

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

LeRoy Koppendrayer	Chair
David C. Boyd	Commissioner
Marshall Johnson	Commissioner
Thomas Pugh	Commissioner
Phyllis Reha	Commissioner

In the Matter of a Site Permit Application
For the up to 49.9 MW Moraine Wind II
Project in the Minnesota Counties of
Pipestone and Murray.

ISSUE DATE: July 31, 2007

DOCKET NO. IP-6632/WS-07-389

FINDINGS OF FACT AND
CONCLUSIONS AND ORDER

The above-entitled matter came before the Minnesota Public Utilities Commission (PUC or Commission), pursuant to the Application by Moraine Wind II, LLC, for a Large Wind Energy Conversion Site (LWECS) permit to construct, operate, maintain and manage up to a 49.9 Megawatt (MW) combined nameplate capacity wind farm and associated facilities Pipestone and Murray counties, Minnesota. The LWECS site permit is to be issued to Moraine Wind II, LLC.

STATEMENT OF ISSUE

Should Moraine Wind II, LLC, be granted a site permit under Minnesota Statutes Chapter 216F to construct and operate up to a 49.9 MW LWECS in Pipestone and Murray counties?

Based upon the record and proceedings created in this proceeding, the Commission makes the following:

FINDINGS OF FACT

Background and Procedure

1. On April 11, 2007, PPM Energy, on behalf of Moraine Wind II, LLC, filed an application with the PUC for a LWECS site permit to construct, operate, maintain and manage a 49.9 MW combined nameplate capacity wind facility and associated facilities in Pipestone and Murray counties, Minnesota. (Exhibit 1).
2. Comments and Recommendations to the PUC, dated April 26, 2007, the Department of Commerce (DOC) Energy Facilities Permitting (EFP) staff recommended that the PUC accept the application as complete under Minnesota Rule 4401.0450, appoint a public advisor, and make a preliminary determination to issue a draft site permit and approve a draft site permit for the Project. (Exhibit 2).

3. DOC EFP staff published on the PUC Energy Facilities Permitting web page the Notice of Public Information Meeting and the availability of the draft site permit on April 27, 2007.
4. On April 27, 2007, pursuant to Minnesota Rule 4401.0550, the DOC EFP staff mailed the Notice of Public Information Meeting and Public Comment Period to persons on the project mailing list to solicit comments on the site permit application, draft site permit and to review the permitting process for the Moraine Wind II Project. (Exhibit 3).
5. On April 30, 2007, the *Murray County Wheel-Herald* published the Notice of Public Information Meeting as required by Minnesota Rule 4401.0550. On May 1, 2007, the *Marshall Independent* published the Notice of Public Information Meeting as required by Minnesota Rule 4401.0550. On May 3, 2007, the *Pipestone Star* published the Notice of Public Information Meeting as required by Minnesota Rule 4401.0550. (Exhibits 4, 6 and 8).
6. On May 1, 2007, HDR Engineering, on behalf of Moraine Wind II, LLC, distributed copies of the site permit application and Notice of Public Information Meeting by U.S. Mail to each landowner within the Project boundary, as well as, township, county and other required governmental officials. Minnesota Rule 4401.0460. (Exhibit 5).
7. On May 3, 2007, the PUC issued its Order accepting the application as complete and issuing a draft site permit for the Project. (Exhibit 7).
8. On May 7, 2007, Notice of Public Information Meeting and Public Comment Period was published in the *EQB Monitor*, Volume 31, No. 10. The published notice contained all of the information required by Minnesota Rule 4401.0550 subp. 1. (Exhibit 9).
9. The DOC EFP staff held a public information meeting on May 15, 2007, in Lake Wilson, Minn., as required by Minnesota Rule 4401.0550 to describe the Project, the permitting process and to take public comments. Approximately 40 people attended the meeting. DOC EFP staff provided an overview of the permitting process, the draft site permit and responded to questions about the permitting process. Representatives from PPM Energy reviewed the proposed Moraine Wind II Project and responded to questions.
10. The public comment period closed on June 6, 2007. Four written comments were received and are discussed in Findings 29 – 33. (Exhibit 10).

The Permittee

11. Moraine Wind II, LLC, is the Permittee and will be responsible for development, management, procurement, construction, commissioning, operation, and long-term ownership of the Project. Moraine Wind II, LLC, will own the Project including all equipment up the interconnection to the high voltage transmission system at the existing Xcel Energy Chanarambie Substation.

Project Description

12. The application provides a preliminary layout and site plan, which is subject to change. (Exhibit 1).
13. The proposed Project will use between 16 – 33 utility scale wind turbine generators between 1.5 MW and 3.0 MW in nameplate capacity for a combined nameplate capacity of up to 49.9 MW. The wind turbines will be between 80 – 105 meters (m) in hub height and will use rotors between 78 – 100 m in diameter. (Exhibit 1).
14. Most of the land within the Project site is actively farmed. Cultivated lands make up nearly all of the Project area with the exception of several areas managed for conservation. (Exhibit 1).
15. The Project boundary as proposed includes approximately 27,000 acres in the townships of Aetna, Ellsborough, Rock, Cameron and Chanarambie in Pipestone and Murray counties. PPM Energy estimates that the proposed facilities will result in the permanent, direct disturbance of 16 - 27 acres of land depending on turbine model, size and final site layout. (Exhibit 1).
16. All wind turbines, towers and blades under consideration will be in a neutral, off-white color. (Exhibit 1).
17. The Project will include an underground-automated supervisory control and data acquisition system (SCADA) for communication purposes. Temporary meteorological towers will be removed from the site no longer than one year after the Project in-service date. One permanent meteorological tower is permitted and will be used as part of the SCADA system. Other associated facilities will include a concrete and steel foundation for each tower, pad-mounted step-up transformers, electrical junction boxes, all weather class 5 roads of gravel or similar material, a project substation, and an underground and overhead 34.5 kilovolt (kV) electric energy feeder and collection system. (Exhibit 1).
18. Each tower will be secured by a concrete foundation that will vary in size and design depending on site soil conditions. A control panel that houses communication and electronic circuitry is placed in each tower. A step-up, pad-mounted transformer will be located adjacent to each turbine to collect the power from the turbine and transfer it to a 34.5 kV collection system via underground and overhead cables. (Exhibit 1).
19. Each turbine will be interconnected through an underground electrical collection and feeder system at 34.5 kV. The Permittee will place the 34.5 kV collection and feeder lines primarily on private rights-of-way and limit use of public rights-of-way. Feeder lines may be underground or overhead depending on local conditions. All of the proposed collection and feeder lines would connect to a new Project substation developed exclusively for the Moraine Wind II Project or to an expansion of an existing substation in the area. Electricity collected from the 34.5 kV collection system will be delivered to and stepped up to 115 kV at the Xcel Energy Chanarambie Substation. (Exhibit 1).

20. Each wind turbine will be interconnected with fiber optic communication cables that will be installed underground. The communication cables will run to a central host computer which will be located either at the Project substation or at the operations and maintenance facility where a SCADA system will be located. Signals from the current and potential transformers at each of the delivery points will also be fed to the central SCADA host computer. The SCADA system will be able to give status indications of the individual wind turbines and the substation and allow for remote control of the wind turbines locally or from a remote computer. The SCADA system will provide detailed operating and performance information for each wind turbine. The Permittee will maintain a computer program and database for tracking each wind turbine's maintenance history and energy production. The PUC will have viewer access to the SCADA system. (Exhibit 1).

Wind Resource Considerations

21. The Moraine Wind II, LLC, Project will be located in Pipestone and Murray counties between approximately 1,700 – 2,000 feet above sea level. Land use in the area is agricultural with intensive farming activities and, as a result, there are few trees or structures in the proposed site to inhibit the wind as it passes over the site. (Exhibit 1).
22. The wind resource in the Project area is well documented by the Applicant and the Department of Commerce. Wind Resource Maps produced in 2006 by WindLogics for the Department of Commerce indicate that the resource in the vicinity of the project area at 80 meters (263 feet) is between 8.1 – 8.9 meters per second (18.1 – 19.9 miles per hour). (Exhibit 1).
23. For the Moraine Wind II Project, wind turbines are sited so as to have good exposure to winds from all directions with emphasis on exposure to the prevailing southerly and northwesterly winds. The turbine spacing, according to site permit application, will maximize use of the available wind and minimize wake and array losses within the topographical context of the site. Turbine placement has been designed to provide a minimum of 3 rotor diameter spacing in the east-west direction and 5 rotor diameter spacing in the north-south direction, with respect to the predominant energy production directions. Given the prevalence of southerly and northwesterly winds, the spacing is widest in the north-south direction. Greater spacing between the turbine strings may be used in areas where the terrain dictates the spacing. This is addressed in the permit at III.E.5. Individual, isolated turbine sites are avoided to minimize interconnection and access costs. Sufficient spacing between each turbine is utilized to minimize wake losses when the winds are blowing parallel to the turbine rows. (Exhibit 1)
24. PPM Energy estimates that the Moraine Wind II Project average annual output will be approximately 153,000 – 196,700 megawatt hours (MWh) per year. Final Project output is subject to final layout, design, equipment selected and wind resources. (Exhibit 1).

Land Rights and Easement Agreements

25. In order to build a large wind energy conversion system, a developer needs to secure wind rights, site leases and easement option agreements to ensure access to the site for construction and operation of a project. These lease or easement agreements generally

also prohibit landowners from undertaking any activities that might interfere with execution of a proposed project.

26. PPM Energy and Moraine Wind II, LLC, have obtained lease and easement option agreements with landowners for approximately 17,000 acres of land and wind rights within portions of the Project site boundary necessary for installation of the components of the wind farm. Moraine Wind II, LLC, may develop its facilities on lands within the Project boundary where it holds or acquires development rights, subject to permit conditions. (Exhibit 1).
27. The wind access buffer set-back of 3 RD on the east-west (cross-wind) axis and set-back of 5 RD on the north-south (down-wind) axis have been established to protect the wind rights of adjacent landowners or others not participating in the Moraine Wind II, LLC, Project.
28. The Permittee will be required to meet the 3 RD east-west and 5 RD north-south wind turbine set-backs from properties outside of the Project boundary described in the application and from properties inside the boundary for which PPM Energy or Moraine Wind II, LLC, do not hold wind development easements or rights. (Exhibit 1).

Public Comments and Letters Received

29. Verbal comments at the May 15, 2007, public meeting were supportive of the Moraine Wind II Project. Questions about the Project and permitting process included noise, archeological and cultural resource surveys, drain tile, wind easement payments, and locations of turbines proposed.
30. On June 1, 2007, Paul White of Project Resources Corporation, a wind development company, submitted comments on the Moraine Wind II Project. Mr. White requested that the previously permitted Ridgewind Power Partners, LLC, Project boundary, reviewed in PUC Docket IP6603/WS-06-1327, be excluded or removed from the Moraine II Project boundary. (Exhibit 10).
31. On June 1, 2007, the Southwest Regional Development Commission submitted comments indicating that Moraine Wind II has covered all aspects required for a site permit and did not raise any concerns about the Project. (Exhibit 10).
32. On May 29, 2007, the Minnesota Department of Transportation (MDOT) District 8 submitted a comment requesting that wind turbine generators be set back from public road rights of way a distance greater than the overall height of the wind turbines, including blades. This issue is addressed in Finding 35, 36 and 39. (Exhibit 10).
33. On June 4, 2007, PPM Energy submitted comments suggesting several clarifications and two substantive changes to the draft site permit. First, PPM Energy requested that permit condition III.B.12 be amended to allow the Permittee up to eight months after completing construction of the entire Project rather than eight months after completion of construction of each individual turbine to restore any disturbed lands to their original preconstruction conditions. Second, PPM Energy indicated that while it plans on avoiding wetlands, it

requests the flexibility to place some 34.5 kV collection line poles in wetlands if unavoidable. (Exhibit 10). This issue is addressed in Finding 69.

Site Criteria

34. Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 4401 apply to the siting of Wind Energy Conversion Systems. The rules require applicants to provide a substantial amount of information to allow the PUC to determine the potential environmental and human impacts of the proposed project and whether the project is compatible with environmental preservation, sustainable development, and the efficient use of resources. Minnesota Rules 4401.0450 and 4401.0600. The following analysis addresses the relevant criteria that are to be applied to a LWECS project.

Human Settlement, Public Health and Safety

35. Nearly the entire Project area is zoned for agricultural use by Pipestone and Murray counties. The Project area is low in population density, with little residential, commercial or industrial development on or near the site. As a result, the impact of the proposed LWECS on human settlement, public health and safety can be avoided. Permit condition III.C. specifies conditions for setbacks from residences and roads.
36. In winter months ice may accumulate on the wind turbine blades when the turbines are stopped or operating very slowly. Furthermore, the anemometer may ice up at the same time, causing the turbine to shut down during any icing event. As weather conditions change, any ice will normally drop off the blades in relatively small pieces before the turbines resume operation. This is due to flexing of the blades and the blades' smooth surface. Although turbine icing is an infrequent event and has not been identified as a safety hazard to date in Minnesota, it remains important that the turbines are not sited in areas where regular human activity is expected below the turbines or in the immediate proximity during the winter months. See site permit condition III.C. requiring a 500 foot minimum setback from residences and a 250 foot setback from public road rights-of-way.
37. There will be no displacement of existing residences or structures in siting the wind turbines and associated facilities. (Exhibit 1).
38. The Permittee is required to comply with the Federal Aviation Administration (FAA) requirements with respect to turbine lighting, marking and aviation safety. See site permit condition III.E.4.
39. Moraine Wind II, LLC, is required to provide security during construction and operation of the Project, including fencing, warning signs, and locks on equipment and facilities. Moraine Wind II, LLC, will also provide landowners and interested persons with safety information about the Project prior to construction. See site permit conditions III.B.15-16.
40. Each wind turbine will be clearly marked to identify each unit and a map of the site shall be provided to local public safety authorities. The site permit requires the Permittee to

prepare a fire protection and medical emergency plan in consultation with the local fire department prior to construction. See site permit conditions III.B.15 - 17.

Noise

41. Wind turbines generate noise. The Permittee is required to meet the Minnesota Noise Standards applicable to residential receivers. The Minnesota Noise Standards are enforced by the Minnesota Pollution Control Agency (MPCA) and are found in Minnesota Rule 7030.0040. See site permit condition III.E.3.
42. The site permit requires that wind turbine generators are sited at least 500 feet from occupied dwellings and at a sufficient distance from residential receivers to ensure the Project meets the requirements of the Noise Standards in Minnesota Rules Chapter 7030. See site permit condition III.E.3.
43. In its Application, Moraine Wind II, LLC, provides sound power levels and estimated distances needed from residential receivers to meet the Minnesota Noise Standards for each wind turbine model under consideration for the Project. Final wind turbine placement will take into account the locations of residential receivers during the micro-siting process to ensure compliance with Minnesota Noise Standards. (Exhibit 1). See site permit condition III.E.3.

Visual Values

44. Wind turbines, towers and rotor blades have visual impacts. The visual impacts of wind facilities are highly subjective. Some people like the view of wind turbines, others do not. The Moraine Wind II Project will be visible to area residents and passing motorists on local, county and state highways. (Exhibit 1).
45. Wind turbines, towers and rotor blades are currently prominent features on the landscape adjacent to the proposed Project site and on the Buffalo Ridge generally. There are currently expansive views of turbines to passing motorists on local, county and state highways, to rural residents and to residents in Lake Wilson and Woodstock. (Exhibit 1).
46. The visual impact of the proposed Moraine Wind II, LLC, wind turbines will be reduced by the use of a neutral paint color. The only lights permitted will be those required by the FAA. See permit condition III.E.4. All site permits issued by the PUC require the use of tubular towers; therefore, the turbine towers will be uniform in appearance. Wind turbines are and will continue to be a dominant visual feature on the landscape on and near the Buffalo Ridge. The wind turbines in this Project, while prominent on the landscape, will also blend in with the surrounding area. The site will retain its rural character. The turbines and associated facilities necessary to convert the wind for energy are consistent with existing land use, wind energy production, and agricultural practices. (Exhibit 1).
47. The numerous wind farms on the Buffalo Ridge have altered the landscape from agricultural to wind plant/agricultural. The Project will incrementally increase the visual impact to the area. The cumulative effect of the proposed Project will increase both the

industrial appearances of the wind plants in the area and the areas from which they will be seen. Because wind generation development is likely to continue in Pipestone and Murray counties, this visual impact will continue to increase the size of the wind plant/farm footprint as the turbines harvest the wind resources of the area for energy. To date the presence of numerous wind turbines on Buffalo Ridge has been well accepted by the people who live and work in the area.

48. Moraine Wind II, LLC, use of larger turbine rotor sizes and rotor diameters will result in greater turbine spacing to minimize wake loss. Therefore the Moraine II turbines will be spaced further from one another and existing turbines than in several older, existing projects on Buffalo Ridge several of which used smaller turbine rotors and rotor diameters. See site permit condition III.C.

Recreational Resources

49. Recreational opportunities in Pipestone and Murray counties include: hunting, fishing, snowmobiling, bird and wildlife watching, campgrounds and trails. Hunting, fishing and wildlife observation is permitted in designated Minnesota Department of Natural Resources Wildlife Management Areas (WMA's), Fish and Wildlife Service lands and other lands inside and outside of the Project boundary, in public waters, and on private property in the area unless otherwise posted. There are six designated state WMAs located within the Project boundary, and four WMAs within one mile of the Project boundary. The proposed Project will not impact public access to public waters in the area. (Exhibit 1).
50. The proposed turbines will be visible to persons using the lands inside and close to the Project area. Turbines will not be located on public lands, WMA's, Scientific and Natural Areas or in any local parks. There are no designated SNAs or public parklands within the Project boundary. Wind turbine operations are not expected to affect the natural areas in any material way and no adverse impact on wildlife areas is expected. (Exhibit 1).

Facilities

51. The Moraine Wind II Project is expected to have a minimal effect on the existing facilities. The Project will use underground or overhead cables for the collector lines primarily on private property within the wind farm. The feeder lines associated with the Project may be overhead or underground, dependant on site conditions. Any above ground feeder lines, if used, would be wood or steel poles typical of wind project feeder lines used in other wind projects in Minnesota. The feeder lines will deliver the energy from the wind farm to the Project substation on a route on public road rights-of way, on private land easements or a combination thereof. (Exhibit 1). See site permit at III.E.7. and 8.
52. The Project will require the use of public roads to deliver construction supplies and materials to the work site. Construction of turbine access roads will be located primarily on private property. The access roads will be routed in a manner that minimizes disturbance of agricultural activities while maintaining a short, direct route. The typical permanent access road will be 16 feet in width and covered in Class 5 gravel (or similar material). The access roads will be low profile roads to allow for the movement of

- agricultural equipment. See site permit at III.B. 8 (b). During operation and maintenance of the wind plant, operation and maintenance crews, while inspecting and servicing the wind turbines, will use the access roads. Periodic grading or other methods are necessary to maintain road integrity. The Permittee may do this work or contract it out. (Exhibit 1).
53. The Moraine Wind II Project is not expected to affect railroads, telecommunication facilities, and radio reception. The presence or operation of the wind plant could potentially impact the quality of television reception in the area. Previous work on television reception issues indicates that in some cases new antennas or relocation of existing antennas can restore television signal strength reception. The Permittee is required to initiate a study to assess the strength of communications and television reception in the Project area before project construction to document and mitigate any impacts that might occur. The Permittee shall be responsible for alleviating any disruption or interference to communications systems caused by the turbines or associated facilities. See site permit at III.D.3.
 54. Construction, operation, and maintenance of the proposed wind plant shall comply with all of the required federal and state permit requirements. See site permit at III.J.2-3 and III.K.7.
 55. If access roads must be installed across waterways that are considered public waters, the Permittee in consultation with the Minnesota Department of Natural Resources will design, shape and locate the road so as not to alter the original water flow or drainage patterns. Any work required below the ordinary high water line, such as road crossings or culvert installation, will require permits from the Minnesota Department of Natural Resources, as well as, consultation with the U.S. Fish and Wildlife Service. See site permit at III.B.8., III.C.5., III.J.3 and III.K.7.

Community Benefits

56. The Moraine Wind II Project will provide local tax revenues from a production tax on the wind energy produced by the turbines. Minnesota Statute 272.028 - 272.029. No significant adverse impact on public services is expected. Wear and tear on roads will occur as a result of the transport of heavy equipment and other materials, and the Permittee is responsible for any necessary repairs. See site permit at III.B.8. Landowners with turbine(s) or associated facilities on their property will receive payments from Moraine Wind II, LLC, for wind rights and land easements.
57. To the extent that local workers and local contractors are capable, qualified, and available, Moraine Wind II, LLC, may hire them to construct the Project. The hiring of local people will expand employment opportunities in this area of the state and keep money in the local economy. Once constructed, the Project will be staffed with site technicians and a wind plant supervisor. Short term construction spending will provide local economic benefits. Long term operations, maintenance, production taxes, and lease payments will also have positive local economic benefits. (Exhibit 1).

Effects on Land-Based Economies

58. The Project will permanently displace approximately 16 - 27 acres of agricultural land. Site permit conditions III.B. 2., 3., 4., 5., 6., 7., 8(c), 9., and 10 address mitigation measures for agricultural lands. The Project does not affect any sand or gravel operations. (Exhibit 1).

Archaeological and Historical Resources

The Moraine Wind II, LLC, site permit Application indicate that the Applicant has consulted with and reviewed the Minnesota State Historic Preservation Office (SHPO) computer database and previous cultural ^{resources} investigations for the Project area, which indicate that numerous historic structures and archaeological resources have been documented inside the boundaries of or within 1 mile of the Project. Moraine Wind II, LLC, will conduct a cultural resources field survey of all the proposed turbine locations, access roads, and other construction elements to document any previously unrecorded archaeological sites within the site. The site permit at III.D.2. requires Moraine Wind II, LLC, to consult with the SHPO upon completion of cultural resources surveys. (Exhibit 1).

59. If any archaeological sites are found during surveys or construction, their integrity and significance would be addressed in terms of the site's potential eligibility for placement on the National Register of Historic Places (NRHP). If such sites are found to be eligible for the NRHP, appropriate mitigation measures will be developed in consultation with SHPO, the State Archaeologist, and consulting American Indian communities. The site permit also requires the Permittee to stop work and notify the Minnesota Historical Society and PUC if any unrecorded cultural resources are found during construction. See the site permit at III.D.2. (Exhibit 1).

Animals and Wildlife

60. Moraine Wind II, LLC, has consulted with the Minnesota Department of Natural Resources (DNR) and the U.S. Fish and Wildlife Service (FWS) about the Project's design and mitigation measures on natural communities, fish and wildlife. The DNR Natural History Database was reviewed to determine if any rare plant or animal species are known to occur within the Project boundary. The DNR indicated that 4 known occurrences of rare or protected species within 1 mile of the project boundary. Two of the species have not been recorded in the area for over 30 years. One native prairie on railroad right-of-way and one colonial waterbird nesting site have been identified and recorded within one mile of the Project boundary. The DNR indicated that the Moraine Wind II Project will not affect these rare natural resources. (Exhibit1).
61. The Topeka Shiner, a species of endangered fish, and federally designated critical habitat may be present in streams within the Project boundary. Best management practices shall be implemented to minimize impacts to Topeka Shiner habitat and are attached to the site permit. See site permit at III.M.2.

62. The site permit prohibits placement of wind turbines and associated facilities in native prairie, unless addressed in the prairie protection and management plan submitted to the Minnesota DNR and PUC. See site permit at III.C.6.
63. Neither construction nor operation of the project is expected to significantly impact wildlife. Based on studies of existing wind power projects in the United States and Europe, the only impact of concern to wildlife would primarily be to avian and bat populations. The final report on avian monitoring studies at Buffalo Ridge, Minnesota "Final Report-Avian Monitoring Studies at the Buffalo Ridge, Minnesota Resource Area: Results of a 4-Year Study" (September 2000) identified the following impacts:
- a) Following construction of the wind turbines, there is a reduction in the use of the area within 100 meters of the turbines by seven of 22 species of grassland breeding birds. It was hypothesized that lower avian use may be associated with avoidance of turbine noise, maintenance activities, and less available habitat. The researchers stated "on a large scale basis, reduced use by birds associated with wind power development appears to be relatively minor and would not likely have any population consequences on a regional level."(p. 44)
 - b) Avian mortality appears to be low on Buffalo Ridge, compared to other wind facilities in the United States, and is primarily related to nocturnal migrants. Resident bird mortality is very low and involves common species. The researchers stated that "based on the estimated number of birds that migrate through Buffalo Ridge each year, the number of wind plant related avian fatalities at Buffalo Ridge is likely inconsequential from a population standpoint." (p. iv)
64. Bat mortality was also studied at Buffalo Ridge, instigated by bat collision victims found during the avian monitoring studies. The bat study was conducted in 2001 and 2002. ("Bat Interactions with Wind Turbines at the Buffalo Ridge, Minnesota Wind Resource Area," November 2003). The overall conclusion is that bat activity at turbines and the numbers of bat fatalities do not share a statistical relationship. Bat collisions were found to be very rare, given the amount of bat activity documented at the turbines. Most fatalities involved migrating bats, a wind-plant related mortality "is possibly not sufficient to cause significant, large-scale population declines." (p. 61)
65. Mitigation measures are also prescribed in the site permit and include but are not limited to: a) a pre-construction inventory of existing biological resources, native prairie, state listed and threatened species and wetlands in the Project area; b) landowner approval will be negotiated prior to any removal of trees during construction; c) sound water and soil conservation practices will be implemented during construction and operation of the Project to protect topsoil and adjacent resources and to minimize soil erosion. See site permit conditions III.B.9, 11, 12, 14, III.C.4-6 and III.D.1.

Vegetation

66. Removal of groves of trees or shelterbelts will be minimized. Native prairie is not known to be present at the site; however, it will be avoided if encountered. The site permit, at

III.C.6. provides for preparation of a prairie protection and management plan if prairie remnants are discovered on the site.

Soils

67. Construction of the wind turbines and access roads increases the potential for erosion during construction and converts small amounts of farmland to industrial use. The site permit at III.B.9. requires a soil erosion and sediment control plan, which can be the same as the Storm Water Pollution Prevention Plan (SWPPP) submitted to the MPCA for the Permittee's storm water runoff permit application. See site permit at III.B.9.

Wetlands

68. No towers, access roads or utility lines will be located in or will cross Public Waters or Public Waters Wetlands, unless permitted by the DNR. See site permit at III.C.5.
69. The Permittee will work with landowners and drain tile contractors to determine or predict the location of drain tile lines. Impacts to drain tile will be avoided. Any impacts to drain tile will be promptly repaired by the Permittee, unless otherwise negotiated with the landowner. See site permit at III.A.6.

Future Development and Expansion

70. While large-scale wind energy projects have occurred elsewhere (California and Iowa), little systematic study of the cumulative impact has occurred. Research on the total impact of many different projects in one area has not occurred. DOC EFP staff continues to monitor for cumulative impacts and issues related to wind energy development.
71. The PUC and DOC anticipate more LWECS site permit applications under Minnesota Statutes Chapter 216F. The PUC is responsible for siting of LWECS "in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources." Minnesota Statute 216F.03.
72. Minnesota Statute 216E.03, subd. 7, requires consideration of design options that might minimize adverse environmental impacts. Turbines must also be sited to minimize noise and aesthetic impacts. Buffers between strings of turbines are designed to protect the turbines' production potential. The site permit also provides for buffers between adjacent wind energy projects to protect production potential. See site permit at III.C.1.
73. The location and spacing of the turbines are critical to the issues of orderly development and the efficient use of wind resources. Turbines are likely to be located in the best winds, and the spacing dictates, among other factors, how much land area a project occupies.
74. One efficiency issue is the loss of wind in the wake of turbines. Wind flow behind the turbine is not as fast and is more turbulent than the free-flowing wind. This condition persists for some distance behind the turbine as normal wind flow is gradually restored. If a turbine is spaced too close downwind of another turbine, it produces less energy and

is less cost-effective. This is the wake loss effect. If the spacing is too far, wind resources are wasted and project footprints on the land is unnecessarily large.

75. For this Project, turbine spacing will maximize use of the available wind resources and minimize wake and array losses within the topographical context of the site. The objective is to capture the most net energy possible from the best available wind resource. Given the predominant southerly and northwesterly winds at this site, the spacing between turbines will be greatest in the north-south direction for the Moraine Wind II Project. (Exhibit 1).

Maintenance

76. Maintenance of the turbines will be on a scheduled, rotating basis. Additional unscheduled maintenance will be conducted on an as needed basis. Maintenance on the interconnection points will be coordinated with Xcel Energy. The Moraine Wind II Project will be staffed with site technicians and a wind plant supervisor. Moraine Wind II, LLC, may build or expand an existing a facility to house the operation and maintenance efforts for the Project. (Exhibit 1).

Site Restoration

77. Decommissioning and site restoration activities will include (1) removal of all turbines and towers; (2) removal of all pad mounted transformers; (3) removal of all above-ground distribution facilities; (4) removal of foundations to a depth of four (4) feet below grade; and (5) removal of surface road material and restoration of the roads and turbine sites to previous conditions to the extent feasible. (Exhibit 1). See site permit at III.G.1-3.

Decommissioning Economics

78. Moraine Wind II, LLC, will be responsible for all costs to decommission the Project and associated facilities. Decommissioning will be completed within 18 months from the time this site permit expires or the facility ceases to operate whichever is earlier. (Exhibit 1). See site permit at III.G.
79. The site permit requires Moraine Wind II, LLC, to submit a decommissioning plan to the PUC prior to construction describing how the Permittee will ensure that the resources are available to pay for decommissioning the Project at the appropriate time. The PUC may request the Permittee file a report at anytime describing how it is fulfilling this obligation. See site permit at III.G.

Site Permit Conditions

80. Nearly all of the conditions contained in the site permit were established as part of the site permit proceedings of other wind turbine projects permitted by the Environmental Quality Board and the Public Utilities Commission. Minor changes that provide for clarifications of the draft site permit conditions have been made.

81. The proposed Moraine Wind II, LLC, Project shall meet the site permit setback requirements from existing wind turbines and lands to which it does not hold wind development rights.
82. The site permit contains conditions that apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning and all other aspects of the Project.

Based on the foregoing findings, the Minnesota Public Utilities Commission makes the following:

CONCLUSIONS OF LAW

1. Any of the foregoing findings, which more properly should be designated as conclusions, are hereby adopted as such.
2. The Moraine Wind II, LLC, Application for a site permit was properly filed and noticed as required by Minnesota Statute 216F.04 and Minnesota Rule 4401.0460 subp. 2 and 4401.0550 subp. 2.
3. The Minnesota Public Utilities Commission has afforded all interested persons an opportunity to participate in the development of the site permit and has complied with all applicable procedural requirements of Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 4401.
4. The Commission concludes that the 3 RD east-west and 5 RD north-south wind access buffer set back adequately protects the wind and property rights of persons outside the Project boundary and/or persons within the Project boundary but not participating the Moraine Wind II, LLC, Project.
5. The Minnesota Public Utilities Commission has jurisdiction under Minnesota Statutes section 216F.04 over the site permit applied for by Moraine Wind II, LLC.
6. The Moraine Wind II, LLC, Project will not create significant human or environmental impacts and is compatible with environmental preservation, sustainable development, and the efficient use of resources.
7. The Minnesota Public Utilities Commission has the authority under Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 4401 to establish conditions in site permits relating to site layout, construction, operation and maintenance of an LWECS. The conditions contained in the site permit issued to Moraine Wind II, LLC, are appropriate, necessary and within the Minnesota Public Utilities Commission's authority.

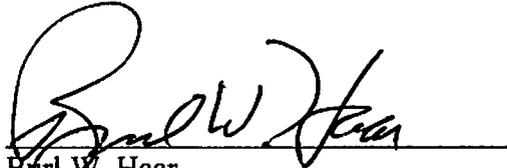
Based on the foregoing Findings of Fact and Conclusions of Law, the Minnesota Public Utilities Commission issues the following:

ORDER

The attached site permit is hereby issued to Moraine Wind II, LLC, for up to a 49.9 MW Large Wind Energy Conversion System in Pipestone and Murray counties, Minnesota. The site permit issued by the PUC authorizes Moraine Wind II, LLC, to construct and operate the proposed LWECS and associated facilities in accordance with the conditions contained in the site permit and in compliance with Minnesota Statutes Chapter 216F and with Minnesota Rules Chapter 4401.

Approved and adopted this 31st day of July, 2007.

BY ORDER OF THE COMMISSION



Burl W. Haar,
Executive Secretary

(SEAL)

This document can be made available in alternative formats (i.e., large print or audio tape) by calling (651) 201-2202 (voice) or 1-800-627-3529 (MN relay service).

**SITE PERMIT FOR
MORAINÉ WIND II
LARGE WIND ENERGY CONVERSION SYSTEM
IN
PIPESTONE AND MURRAY COUNTIES
ISSUED TO
MORAINÉ WIND II, LLC
PUC DOCKET NO. IP6632/WS-07-389**

In accordance with Minnesota Statutes Section 216F.04 this Site Permit is hereby issued to:

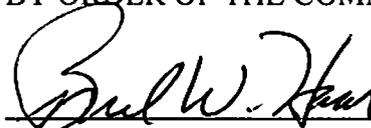
MORAINÉ WIND II, LLC

Moraine Wind II, LLC, is authorized to construct and operate up to a 49.9-Megawatt Large Wind Energy Conversion System on the site identified in this Site Permit and in compliance with the conditions contained in this Permit.

This Permit shall expire 30 years after issuance.

Dated: July 31, 2007

BY ORDER OF THE COMMISSION



BURL W. HAAR
Executive Secretary

(SEAL)

This document can be made available in alternative formats (i.e., large print or audio tape) by calling 651-201-2202 (Voice), 651-297-1200 (TTY).

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I. SITE PERMIT

This Site Permit for a Large Wind Energy Conversion System (LWECS) authorizes Moraine Wind II, LLC, (hereinafter "Permittee") to construct up to a 49.9-Megawatt LWECS and associated facilities in Pipestone and Murray Counties, on a site of approximately 27,000 acres in accordance with the conditions contained in this Permit. The site boundary is shown on the map that is attached hereto as Exhibit 1.

II. PROJECT DESCRIPTION

The up to 49.9 -Megawatt LWECS authorized to be constructed in this Permit will be owned and operated by Moraine Wind II, LLC. The Project will consist of 1.5 – 3.0 MW wind turbines (or comparable utility grade wind turbines) with a combined nominal nameplate capacity of no more than 49.9 MW. Turbines are interconnected by communication and overhead and underground electrical power collection facilities within the wind farm. These facilities will include transformers, overhead and underground collector and feeder lines that will deliver wind-generated power to the Chanarambie Substation located in Chanarambie Township in Murray County. Associated facilities will include one permanent meteorological tower, one additional temporary meteorological tower, electrical junction boxes, wind turbine access roads, and a operations and maintenance facility.

III. CONDITIONS

The following conditions shall apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning and all other phases of the LWECS. The PUC preserves all available remedies for violation of any of these Permit conditions, including revocation or modification of the Permit.

A. GENERAL CONSTRUCTION CONDITIONS

1. SITE PLAN

At least 60 days prior to commencing construction, the Permittee shall submit to the PUC a site plan for all turbines, roads, electrical equipment, collector and feeder lines and other associated facilities to be constructed and engineering drawings for site preparation, construction of the facilities, and a plan for restoration of the site due to construction. The Permittee may submit a site plan and engineering drawings for only a portion of the LWECS if the Permittee is prepared to commence construction on certain parts of the Project before completing the site plan and engineering drawings for other parts of the LWECS. The Permittee shall have the right to move or relocate turbine sites due to the discovery of environmental conditions during construction, not previously identified, which by law or pursuant to this Permit would prevent such use. The Permittee shall notify the PUC of any turbines that are to be relocated before the turbine is constructed on the new site.

2. FIELD REPRESENTATIVE

Prior to the start of construction and continuously throughout construction and site restoration, the Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this Permit. This person (or a designee) shall be accessible by telephone during normal business hours. This person's address, phone number and emergency phone number shall be provided to the PUC, who may make the number available to local residents and officials and other interested persons. The Permittee may change the field representative by notification to the PUC.

3. PRECONSTRUCTION MEETING

Prior to the start of any construction, the Permittee shall conduct a preconstruction meeting with the person designated by the PUC to coordinate field monitoring of construction activities.

4. NOTICE OF PERMIT CONDITIONS

The Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the LWECS of the terms and conditions of this Permit.

B. MITIGATION MEASURES

1. SITE CLEARANCE

The Permittee shall disturb or clear the site only to the extent necessary to assure suitable access for construction, safe operation, and maintenance of the LWECS.

2. TOPSOIL PROTECTION

The Permittee shall implement measures to protect and segregate topsoil from subsoil in cultivated lands unless otherwise negotiated with the affected landowner.

3. COMPACTION

The Permittee shall implement measures to minimize compaction of all lands during all phases of the Project's life and shall confine compaction to as small an area as practicable.

4. LIVESTOCK PROTECTION

The Permittee shall take precautions to protect livestock during all phases of the Project's life.

5. FENCES

The Permittee shall promptly replace or repair all fences and gates removed or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner. When the Permittee installs a gate where electric fences are present, the Permittee shall provide for continuity in the electric fence circuit.

6. DRAINAGE TILE

The Permittee shall take into account, promptly repair or replace all drainage tiles broken or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner.

7. EQUIPMENT STORAGE

The Permittee shall not locate temporary equipment staging areas for site construction and restoration on cultivated land unless otherwise negotiated with the affected landowner. Temporary staging areas shall not be located in wetlands or native prairie.

8. ROADS

(a) Public Roads

Prior to commencement of construction, the Permittee shall identify all state, county or township roads that will be used for the LWECS Project and shall notify the PUC and the state, county or township governing body having jurisdiction over the roads to determine if the governmental body needs to inspect the roads prior to use of these roads. Where practical, existing roadways shall be used for all activities associated with the LWECS. Where practical, all-weather roads shall be used to deliver cement, turbines, towers, assembled nacelles and all other heavy components to and from the turbine sites.

The Permittee shall, prior to the use of such roads, make satisfactory arrangements with the appropriate state, county or township governmental body having jurisdiction over roads to be used for construction of the LWECS for maintenance and repair of roads that will be subject to extra wear and tear due to transportation of equipment and LWECS components. The Permittee shall notify the PUC of such arrangements upon request of the PUC.

(b) Turbine Access Roads

The Permittee shall construct the smallest number of turbine access roads it can. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class 5 gravel or similar material. When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so

runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed.

(c) Private Roads

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.

9. SOIL EROSION AND SEDIMENT CONTROL

The Permittee shall develop a Soil Erosion and Sediment Control Plan prior to construction and submit the Plan to the PUC. This Plan may be the same as the Storm Water Pollution Prevention Plan (SWPP) submitted to the Minnesota Pollution Control Agency (MPCA) as part of the National Pollutant Discharge Elimination System (NPDES) permit application. A goal of the Soil Erosion and Sediment Control Plan is to minimize soil erosion and, wherever possible, to plant appropriate native species in cooperation with landowners.

The Soil Erosion and Sediment Control Plan shall address what types of erosion control measures will be implemented during each Project phase, and shall at a minimum identify plans for grading, construction and drainage of roads and turbine pads; necessary soil information; detailed design features to maintain downstream water quality; a comprehensive re-vegetation plan to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary Project activities; and measures to minimize the area of surface disturbance. Other practices shall include containing excavated material, protecting exposed soil, and stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The plan shall identify methods for disposal or storage of excavated material. Erosion and sedimentation control measures shall be installed prior to construction and maintained throughout the Project's life.

10. CLEANUP

The Permittee shall remove all waste and scrap that is the product of construction, operation, restoration and maintenance from the site and properly dispose of it upon completion of each task. Personal litter, bottles, and paper deposited by site personnel shall be removed on a daily basis.

11. TREE REMOVAL

The Permittee shall minimize the removal of trees and the Permittee shall not remove groves of trees or shelter belts without notification to the PUC and the approval of the affected landowner.

12. RESTORATION

The Permittee shall, as soon as practical following construction of each turbine, considering the weather and preferences of the landowner, restore the area affected by any LWECS activities to the condition that existed immediately before construction began, to the extent possible. The time period may be no longer than eight months after completion of construction of the turbine, unless otherwise negotiated with the landowner. Restoration shall be compatible with the safe operation, maintenance, and inspection of the LWECS.

13. HAZARDOUS WASTE

The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of hazardous wastes generated during any phase of the Project's life.

14. 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 site within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as to not damage crops, orchards, tree farms, or gardens. The Permittee shall also, at least ten days prior to the application, notify beekeepers with an active apiary within one mile of the proposed application site of the day the company intends to apply herbicide so that precautionary measures may be taken by the beekeeper.

15. PUBLIC SAFETY

The Permittee shall provide educational materials to landowners within the site boundaries and, upon request, to interested persons, about the Project and any restrictions or dangers associated with the LWECS Project. The Permittee shall also provide any necessary safety measures, such as warning signs and gates for traffic control or to restrict public access.

16. FIRE PROTECTION

The Permittee shall prepare a fire protection and medical emergency plan in consultation with the fire department having jurisdiction over the area prior to LWECS construction. The Permittee shall submit a copy of the plan to the PUC upon request.

17. TOWER IDENTIFICATION

All turbine towers shall be marked with a visible identification number.

C. SETBACKS

1. WIND ACCESS BUFFER

Wind turbine towers shall not be placed less than 5 rotor diameters (RD) from the perimeter of the site on the north-south axis and 3 rotor diameters (RD) on the east-west axis where the Permittee does not hold the wind rights, without the approval of the PUC. Permittee acknowledges that properties within the Project boundaries for which Permittee does not hold the wind rights will not be foreclosed from installing wind turbine generators on such property at a later date as a result of the issuance of this Permit, even if such turbine generators cannot be installed on such property in compliance with the setbacks set forth in the first sentence of this section.

2. RESIDENCES

Wind turbine towers shall not be located closer than 500 feet from the nearest occupied dwelling.

3. ROADS

Wind turbine and meteorological towers shall not be located closer than 250 feet from the edge of the nearest public road right-of-way.

4. WILDLIFE MANAGEMENT AREAS

Wind turbines and associated facilities including foundations, access roads, underground cable, and transformers, shall not be located in Waterfowl Protection Areas, State Wildlife Management Areas or Scientific and Natural Areas or in county parks. These areas may be used in establishing the wind access buffer required by paragraph III.C.1.

5. WETLANDS

Wind turbines and associated facilities, including foundations, access roads, underground cable, and transformers, shall not be placed in public waters wetlands, as defined in Minnesota Statute 103G.005, subp. 15a. Electric collector and feeder lines may cross or be placed in public water or public water wetlands if permitted and licensed by the DNR.

6. NATIVE PRAIRIE

Upon request of the PUC, the Permittee shall, with the advice of the DNR and any others selected by the Permittee, prepare a prairie protection and management plan and submit it

to the PUC and DNR Commissioner 60 days prior to the start of construction. The plan shall address steps to be taken to identify native prairie within the Project area, measures to avoid impacts to native prairie, and measures to mitigate for impacts if unavoidable. Wind turbines and all associated facilities, including foundations, access roads, underground cable and transformers, shall not be placed in native prairie unless addressed in the prairie protection and management plan. Unavoidable impacts to native prairie shall be mitigated by restoration or management of other native prairie areas that are in degraded condition, or by conveyance of conservation easements, or by other means agreed to by the Permittee and PUC.

7. OTHER

Wind turbines and all associated facilities, including foundations, access roads, underground cable, and transformers shall not be located within active sand and gravel operations, unless otherwise negotiated with the landowner with notice given to the owner of the sand and gravel operation.

D. PRECONSTRUCTION SURVEYS

1. BIOLOGICAL PRESERVATION SURVEY

The Permittee, in consultation with DNR and other interested parties, shall conduct a pre-construction inventory of existing wildlife management areas, scientific and natural areas, recreation areas, native prairies and forests, wetlands, and any other biologically sensitive areas within the site and assess the presence of state- or federally-listed or threatened species. The results of the survey shall be submitted to the PUC and DNR prior to the commencement of construction.

2. ARCHAEOLOGICAL RESOURCES

The Permittee shall work with the State Historic Preservation Office (SHPO) at the Minnesota Historical Society and the State Archaeologist as early as possible in the planning process to determine whether an archaeological survey is recommended for any part of the proposed Project. The Permittee will contract with a qualified archaeologist to complete such surveys, and will submit the results to the PUC, the SHPO and the State Archaeologist. The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by PUC in consultation with SHPO and the State Archaeologist. In addition, the Permittee shall mark and preserve any previously unrecorded archaeological sites that are found during construction and shall promptly notify the SHPO, the State Archaeologist, and the PUC of such discovery. The Permittee shall not excavate at such locations until so authorized by the PUC in consultation with the SHPO and the State Archaeologist.

If human remains are encountered during construction, the Permittee shall immediately halt construction at that location and promptly notify local law enforcement authorities

and the State Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit or license is involved or required, the Permittee shall notify the MHS as soon as possible in the planning process to coordinate section 106 (36 C.F.R 800) review.

Prior to construction, 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. If any archaeological sites are found during construction, the Permittee shall immediately stop work at the site and shall mark and preserve the site and notify the PUC and the MHS about the discovery. The PUC and the MHS shall have three working days from the time the agency is notified to conduct an inspection of the site if either agency shall choose to do so. On the fourth day after notification, the Permittee may begin work on the site unless the MHS has directed that work shall cease. In such event, work shall not continue until the MHS determines that construction can proceed.

3. ELECTROMAGNETIC INTERFERENCE

At least 60 days prior to beginning construction, the Permittee shall submit a plan to the PUC for conducting an assessment of television signal reception and microwave signal patterns in the Project area prior to commencement of construction of the Project. The assessment shall be designed to provide data that can be used in the future to determine whether the turbines and associated facilities are the cause of disruption or interference of television reception or microwave patterns in the event residents should complain about such disruption or interference after the turbines are placed in operation. The assessment shall be completed prior to operation of the turbines. The Permittee shall be responsible for alleviating any disruption or interference of these services caused by the turbines or any associated facilities.

The Permittee shall not operate the LWECS and associated facilities so as to cause microwave, television, radio, telecommunications or navigation interference contrary to Federal Communications Commission (FCC) regulations or other law. In the event the LWECS and its associated facilities or its operations cause such interference, the Permittee shall take timely measures necessary to correct the problem.

E. SITE LAYOUT RESTRICTIONS

1. WIND TURBINE TOWERS

Structures for wind turbines shall be self-supporting tubular towers. The towers may be between 80 meters (262 feet) and 105 meters (344 feet) above grade measured at the hub.

2. METEOROLOGICAL TOWERS

Permanent towers up to 100 feet high for meteorological equipment shall be free standing. Temporary meteorological towers, which are those that will be removed no more than one year after the Project in-service date, and all meteorological towers over 100 feet high may be guyed if the landowner has given written permission and the guys are properly marked with safety shields.

One new temporary and one permanent meteorological tower are authorized to be constructed for the Project by this Permit. New temporary and permanent meteorological towers shall not be placed less than 250 feet from the edge of the nearest public road right-of-way and from the boundary of the Permittee's site control, or in compliance with the county ordinance regulating meteorological towers in the county the tower is built, whichever is more restrictive. Meteorological towers shall be placed on lands the Permittee holds the wind or other development rights.

Meteorological towers shall be marked as required by the Federal Aviation Administration (FAA). There shall be no lights on the meteorological towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

3. NOISE

The wind turbine towers shall be placed such that the Permittee shall comply with noise standards established as of the date of this Permit by the Minnesota Pollution Control Agency at all times at all appropriate locations. The noise standards are found in Minnesota Rules Chapter 7030. Turbines shall be moved or modified or removed from service if necessary to comply with this condition. The Permittee or its contractor may install and operate turbines, as close as the minimum setback required in this Permit but in all cases shall comply with PCA noise standards. The Permittee shall be required to comply with this condition with respect to all homes or other receptors in place as of the time of construction, but not with respect to such receptors built after construction of the towers.

4. FEDERAL AVIATION ADMINISTRATION

Towers shall be marked as required by the Federal Aviation Administration (FAA). There shall be no lights on the towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

5. TURBINE SPACING

The turbine towers shall be constructed within the site as shown on the map attached as Exhibit 1. The turbine towers shall be spaced no closer than 3 rotor diameters (RD) for

crosswind spacing (distance between towers) and 5 RD downwind spacing (distance between strings of towers). If required during final micro siting of the turbine towers to account for topographic conditions, up to 20 percent of the towers may be sited closer than the above spacing but the Permittee shall minimize the need to site the turbine towers closer.

6. FOOTPRINT MINIMIZATION

The Permittee shall design and construct the LWECS so as to minimize the amount of land that is impacted by the LWECS. Associated facilities in the vicinity of turbines such as electrical/electronic boxes, transformers and monitoring systems shall, to the greatest extent feasible, be mounted on the foundations used for turbine towers or inside the towers unless otherwise negotiated with the affected landowner.

7. ELECTRICAL CABLES

The Permittee shall place electrical lines, known as collectors, and communication cables underground when located on private property. Collectors and cables shall also be placed within or adjacent to the land necessary for turbine access roads unless otherwise negotiated with the affected landowner. This paragraph does not apply to feeder lines.

8. FEEDER LINES

The Permittee shall place overhead or underground 34.5 kV electric lines, known as feeders within public rights-of-way or on private land immediately adjacent to public rights-of-way if a public right-of-way exists, except as necessary to avoid or minimize human, agricultural, or environmental impacts. A change in feeder line locations may be made as long as feeders remain on public rights-of-way and approval has been obtained from the governmental unit responsible for the affected right-of-way. When placing feeders on private property, the Permittee shall place the feeder in accordance with the easement negotiated with the affected landowner. In all cases, the Permittee shall avoid routing feeder lines in locations which may interfere with agricultural operations. Notwithstanding any of the requirements in paragraph III.D. to conduct surveys before any construction can commence, the Permittee may begin immediately upon issuance of this permit to construct the 34.5 kV feeder lines that will be required as part of this Project. The Permittee shall submit the site plan and engineering drawings required under paragraph III.A.1. for the feeder lines before commencing construction. Any guy wires on the structures for feeder lines shall be marked with safety shields.

The Permittee must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this Project, including but not limited to IEEE 776, IEEE 519, and IEEE 367, provided the telephone service provider(s) have complied with any obligations imposed on it pursuant to these standards. Upon request by the PUC, the Permittee shall report to the PUC on compliance with these standards.

F. STUDIES

1. WAKE LOSS STUDIES

The Permittee shall provide to the PUC with the site plan required by paragraph III.A.1., the preconstruction micro siting analysis leading to the final tower locations and an estimate of total Project wake losses. The Permittee shall provide to the PUC any operational wake loss studies conducted on this Project.

2. NOISE

On request of the PUC, the Permittee shall submit a proposal to the PUC for the conduct of a noise study. Upon the approval of the PUC the Permittee shall carryout the study. The study shall be designed to determine the noise levels at various distances from the turbines at various wind directions and speeds.

G. DECOMMISSIONING/RESTORATION/ABANDONMENT

1. DECOMMISSIONING PLAN

Prior to commencement of construction, the Permittee shall submit to the PUC a Decommissioning Plan describing the manner in which the Permittee anticipates decommissioning the Project in accordance with the requirements of Minnesota Rule 4401.0450, subp.13. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The PUC may at any time request the Permittee to file a report with the PUC describing how the Permittee is fulfilling this obligation.

2. SITE RESTORATION

Upon expiration of this Permit, or upon earlier termination of operation of the LWECs, the Permittee shall have the obligation to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables, foundations, buildings and ancillary equipment to a depth of four feet. To the extent possible the Permittee shall restore and reclaim the site to its pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. Any agreement for removal to a lesser depth or for no removal shall be recorded with the county and shall show the locations of all such foundations. All such agreements between the Permittee and the affected landowner shall be submitted to the PUC prior to completion of restoration activities. The site shall be restored in accordance with the requirements of this condition within 18 months after expiration.

3. ABANDONED TURBINES

The Permittee shall advise the PUC of any turbines that are abandoned prior to termination of operation of the LWECS. The PUC may require the Permittee to decommission any abandoned turbine.

H. REPORTING

1. PROJECT ENERGY PRODUCTION

The Permittee shall, by July 15 of each year, report to the PUC on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the PUC during the preceding year or partial year of operation. The report shall include copies of any Project production reports filed with the Midwest Independent System Operator (MISO), Midwest Area Power Pool (MAPP), the Federal Energy Regulatory Commission (FERC), or any other public regulatory agency. The Permittee shall describe the operational status and availability of the Project and any major outages, major repairs, or turbine performance improvements occurring in the previous year.

2. WIND RESOURCE USE

Within three months after commercial operation begins, the Permittee shall provide the PUC with viewer access to its supervisory control and data acquisition (SCADA) system to allow the PUC convenient review of the following average hourly data for each hour of commercial operation in printed format or electronic format capable of computerized analysis as specified by the PUC:

- (a) The power output of each turbine;
- (b) The wind speed and direction measured at all monitored heights at any temporary and permanent meteorological towers, connected to the SCADA system, owned or operated by the Permittee, in or within three miles of the Project site boundary; and
- (c) Temperature and any other meteorological parameters recorded at one permanent meteorological tower selected by the PUC.

Once the Permittee provides the initial access, the PUC shall be responsible for maintaining the remote viewer connection. The Permittee shall not be in violation of this Permit if remote connection is lost or the SCADA system goes down. In the event the PUC is not provided access to the SCADA system, the Permittee shall file a quarterly report (due January 15, April 15, July 15, and October 15) with the PUC with the same data specified above. After two years of commercial operation, the PUC may reduce or

eliminate the requirements of this condition. The provisions of paragraph III.K.5. shall apply to the PUC's review of this data.

3. EXTRAORDINARY EVENTS

Within 24 hours of an occurrence, the Permittee shall notify the PUC of any extraordinary event. Extraordinary events include but shall not be limited to: fires, tower collapse, thrown blade, collector or feeder line failure, injured LWECS worker or private person, kills of threatened or endangered species, or discovery of an unexpectedly large number of dead birds or bats of any variety on site. In the event of extraordinary avian mortality the DNR shall also be notified within 24 hours. The Permittee shall, within 30 days of the occurrence, submit a report to the PUC describing the cause of the occurrence and the steps taken to avoid future occurrences.

4. COMPLAINTS

Prior to the start of construction, the Permittee shall submit to the PUC the company's procedures to be used to receive and respond to complaints. The Permittee shall report to the PUC all complaints received concerning any part of the LWECS in accordance with the procedures provided in Exhibit 2 attached to this Permit.

I. FINAL CONSTRUCTION

1. AS-BUILT PLANS AND SPECIFICATIONS

Within 60 days after completion of construction, the Permittee shall submit to the PUC a copy of the as-built plans and specifications. The Permittee must also submit this data in a geographic information system (GIS) compatible format so that the PUC can place it into the Land Management Information Center's geographic data clearinghouse located in the Office of Geographic and Demographic Analysis.

2. FINAL BOUNDARIES

After completion of construction, the PUC shall determine the need to adjust the final boundaries of the site required for this Project. If done, this Permit may be modified, after notice and opportunity for public hearing, to represent the actual site required by the Permittee to operate the Project authorized by this Permit.

3. EXPANSION OF SITE BOUNDARIES

No expansion of the site boundaries described in this Permit shall be authorized without the approval of the PUC. The Permittee may submit to the PUC a request for a change in the boundaries of the site for the LWECS. The PUC will respond to the requested change in accordance with applicable statutes and rules.

J. AUTHORITY TO CONSTRUCT LWECS

1. WIND RIGHTS.

The Permittee shall advise the PUC of the obtaining of exclusive wind rights within the boundaries of the LWECS authorized by this Permit within 30 days of receiving such wind rights. The Permittee shall submit documentation of such exclusive wind rights if requested by the PUC.

2. OTHER PERMIT APPLICATIONS.

Nothing in this Permit shall be construed to preclude any other person from seeking a site permit to construct a large wind energy conversion system in any area within the boundaries of the Project covered by this Permit if the Permittee does not hold exclusive wind rights for such areas.

3. PREEMPTION OF OTHER LAWS

Pursuant to Minnesota Statute 216F.07, this Site Permit shall be the only site approval required for the location of this Project, and this Permit shall supersede and preempt all zoning, building, and land use rules, regulations, and ordinances adopted by regional, county, local, and special purpose governments. Nothing in this Permit shall release the Permittee from any obligation imposed by law that is not superseded or preempted by law.

4. POWER PURCHASE AGREEMENT

This Permit does not authorize construction of the Project until the Permittee has obtained a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project. In the event the Permittee does not obtain a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project within three years of the issuance of this Permit, the Permittee must advise the PUC of the reason for not having such power purchase agreement or enforceable mechanism. In such event, the PUC may determine whether this Permit should be amended or revoked. No amendment or revocation of this Permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Statute 216F.05 and Minnesota Rule 4401.0700.

K. MISCELLANEOUS

1. PERIODIC REVIEW

The PUC shall initiate a review of this Permit and the applicable conditions at least once every five years. The purpose of the periodic review is to allow the PUC, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of

the Permit. No modification may be made except in accordance with applicable statutes and rules.

2. FAILURE TO COMMENCE CONSTRUCTION

If the Permittee has not completed the pre-construction surveys required in paragraph III.D. and commenced construction of the LWECs within three years of the issuance of this Permit, the Permittee must advise the PUC of the reason construction has not commenced. In such event, the PUC may determine whether this Permit should be amended or revoked. No revocation of this Permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Statute 216F.05 and Minnesota Rule 4401.0700.

3. MODIFICATION OF CONDITIONS

After notice and opportunity for hearing, this Permit may be modified or amended for cause including but not limited to the following:

- (a) Violation of any condition in this Permit;
- (b) Endangerment of human health or the environment by operation of the facility; or
- (c) Existence of other grounds established by rule.

4. REVOCATION OR SUSPENSION OF THE PERMIT

The PUC may take action to suspend or revoke this Permit upon the grounds that:

- (a) A false statement was knowingly made in the application or in accompanying statements or studies required of the Permittee, and a true statement would have warranted a change in the PUC's findings;
- (b) There has been a failure to comply with material conditions of this Permit, or there has been a failure to maintain health and safety standards; or
- (c) There has been a material violation of a provision of an applicable statute, rule or an order of the PUC.

In the event the PUC shall determine that it is appropriate to consider revocation or suspension of this Permit, the PUC shall proceed in accordance with the requirements of Minnesota Statute 216F.05 to determine the appropriate action. Upon a finding of any of the above, the PUC may require the Permittee to undertake corrective measures in lieu of having the Permit suspended or revoked.

5. PROPRIETARY INFORMATION

Certain information required to be submitted to the PUC under this Permit, including energy production and wake loss data, may constitute trade secret information or other type of proprietary information under the Data Practices Act or other law and is not to be made available by the PUC. The Permittee must satisfy requirements of applicable law to obtain the protection afforded by the law.

6. TRANSFER OF PERMIT

The Permittee may not transfer this Permit without the approval of the PUC. If the Permittee desires to transfer this Permit, the holder shall advise the PUC in writing of such desire. The Permittee shall provide the PUC with such information about the transfer as the PUC requires to reach a decision. The PUC may impose additional conditions on any new Permittee as part of the approval of the transfer.

7. OTHER PERMITS

The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a LWECS within the authorized site. The Permittee shall submit a copy of such permits and authorizations to the PUC upon request.

8. SITE MANAGER

The Permittee shall designate a site manager who shall be the contact person for the PUC to contact with questions about the LWECS. The Permittee shall provide the PUC with the name, address, and phone numbers of the site manager prior to placing any turbine into operation. This information shall be maintained current by informing the PUC of any changes, as they become effective.

9. NOTICE TO LOCAL RESIDENTS

The Permittee shall, within ten working days of receipt of this Permit, send a copy of the Permit to the office of the auditor of each county in which the site is located and to the clerk of each city and township within the site boundaries. If applicable, the Permittee shall also, within 10 working days of issuance, send a copy of this Permit to each regional development commission, local fire district, soil and water conservation district, watershed district, and watershed management district office with jurisdiction in the county where the site is located. Within 30 days of issuance of this Permit, the Permittee shall send a copy of the Permit to each affected landowner within the site. In no case shall the affected landowner receive the site permit less than five days prior to the start of construction on their property.

10. RIGHT OF ENTRY

The Permittee shall allow representatives of the PUC to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

(a) To enter upon the facilities easement of the site property for the purpose of obtaining information, examining records, and conducting surveys or investigations.

(b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.

(c) To sample and monitor upon the facilities easement of the property;
and

(d) To examine and copy any documents pertaining to compliance with the conditions of this Permit.

11. MORE STRINGENT RULES

The PUC's issuance of this Site Permit does not prevent the future adoption by the PUC of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

L. EXPIRATION DATE

This Permit shall expire 30 years after issuance.

M. SPECIAL CONDITIONS

1. EFFECT

These Special Conditions shall take precedence over any of the other conditions of this Permit if there should be a conflict between the two.

2. FEDERALLY-ENDANGERED TOPEKA SHINER

To prevent sedimentation in streams inhabited by the federally-endangered (state special concern) Topeka shiner (*Notropis topeka*), the Permittee shall employ best management practices as described in Exhibit 3, when working in Project area waters.

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT REPORT PROCEDURES FOR
LARGE WIND ENERGY CONVERSION SYSTEMS**

1. Purpose

To establish a uniform and timely method of reporting complaints received by the Permittee concerning the Permit conditions for site preparation, construction, cleanup and restoration, and resolution of such complaints.

2. Scope

This reporting plan encompasses complaint report procedures and frequency.

3. Applicability

The procedures shall be used for all complaints received by the Permittee.

4. Definitions

Complaint - A statement presented by a person expressing dissatisfaction, resentment, or discontent as a direct result of the LWECS and associated facilities. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint - Any complaints submitted to the Permittee in writing that, if substantiated, could result in Permit modification or suspension pursuant to the applicable regulations.

Person - An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

5. Responsibilities

Everyone involved with any phase of the LWECS is responsible to ensure expeditious and equitable resolution of all complaints. It is therefore necessary to establish a uniform method for documenting and handling complaints related to this LWECS project. The following procedures will satisfy this requirement:

- A. The Permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:
1. Name of the Permittee and project.
 2. Name of complainant, address and phone number.
 3. Precise property description or tract numbers (where applicable).
 4. Nature of complaint.
 5. Response given.
 6. Name of person receiving complaint and date of receipt.
 7. Name of person reporting complaint to the PUC and phone number.
 8. Final disposition and date.
- B. The Permittee shall assign an individual to summarize complaints for transmittal to the PUC.

6. Requirements

The Permittee shall report all complaints to the PUC according to the following schedule:

Immediate Reports - All substantial complaints shall be reported to the PUC by phone the same day received or on the following working day for complaints received after working hours. Such reports are to be directed to Wind Permit Compliance at the following: 651-296-5089 or 1-800-657-3794. Voice messages are acceptable.

Monthly Reports – By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the proceeding month, and a copy of each complaint shall be sent to Wind Permit Compliance, Minnesota Department of Commerce, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

7. Complaints Received by the PUC

Copies of complaints received directly by the PUC from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the Permittee.

Recommendations for Construction Projects Affecting Waters Inhabited by Topeka Shiners (*Notropis topeka*) in Minnesota

U.S. Fish and Wildlife Service
Twin Cities Field Office
(612) 725-3548

Background

Topeka shiner (*Notropis topeka*) occurs throughout the Big Sioux and Rock River Watersheds in five counties in southwestern Minnesota (Figure 1). The U.S. Fish and Wildlife Service (Service) listed Topeka shiner as an endangered species in 1998 and designated critical habitat¹ for it in 2004. The Endangered Species Act (ESA) prohibits the taking² of this species.

Endangered Species Act Requirements for Actions in Topeka Shiner Habitat

Federal Agency Actions

Federal agencies or their designated non-federal representatives must consult with the Service on any action that they fund, authorize, or carry out that may affect Topeka shiner or its critical habitat. If an agency proposes to implement an action that is likely to result in adverse effects to Topeka shiner, it must undergo formal consultation with the Service. If the agency determines that an action may affect Topeka shiners, but that those effects are not likely to be adverse, it may avoid formal consultation by receiving written concurrence on this determination from the Service.

Private or Local (Non-federal) Actions

Private landowners, corporations, state or local governments, and other non-federal entities or individuals who wish to conduct activities that might incidentally harm (or "take") Topeka shiners must first obtain an incidental take permit from the U.S. Fish and Wildlife Service (Service). To determine whether an action may require an incidental take permit, coordinate with the Service when planning actions that may affect streams or off-channel habitats in the Rock River or Big Sioux River watersheds in Minnesota. Contact the Service's Twin Cities Field Office (612/725-3548) for further information or see the following website for information regarding Endangered Species permits -- <http://endangered.fws.gov/permits/index.html?#forms>.

Project Recommendations

The following recommendations are provided to help design actions that would avoid or minimize adverse effects to Topeka shiner. These recommendations may not address every way in which proposed actions may affect this species and may not preclude the need for formal consultation for federal actions or for an incidental take permit for non-federal actions. Therefore, we highly recommend that you coordinate early in the planning process with the Service's Twin Cities Field Office (612/725-3548) when contemplating any action that may affect streams or associated off-channel habitats (oxbows, abandoned channels, etc.) in the Big Sioux River or Rock River watersheds

¹ 1 See 69 Federal Register 44,736 (July 27, 2004) or <http://www.fws.gov/midwest/endangered/fishes/index.html> for further information about Topeka shiner critical habitat. 1 Revised 5/12/2005 USFWS Ecological Services

² 2 The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

in Minnesota (Fig. 1).

1. Ensure that contractors and subcontractors understand all permit provisions that are necessary to avoid or minimize adverse effects to Topeka shiners.
2. Do not dewater stream reaches or temporarily divert streams for construction.
3. Do not conduct in-stream work before August 15 to avoid disrupting Topeka shiner spawning.
4. Follow all applicable requirements and best management practices for stormwater and erosion control – for example, requirements contained within stormwater permits from Minnesota Pollution Control Agency (MPCA). Useful resources for designing effective stormwater and erosion control include the MPCA Stormwater Best Management Practices Manual (see <http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html>) and the Minnesota Department of Transportation Erosion Control Handbook for Local Roads (see <http://www.lrrb.gen.mn.us/PDF/200308.pdf>). Other resources are available at <http://www.pca.state.mn.us/water/stormwater/stormwater-c.html#factsheets>. General suggestions for minimizing effects of erosion on Topeka shiners are shown below.
5. Minimize removal of riparian (streamside) vegetation; such removal should occur sequentially as needed over the length of the project.
6. Mulch areas of disturbed soils and reseed promptly.
7. Implement appropriate erosion and sediment prevention measures to the maximum extent practicable. Inspect devices frequently to ensure that they are effective and in good
8. Leave existing features, such as bridge abutments, retaining walls, and riprap, in place as much as is feasible.
9. Ensure that erosion prevention measures are in place and in adequate condition when leaving work site.
10. Design and install instream structures (e.g., box culverts) in a manner that will not impair passage of Topeka shiners and other fish species after construction is completed.
11. Do not operate motorized vehicles instream. Excavation, culvert placement, etc. should be conducted from streambanks outside of standing or flowing water.
12. Backfill placed in the stream shall consist of rock or granular material free of fines, silts, and mud. Machinery parts (i.e., backhoe buckets, etc.) shall be cleaned of all such material and free of grease, oil, etc. before their instream use.
13. Prevent materials and debris from falling into the water during construction. If materials or debris fall into the water or into riparian areas retrieve them promptly by hand or with equipment working from the banks.
14. If the project is modified, or if field conditions change, the applicant or agency representative should contact U.S. Fish and Wildlife Service before proceeding.

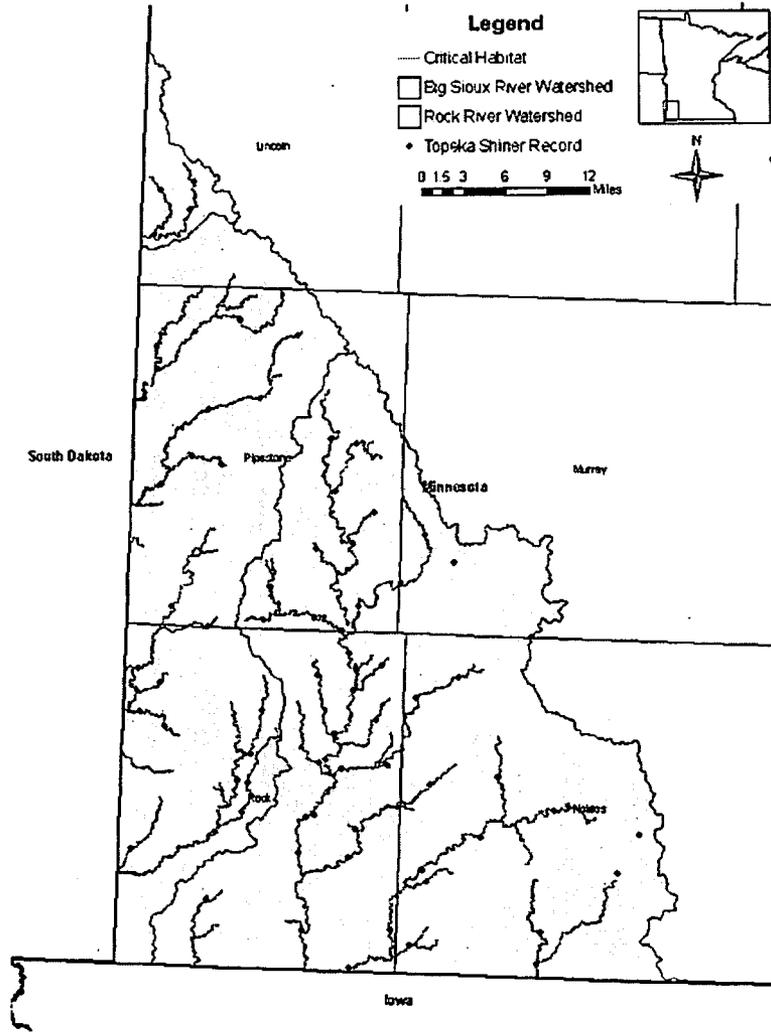


Figure 1. Recorded occurrences of Topeka shiner and officially designated critical habitat in Minnesota. [See 69 Fed. Reg. 44,736 (July 27, 2004) or <http://www.fws.gov/midwest/endangered/fishes/index.html#topeka> for further information about Topeka shiner critical habitat.] U.S. Fish and Wildlife Service (Service) designated critical habitat only in stream reaches where Topeka shiner had been recorded as of August 2002, when critical habitat was originally proposed. Surveys conducted after August 2002 have found Topeka shiners in additional locations, including some that the Service had not proposed as critical habitat. Therefore, some records shown above occur outside of officially designated critical habitat. Surveys for this species are limited and ongoing. Although Topeka shiners are likely to be found in additional sites not indicated on this map, it is unlikely that the species occurs outside of the Rock River or Big Sioux River watersheds. For information on potential Topeka shiner occurrence in a specific location, contact U.S. Fish and Wildlife Service (612/725-3548).

Melanie - 07-389

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