

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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Chair
Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of
Minnesota Power for a Route Permit for the
Great Northern 500 kV Transmission Line
Project in Roseau, Lake of the Woods,
Beltrami, Koochiching, and Itasca Counties

ISSUE DATE: April 11, 2016

DOCKET NO. E-015/TL-14-21

ORDER ISSUING ROUTE PERMIT
WITH MODIFICATIONS

PROCEDURAL HISTORY

I. The Route Permit Application

On April 15, 2014, Minnesota Power (the Applicant) filed an application for a route permit for the Great Northern 500 kV Transmission Line Project in Roseau, Lake of the Woods, Beltrami, Koochiching, and Itasca and St. Louis Counties (the project). The Applicant filed its application under the full permitting process set forth in Minn. Stat. § 216E.03 and Minn. R. 7850.1700 – 2700 and 7850.4000 – 4400.

On April 15, 2014, Minnesota Power applied to the United States Department of Energy for a Presidential Permit to cross the United States/Canadian border in Roseau County.¹ The Department of Energy and the Minnesota Department of Commerce Energy Environmental Review and Analysis unit (EERA) elected to conduct a single environmental review for the project. On October 29, 2014, Minnesota Power filed an amendment to the route permit and Presidential permit applications changing the proposed location of the international border crossing approximately 4.3 miles east of the original proposed border crossing location.

On July 2, 2014, the Commission issued an Order Finding Application Complete and Referring Matter to the Office of Administrative Hearings. The order also adopted the EERA's recommendation to form advisory task forces to assist in determining the scope of the Environmental Impact Statement (EIS). The Commission subsequently modified the format and charge of the advisory task forces.

On August 5, 6, 12, and 13, 2015, Administrative Law Judge (ALJ) Ann O'Reilly conducted combined public and evidentiary hearings in Roseau, Baudette, Littlefork, Kelliher, Bigfork, and Grand Rapids. The public comment period and administrative record, with the exception of receipt of the Final EIS, closed September 1, 2015.

¹ The Department of Energy acts as the federal joint lead agency with the Minnesota Department of Commerce acting as the state joint lead agency.

On January 4, 2016, the Office of Administrative Hearings issued its Findings of Fact, Conclusions of Law, and Recommendation (ALJ Report).²

On January 19, 2016, Minnesota Power filed exceptions to the ALJ Report. On February 3, 2016, the Minnesota Department of Natural Resources (DNR) filed its exceptions.

On February 5, 2016, Minnesota Power filed objections to the DNR exceptions, arguing that DNR's comments were neither timely nor those of a party. The Company requested that if the objections were accepted by the Commission, it would also allow the Company's response into the record, and the Commission granted the request.

The U.S. Fish and Wildlife Service filed comments on February 12, 2016, and the Commission decided to take administrative notice of the filing.

On February 26, 2016, the Commission met to consider the matter.

II. The Environmental Impact Statement

On June 20, 2014, the Commission issued a Notice of Public Information and Environmental Impact Statement Scoping Meeting jointly with the Minnesota Department of Commerce (Department). Eight public meetings were held in the cities of Roseau, Baudette, Littlefork, International Falls, Kelliher, Bigfork, and Grand Rapids between July 16 and July 24, 2014 to provide project information and to identify issues and route alternatives to be addressed in the EIS. Public comments were accepted until August 15, 2014.

On January 9, 2015, the deputy commissioner of the Department of Commerce issued the EIS Scoping Decision, in accordance with Minn. R. 7850.3700, subp. 2. The Scoping Decision identified 22 route segment alternatives and nine alignment modifications to be evaluated, as well as the two route alternatives (the Orange and the Blue alternatives) identified by Minnesota Power in its application.

The EERA and the Department of Energy filed a draft EIS on the proposed project June 19, 2015.

The EERA filed portions of the final EIS (FEIS) on October 30, 2015, and the remaining portion of the FEIS on December 18, 2015. The FEIS responded to timely substantive comments on the draft EIS, consistent with the scoping decision.

FINDINGS AND CONCLUSIONS

I. The Project

The project is a 500 kilovolt (kV) high-voltage transmission line (HVTL) to be located between the province of Manitoba in Canada and the Blackberry Substation in Itasca County. The project is part of a joint effort with Manitoba Hydro to construct a new Canada-United States transmission

² The ALJ issued Amended Findings of Fact, Conclusions of Law, and Recommendation correcting minor formatting inaccuracies on January 14, 2016.

interconnection. The transmission line is intended to deliver power generated by Manitoba Hydro's hydroelectric stations in Manitoba to the United States, and also to allow power from the United States to be delivered to Canada.³

The Great Northern transmission line is an overhead single-circuit alternating current transmission line that will cross the international border into and across Roseau, Lake of the Woods, Beltrami, Koochiching, and Itasca Counties. The project includes construction of associated substation facilities, a 500 kV series compensation station, and a proposed Iron Range 500 kV substation located adjacent to Applicant's Blackberry Substation near Grand Rapids.

As recommended by the ALJ and approved by the Commission, with the Effie Variation, discussed herein, the total line length is approximately 224 miles.

II. The Legal Standard

The project is subject to Minn. Stat. Chapter 216E, which requires that high-voltage transmission lines be routed consistent with the state's goals to locate electric power facilities in an orderly manner compatible with environmental preservation and the efficient use of resources.⁴ The Commission is required to choose locations that minimize adverse human and environmental impact while insuring continuous electric power system reliability and integrity and insuring that electric energy needs are met and fulfilled in an orderly and timely fashion.

In addition, the statute requires that route permit determinations be guided by the policy objective to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure.⁵

The project is also subject to environmental review under Minn. Stat. § 216E.03, subd. 5, which directs the commissioner of the Department of Commerce to prepare an EIS on proposed high voltage transmission lines.

Further, in designating a route, the Commission must consider the permitting criteria contained in Minn. Stat. § 216E.03, subd. 7(b), and Minn. R. 7850.4100.

Under Minn. Stat. § 216E.03, subd. 7(b), the criteria are as follows:

³ As reflected in the certificate of need for this project (*see* Docket No. E-015/CN-12-1163).

⁴ Minn. Stat. § 216E.02.

⁵ Minn. Stat. § 216E.03, subd. 7(a), and Minn. R. 7850.4000.

- (1) evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high-voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including baseline studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;
- (2) environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;
- (3) evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;
- (4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;
- (5) analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;
- (6) evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;
- (7) evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivisions 1 and 2;
- (8) evaluation of potential routes that would use or parallel existing railroad and highway rights-of-way;
- (9) evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;
- (10) evaluation of the future needs for additional high-voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;
- (11) evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and
- (12) when appropriate, consideration of problems raised by other state and federal agencies and local entities.

Under Minn. Rules, part 7850.4100, the criteria to be followed for the route permit are as follows:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;
- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;
- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

III. Public Involvement

The public participated in the review of the application at several times during the review process. The EIS scoping meetings conducted in July 2014 provided a description of the project, an overview of the application review process, and an opportunity for public comment. The public was invited to recommend particular route alternatives and environmental impacts to be studied in the EIS for the project.

As part of that process, two citizen work group meetings were held, which allowed local government representatives to discuss matters of concern, develop potential alternative route segments, review potential zoning conflicts, and ensure local participation in the EIS scoping decision.

The Scoping Summary report, prepared by the EERA, also addressed public and agency comments regarding public concerns as well as border crossing alternatives, impacts to private property and human settlements, agricultural use, and natural resources. The report identified the benefits of following existing transmission corridors to minimize impacts, and discussed possible route alternatives, as well as adjustments and modifications thereto.

Between July 15, 2015, and July 22, 2015, the EERA and the Department of Energy held combined public information meetings and Federal Public Hearings on the draft EIS and the Presidential Permit in Roseau, Baudette, Littlefork, Kelliher, Bigfork, and Grand Rapids. Some 208 substantive comments that had been submitted by the public were addressed.

Finally, an additional comment period was established by the Commission and the EERA to accept input on the draft EIS for the public and evidentiary hearings by the ALJ. During these hearings, witnesses on behalf of Minnesota Power appeared to address questions from the public.

IV. Environmental Impact Statement

At the time when the Commission determines whether to issue a route permit, the Commission is to make a finding whether the EERA's EIS and the record created in the public hearing address the issues identified in the EIS Scoping Decision. Minn. R. 7850.2500, subp. 10, states:

The Public Utilities Commission shall determine the adequacy of the final environmental impact statement. . . . The final environmental impact statement is adequate if it:

- A. addresses the issues and alternatives raised in scoping to a reasonable extent considering the availability of information and the time limitations for considering the permit application;
- B. provides responses to the timely substantive comments received during the draft environmental impact statement review process; and
- C. was prepared in compliance with the procedures in parts 7850.1000 to 7850.5600.

Having reviewed the record in this matter, the Commission concurs with the finding of the ALJ that the evidence demonstrates that the final EIS is adequate because it addresses the issues and alternatives raised in the Scoping Decision.

Further, the EIS provides responses to the timely substantive comments received during the draft EIS review process. Finally, the EIS was prepared in compliance with Minn. R. 7850.1000 to 7850.5600.⁶ The Commission thus finds that the Final EIS meets the requirements of Minn. R. Part 7850.2500, subp. 10, and will approve it.

⁶ ALJ Report, Conclusion of Law 14 at 135.

V. The ALJ Report

On January 4, 2016, the ALJ filed her Findings of Fact, Conclusions of Law, and Recommendation regarding the EIS and the route permit proceeding. The ALJ Report recommended that the Commission grant Minnesota Power a route permit for the Great Northern 500 kV transmission line project along the Blue Route for all areas except in the Effie Variation Area in the project's East Section.

The ALJ Report thoroughly discussed the two route alternatives considered for the project: the Orange Route and the Blue Route. The ALJ Report contains an evaluation of both route alternatives using the route permitting criteria the Commission must consider in designating routes for high-voltage transmission lines, set forth in Minn. Stat. § 216E.03, subd. 7(b), and Minn. R. 7850.4100.

The ALJ found that the Blue Route best satisfies the route permit criteria in statute and rule. In the East Section of that route, the ALJ found that the Effie Variation and the East Bear Lake Variation better meet the route permit criteria. The Effie and East Bear Lake Variations were proposed by the DNR, and overwhelmingly favored by the public and communities in the Effie Variation Area.⁷ The ALJ also recommended adoption of the Trout Lake Modification⁸ to minimize the impact of the Blue Route on residences in that alignment area. Other alignment modifications should be considered during the Plan and Profile process.

The ALJ Report is well reasoned, comprehensive, and thorough. She made some 704 findings of fact, 26 conclusions of law, and a recommendation on route selection based on those findings and conclusions. Some 439 findings of fact specifically address the route permit criteria set forth above (Findings 249-688). The ALJ Report also included a summary of public comments and government agency participation.

The ALJ Report also included the following conclusions and recommendations:

- That the final EIS is adequate for use in this proceeding based on the record.
- That all procedural requirements under statute and rule were met based on the record.
- That the Standard Route Permit Conditions be incorporated into the Route Permit, unless modified herein.
- That the Special Route Permit Conditions, including those related to electric fields, be incorporated into the route permit.

⁷ ALJ Report, Finding 558.

⁸ ALJ Report at Findings 687-688. The Trout Lake Modification is located in the central portion of the Blackberry Variation. It shifts the centerline away from two residences so that only one residence would be located within 1,000 feet of the alignment. All other land ownership along the Trout Lake Alignment is corporate.

- That the Commission determine, in its expertise, whether Minnesota Power’s request to use the National Electrical Standards Code (NESC) 5 mA Rule is acceptable for remote areas of the line where human habitation and use is minimal.⁹

Finally, the ALJ recommended that a number of Special Route Conditions proposed by the EERA be included in the route permit. These address the following: 1) a Construction Environmental Control Plan; 2) an Agriculture Mitigation Plan; 3) a Vegetation Management Plan; 4) an Avian Mitigation Plan; 5) Consultation with the United States Fish and Wildlife Service; and 6) a Programmatic Agreement. Modifications to the Route Permit Conditions and Special Conditions are set forth below in Section 6.

Having itself examined the record and having considered the ALJ Report as well as the exceptions filed thereto, the Commission concurs in nearly all of the ALJ’s findings and conclusions. In a few instances, however, the Commission will modify the ALJ’s findings and conclusions as delineated below. On all other issues, the Commission accepts, adopts, and incorporates her findings, conclusions, and recommendation.

VI. Modifications to the ALJ Findings and Conclusions

A. Minnesota Power Recommendations

1. The Effie Variation and the East Bear Lake Variation

Minnesota Power stated that it supports most of the ALJ’s Findings as being well-supported by the evidentiary record. Minnesota Power filed exceptions, however, to the ALJ’s recommendations regarding the Effie Variation, the East Bear Lake Variation, and the Trout Lake Alignment Modification, and recommended that the Commission make certain modifications, deletions, and additions to the ALJ Findings and Conclusions. Minnesota Power recommended changes to the ALJ Findings regarding the Effie Variation (Findings 577, 578-581, 235-237, 582, 584, and 587) and the East Bear Lake Variation (Finding 609).

The Effie Variation is an alternative to a portion of the Blue Route, in the project’s East Section. The Effie Variation would locate a portion of the project in a common corridor with both the existing 500 kV international kV line (owned by Xcel Energy) and the 230 kV international tie line (owned by Minnkota Power).

The Blue Route and Effie Variation have a common starting point where the existing 500 kV and 230 kV line corridors converge. The anticipated alignment of the Effie Variation would be along the west side of Xcel Energy’s existing 500 kV line. Minnkota’s 230 kV line parallels the east side of the Xcel line, resulting in a third HVTL in the same corridor.¹⁰

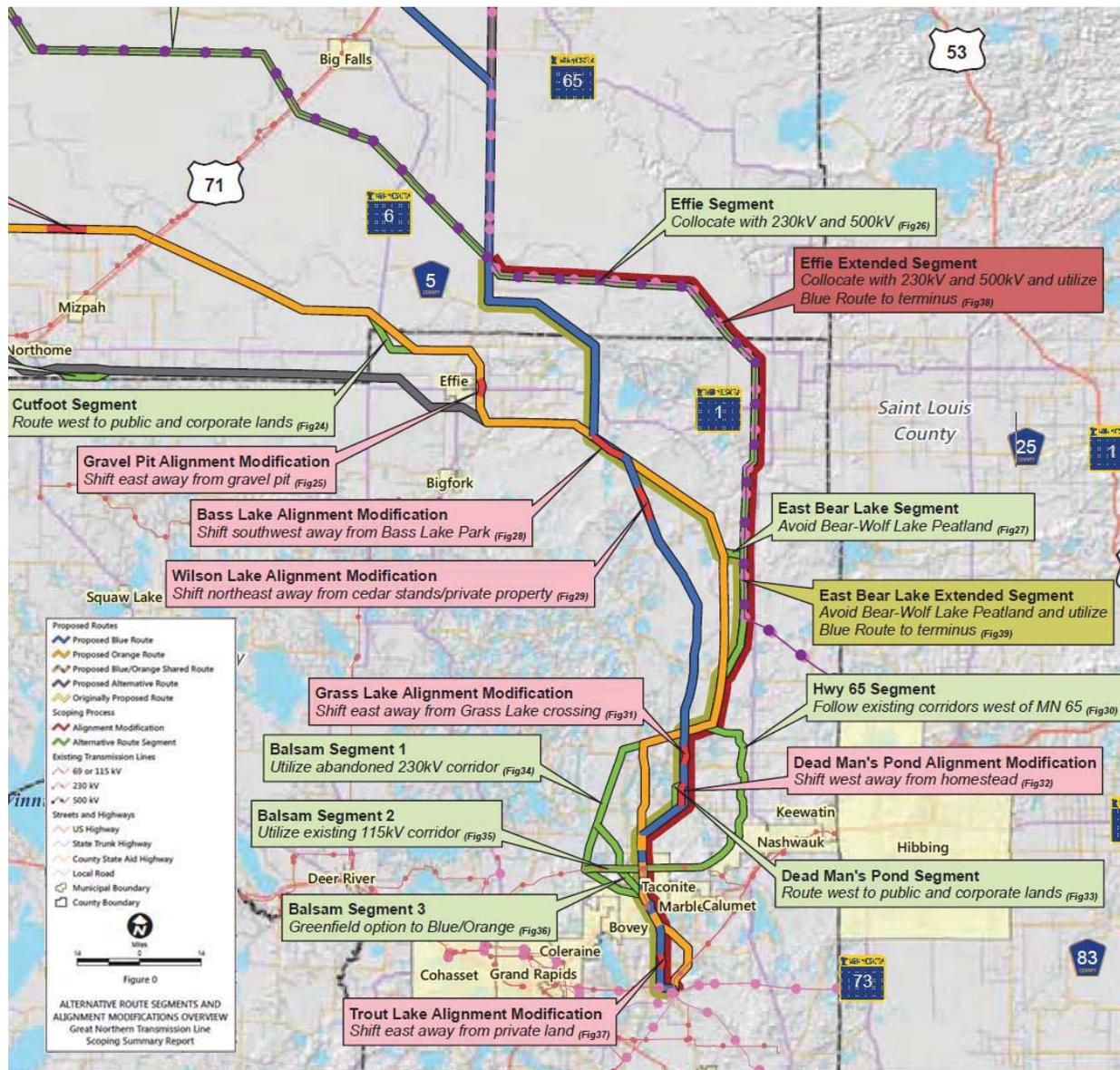
⁹ See discussion, *infra*, at p. 10, Finding 704.

¹⁰ ALJ Report, Finding 555-556.

Within the Effie Variation Area, the Blue Route is 41.1 miles in length; the Orange Route is 44.6 miles in length, and the Effie Variation is 49.9 miles in length. Neither the Blue Route nor the Orange Route parallels any existing utility right of ways. The Effie Variation parallels existing utility corridors for 80 percent of its distance.¹¹

The DNR proposed the Effie Variation including the East Bear Lake Variation due to concerns with the impact of the new transmission line (using the Orange or Blue Route) through intact forested areas in the Effie area.

The three Route Alternatives considered in the Effie Variation Area are shown below:¹²



¹¹ ALJ Report, Finding 554.

¹² E-dockets [20161-117270-01](#), Figure 2-1, Summary of Requested Routes Segments and Alignment Modifications (November 13, 2014).

Many of the Company's Exceptions to the Effie Variation focused on the close proximity of the three high-voltage transmission lines in one utility corridor and difficulty of maintenance of the line, and the risks of a catastrophic outage of the three lines with negative impacts on system reliability.

The public and communities in the Effie Variation Area overwhelmingly supported this Variation because despite the fact that it would run closer to some landowners' properties than the other alternatives,¹³ it would add fewer new impacts to the corridor. Choosing the Effie Variation makes use of the existing utility corridor, would prevent new environmental impacts to untouched wilderness areas of the state, and prevent forest fragmentation of these pristine forest areas. Landowners also favored selection of the Effie Variation because that option would promote conservation of the natural environment, and limit impacts on sensitive or endangered areas of wildlife and rare vegetation.¹⁴

DNR requested that the triple-paralleled lines in the Effie Variation and East Bear Lake Areas be placed with as little separation as practicable, with no forested strip separating the lines, consistent with other required permits or licenses. DNR argued that this approach minimizes forest fragmentation, as reflected in the record.

The Company initially disagreed, arguing that increased separation of the lines in the Effie Variation and the East Bear Lake Variation Areas is necessary to mitigate reliability and safety issues, as well as to provide the necessary access to address operating and maintenance issues. The Company indicated that additional engineering analysis related to noise and electromagnetic fields would be necessary in order to develop a final design in the triple corridor area.

With respect to construction operation and maintenance of the line in the Effie Variation Area, the Company argued that addition of a third HVTL line in the same corridor might make it more difficult for power companies – particularly the utility operating the middle line - to operate helicopters or large equipment in the area of the lines. The ALJ found that Xcel Energy, which owns the middle line, did not object to the selection of the Effie Variation.¹⁵ Nor did Xcel object to the Effie Variation at the Commission meeting, but simply stated that the paralleling of lines in the Effie Variation will require more study. Further, at the Commission meeting, the Company acknowledged that while separation of the lines is necessary, it is willing to work with the DNR to see if a compromise can be reached on the separation distance.

The ALJ Report addressed each of these issues raised by the Company in some detail (*See e.g.*, Findings 237, and 575-581.) After thorough consideration, the ALJ summarized her findings regarding these points in Finding 587:

¹³ ALJ Report, Findings 558-559.

¹⁴ *See, e.g.*, ALJ Report at Finding 557.

¹⁵ The ALJ Report addressed Xcel's concerns at Finding 237.

With respect to the potential drawbacks related to “triple paralleling” of HVTLs, Minnesota Power acknowledges that the challenges in constructing, maintaining, and inspecting the lines can be remedied through increased distance between lines and other forms of mitigation. Consequently, the concerns raised by Minnesota Power do not make the Effie Variation unfeasible.

In addition, the ALJ examined the Company’s concern regarding electromagnetic field and audible noise, and found it to be merely speculative, as the Company had provided insufficient data on which to determine these issues.¹⁶

The Commission has also examined the Company’s arguments regarding potential reliability issues of the HVTL in the proposed route as modified with the Effie Variation. At the Commission meeting, the Company confirmed that with its proposed changes in Route Permit alignment to the centerline, (discussed below at Section VII A), it is comfortable with the Effie Variation in terms of reliability in conjunction with existing special protection protocols.

The Commission has considered Minnesota Power’s Exceptions and recommended changes to the ALJ Findings regarding the Effie Variation and the East Bear Lake Variation. For the most part, the Company’s recommendations regarding the Effie Variation consist of restating or supplementing the record with additional detail and information previously considered by the ALJ in the proceeding, or striking information that appears to accurately reflect the testimony and evidence presented in the proceeding. Having carefully reviewed the record in this matter, the Commission finds that it need not modify the ALJ Report with the additional detail recommended by Minnesota Power regarding this subset of findings.

The Commission finds the ALJ Report to be comprehensive and thorough regarding the Effie Variation, the East Bear Lake Variation,¹⁷ and the Trout Lake Alignment Modification. Sections 5C, D, and E of the ALJ Report provide a detailed description and thorough analysis of each of the Route Alternatives considered in the proceeding (the Blue Route, the Orange Route, and the Variation Areas applicable to each alternative). The Commission also will adopt the Trout Lake Modification to minimize the impact of the Blue Route on residences in that alignment area. The Report provides a comprehensive analysis of the each of the routing factors and criteria and requires no further facts or modifications to bolster it.

¹⁶ ALJ Report Finding 580:

With respect to EMFs and noise, Minnesota Power noted that there is a potential for incrementally higher EMF and audible noise due to the addition of a third line in the same corridor. Minnesota Power, however, did not provide any data on how much more EMFs and audible noise might result from an additional line, rendering this claim merely speculative. (Foot note omitted)

¹⁷ In its Exception to the East Bear Lake Variation (Finding 609), Minnesota Power stated that while it agreed with the ALJ’s summary of facts, it excepted to the finding for the same reasons it objected to the Effie Variation. Minnesota Power recommended that ALJ’s Recommendations 18-20 be modified to eliminate the East Bear Lake Variation. The Commission observes that as only a part of the East Bear Lake Variation is included in the Effie Variation, it is unlikely that the remainder of the East Bear Lake Variation outside of the Effie Variation would be chosen during the Plan and Profile review. The Commission will not alter the Finding; instead the Commission will take administrative notice that a portion of the East Bear Lake Variation would be included in the Effie Variation.

As is clear from the administrative record, the Effie Variation and East Bear Lake Variation use existing utility corridors, thus reducing new impacts to pristine areas of wilderness in the state and preventing further forest fragmentation. These Variations also leave intact large blocks of habitats, including those associated with the Minnesota Biological Survey Sites of Biodiversity Significance, old growth forest, peatlands, forested wetlands, and critical wildlife habitat, particularly for the Canada lynx.¹⁸

Further, to ensure that issues regarding system reliability are addressed, the Commission will require that prior to actual project construction, Minnesota Power file a letter stating that the Regional Planning Authority has studied the triple-line configuration as permitted by the Commission and determined or confirmed that the triple paralleling of the project area meets all applicable NERC standards.

Minnesota Power's Exceptions to the Trout Lake Alignment Modification are addressed separately below (Finding 688).

2. Further Modifications and Clarifications to the ALJ Report

The Company also filed additional exceptions to clarify or otherwise correct certain findings. After consideration, the Commission will accept only those modifications to the ALJ Findings and Conclusions listed below.

a. Finding 577

Finding 577 summarizes Xcel Energy's comments regarding the Effie Variation. Minnesota Power recommended that the Commission modify Finding of Fact 577 to provide additional detail regarding safety and to delete the word infrequent. The Commission disagrees that additional detail is necessary, but agrees that that deletion of the word infrequent is appropriate, as the word is somewhat ambiguous in this context. The word infrequent will be stricken.

In the case of the Effie Variation, the middle line would be Xcel Energy's 500 kV line. In its comments, Xcel explained that having three lines in one corridor may make it more difficult for Xcel to employ helicopters for ~~infrequent~~ inspections and it may require more precaution when servicing its line.

b. Finding 688/Conclusion 21

Finding 688

Minnesota Power requested that the following language be added to ALJ Finding 688. Minnesota Power explained that its proposed language was not adopted by the ALJ, albeit included in the record. The Commission agrees that the additional information will improve the record; accordingly, it will modify Finding of Fact 688 as set forth below:

¹⁸ ALJ Report, Conclusion 19.

The Trout Lake Alignment Modification shifts the centerline away from the two residences located west of the comparable segment of the Proposed Blue Route, so only one residence would be located within 1,000 feet of the alignment. All other land ownership along the Trout Lake Alignment Modification is corporate. Although the Alignment Modification would avoid impacts to the landowner's private property, it would be 150 feet longer and would add three additional angle structures, raising cost and feasibility concerns.

In addition to the Variations discussed above, a number of Alignment Modifications (or shifts of the anticipated alignment of the Project within the currently designated route) were included in the environmental review of the Project. Generally, such shifts of the precise alignment come forward during the "Plan and Profile" stage of routing. Once a route is approved, the Company will work with landowners and gain additional "on the ground" information, including conducting field surveys. That information often leads to the Company and landowners agreeing to move the alignment to some place other than originally anticipated and designated in the record.

The Commission will also require Minnesota Power to provide an informational filing regarding the Trout Lake Alignment modification cost of angle structures, specific feasibility concerns, and an overall comparison of impacts previously identified in the record. The Commission also requests the Department to provide additional analysis of these issues and make a recommendation to the Commission for a final determination as part of the Plan and Profile process.

Conclusion 21

Finally, the Commission will modify ALJ Recommendation 21 for clarity as follows:

~~The Administrative Law Judge further recommends that the Commission adopt the Trout Lake Alignment Modification so as to minimize the impact of the Blue Route on residences in that alignment area. Other alignment modifications shall be considered during the Commission's final review and in the Plan and Profile process and that Minnesota Power work with landowner to minimize impacts to landowners in determining route alignments.~~

c. Finding 301

Minnesota Power requested that Finding 301 be modified as follows, to correct the in-service date and more accurately reflect the record in this proceeding:

Manitoba Hydro asserts that if it is required to amend its application to the NEB to address a different border crossing location and thus select a different route for the Canadian portion of the line, such change will "jeopardize" the Project as a whole because it will cause delays in the process and could potentially impact the June ~~2010-2020~~ in-service date agreed to by Minnesota Power and Manitoba Hydro in their contracts for this Project. The record reflects that the formal Canadian approval process began in November 2014 and is based on a specific international border crossing. Unfortunately, the record is unclear as to how long the Canadian

~~approval process could take if a border crossing location is selected other than the Proposed Border Crossing.349~~

The Commission agrees with the proposed modifications to the finding, as they more accurately reflect the record in this matter. The Commission will modify the Finding as proposed by Minnesota Power.

d. Finding 704

In its Exceptions, Minnesota Power objected to the Electric Field standard identified in Section 4.7.2 of the Generic Route Permit. Minnesota Power requested to use the National Electrical Standards Code (NESC) 5 milliamp (mA) Rule in remote areas of the line where human habitation and use is minimal. Minnesota Power argued that Finding 704 should be modified to use the NESC Standard, as follows:

~~704. The DOC-EERA did not expressly oppose the Company's request to use the NESC 5 mA Rule for remote areas of the line. The record supports the Company's request to provide this limited modification to the Electric Field General Condition. However, the Administrative Law Judge is without sufficient information in the record to provide analysis of the Company's request and can, therefore, make no informed recommendation related to this request.~~

The Commission has reviewed Minnesota's Power's testimony submitted in support of the modification to the electric field limitation, and the arguments made at the Commission meeting on this matter. The Commission finds that the record does not include sufficient analysis and evaluation of use of the NESC 5mA level to justify its use. Nor did Minnesota Power provide an adequate means by which to calculate, evaluate, and administer the NESC 5mA level.

Instead, the Commission will modify Finding 704 to incorporate the standard for electrical fields set in Section 4.7.2 of the Generic Route Permit.

~~704. The DOC-EERA did not expressly oppose the Company's request to use the NESC 5 mA Rule for remote areas of the line. The Generic Route Permit includes standards for electric performance including for electric fields. Specifically, section 4.7.2 of the Generic Route Permit states "The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms." However, ~~the~~ Administrative Law Judge is without sufficient information in the record to provide analysis of the Company's request and can, therefore, make no informed recommendation related to this request.~~

B. Department of Natural Resources Exceptions

The Minnesota Department of Natural Resources (DNR) filed Exceptions on February 3, 2016. Minnesota Power objected to the filing as untimely and that the agency was not a formal party to the proceedings. The Commission will allow the agency's Exceptions to be considered. The Commission specifically requested the agency's participation in the development of the record and the public hearing in this matter beginning on August 1, 2014.

1. Finding 277

The DNR proposed the following modification to Finding 277, which the Commission will accept and adopt:

~~While the~~ The 230 kV Variation crosses the least amount of land (both public and private); ~~an~~ An airstrip, important to the region, would be located within one mile from the anticipated alignment for the Highway 310 Variation.³²⁴ Public comment overwhelmingly opposed any HVTL that could interfere with this airstrip important to residents in the area.

³²⁴ Ex.119, Vol. 1, Pt.7 of 14, at 255-59 (FEIS).

2. Finding 597 and Footnote 604

DNR recommended striking Finding 597 and footnote 604 because the agency's review shows that there is no agricultural land use along the East Bear Lake Variation.

~~597. The East Bear Lake Variation would cross nearly two times more agricultural land than the Orange Route (160 acres versus 85 acres). Both the Orange Route and the East Bear Lake Variation would cross a relatively similar amount of state forest land. The East Bear Lake Variation would cross more expired or terminated mineral lease lands. However, the East Bear Lake Variation would parallel an existing utility corridor for the majority of its length.~~⁶⁰⁴

⁶⁰⁴Id.

C. Other Modifications to the ALJ Report

The citation for Finding of Fact 59 is corrected as follows:

In addition to soliciting public comment at the scoping meetings, on July 31, 2014, the Commission sent a letter to various state agencies requesting their participation in the development of the record, the environmental review, and the public hearings for the Project.⁷⁷

⁷⁷ ~~Ex. 101 (Notice of Public Information and Scoping Meeting). Minnesota Public Utilities Commission Letter to State Agency Technical Representatives Regarding Participation in Record Development and Public Hearings, e-Dockets Filing Number 20148-10111956-01, August 1, 2014.~~

VII. Route Permit Modifications and Conditions

The ALJ recommended that a number of Special Route Permit Conditions be included in the route permit. After discussion at the Commission meeting, the Commission also modified certain permit conditions. The Commission approves inclusion of the Special Route Permit Conditions, with certain modifications proposed by the parties.

The Commission will adopt the following permit modifications and conditions.

A. Effie Variation Routing Modification

In its Exceptions, Minnesota Power stated that if the Commission were to adopt the Effie Variation as part of the route permit, the proposed centerline alignment contemplated in the FEIS and ALJ Report should be revised. Minnesota Power submitted a proposed centerline map for the Effie Variation as Exhibit B to their Exceptions.

The Commission agrees with this modification. It does not result in a route change as the proposal is entirely within the Effie Variation route corridor. The centerline alignment modification will be attached to the Route Permit as part of the Route Maps.

B. Generic Route Permit Language Changes to the General Route Permit Conditions

Prior to the Commission meeting, the DNR requested modifications to the draft Route Permit Conditions to add a permitting requirement to General Condition Section 4.8.1, and to make certain revisions to the Special Conditions addressing the Construction Environmental Control

Plan (CECP) (Section 5.01), and requiring the inclusion of a Mineral Resource Plan (Section 5.06).¹⁹ These modifications were discussed and accepted by all parties at the Commission meeting, and are set forth below:

4.8.1

The Permittee shall comply with applicable NERC planning standards and requirements of the NESC including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of-way widths, erecting power poles, and stringing of transmission line conductors.

When triple paralleling lines within the permitted route width, lines shall be located in compliance with above standards and in compliance with other required permits or licenses recognizing safety, access, and operating and maintenance issues for all impacted lines regardless of ownership. Permittee shall consult with MNDNR regarding forestry and other potential corridor impacts prior to submitting the Plan and Profile for review by the Department and the Commission.

Further, the Commission will require that prior to actual project construction, Minnesota Power file a letter stating that the Regional Planning Authority has studied the line as permitted by the Commission and determined or confirmed that the project meets all applicable NERC standards.

¹⁹ During the Commission meeting, Minnesota Power also agreed to take a further look at the Route Permit's Agricultural Mitigation Plan to determine whether the criteria regarding apiaries listed in Section 4.2.6, "Application of Herbicides," contains appropriate notice and distance criteria.

C. Special Route Permit Conditions

DNR and Minnesota Power each offered comments regarding proposed Special Route Permit Conditions 5.01, Construction Environmental Control Plan, and 5.06, Mineral Resource Plan, 5.01 and 5.06 the day prior to the meeting.²⁰ There was extensive discussion of these provisions at the Commission meeting. Each provision is discussed below:

5.01 Construction Environmental Control Plan

The DNR proposed including a new requirement for a Mineral Resource Plan in Condition 5.1, and requiring Minnesota Power to provide an independent dedicated environmental inspectors and monitors to oversee the construction process and monitor compliance with the Vegetation Management Plan, the Avian Mitigation Plan, and all environmental permits. DNR noted the importance of third party monitoring for large energy projects, and stated that it has found such monitoring helpful in prior Commission large energy projects. DNR stated such monitoring has become a fairly consistent requirement for large transmission lines.

The Company asserted that the provisions of the Mineral Resource Plan are largely covered by DNR licensing, with the exception of county tax-forfeiture land. The Company also initially disagreed that the use of an independent monitor was necessary, given overall permit obligations and incentives to ensure compliance. Finally, the Company balked at paying for the work, and raised concerns that the scope of the work to be conducted pursuant to the Mineral Resource Plan is too vague. At the Commission meeting, however, the Company agreed to consult with DNR on these issues.

After discussion at the meeting, the Commission determined to delete the reference to the Mineral Resource Plan in this provision and move it to new provision 5.06.

The Permittee shall develop a Construction Environmental Control Plan (CECP) that shall include all environmental control plans and special conditions imposed by permits or licenses issued by state or federal agencies related to agency-managed resources. Plans within the CECP shall include, but not be limited to, the Agricultural Impact Mitigation Plan, the Avian Mitigation Plan, the Vegetation Management Plan, ~~the Mineral Resource Plan,~~ and a Stormwater Pollution Prevention Plan. The CECP shall be filed with the Commission 30 days prior to submitting the plan and profile for any segment of the Project. ~~The Mineral Resource Plan shall be filed 30 days prior to tower erection construction.~~

The Permittee shall provide dedicated independent environmental inspectors and monitors to oversee the construction process and to monitor compliance with 1) the Vegetation Management Plan, 2) the Avian Mitigation Plan, and 3) the requirements of this and all other environmental permits, excluding any mineral resource plan.

²⁰ The substance of these comments is found in Document C-2 – Amended Decision Options Requested by MN DNR with Replies from the Department and Minnesota Power (February 26, 2016).

5.0.6 Mineral Resource Plan

DNR noted that transmission lines create noise for geophysical detection methods (non-drilling) of mineral exploration, particularly for greenfield routing. Some portions of the project have areas of probable or known non-ferrous state-owned minerals. Revenue from possible future mining, which could be substantial, would fund Minnesota schools. The DNR stated that obtaining data prior to placement of the transmission line is important, as it would help mitigate the possible loss of future revenue and reduce the possibility of having to move the line at some future point. After discussion at the meeting, Minnesota Power agreed to consult with DNR in the development of a Mineral Resource Plan, and to file its proposed Mineral Resource Plan as a compliance filing in its Plan and Profile submission. If DNR has any objections to the plan, akin to the other route permit plans, it may file objections or deny the Company's license to cross application.

The Permittee shall develop a Mineral Resource Plan (MRP) to be submitted as a compliance filing 30 days prior to the Plan and Profile. The Permittee shall consult with the MNDNR regarding the scope and content of the MRP. The purpose of the MRP will be to identify measures to avoid interference with the exploration or mining operations conducted on state-owned mining units. The MRP would include (1) General description of state-owned mineral resources in the project area; and (2) Documentation of consultation with the MNDNR regarding measures to avoid interference with exploration and encumbrance of state-owned minerals.

The Commission will approve the foregoing changes in the Route Permit language. The Route Permit incorporating these changes is attached to this Order.

ORDER

1. The Commission finds that the EIS prepared by the EERA for the Minnesota Power Great Northern 500 kV Transmission Line meets the requirements of Minn. R. 7850.2500, subp. 10, in that:
 - A. addresses the issues and alternatives to a reasonable extent considering the availability of information and the time limitations for considering the permit application;
 - B. provides responses to the timely substantive comments received during the draft environmental impact statement review process; and
 - C. was prepared in compliance with the procedures in parts 7850.1000 to 7850.5600.
2. The Commission approves and adopts the ALJ's Findings of Fact, Conclusions of Law, and Recommendations for the Great Northern 500 kV Transmission Line project with the modifications to the findings and route permit conditions set forth in the Order.
3. The Commission finds that the draft route permit satisfies the considerations of permitting criteria contained in Minn. Stat. § 216E.03, subd. 7(b), and Minn. R. 7850.4100 and grants Minnesota Power a route permit for the project with the conditions in the Order.

4. Prior to actual project construction, Minnesota Power shall file a letter stating that the Regional Planning Authority/Planning Coordinator and the Transmission Planner have studied the triple-line corridor as permitted by the Commission and have determined or confirmed that the project conforms with applicable transmission system planning requirements and business practices including all applicable North American Electric Reliability Corporation (NERC) Reliability Standards.
5. Minnesota Power shall provide an informational filing regarding the Trout Lake Alignment modification cost of angle structures, specific feasibility concerns, and an overall comparison of impacts previously identified in the record. The Commission requests the Department to provide additional analysis of these materials and make a recommendation to the Commission for a final determination as part of the Plan and Profile process.
6. The Commission hereby issues the route permit for the Minnesota Power Great Northern Transmission Line 500 kV Great Northern Transmission Line in the form attached.
7. This order shall become effective immediately.

BY ORDER OF THE COMMISSION



Daniel P. Wolf
Executive Secretary



This document can be made available in alternative formats (e.g., large print or audio) by calling 651.296.0406 (voice). Persons with hearing loss or speech disabilities may call us through their preferred Telecommunications Relay Service.

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

**ROUTE PERMIT FOR CONSTRUCTION OF A HIGH-VOLTAGE TRANSMISSION
LINE AND ASSOCIATED FACILITIES**

**IN
ROSEAU, LAKE OF THE WOODS, BELTRAMI,
KOOCHICHING AND ITASCA COUNTIES**

**ISSUED TO
MINNESOTA POWER**

PUC DOCKET NO. E015/TL-14-21

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850, this route permit is hereby issued to:

MINNESOTA POWER

Minnesota Power is authorized by this route permit to construct and operate a single-circuit 500-kilovolt alternating current High Voltage Transmission Line and associated facilities from the U.S./Canada International Border in Roseau County to a new substation near the existing Blackberry Substation in Itasca County.

The transmission line and associated facilities shall be built within the route identified in this permit and as portrayed on the official route maps, and in compliance with the conditions specified in this permit.

Approved and adopted this 11th day of April, 2016

BY ORDER OF THE COMMISSION

Daniel P. Wolf,
Executive Secretary

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Route Maps

Exhibit B - Anticipated Alignment Changes for the Effie Variation

ATTACHMENTS

- Attachment A - Table of Township, Range and Section Data for the approved route
- Attachment B - Complaint Procedures
- Attachment C - Compliance Filing Schedule

1.0 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Minnesota Power (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes Minnesota Power to construct a single-circuit 500-kilovolt alternating current (AC) High Voltage Transmission Line from the U.S./Canada International Border in Roseau County to a new substation near the existing Blackberry Substation in Itasca County, and as identified in the attached route permit maps, hereby incorporated into this document.

2.0 PROJECT DESCRIPTION

Minnesota Power proposed construction and operation of the Great Northern Transmission Line, which is an approximately 224-mile, 500 kilovolt (kV) overhead, single-circuit, alternating current (AC) transmission line. The transmission line would cross the U.S. and Canada Border in Roseau County, Minnesota and connect into the proposed Iron Range 500 kilovolt Substation adjacent to the existing Blackberry Substation near Grand Rapids, Minnesota.

The project also includes associated substation facilities and transmission system modifications at the Blackberry Substation site, construction of a new 500 kV series compensation station, necessary access roads, construction lay-down areas and fly-in sites. A new Iron Range 500 kV Substation for the project will be constructed east of the existing Blackberry 230/115 kV Substation.

The transmission line is expected to carry at least 750 megawatts (MW) to facilitate agreements and transmission service requests between Minnesota Power and Manitoba Hydro plus exports and transmission service requests by Manitoba to other utilities.

2.1 Project Location

The approved transmission line will cross the U.S. / Canadian border at latitude 49 00 00.00 N and longitude 95 54 50.49 W, approximately 2.9 miles east of Highway 89 in Roseau County. The transmission line would cross the border between the U.S. and Canada in Roseau County, Minnesota, and connect into the proposed Iron Range 500 kilovolt (kV) Substation adjacent to the existing Blackberry Substation near Grand Rapids, Minnesota. The route includes locations in Roseau, Lake of the Woods, Koochiching, and Itasca Counties.

2.2 Associated Facilities and Substations

The project includes construction of associated facilities including the proposed Iron Range 500 kV Substation, a new 500 kV Series Compensation Station, and three regeneration stations with permanent and temporary access roads. Additionally, construction of the proposed Project would require temporary and permanent access roads, temporary laydown areas, temporary stringing areas, and temporary fly-in sites.

The project includes the expansion of the site of the Permittee's existing 8.8 acre Blackberry 230/115 kV Substation near Grand Rapids, Minnesota to incorporate the new Iron Range 500 kV Substation. It will be constructed adjacent to and east of the existing Blackberry Substation and is expected to permanently impact approximately 23 acres. The Iron Range 500 kV Substation would accommodate the new 500 kV transmission line, existing 230 kV transmission lines, and all associated 500 kV and 230 kV equipment.

The Permittee will locate a new 500 kV Series Compensation Station within or adjacent to the approved route. The precise location for the 500 kV Series Compensation Station will be determined by electric design optimization studies and final route selection, but is anticipated to be located at the approximate midpoint between the existing Dorsey Substation in Canada and the proposed Iron Range 500 kV Substation located just east of the existing Blackberry Substation. The Series Compensation Station will permanently impact approximately 6 acres.

The Permittee is permitted to locate three regeneration stations within or adjacent to the approved route. The sites would be 75 feet by 75 feet and located on upland areas. The Permittee will construct temporary access roads within the right-of-way for construction. The Permittee will work with local property owners to identify suitable access locations during final design. The typical width of the temporary access road will be 16 feet.

The Permittee intends to establish a permanent "2-track" trail on uplands within the permanent right-of-way as a result of construction traffic. This 2-track trail would be unimproved and it is assumed that there will be no grading or filling for this permanent access.

The Permittee is permitted to establish a main staging area for temporary storage of materials and equipment. There would be other temporary staging areas located along the approved right-of-way for laydown and framing prior to structure installation. The laydown areas would be approximately 20 to 40 acres, and would be located along suitable roadways approximately 40 to 50 miles apart, and would be within 5 miles from the approved route. Upland areas with prior disturbance will be preferred; however other areas may be approved as part of the plan and profile process in instances where this is not feasible. These yards would be in place for at least

one year and used to store equipment and materials and include the construction offices. The Permittee will identify specific staging areas during final design.

The Permittee may establish temporary stringing sites within or adjacent to the approved route. The sites would be approximately 2.8 acres in size and spaced approximately 2 miles apart.

The Permittee is allowed to establish fly-in sites that would be approximately 10 acres in size, located as near to the right-of-way as possible, and approximately 5 to 7 miles apart. These sites may be in place for up to 1 year to assemble structures for helicopter (sky crane) construction. Upland areas with prior disturbance will be preferred; however, there may be some areas where this is not feasible and other areas would be used. The Permittee will identify fly-in sites during final design.

2.3 Structures and Conductors

The project will be located is new right-of-way that would be approximately 200 feet wide. A wider right-of-way may be required for certain spans of the project, at angle and corner structures, for guyed structures, or where special design requirements are dictated by topography. The Permittee is evaluating several steel structure types and configurations including a self-supporting lattice structure, a lattice guyed-V structure, and a lattice guyed-delta structure.

The transmission towers will be steel lattice structures for the majority of the route, with the exact type of structure in any given location dependent on land type, land use, and potential effect on the surrounding landscape.

The transmission tower heights will range from approximately 100 to 170 feet. In some locations, such as where the project crosses an existing transmission line, taller structures may be required. None of the structures are anticipated to be taller than 200 feet in order to meet Federal Aviation Administration (FAA) lighting standards. Approximately 4 to 5 structures are anticipated per mile of transmission line and the structures would be placed approximately 1,000 to 1,700 feet apart, with a maximum span of 1,700 feet. Where the transmission line crosses farmland, the Permittee will use self-supporting lattice structures to minimize interference with farm operations. The area of permanent impact for the guyed structures is anticipated to be 1,936 square feet per structure, with a temporary construction disturbance footprint of approximately 0.92 acres per structure.

The table below details specifics on the various structure types as presented in the route permit application.

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			
Single-Circuit 500 kV AC overhead transmission line	Aluminum Conductor Steel Reinforced (ACSR)	3-conductor bundle 1192.5 kcmil ACSR with 18 inch sub-spacing	NESC approved ACSR rated for 500 kV operation	Self-supporting lattice and guyed-V structures	100-170 feet	Approximately 1,000 to 1,450 feet (0.20-0.25 miles)

The transmission line and associated facilities shall be designed to meet or exceed all relevant local and state codes, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements. The transmission line shall be equipped with protective devices to safeguard the public if an accident occurs.

3.0 DESIGNATED ROUTE

The route designated by the Commission in this permit is the route described below and shown on the route maps attached to this permit. Enclosed as Attachment A is a summary of Township, Range and Section data of the project. The route is generally described as follows:

The location of the international border crossing at the U.S. / Canadian border is located at latitude 49 00 00.00 N and longitude 95 54 50.49 W, approximately 2.9 miles east of Highway 89 in Roseau County.

The approved route proceeds southeast 0.5 miles to 410th Street, approximately 0.16 of a mile from the intersection of 410th Street and County Road 3. The approved route travels south 2 miles to 390th Street and turn east following 390th Street for 10.5 miles (where 390th street then turns into County Road 118). At 0.25 miles from Highway 310 further east the approved transmission line would turn southeast and continue for another 12 miles. At 0.5 miles from 510th Avenue further southeast the approved transmission line would again turn and travel 2.3 miles east to join the existing Minnkota Power 230 kV transmission line. The proposed Project would parallel the existing Minnkota Power 230 kV transmission line southeast for 1.8 miles and then turn south where it would meet the existing Xcel Riel-Forbes 500 kV transmission line. Further southeast and beginning at a tenth of mile north of US Highway 11, the proposed

transmission line would parallel the existing Xcel 500 kV transmission line route for 36 miles after which it would turn east, leaving the Xcel 500 kV transmission line 2 miles southeast of the intersection of Faunce Forest Road and 19th Street Southwest in Lake of the Woods County (the Proposed Blue Route enters the Central Section in this location).

The approved route proceeds east for 5.8 miles and then turn northeast to rejoin the existing Minnkota Power 230 kV transmission line at its intersection with Pitt Grade Trail. The proposed transmission line would then parallel this existing 230 kV transmission line in an easterly direction for 31 miles to a point 1.5 miles west of County Road 86 in Koochiching County where it would then proceed southeast for 8.3 miles and then south for 1.8 miles. At this point, the proposed Project would be roughly 1.5 miles south from the intersection of County Road 32 and County Road 36 in Koochiching County. The transmission line would then continue southeast for 21.3 miles and intersect Highway 71 roughly 4.5 miles northeast of Big Falls, where it would continue an additional 9.6 miles to the southeast where it would rejoin the existing Minnkota Power 230 kV and Xcel Riel – Forbes 500 kV transmission lines (230/500 Corridor). The transmission line continues southeast approximately 0.9 miles and then proceeds in an east-southeasterly direction following the 230/550 Corridor for approximately 11.1 miles as it crosses Forest Road 138. The transmission lines proceed in a southeasterly direction for approximately 6.9 miles. The project continues south along the 230/550 Corridor for approximately 7.0 miles, proceeds approximately 1.0 miles to the southwest. The project continues to follow the 230/500 Corridor for approximately 13.8 miles until the 230/550 Corridor proceeds to the southeast in Township 59N, Range 23W, Section 12 in Itasca County. The approved route then exits the 230/500 kV Corridor and proceeds in a south by southwest direction for approximately 4.5 miles where it connects with the Proposed Orange Route in Township 59N, Range 23W and Section 34 and proceeds by southwest for approximately 3.3 miles and then proceeds southwest until it joins the Proposed Blue Route in Township 58N, Range 23W and Section 20.

The identified route widths will provide the Permittee with flexibility for minor adjustments of the specific alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (i.e., permanent and maintained rights-of-way) will be located within this designated route unless otherwise authorized below.

3.1 Right-of-Way

The approved route varies from 650 to 3,000 feet wide in order to provide flexibility during detailed design to try to accommodate landowner's preferences once the route is selected by the Commission. The approved route widths with anticipated alignments are shown on the detailed maps provided in Volume II: Part 3, Appendix S of the Final Environmental Impact Statement for the project.

The approved right-of-way width for the project is up to 200 feet. This permit anticipates that the right-of-way will generally conform to the anticipated alignment as noted on the attached route permit maps unless changes are requested by individual landowners and agreed to by Permittee or for unforeseen conditions that are encountered or are otherwise provided for by this permit. The anticipated alignment may be modified to incorporate changes identified by Minnesota Power (Exhibit B to its Exceptions filing, January 19, 2016, E-Dockets No. 20161-117422-04, enclosed).

Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the alignment identified in this permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to section 4.1 of this permit.

Where the transmission line route parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible, consistent with the criteria in Minn. R. 7850.4100, the other requirements of this permit, and for highways under the jurisdiction of the Minnesota Department of Transportation (Mn/DOT) rules, policies, and procedures for accommodating utilities in trunk highway rights-of-way.

4.0 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction of the transmission line and associated facilities over the life of this permit.

4.1 Plan and Profile

At least 30 calendar days before right-of-way preparation for construction begins on any segment or portion of the project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the transmission line. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per this permit.

The Permittee may not commence construction until the 30 days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission at least

five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

4.2 Construction Practices

The Permittee shall follow those specific construction practices and material specifications described in Minnesota Power's Application to the Commission for a route permit for the Great Northern Transmission Line Project dated April 15, 2014, unless this permit establishes a different requirement in which case this permit shall prevail.

4.2.1 Field Representative

At least 14 days prior to commencing construction, the Permittee shall advise the Commission in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this permit during construction.

The field representative's address, phone number, emergency phone number, and email shall be provided to the Commission and shall be made available to affected landowners, residents, public officials and other interested persons. The Permittee may change the field representative at any time upon written notice to the Commission to affected landowners, residents, public officials, and other interested persons.

4.2.2 Local Governments

During construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these would be temporary and the Permittee will restore service promptly. Where any impacts to public utilities have the potential to occur the Permittee will work with both landowners and local agencies to determine the most appropriate transmission structure placement.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction.

4.2.3 Cleanup

All waste and scrap that is the product of construction shall be removed from the area and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper from construction activities shall be removed on a daily basis.

4.2.4 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minn. R. 7030.0200, to ensure nighttime noise level standards will not be exceeded.

4.2.5 Vegetation Removal

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

Tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission facility will be removed by the Permittee. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission facility or impede construction.

The Permittee shall avoid construction and maintenance practices, particularly the use of fertilizer, herbicides or other pesticides that are inconsistent with the landowner's or tenant's use of the land. The Permittee will provide notification to affected landowners and tenants before using these materials.

4.2.6 Application of Herbicides

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee shall contact the landowner or his designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the right-of-way within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as not to damage crops, orchards, tree farms, or gardens. The Permittee shall provide notice of herbicide application to known beekeepers operating apiaries within one mile of the project site at least 14 days prior to such application.

4.2.7 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. Care shall be used to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the project during construction and maintenance. Structures shall be placed at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highway, or trail crossings and could cross roads to minimize or avoid impacts.

4.2.8 Soil Erosion and Sediment Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the facilities shall be returned to pre-construction conditions.

When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

In accordance MPCA, the Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA.

4.2.9 Wetlands and Water Resources

Wetland impact avoidance measures that shall be implemented during design and construction of the transmission line will include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains.

Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, construction in wetland areas shall occur during frozen ground conditions. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area.

Wetlands and riparian areas shall be accessed using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. No staging or stringing set up areas shall be placed within or adjacent to wetlands or water resources, as practicable. Power pole structures shall be assembled on upland areas before they are brought to the site for installation. Areas disturbed by construction activities shall be restored to pre-construction conditions.

All requirements of the U.S. Army Corps of Engineers (wetlands under federal jurisdiction), Minnesota Department of Natural Resources (Public Waters/Wetlands), and County (wetlands under the jurisdiction of the Minnesota Wetland Conservation Act) shall be met.

As part of preconstruction reports, the Permittee will include a section evaluating the potential for the occurrence of Aquatic Invasive Species (AIS) in the project area and describing if any best management practices that apply to the project. The Permittee should identify any infested waters or otherwise indicate that aquatic invasive species are not anticipated. The MN DNR must be notified if any AIS are identified in an area not previously identified as infested water.

4.2.10 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

4.2.11 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city or township roads that will be used during the construction phase of the project. Where practical, existing roadways shall be used for all activities associated with

construction of the solar facility. Oversize or overweight loads associated with the facility shall not be hauled across public roads without required permits and approvals.

The Permittee shall construct the least number of site access roads it can. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when obtaining access to the site, unless otherwise negotiated with the affected landowner.

4.2.12 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when installing the high-voltage transmission line on the approved route. In the event that a resource is encountered, the Permittee shall contact and consult with the State Historic Preservation Office (SHPO). Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Because of the federal decisions required for the Project, review of the Project and consultation with tribes and agencies under Section 106 of the National Historic Preservation Act is required. In light of the significant consultation with potentially affected parties and responsible agencies, the Permittee must defer to the Programmatic Agreement and advise the Commission when the measures to avoid, minimize or mitigate adverse effects to cultural resource and environmental justice impacts identified in the Record of Decision have been fulfilled.

Prior to construction, workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction.

4.2.13 Avian Mitigation

The Permittee's standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices.

The Permittee will consult with the Minnesota Department of Natural Resources regarding type and placement of bird diverters.

4.2.14 Temporary Work Space

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. Temporary easements outside of the authorized transmission line right-of-way will be obtained from affected landowners through rental agreements and are not provided for in this permit.

Temporary driveways may be constructed between the roadway and the structures to minimize impact using the shortest route possible. Construction mats should also be used to minimize impacts on access paths and construction areas.

4.2.15 Restoration

The Permittee shall restore the right-of-way, temporary work spaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the transmission line. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities.

The Permittee shall fairly compensate landowners for damage to crops, fences, landscaping, drain tile, or other damages sustained during construction.

4.2.16 Pollution and Hazardous Wastes

All appropriate precautions to protect against pollution of the environment must be taken by the Permittee. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all wastes generated during construction and restoration of the right-of-way.

4.2.17 Notification

Before entering a landowner's property for construction or maintenance, the Permittee shall notify landowners or their designee(s) at least 14 but not greater than 60 days in advance.

4.2.18 Notice of Permit

The Permittee shall inform all employees, contractors, and other persons involved in the transmission line construction of the terms and conditions of this permit.

4.3 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly.

4.4 Complaint Procedures

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in the complaint procedures attached to this permit.

4.5 Permit Distribution and Notification

Within 30 days of permit issuance, the Permittee shall provide all affected landowners with a copy of this permit and the complaint procedures. In no case shall the landowner receive this route permit and complaint procedures less than five days prior to the start of construction on their property. The Permittee shall contact landowners prior to entering the property or conducting maintenance along the route. The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.

At the time of first contact, the Permittee shall also provide all affected landowners with a copy of the Department of Commerce's Rights-of-Way and Easements for Energy Facility Construction and Operation fact sheet.¹

4.6 Completion of Construction

4.6.1 Notification to Commission

¹ http://mn.gov/commerce/energyfacilities/documents/Easements%20Fact%20Sheet_08.05.14.pdf

At least three days before the line is to be placed into service, the Permittee shall notify the Commission of the date on which the line will be placed into service and the date on which construction was complete.

4.6.2 As-Built Specifications

Within 60 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

4.6.3 GPS Data

Within 60 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (e.g., ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the transmission line and each substation connected.

4.7 Electrical Performance Standards

4.7.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five milliamperes root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one milliamperes rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the NESC. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

4.7.2 Electric Field

The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

4.7.3 Interference with Communication Devices

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

4.8 Other Requirements

4.8.1 Applicable Codes

The Permittee shall comply with applicable NERC planning standards and requirements of the NESC including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of way widths, erecting power poles, and stringing of transmission line conductors.

When triple paralleling lines within the permitted route width, lines shall be located in compliance with above standards and in compliance with other permits or licenses, recognizing safety, access and operating and maintenance issues for all impacted lines regardless of ownership. Permittee shall consult with Minnesota DNR regarding forestry and other potential corridor impacts prior to submitting the Plan and Profile for review by the Department and the Commission.

4.8.2 Other Permits

The Permittee is required to work in continued consultation with applicable state and federal agencies, including the MNDNR and USFWS, to obtain approval for all required permits for this Project. The Permittee must comply with conditions of any permits. The Permittee must submit documentation of permit compliance to the Commission upon request.

4.8.3 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole approval required to be obtained by the Permittee for construction of the transmission facilities and this permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

4.9 Delay in Construction

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this permit, the Permittee shall file a report on the failure to construct and the Commission shall consider suspension of the permit in accordance with Minn. R. 7850.4700.

5.0 SPECIAL CONDITIONS

The Permittee shall provide a report to the Commission as part of the plan and profile submission that describes mitigation actions and measures developed and status of the following special conditions. Special conditions shall take precedence over other conditions of this permit should there be a conflict.

5.0.1 Construction Environmental Control Plan (CECP)

The Permittee shall develop a Construction Environmental Control Plan (CECP) that shall include all environmental control plans and special conditions imposed by permits or licenses issued by state or federal agencies related to agency-managed resources. Plans within the CECP shall include, but not be limited to, the Agricultural Impact Mitigation Plan, the Avian Mitigation Plan, the Vegetation Management Plan, and a Stormwater Pollution Prevention Plan. The CECP shall be filed with the Commission as a compliance filing 30 days prior to submitting the plan and profile for any segment of the Project.

The Permittee shall provide dedicated independent environmental inspectors and monitors to oversee the construction process and to monitor compliance with 1) the Vegetation Management Plan, 2) the Avian Mitigation Plan, and 3) the requirements of this and all other environmental permits with the exception of the Mineral Resource Plan.

5.0.2 Avian Mitigation Plan and Bird Flight Diverters

Avian Mitigation Plan. The Permittee shall develop an Avian Mitigation Plan (AMP). The AMP shall be developed in consultation with the MNDNR. The Permittee shall submit and implement the plan in accordance with the CECP for the Project. The Purpose of the AMP shall be to identify site-specific risks to avian species from the Project and to identify and implement strategies to avoid and mitigate potential impacts to these species, including but not limited to, the use of bird flight diverters. The AMP shall include documentation of the Permittee's consultation with the MNDNR and the USFWS.

5.0.3 Agriculture Impact Mitigation Plan

The Permittee shall comply with the Agricultural Impact Mitigation Plan (AIMP) prepared for this Project and approved by the Minnesota Department of Agriculture. The Applicant/Permittee shall distribute the AIMP with the route permit to all affected landowners.

5.0.4 Vegetation Management Plan

The Permittee must develop a Vegetation Management Plan (VMP). The VMP shall be developed in consultation with the MNDNR. The purpose of the VMP shall be to identify measures to minimize the disturbance and removal of vegetation for the Project, prevent the introduction of noxious weeds and invasive species, and re-vegetate disturbed non-cropland areas with appropriate native species in cooperation with landowners and state, federal, and local resource agencies, in such a way that does not negatively impact the safe and reliable operation of the Project. The Permittee shall submit the VMP with the CECP and monitor compliance with the VMP.

5.0.5 Consultation with the United States Fish and Wildlife Service (USFWS)

The Permittee is required to develop avoidance, mitigation and conservation measures for the protection of federally-listed species (including critical habitats) and for migratory birds with the USFWS under Section 7 of the Endangered Species Act. The Permittee is required to document this consultation as part of the Periodic Status Reports.

5.0.6 Mineral Resource Plan

The Permittee must develop a Mineral Resource Plan (MRP). The Permittee shall consult with the MNDNR regarding the scope and content of the MRP. The purpose of the MRP will be to identify measures to avoid interference with the exploration or mining operations conducted on state-owned mining units. The MRP would include (1) General description of state-owned mineral resources in the project area; and (2) Documentation of consultation with the MNDNR regarding measures to avoid interference with exploration and encumbrance of state-owned minerals. The Mineral Resource Plan shall be submitted as a compliance filing 30 days prior to the Plan and Profile submittals.

6.0 PERMIT AMENDMENT

This permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required.

7.0 TRANSFER OF PERMIT

The Permittee may request at any time that the Commission transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer.

The person to whom the permit is to be transferred shall provide the Commission with such information as the Commission shall require to determine whether the new Permittee can comply with the conditions of the permit. The Commission may authorize transfer of the permit after affording the Permittee, the new Permittee, and interested persons such process as is required.

8.0 REVOCATION OR SUSPENSION OF THE PERMIT

The Commission may initiate action to revoke or suspend this permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend the permit