

Minnesota Department of Natural Resources

500 Lafayette Road · Saint Paul, Minnesota · 55155-4037

Office of the Commissioner

651-259-5555



February 5, 2014

JoAnne M. Zoff
 Secretary of the Senate
 231 State Capitol
 75 Rev. Dr. Martin Luther King Jr. Blvd.
 St. Paul, MN 55155-1606

Albin A. Mathiowetz
 Chief Clerk of the House of Representatives
 211 State Capitol
 75 Rev. Dr. Martin Luther King Jr. Blvd.
 St. Paul, MN 55155-1606

Dear Secretary Zoff and Chief Clerk Mathiowetz:

Enclosed is the Department of Natural Resources (DNR) report on the examination of the Brainerd Dam on the Mississippi River in Crow Wing County. The report is being submitted in accordance with Minnesota Statutes, section 103G.525, which requires the DNR to file a report on any proposed transfer of a privately owned dam to a public entity of the state. The DNR requests that this report be reviewed during this legislative session. The purchase cannot occur until either the legislature acts to approve it or the session ends without the legislature prohibiting the purchase.

Wausau Paper Mills, LLC (Wausau Paper) is the current owner of the dam. Wausau Paper ceased production at the adjacent Brainerd mill in early 2013 and is planning to sell both the mill and the dam. The City of Brainerd has expressed a desire to purchase the dam in order to obtain additional electrical energy for the city and reduce the quantity it must purchase from commercial utilities. Wausau Paper and the city of Brainerd have filed an application with the Federal Energy Regulatory Commission (FERC) to transfer the hydropower license from Wausau Paper to the city of Brainerd. The FERC license transfer is expected to occur in the spring of 2014.

Transferring the ownership of a private dam to a public entity would shift the liability and responsibility for dam operations, maintenance, repairs, inspections, reporting, and funding from a private owner to the public. Dams owned by a public entity are eligible to receive state funds that a private owner is not eligible to receive.

If you have any questions, please contact Jason Boyle of our Dam Safety Unit at 651-259-5715.

Sincerely,


 Tom Landwehr
 Commissioner

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 Jason Boyle, DNR Dam Safety Engineer
 Todd Wicklund, Finance Director, Brainerd Public Utilities
 Scott Magnuson, Superintendent, Brainerd Public Utilities

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LEGISLATIVE REPORT
BRAINERD DAM
February 5, 2014

Location

The Brainerd Dam is located on the Mississippi River in Crow Wing County, on the north end of the City of Brainerd, as shown on the attached location map.

Ownership

The dam has been owned by Wausau Paper since 2003. Prior to Wausau Paper ownership, it was owned for nearly 100 years by Northwest Paper/Potlatch. The dam was originally built in 1888 by the Mississippi Water Power and Boom Company.

Function of Dam

The dam was originally used to sort logs for downstream milling operations. It was modified in the late 1910s when the paper mill was constructed. The dam has produced hydropower for the paper mill since that time. The 2500 acre reservoir created by the dam is used for recreation.

Description of Dam

The dam is constructed mainly of concrete and consists of a powerhouse with five generating units, a slide gate spillway section, a bascule gate spillway section, a radial gate spillway section, and an earthen embankment. Slide gates are vertical lift gates that operate like a common house window, bascule gates are crest gates that rotate about an axis like a laptop computer monitor, and radial gates are curved plates that operate along an arc. The dam is 32 feet high with a normal hydraulic head of 20 feet. The overall length of the dam from abutment to abutment is 800 feet.

Most of the concrete spillway that exists today was constructed in 1950-1951 after a major flood in the spring of 1950 destroyed major portions of the spillway apron and gates. The current spillway consists of a four-foot thick layer of concrete poured over a stone-filled crib foundation consolidated with pressurized grout and founded on timber piling. The five slide gates were installed in 1951, the two bascule gates were installed in 1981, and the radial gate was installed in 2000. The powerhouse was constructed in 1916 and it is founded on timber piling.

Previous Studies and Inspections

The dam was inspected by the Minnesota Department of Natural Resources (DNR) Dam Safety Unit on January 10, 2014. Much of the dam was not visible or operable due to the winter conditions, so the condition assessment in this report relies on a dam inspection conducted on August 22, 2013 by Mead & Hunt as part of the Federal Energy Regulatory Commission (FERC) requirements and on dam inspections conducted in July of 2013 by Barr Engineering as part of the Brainerd Public Utilities assessment for taking over ownership of the dam.

Condition of Dam

The dam is in fair condition. There is minor embankment seepage, gate leakage, concrete cracking, animal burrowing, overgrown vegetation, and paint coating deterioration, though none of these are

significant dam safety concerns.

The most urgent repair need is the reconstruction of the concrete spillway apron scheduled for 2014. This project entails removing deteriorated concrete and constructing new reinforced concrete features on the downstream side of the dam to dissipate the energy of the water going over the spillway. This estimated \$1.5 million project is required by FERC and will be the responsibility of Brainerd Public Utilities. Bidding has not yet occurred for this project.

We do not have a current condition assessment of the gates, the timber piling that supports the powerhouse, the wood planking that forms the bottom of the tailrace, or any potential undermining. An underwater dive inspection, originally scheduled for October of 2013 and now scheduled for 2014, should provide a better indication of the condition of the gates and tailrace area and may reveal deficiencies that are unknown at this time. Underground features, such as the foundation piling, cannot be directly inspected, but their effectiveness can be monitored through alignment and settlement surveys. Notwithstanding the concrete spillway repairs and the underwater dive inspection results, the dam appears to meet or nearly meet all current dam safety design standards, assuming continued proper operation and maintenance.

Hazards

The dam is classified as a high-hazard dam because failure of the dam during a flood event may result in the loss of life and significant property damage downstream.

Ownership Responsibilities and Expectations

Ownership of a large high-hazard dam carries with it significant liabilities and both short and long-term financial responsibilities. A dam owner could be found liable for damages incurred from a dam failure or improper operation, as well as injuries to others because of dangerous conditions at the dam. Unless the dam is removed, the owner must perpetually maintain, operate, and repair their dam to ensure the integrity of the structure. A non-state dam owner will need to be able to meet dam safety requirements without financial assistance from the state. Since the FERC will be the primary regulatory authority to ensure dam safety, the State of Minnesota will not dually regulate the dam for dam safety. All active Public Waters Work Permits and Water Use Permits shall be kept current. Assignment of these permits from Wausau Paper or previous owners to the City of Brainerd shall require written consent of the DNR Commissioner. It is expected that the City of Brainerd will participate in the Mississippi River "System-Wide Low-Flow Management Plan" as required by the FERC license.

Future Costs and Funding

The major short-term cost is the estimated \$1.5 million spillway apron construction project scheduled for 2014. An upcoming dive inspection could reveal deficiencies that would also need to be addressed in the short-term. Local bonding will cover the purchase of the dam, spillway apron construction, and any other repairs needed as a result of the findings of the dive inspection.

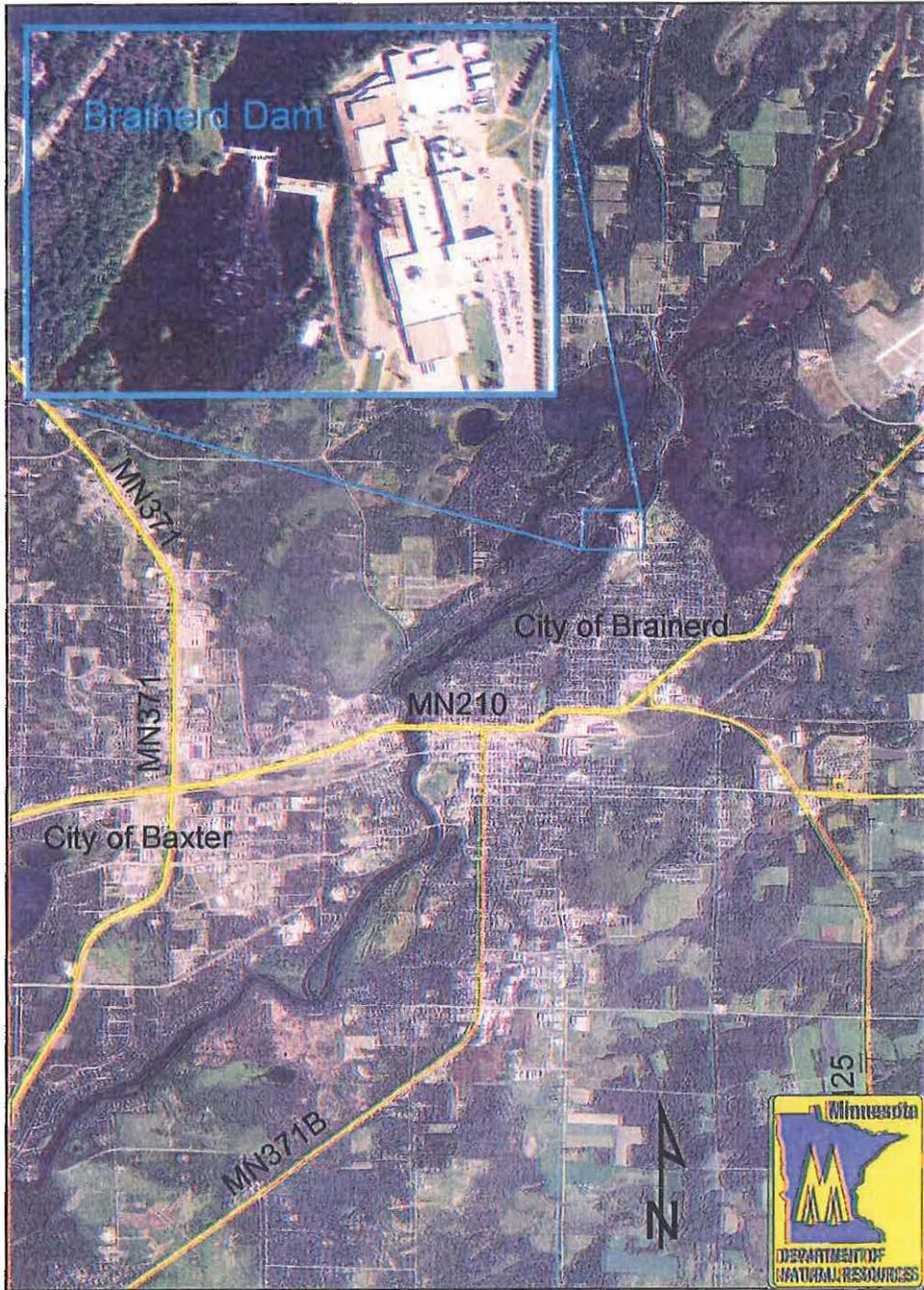
Reasonably foreseeable major long-term capital costs associated with dam safety include the rehabilitation of the slide gate section, bascule gate section, and operator's walkway, along with repairs to the spillway apron. The existing FERC license expires in 2023, and a major effort is typically needed prior to relicensing to ensure the dam and facility meet all FERC requirements. FERC regulations

require hydropower relicensing activities to begin five years in advance of relicensing, so activities will begin in approximately 2018. As part of future relicensing of this facility for hydropower, environmental mitigation recommendations and requirements may be more stringent than occurred when the FERC hydropower license was first issued and could include elements such as control plans for zebra mussels and other invasive species, modifications to the dam to allow for fish passage, and providing recreational enhancement and opportunities.

Since the dam is now privately owned, it is not eligible to receive state dam safety funding for repairs or removal. Local government-owned dams are eligible to receive a state grant of up to 50% of the costs of repair (Minn. Stat., sec. 103G.511, subd.3) and up to 100% of the costs of removal (Minn. Stat., sec. 103G.515, subd.5). The state is responsible for 100% of the costs of state-owned dams. If ownership is transferred from a private entity to the public, the state may incur financial obligations it previously did not have.

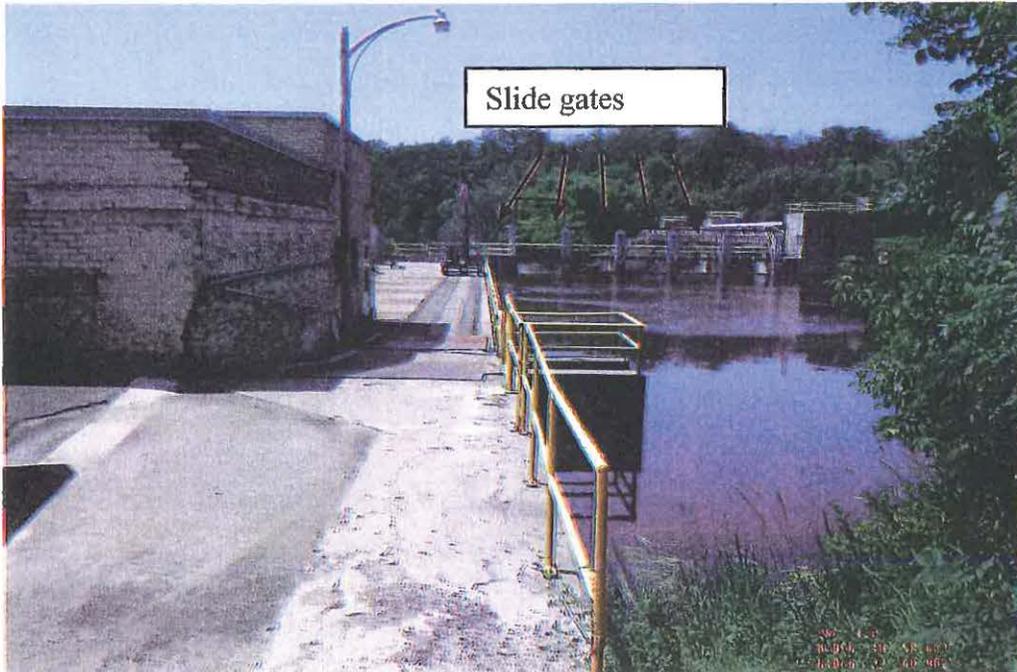
Note that repairs to the hydropower facility unrelated to dam safety, such as the replacement of a generator, are not covered in this report as these items are not eligible items for state dam safety bonding funds.

BRAINERD DAM LOCATION MAP



0 0.5 1 2 Miles

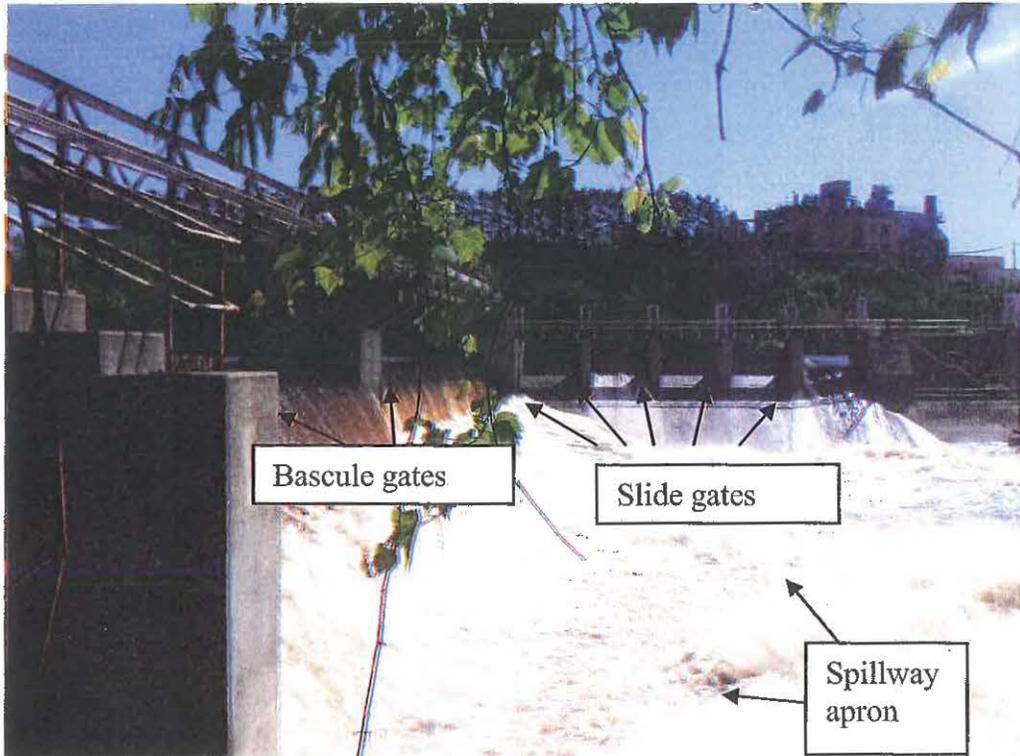
Jason Boyle
February 3, 2014



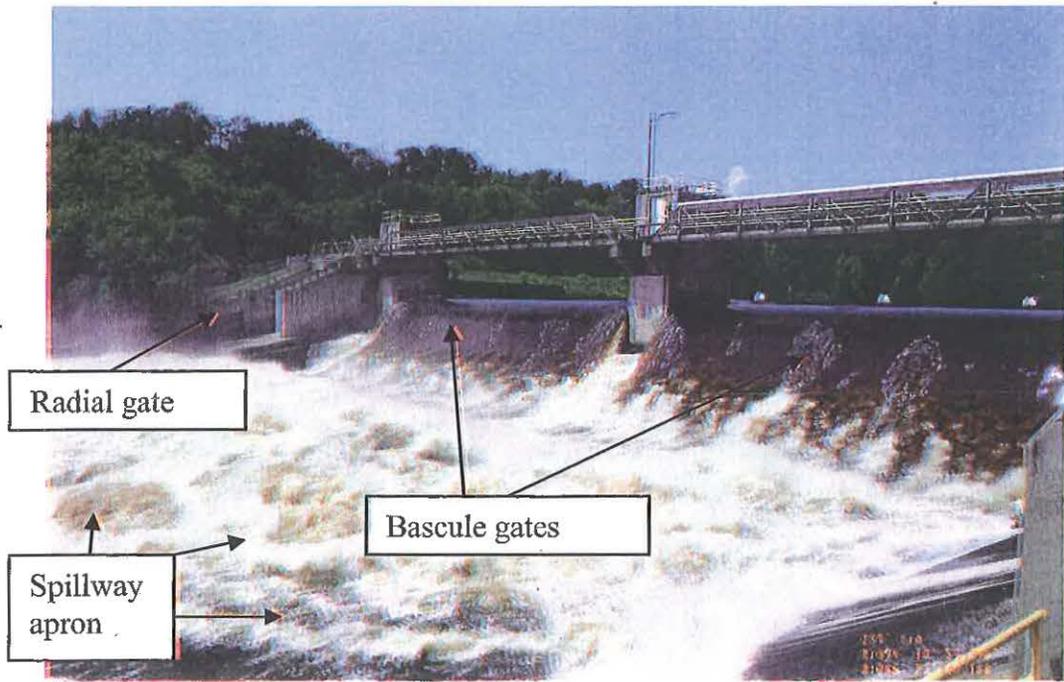
Upstream side with powerhouse on left and slide gates in background (looking west)



Downstream side of powerhouse (looking west)



Downstream side showing two bascule gates and five slide gates (looking east)



Downstream side with radial gate on left and two bascule gates on right (looking west)