

Report on
Survey of Power Generation Capacity
to
Montana Legislature
Energy and Telecommunications Interim Committee
and
Water Policy Interim Committee
per 85-1-501 MCA

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BACKGROUND

Pursuant to 85-1-501 MCA, the Department is reporting on past and current studies conducted to assess the feasibility of establishing hydroelectric power generating projects at state-owned dams. In 2012 Kleinschmidt was contracted by the Montana Department of Natural Resources & Conservation (DNRC) to perform an evaluation of the potential for small hydropower project development at three state owned dams in Montana.¹ These dams were the Tongue River Dam in Big Horn County, the Painted Rocks Dam located on the West Fork of the Bitterroot River in Ravalli County, and the Cooney Dam located on Red Lodge Creek in Carbon County. They were selected for study because they had the highest potential for hydropower development. A fourth dam, Ruby Dam in Madison County, was evaluated by URS as part of the overall design and construction project for the rehabilitation of the Ruby Dam Spillway and Outlet Works.

The results of the Kleinschmidt study indicated that Cooney and Painted Rocks Dam developments would not result in a positive cash flow over the debt service. At the Cooney site, the principal cause for this site being uneconomic is the low annual power generation. At the Painted Rocks site, the cost to construct the approximately 15 miles transmission line results in the project revenues not able to support the total development cost. However, the Tongue River site had marginal feasibility under the study assumptions. The study recommended proceeding with a more detailed design at Tongue River to reduce project contingencies, determine actual

¹ This study was reported on in more detail in a report to ETIC and MPIC in 2012.

cost data from equipment suppliers, and develop actual data regarding revenue, to further determine project viability.

RECENT EVENTS

Preliminary Permits

Based on study results, the DNRC-held Federal Energy Regulatory Commission (FERC) Preliminary Permits for Ruby and Cooney were allowed to lapse. The purpose of a Preliminary Permit is to grant the permit holder priority to file a license application during the permit term. The DNRC had applied for these preliminary permits in order to allow the development of hydropower facilities at these sites if it was determined that it was economically feasible to do so.

Tongue River Power Project

On March 13, 2014, DNRC made application for a new FERC Preliminary Permit for Tongue River Power Project², a proposed hydroelectric project to be located below the Tongue River Reservoir in Big Horn County, Montana.

On May 15, 2014, FERC notified DNRC that our application was accepted and issued a public notice for filing comments, motions to intervene, competing applications (without notices of intent), or notices of intent to file competing applications to be submitted within 60 days.

On July 10, 2014, the Department of Interior, on behalf of the Bureau of Indian Affairs (BIA), commented to FERC on our Tongue River application. They indicate that they have no objection to issuing the Preliminary Permit. They note that the Northern Cheyenne Indian Reservation is nearby and the Northern Cheyenne Tribe has significant water rights in the area, therefore they encourage ongoing consultation with the Tribe.

On July 11, 2014, the Northern Cheyenne Tribe filed a Notice of Intervention and Motion to Intervene with FERC. Reasons stated include protection of water quality and protection of the Tribe's water rights.

On July 14, 2014, the Tongue River Water Users' Association (TRWUA) also filed a Motion to Intervene with FERC. Reasons cited include significant financial obligations to the State and obligations to its members to deliver water from the Dam.

The Department met with representatives of the Northern Cheyenne Tribe, BIA, and TRWUA on July 25, 2014 and plans to continue to communicate regularly with them in the future.

² A copy of the application for Preliminary Permit is attached.

On July 30, 2014, FERC awarded DNRC a Preliminary Permit for the Tongue River Power Project, which is valid for three years.

Work to conduct more extensive feasibility studies on the Tongue River site is dependent upon availability of funding for consultants and in-house staff availability to perform the appropriate level of contract management. However, funding and staffing are currently not available to conduct the necessary studies.

Ruby Dam

As part of the design and construction preparation stage for the recently completed Ruby Dam Rehabilitation efforts, the State Water Projects Bureau contracted with URS to perform a hydroelectric feasibility study at the site. This study indicated that hydroelectric development at the outlet of the Ruby Dam in Madison County was not economically feasible at this time. Since it may become feasible in the future, our recent rehabilitation efforts at this site included a bifurcation in the outlet works to facilitate later installation of a hydroelectric generator.

After the State allowed the preliminary permit to expire, Hydrodynamics, Inc. applied for and secured a FERC Preliminary Permit for the Ruby site. DNRC supplied Hydrodynamics, Inc. with site information approximately seven months ago and has not had further contact. A review of the FERC e-library indicates that no additional updates on the Hydrodynamics permit application are available at this time.

Broadwater-Missouri Project (Toston Dam)

The Broadwater-Missouri Dam and Hydroelectric Project is the only state owned hydroelectric project. The irrigation water diversion dam was completed in 1940 and the powerhouse was completed in 1989. As a run of the river project, power generation is dictated by river flows. The maximum power rating is 10 Megawatts (MW). Annually, our power generation averages approximately 6 MW, depending on actual river flow. Net revenue from the sales of power is deposited into our Rehabilitation Hydro Account and is used for rehabilitation efforts at DNRC water storage projects across the state. Depending on production, recent annual net proceeds have varied from \$1.5M to \$2.5M.

On September 22, 2012, the rubber spillway gate in Bay 6 (there are a total of 7 bays) developed a leak at one of its seams and the reservoir partially drained. Five days after the rupture, project personnel were able to install needle beams and wooden flashboards to restore reservoir level to normal and to resume supplying irrigation water and power generation.

Engineers concluded that all seven of the 23-year old rubber bladders had reached the end of their useful lives and replacement gates should be installed in all seven bays. Each bladder is 51 feet long and 11.5 feet tall when installed, and weighs nearly 8 tons. As part of this work, additional gate valves were added so any gate can be isolated from all others. Also, steel

bulkheads were procured to replace the wooden flashboards, which will significantly reduce the recovery time should this type of failure occur in the future. Finally, ladders and catwalks were installed on the piers to assist in inspection of the dam structure and rubber gates.

Funding for the rehabilitation project was from a \$3,000,000 Renewable Resource Emergency Loan from the Conservation and Resource Development Division of the DNRC. The construction contractor was NW Construction, Inc. from Bozeman MT. Loan repayment will be made from the net proceeds of power sales through our Rehabilitation Hydro Account.

A brief timeline of the project is:

- The gate failure occurred in September 2012
- The engineering contractor was placed under contact in March 2013
- Bids were received for the gates in July 2013
- The contract awarded to the rubber gate supplier in August 2013
- Bids were received for construction in January 2014
- The contract awarded to the construction contractor in January 2014
- Construction started in February 2014
- Substantial completion was achieved in late June 2014

The replacement gates have been operated without difficulty since they were installed. Post-construction activities are progressing well.

FUTURE RECOMMENDATIONS

Pending availability of staffing and funding, a detailed analysis of the Tongue River Dam system is necessary to determine if this site can be developed. As Federal and FERC regulatory guidelines change with time and/or power rates change significantly, projects such as the Ruby Dam and others will likely warrant further review and analysis.

A thorough feasibility assessment is required to develop confidence sufficient to proceed with Tongue River Project development. This assessment will address geotechnical, land ownership and right-of-way, electrical interconnection, hydraulic, or other questions. We anticipate that consultant costs to conduct the necessary assessment will range from \$150,000 to \$300,000, depending on the complexity of the site. On top of the fiscal costs, in-house staffing requirements to manage the contract will be substantial. Work conducted by in-house staff includes time to set up and administer the contract, coordinate with interested organizations, compile technical information, determine relevant assumptions, conduct regularly scheduled review meetings, and review the final product. Typically the work conducted by in-house staff equates to $\frac{1}{3}$ to $\frac{1}{2}$ of an FTE. The outcome of this effort will be a complete evaluation of

economic, technical, and regulatory feasibility, plus a cost estimate for final engineering design and construction.