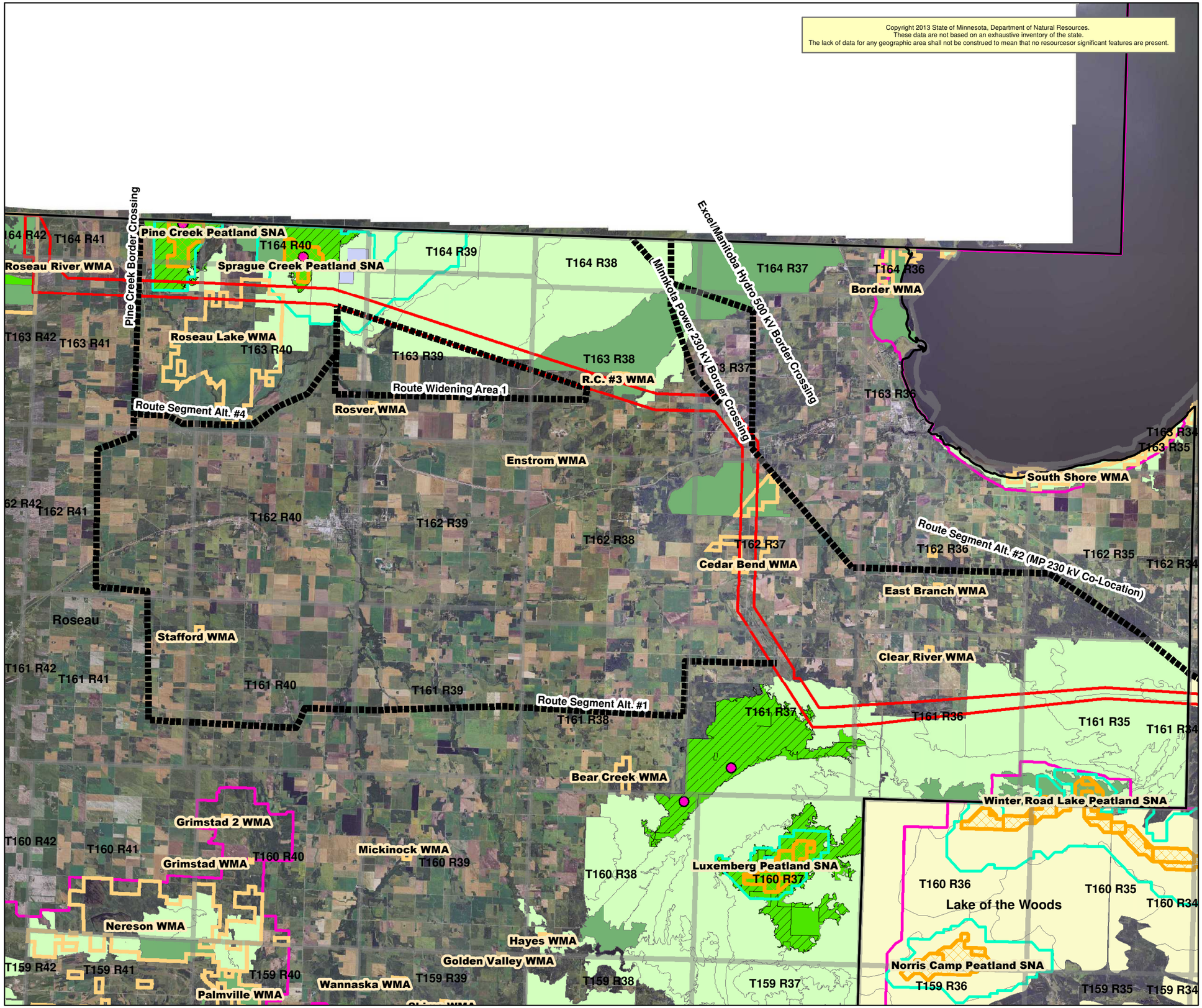
Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

Enclosures: 3

C: Julie Smith, US Department of Energy
Christopher Lawrence, US Department of Energy
Michael Kaluzniak, MN Public Utilities Commission
Bill Baer, US Army Corps of Engineers
Jim Atkinson, Minnesota Power

Roseau County
Route Segment Alternatives/ Resources Map

Copyright 2013 State of Minnesota, Department of Natural Resources.
These data are not based on an exhaustive inventory of the state.
The lack of data for any geographic area shall not be construed to mean that no resourcesor significant features are present.



Legend

- County Boundaries
- DNR Route Segment Alternatives
- PUC Application Route Alts.
- National Wildlife Refuges
- State Wildlife Management Area Boundaries
- Scientific and Natural Area Boundaries
- SNA-WPA Boundaries
- Minnesota Important Bird Areas By Audubon Minnesota
- Calcareous Fens
- Great Gray Owl Reserve
- High Conservation Value Forests
- Prelim ranking not assigned

Prelim Areas of Biodiversity Significance

- Outstanding
- High
- Moderate

0 2 4 8 Miles

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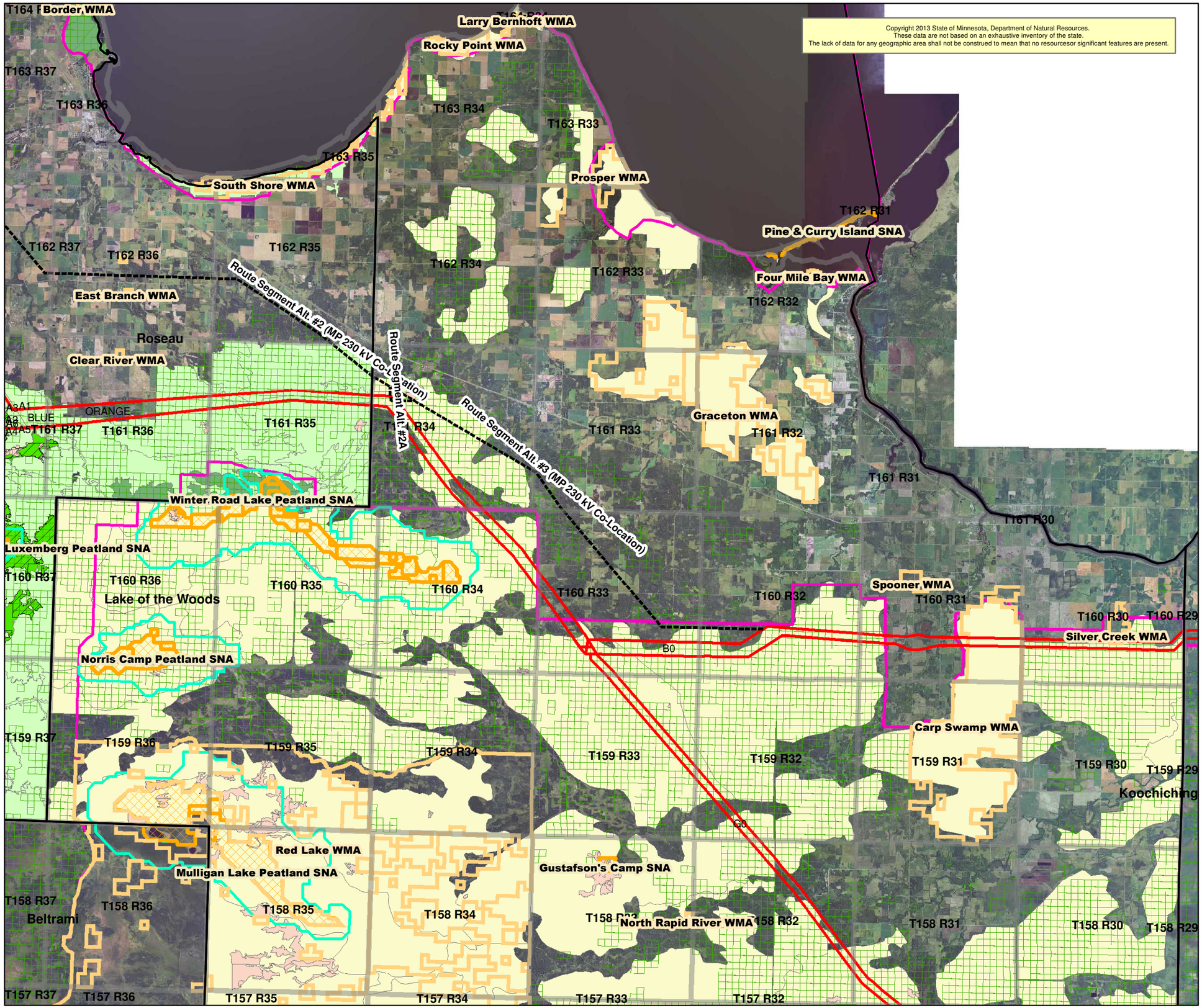
LOTW County Route Segment Alternatives/ Resources Map



Legend

- County Boundaries
- DNR Route Segment Alternatives
- PUC Application Route Alts.
- MN Power Refined Route Segments (12-04-13)
- National Wildlife Refuges
- State Wildlife Management Area Boundaries
- Scientific and Natural Area Boundaries
- SNA-WPA Boundaries
- High Conservation Value Forests
- Ecologically Import Lowland Conifers (EILC)
- Minnesota Important Bird Areas By Audubon Minnesota
- Calcareous Fens
- State Lands Admin. by Forestry
- Great Gray Owl Reserve

Prelim Areas of Biodiversity Significance

- Outstanding
- High
- Moderate
- Prelim ranking not assigned

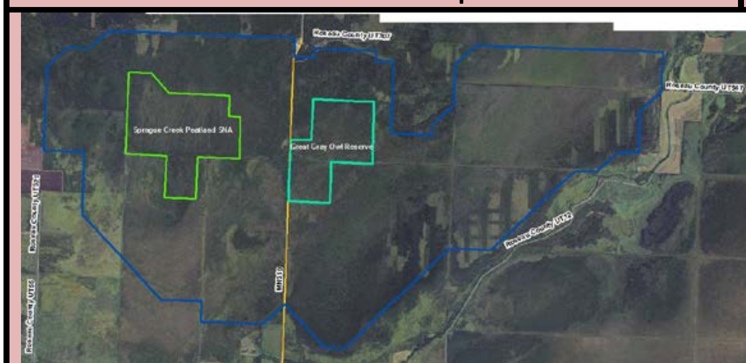
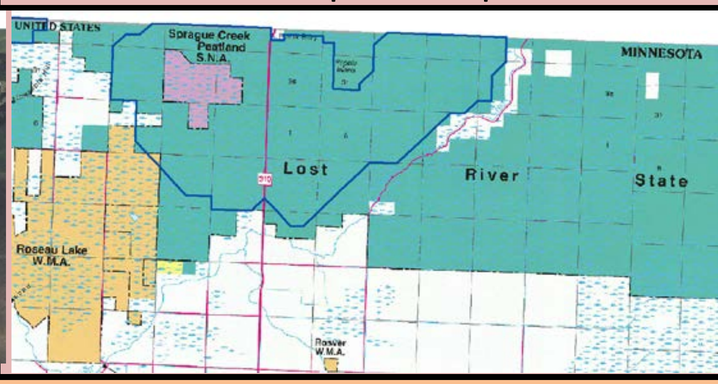
0 2 4 8 Miles

DNR Ecological & Water Resources 08-04-14

SFRMP Special Management Area Plan	ol Click here to enter text.
Special Management Area Summary	
Type:	Great Gray Owl Management Area
Name:	Sprague Creek Watershed Protection Area (WPA)
Subsection:	Agassiz Lowlands (212M)
NPC System:	
Size (acres):	11,664 acres
Land Status:	Land within Lost River State Forest administered by Forestry and Sprague Creek Peatland SNA administered by the Scientific and Natural Areas Program. Area falls across 2 Wildlife Areas (Baudette and Roseau River) and a small portion of Roseau Lake WMA falls within the watershed protection area (WPA).

Other:

Additional Information regarding the Roseau Bog Owl Management Unit and Great Gray Owl Reserve Area can be found in plans written by Katie Haws entitled MANAGEMENT RECOMMENDATIONS FOR THE ROSEAU BOG OWL MANAGEMENT UNIT (1987) and the SPRAGUE CREEK PEATLAND WATERSHED PROTECTION AREA INTERIM MANAGEMENT PLAN FOR TIMBER AND GREAT GRAY OWLS (2006)

Local Patch Map	Landscape Patch Map
	

Brief SMA Descriptions

Current conditions

During the last approximately 20 year time frame much of the tamarack in the area has died from insect damage (larch beetle). Photo interpretation shows damage is worse in some areas of the landscape than others; 2010 photos show some smaller understory tamarack might have less beetle damage. The Great Gray Owl Reserve area appears to be heavily damaged by beetles and may no longer provide nesting or foraging habitat for owls. Additionally, based on FSI data, many of the black spruce and tamarack stands are <75 yrs old.

10-year SMA management intent

Maintain or improve forested areas within the Watershed Protection Area (WPA) for Great Gray Owls and other forest species such as Northern Hawk Owl and those listed as Species of Greatest Conservation Need (e.g., Black-billed Cuckoo, Olive-sided Flycatcher, Spruce Grouse, Black-backed Woodpecker, Connecticut Warbler and Winter Wren among others). Clear portions of brushland areas within the WPA to provide openings for Great Gray Owl foraging habitat and to benefit other species that may use these openings (e.g., Sharp-tailed Grouse, American Woodcock, and Golden-winged Warbler among others). Many of these species use similar habitats as the Great Gray Owl including lowland conifers, edges of bogs and other openings. Allow for regeneration of tamarack in the beetle infected areas or consider encouraging black spruce in areas heavily damaged by beetles. Options include creating small openings for owl foraging, reserving clusters of trees that include snags and seed trees, and allowing stands to increase in age/size structure so that nesting trees (>12 inches dbh) and dense, closed canopy is available to be used by juvenile owls for cover and protection. Cuts could include irregular edges to allow for perch sites for foraging owls. Forestry and Wildlife Managers as well as Nongame Staff will collaborate to achieve these goals.

Measureable goals for the planning period

Manage primarily for older growth forest in this area with small openings (<5 acres) for Great Gray Owl foraging habitat. Increase tamarack regeneration within the insect damaged area. Consider encouraging black spruce in some of the areas with beetle damaged tamrack and creating boggy openings for Great Gray Owl foraging habitat. Brushland treatment in this area may result in larger openings, but these could also serve as foraging areas for owls. Protect trees, particularly nest trees (>12 inches dbh). Increase the availability of nesting structures (snags, broken-topped dead or deformed trees).
50-year SMA Goal
Great Gray Owls need large expanses of dense, closed canopy stands, particularly tamarack and black spruce for nesting, adjacent to open, boggy areas for hunting. Perch trees must be maintained in or adjacent to open areas. Increase/maintain larger sized trees (>12 inches dbh) as these are often used for nest locations by ravens, hawks and owls. Great Gray Owls do not construct their own nests; they use nests constructed by other species. Management of the entire Watershed Protection Area will consistently allow some areas that meet the needs of Great Gray Owls at all times, while allowing harvest and other management activities.
Direction or considerations for specific stands
Harvest operations should be limited to December through February on frozen ground to limit impact to breeding birds and prevent peat compaction. Additional considerations, to be determined after consultation among Forestry, Wildlife, and Ecological and Water Resources staff.