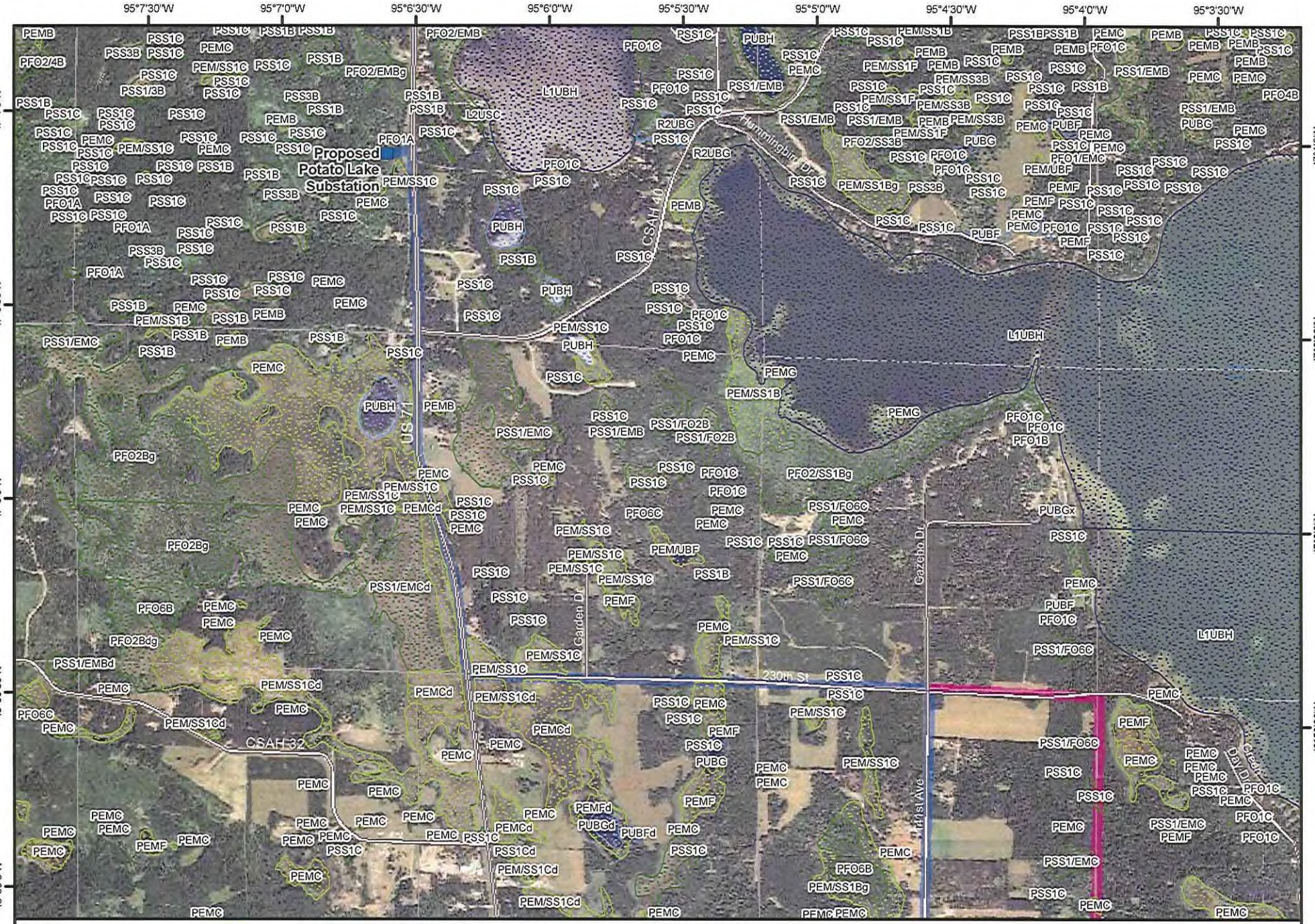

95°7'30"W
95°7'0"W
95°6'30"W
95°6'0"W
95°5'30"W
95°5'0"W
95°4'30"W
95°4'0"W
95°3'30"W
47°1'0"N
47°0'30"N
47°0'0"N
46°59'30"N
46°59'0"N
Proposed Potato Lake Substation
CSAH 40
US 71
CSAH 32
230th St
Garden Dr
Gazebo Dr
Hummingbird Dr
Dahl Dr
170th Ave
NWI Wetlands
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Riverine
NWI Wetlands data from U.S Fish & Wildlife Service
2008 Digital Orthorectified Images from U.S. Department of Agriculture, Farm Service Agency
Proposed Great River Energy 115 kV Transmission Line
Proposed
Alternative
1:24,000
N
Potato Lake
115 kV Transmission Line
and Distributiion Substation
Map 2 of 2
GREAT RIVER ENERGY
A Touchstone Energy Cooperative

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MINNESOTA 55101-1638

REPLY TO
ATTENTION

December 17, 2009

Operations
Regulatory (2009-05592-LSP)

Ms. Marsha Parlow
Great River Energy
12300 Elm Creek Boulevard
Maple Grove, Minnesota 55369-4718

Dear Ms. Parlow:

We have received the document describing Great River Energy's Potato Lake 115kV Transmission Line project, dated 13 November 2009. Due to the brief description of the project, the general assessment of aquatic resources potentially affected in the corridor, and a lack of information regarding project impacts, the U.S. Army Corps of Engineers Regulatory staff can only provide a general response until we receive a jurisdictional determination request and/or a permit application. In lieu of a specific response, please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves the discharge of dredged or fill material into waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). The use of the National Wetland Inventory map, by itself, is not likely to provide an accurate assessment of the presence or absence of wetlands. Additional wetland review information will be necessary to determine wetland presence/absence and to quantify impacts for permit application processing.

CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at http://www.mvp.usace.army.mil/regulatory.

The Corps' evaluation of a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable

alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

The project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

For further information or to request a pre-application consultation meeting, please contact Larry Puchalski at 218-444-6381, the Corps' project manager for the County in which this proposal is located.

Sincerely,

for Tamara E. Cameron
Chief, Regulatory Branch

Cf: Shane Foley, Hubbard SWCD
Kirk English, MNDNR Waters

GREAT RIVER ENERGY®

12300 Elm Creek Boulevard • Maple Grove, Minnesota 55369-4718 • 763-445-5000 • Fax 763-445-5050 • www.GreatRiverEnergy.com

12 November 2009

Mr. Phil Delthey, Habitat Conservation Biologist
United States Department of the Interior
Twin Cities Field Office
4101 East 80th Street
Bloomington, MN 55425-1665

RE: Proposed Potato Lake Substation and Transmission Line Construction
Hubbard County, Minnesota
T 141 N, R35W, Sections 21, 22, 28, 27, 34, 26, 35 and 36
T 141 N, R34W, Sections 31 and 32
T 140 N, R35W, Sections 2 and 1
T 140 N, R34W, Sections 6 and 5

WO# 73361

Dear Mr. Delthey:

Great River Energy is proposing a 115 kilovolt transmission line project near Potato Lake in Hubbard County, Minnesota. The line is to support a new substation that Itasca-Mantrap Cooperative Electrical Association will be constructing in Section 21 of Arago Township. The new substation is necessary to bring a new energy source closer to increasing load growth, particularly during the heating season, in the lakes area north of Park Rapids.

The Fish and Wildlife Service website (http://www.fws.gov/Midwest/Endangered/LISTS/minnesot-cty.html) indicates that the Gray Wolf is listed on the threatened and endangered list in Hubbard County, Minnesota. Great River Energy is requesting concurrence or information on the possible effects of the proposed project on any listed or proposed threatened or endangered species and designated or proposed critical habitat that may be present in the project area. A project description has been included for your review. The proposed line is marked in blue and an alternative route is marked in pink.

We would appreciate receiving any written comments from your office by Friday, 11 December 2009. If you have any questions about this proposed project, please contact me at (763) 445-5215. If you wish to respond by e-mail, my address is mparlow@grenergy.com. Thank you for your cooperation and assistance.

Sincerely,

GREAT RIVER ENERGY

Marsha Parlow

Marsha Parlow
Transmission Permitting Analyst

Enclosure

S:\Member Services\Environmental\Transmission\Projects\73361 Potato Lake\Potato Lake FWS.doc

Potato Lake 115 kV Substation and Transmission Line

GREAT RIVER ENERGY
17845 East Hwy 10 P.O. Box 800
Elk River, MN 55330-0800
1-800-442-3013
www.greatriverenergy.com

ITASCA-MANTRAP
16930 County 6, PO Box 192
Park Rapids, MN 56470
218-732-3377
www.itasca-mantrap.com

Project Need

Great River Energy, wholesale power supplier to Itasca-Mantrap Cooperative Electrical Association (Itasca-Mantrap) and 27 other distribution cooperatives in Minnesota and Wisconsin, is planning to construct 7.25 miles of new 115 kV (115,000 volt) overhead electric transmission line to serve a new substation to be built by Itasca-Mantrap. The substation is needed to bring a new energy source closer to increasing load growth (particularly during the heating season) in the region north of Park Rapids. The substation and transmission line will be designed and constructed to operate at 115 kV, but will be operated at 34.5 kV until transmission facilities in the area are converted to 115 kV.

Planned Project

Itasca-Mantrap will construct the new Potato Lake Substation in the southeast corner of the northeast quarter of Section 21 in Arago Township (see map on back).The new transmission line will exit the Potato Lake Substation and head south along Highway 71 for 1.5 miles. It will then turn east along 230th Street for 1.5 miles, turn south along 141st Avenue for 1 mile, then turn east along CSAH 18 for 3.25 miles. The new line will tap an existing Great River Energy transmission line along CSAH 4.

Poles will typically be single-pole structures (see top photo) located two to five feet off of the road rights-of-way on private property. They will generally be 65 to 85 feet in height with 300- to 400-foot spans. Guy wires and anchors and possibly two-pole or steel structures may be required in limited areas as angles or soil conditions dictate. The single circuit transmission lines will carry three energized wires and one non-energized shield wire for lightning protection. In some areas, Itasca-Mantrap's distribution lines may be underbuilt on cross-arms on the transmission line structures (see bottom photo).

After public notification and an open house about the project, Great River Energy will apply to the Minnesota Public Utilities Commission for a Route Permit. Once the project has been approved, Great River Energy will contact landowners and a fair offer of compensation will be presented along with the easement. Great River Energy will acquire a right-of-way easement within the proposed 300- to 500-foot corridor shown on the map on back. If the line is located along existing road rights-of-way, the easement will be approximately 55 feet wide, otherwise it will be 100 feet wide (50 feet on each side of the transmission centerline). The easements will allow the poles to be located on private property, although the majority of the easement area will still be available for use by the landowner for agricultural activities, underground utilities, fencing and access drives.

Typical 115 kV Wood Single Circuit Transmission Line Structure

Typical 115 kV Wood Single Circuit Transmission Line Structure with Distribution Underbuild

Project Schedule

Open House and Public Notifications..... October 2009
Project Permitting.....Fall 2009 to Summer 2010
Easement Acquisition.....Summer/Fall 2010
Construction.....Fall 2010 to Spring 2011

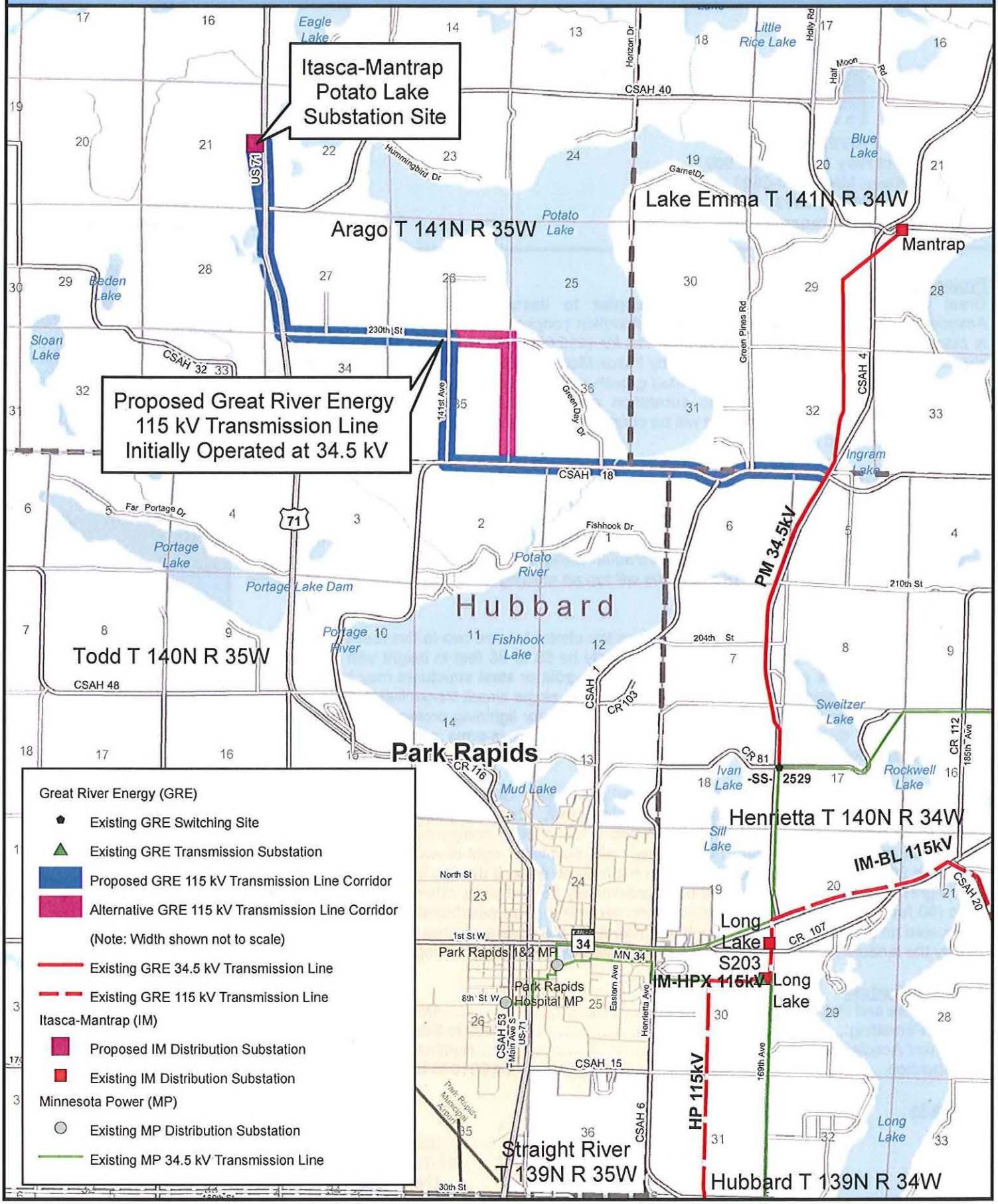
Contacts

Michelle Lommel
Sr. Field Representative
Great River Energy
763-445-5977 or 1-800-442-3013 ext. 5977
mlommel@grenergy.com

Tony Nelson
Engineering Manager
Itasca-Mantrap Co-op Electric
218-732-0695 or 218-255-1432 (cell)
TNelson@itasca-mantrap.com

Date last revised: 11/10/2009

PROPOSED PROJECT



Parlow, Marsha GRE-MG

From: Nick_Rowse@fws.gov
Sent: Friday, November 13, 2009 3:33 PM
To: Parlow, Marsha GRE-MG
Cc: phil_delphey@fws.gov
Subject: Proposed Potato Lake Substation and Transmission Line construction, Park Rapids, MN

Marsha Parlow
Transmission Permitting Analyst
Environmental Services
Great River Energy
2300 Elm Creek Boulevard
Maple Grove, MN 55369

Dear Marsha,

Our records indicate there are no federally listed or proposed species and/or designated or proposed critical habitat within the action area of the proposed project. If project plans change, additional information on listed or proposed species becomes available, or new species are listed that may be affected by the project, consultation should be reinitiated. This concludes section 7 consultation for proposed construction at the above location. Thank you for your cooperation in meeting our joint responsibilities under section 7 of the Endangered Species Act. If you have any further endangered species questions, please contact me at (612) 725-3548 x2210.

Nick Rowse
Fish and Wildlife Biologist
Twin Cities ES Field Office
U.S. Fish and Wildlife Service
4101 American Blvd. E.
Bloomington, MN 55425-1665
612-725-3548

"Parlow, Marsha GRE-MG" <mparlow@GREnergy.com>

11/13/2009 12:36 PM

To "Nick_Rowse@fws.gov" <Nick_Rowse@fws.gov>
cc
Subject Potato Lake Information

Hi Nick,

Thank you again for calling me on this project. I had mentioned that I sent the information to Phil Delthey. Here is the copy of that correspondence. I apologize if I caused any confusion in sending it someone else.

I will wait for your response. If you have any questions feel free to contact me.

Thanks!

Marsha Parlow
Transmission Permitting Analyst, Environmental Services
Great River Energy
2300 Elm Creek Boulevard
Maple Grove, MN 55369
Direct: 763-445-5215 | Fax: 763-445-5246 | Cell: 612-345-1212

WWW.GreatRiverEnergy.com

** Please consider the environment before you print this e-mail.*

[attachment "Potato Lake FWS.PDF" deleted by Nick Rowse/R3/FWS/DOI]

GREAT RIVER ENERGY®

12300 Elm Creek Boulevard • Maple Grove, Minnesota 55369-4718 • 763-445-5000 • Fax 763-445-5050 • www.GreatRiverEnergy.com

13 November 2009

Ms. Lisa Joyal
Minnesota Department of Natural Resources
Natural Heritage and Nongame Research Program
500 Lafayette Road, Box 25
St. Paul, MN 55155

RE: Proposed Potato Lake Substation and Transmission Line Construction
Hubbard County, Minnesota
T 141 N, R35W, Sections 21, 22, 28, 27, 34, 26, 35 and 36
T 141 N, R34W, Sections 31 and 32
T 140 N, R35W, Sections 2 and 1
T 140 N, R34W, Sections 6 and 5 **WO# 73361**

Dear Ms. Joyal:

Great River Energy is proposing a 115 kilovolt transmission line project near Potato Lake in Hubbard County, Minnesota. The line is to support a new substation that Itasca-Mantrap Cooperative Electrical Association will be constructing in Section 21 of Arago Township. The new substation is necessary to bring a new energy source closer to increasing load growth, particularly during the heating season, in the lakes area north of Park Rapids.

The DNR Rare Features map indicates several features of interest in the vicinity of the project area. A colonial waterbird nesting area located in Sections 22 and 23, T141N, R35W. The Trumpter Swan located in Section 28, T141N, R35W. The Bald Eagle located in Sections 1 and 2, T140N, R35W. The Creek Heelsplitter located in Section 36, T141N R35W. The Blanding Turtle located in Section 32, T141N, R34W. Also, the DNR Public Waters Inventory (PWI) maps indicate that the new lines affect two public waterbodies. However, Great River Energy believes that construction and timing of that construction can keep the impact on these features to a minimum.

Great River Energy is requesting concurrence of its interpretation of the rare features in the vicinity and the possible effects of the new transmission lines on wetlands, threatened and endangered species, and other important state natural resources that occur in the project area. A project description, PWI map and rare features map are enclosed for your information. The proposed line is marked in blue and an alternative route is marked in pink.

We would appreciate receiving any written comments from your office by Friday, 11 December 2009. If you have any questions about this proposed project, please contact me at (763) 445-5215. If you wish to respond by e-mail, my address is mparlow@grenergy.com. Thank you for your cooperation and assistance.

Sincerely,

GREAT RIVER ENERGY
Marsha Parlow

Marsha Parlow
Transmission Permitting Analyst

Enclosures
S:\Member Services\Environmental\Transmission\Projects\73361 Potato Lake\Potato Lake DNR.doc

Potato Lake 115 kV Substation and Transmission Line

GREAT RIVER ENERGY
17845 East Hwy 10 P.O. Box 800
Elk River, MN 55330-0800
1-800-442-3013
www.greatriverenergy.com

ITASCA-MANTRAP
16930 County 6, PO Box 192
Park Rapids, MN 56470
218-732-3377
www.itasca-mantrap.com

Project Need

Great River Energy, wholesale power supplier to Itasca-Mantrap Cooperative Electrical Association (Itasca-Mantrap) and 27 other distribution cooperatives in Minnesota and Wisconsin, is planning to construct 7.25 miles of new 115 kV (115,000 volt) overhead electric transmission line to serve a new substation to be built by Itasca-Mantrap. The substation is needed to bring a new energy source closer to increasing load growth (particularly during the heating season) in the region north of Park Rapids. The substation and transmission line will be designed and constructed to operate at 115 kV, but will be operated at 34.5 kV until transmission facilities in the area are converted to 115 kV.

Planned Project

Itasca-Mantrap will construct the new Potato Lake Substation in the southeast corner of the northeast quarter of Section 21 in Arago Township (see map on back).The new transmission line will exit the Potato Lake Substation and head south along Highway 71 for 1.5 miles. It will then turn east along 230th Street for 1.5 miles, turn south along 141st Avenue for 1 mile, then turn east along CSAH 18 for 3.25 miles. The new line will tap an existing Great River Energy transmission line along CSAH 4.

Poles will typically be single-pole structures (see top photo) located two to five feet off of the road rights-of-way on private property. They will generally be 65 to 85 feet in height with 300- to 400-foot spans. Guy wires and anchors and possibly two-pole or steel structures may be required in limited areas as angles or soil conditions dictate. The single circuit transmission lines will carry three energized wires and one non-energized shield wire for lightning protection. In some areas, Itasca-Mantrap's distribution lines may be underbuilt on cross-arms on the transmission line structures (see bottom photo).

After public notification and an open house about the project, Great River Energy will apply to the Minnesota Public Utilities Commission for a Route Permit. Once the project has been approved, Great River Energy will contact landowners and a fair offer of compensation will be presented along with the easement. Great River Energy will acquire a right-of-way easement within the proposed 300- to 500-foot corridor shown on the map on back. If the line is located along existing road rights-of-way, the easement will be approximately 55 feet wide, otherwise it will be 100 feet wide (50 feet on each side of the transmission centerline). The easements will allow the poles to be located on private property, although the majority of the easement area will still be available for use by the landowner for agricultural activities, underground utilities, fencing and access drives.

Typical 115 kV Wood Single Circuit Transmission Line Structure

Typical 115 kV Wood Single Circuit Transmission Line Structure with Distribution Underbuild

Project Schedule

Open House and Public Notifications..... October 2009
Project Permitting.....Fall 2009 to Summer 2010
Easement Acquisition.....Summer/Fall 2010
Construction.....Fall 2010 to Spring 2011

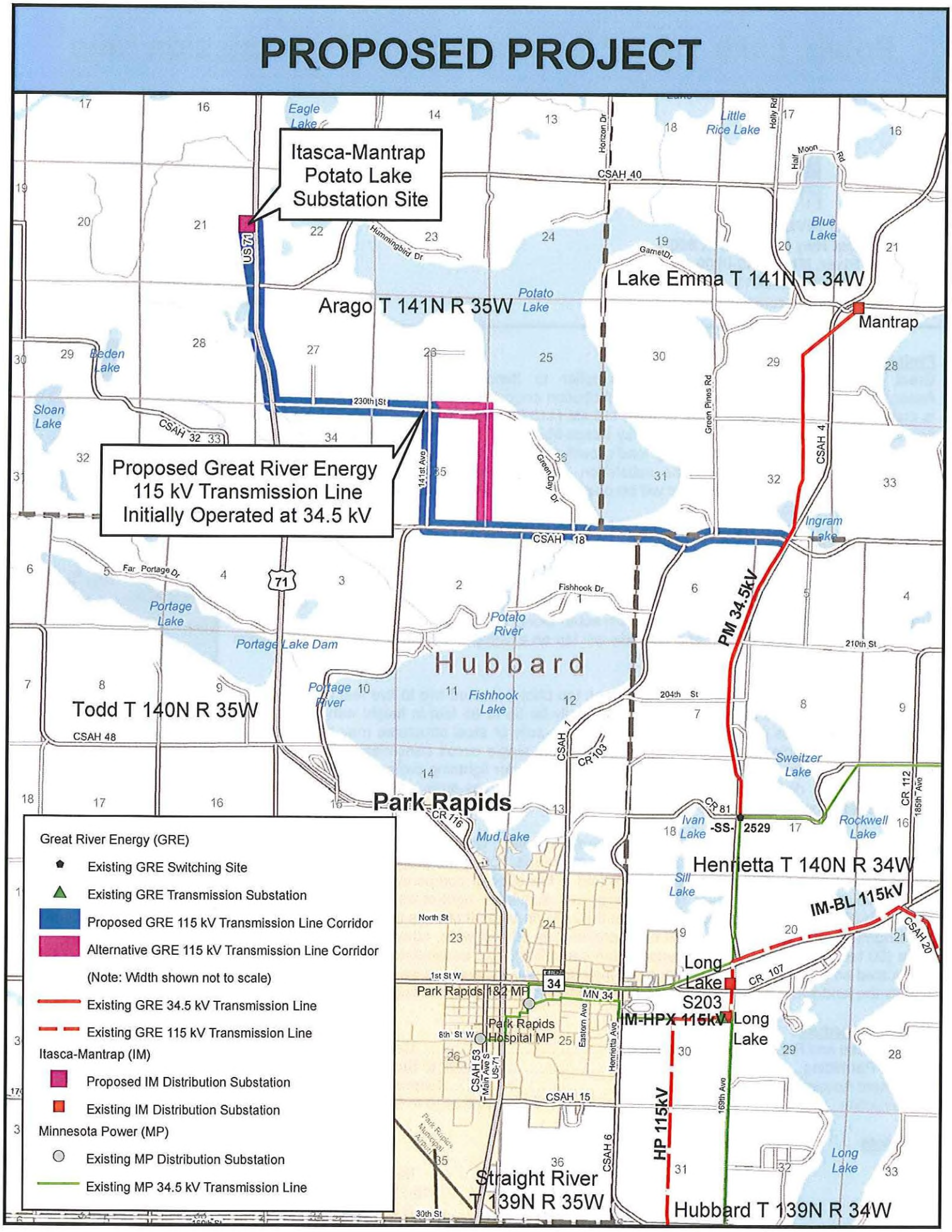
Contacts

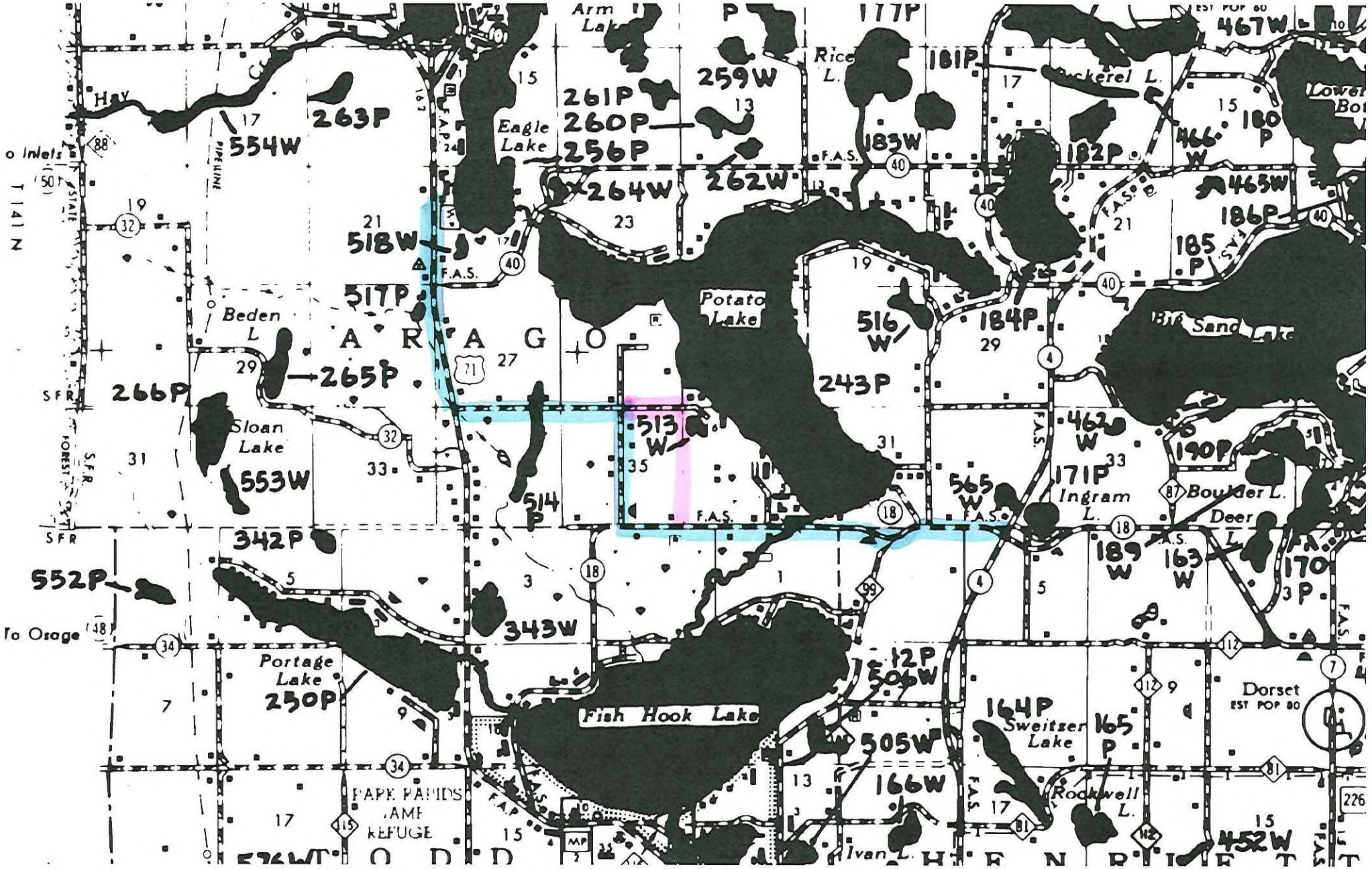
Michelle Lommel
Sr. Field Representative
Great River Energy
763-445-5977 or 1-800-442-3013 ext. 5977
mlommel@grenergy.com

Tony Nelson
Engineering Manager
Itasca-Mantrap Co-op Electric
218-732-0695 or 218-255-1432 (cell)
TNelson@itasca-mantrap.com

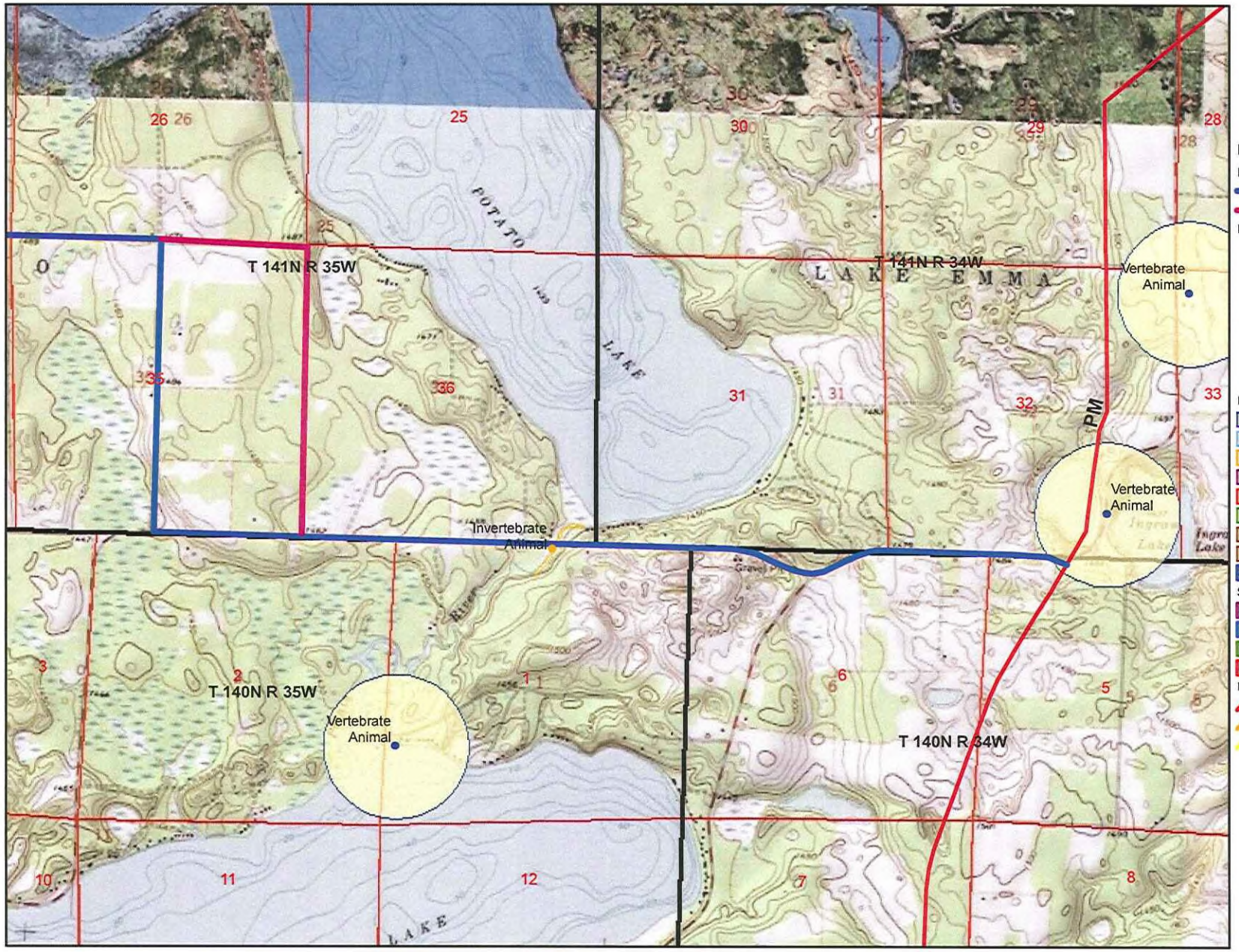
Date last revised: 11/10/2009

PROPOSED PROJECT




Arm Lake
Rice L.
Mackerel L.
Eagle Lake
Potato Lake
Big Sand Lake
Beden L.
Sloan Lake
Ingram L.
Boulder L.
Deer L.
Portage Lake
Fish Hook Lake
Sweitzer Lake
Rockwell L.
Ivan L.
Dorset
EST POP 80
To Osage
PARK RAPIDS GAME REFUGE
T 141 N
261P
260P
256P
259W
264W
262W
263P
554W
518W
517P
265P
266P
553W
513 W
514 P
516 W
243P
184P
565 W
171P
462 W
190P
189 W
163 W
170 3P
342P
552P
343W
250P
506W
164P
165 P
505W
166W
452W
467W
465W
186P
185 P
183W
182P
181P
180 P
466 W

Rare Features in the Vicinity of the Potato Lake Substation & Transmission Line Route
Township T141N R35W, T141N R34W
Section 1, 2, 5, 6, 26, 31, 32, 35, 36
County: Hubbard



Legend

Proposed GRE Overhead Transmission Line
- Proposed 115 kV Line
- Alternative 115 kV Line

Rare Natural Features Points
- Vertebrate Animal
- Terrestrial Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Vascular Plant
- Animal Assemblage
- Fungus
- Other (Ecological)

Rare Natural Features Polygons
- Vertebrate Animal
- Terrestrial Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Vascular Plant
- Animal Assemblage
- Fungus
- Other (Ecological)
- Native Plant Community Polygons

Sites of Biodiversity Significance
- Outstanding
- High
- Moderate
- Below

Prairie Railroad Survey
- Very Good
- Good
- Fair

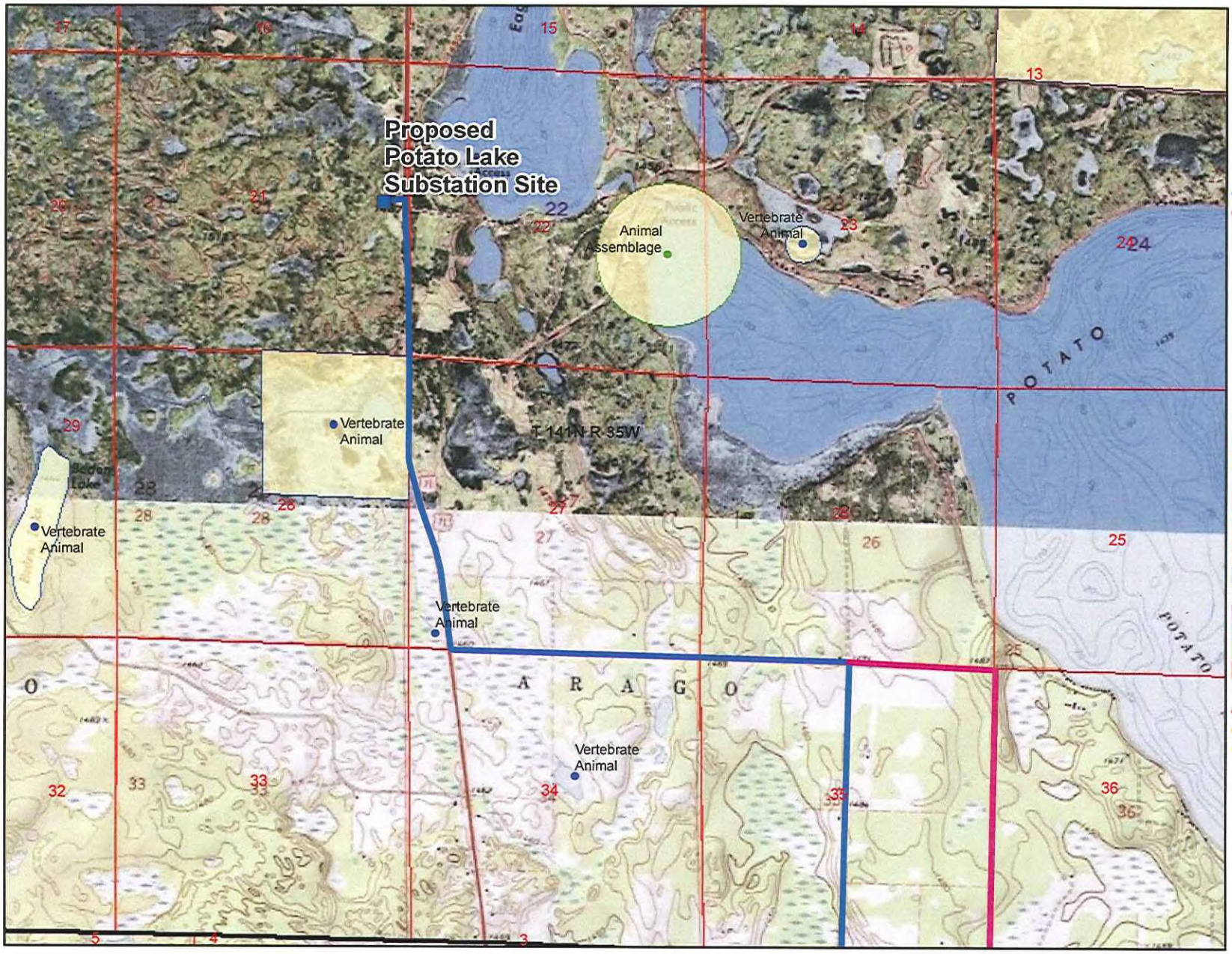
N

0.5 0.25 0 0.5
Miles

Updated: Nov 12, 2009
Rare Features from the MN DNR Natural Heritage Data Set 10-27-2007
1:24k Digital Raster Graphic from the MN DNR WMS Image Service

Potato Lake Substation and
115 kV Transmission Line
Map 1

Rare Features in the Vicinity of the Potato Lake Substation & Transmission Line Route
Township T141N R35W
Section 21, 22, 27, 28, 34, 35, 36
County: Hubbard



Updated: Nov 12, 2009
Rare Features from the MN DNR Natural Heritage Data Set 10-27-2007
1:24k Digital Raster Graphic from the MN DNR WMS Image Service

Potato Lake Substation and
115 kV Transmission Line
Map 2

Minnesota Department of Natural Resources

Division of Ecological Resources, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-4025

Phone: (651) 259-5109 Fax: (651) 296-1811 E-mail: lisa.joyal@dnr.state.mn.us

December 16, 2009 **Correspondence # ERDB 20100373**

Marsha Parlow
Great River Energy
12300 Elm Creek Boulevard
Maple Grove, MN 55369

RE: Natural Heritage information in the vicinity of the proposed Potato Lake 115 kV Substation and Transmission Line, Hubbard County

Township (N)	Range (W)	Section(s)
141	35	21, 22, 26-28, & 34-36
141	34	31 & 32
140	35	1 & 2
140	34	5 & 6

Dear Ms. Parlow,

I have reviewed the information submitted in your 13 November 2009 letter regarding the above project. As mentioned in your letter, the Minnesota Natural Heritage Information System contains several records of rare features in the vicinity of the proposed project. Many of these rare features have the potential to be impacted by the proposed project, and are discussed below. Please note that the Public Utilities Commission Route Permit Application for this project needs to address the following issues, including any avoidance or mitigation measures that will be implemented.

- Several rare birds have been documented in the vicinity of the proposed project. Trumpeter swans (*Cygnus buccinator*), a state-listed threatened species, have been documented (as recently as 2008) nesting in close proximity to US 71 and the proposed transmission line. Bald eagles (*Haliaeetus leucocephalus*), a state-listed species of special concern, also nest in the area and periodic surveys from 1986 to 1997 have documented red-necked grebes (*Podiceps grisegena*), a Species in Greatest Conservation Need as identified in Minnesota's Comprehensive Wildlife Conservation Strategy (http://www.dnr.state.mn.us/cwcs/index.html), nesting on Potato Lake. These rare birds may be at risk for colliding with or being electrocuted by the overhead transmission line. Given the proximity of past swan nests, construction activities along US 71 may also disrupt nesting swans if construction occurs during the breeding season.

- Blanding's turtles (*Emydoidea blandingii)*, a state-listed threatened species, have been reported from the vicinity of the proposed project and may be encountered on site. If Blanding's turtles are found on the site, please remember that state law and rules prohibit the destruction of threatened or endangered species, except under certain prescribed conditions. If turtles are in imminent danger they should be moved by hand out of harms way, otherwise they should be left undisturbed.

  For your information, I have attached a Blanding's turtle fact sheet that describes the habitat use and life history of this species. The fact sheet also provides two lists of recommendations for avoiding and minimizing impacts to this rare turtle. Please refer to the first list of recommendations for your project. If greater protection for turtles is desired, the second list of additional recommendations can also be implemented. The attached flyer should be given to all contractors working in the area.

- Several mussels, including the creek heelsplitter (*Lasmigona compressa*), a state-listed species of special concern, have been documented in the Potato River in the vicinity of the proposed crossing. As mussels are particularly vulnerable to deterioration in water quality, especially increased siltation, it is important that effective erosion prevention and sediment control practices be implemented and

maintained near this crossing. Please contact me if the project will impact the riverbed, as a mussel survey may be required.

- In addition to the above rare species, the Minnesota County Biological Survey (MCBS) has identified a preliminary Site of Moderate Biodiversity Significance immediately west of US 71 and the proposed line. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as Moderate contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. Actions to minimize disturbance in this area may include, but are not limited to, the following recommendations: (1) Place the overhead line on the opposite side of the road; (2) As much as possible, operate within already-disturbed areas; (3) Minimize vehicular disturbance in the area (allow only vehicles necessary for installation); (4) Do not park equipment or stockpile supplies in the area; (5) If possible, do work in autumn or winter, to avoid damaging plants during the growing season; (6) Reduce runoff by completing the work as rapidly as possible and using erosion control measures such as straw bales or silt fencing; (7) Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; (8) Use only invasive-free mulches, topsoils, and seed mixes.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area.

This letter does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist, Nathan Kestner at 218-308-2672. Please be aware that additional site assessments or review may be required. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Lisa Joyal

Lisa Joyal
Endangered Species Environmental Review Coordinator

enc. Blanding's Turtle Fact Sheet and Flyer

links: DNR Rare Species Guide – http://www.dnr.state.mn.us/rsg/index.html
(information on the biology, habitat use, and conservation measures of Minnesota's rare species)

cc: Jamie Schrenzel
Nathan Kestner
Katie Haws
Kirk English

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(*Emydoidea blandingii*)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed before August 1st** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

REFERENCES (cont.)

Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.

Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.

Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

CAUTION

BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harms way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological Resources, Updated March 2008
Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109