

RIVER FALLS HYDROELECTRIC PROJECT

PRE-APPLICATION DOCUMENT
PROJECT NO. P-10489
RIVER FALLS, WISCONSIN



Prepared by:

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1.0 INTRODUCTION

The Kinnickinnic River flows south and west through the City of River Falls, Wisconsin. The Junction Falls Dam was the first dam in the City, and began as a privately owned rock-filled timber dam to generate power for a mill located adjacent to the site. The City acquired ownership of the dam in 1900 and in 1920 replaced the damaged timber crib dam. A new power house was built in 1948 and around 1962 the steel tube penstock was encased in concrete. The City has since made repairs to the dam to improve the structure. The penstock and powerhouse have remained the same. Lake George is its reservoir.

The Powell Falls Dam is located approximately ½ mile downstream. It was built in 1966 to replace an earlier timber crib structure that was destroyed by high water on the Kinnickinnic River. The hydroelectric facility at Powell Falls was replaced in 1948 when equipment was installed to replace the original equipment from 1903. Lake Louise is its reservoir.

The River Falls Hydroelectric Project operates in “instantaneous run of river mode” and will continue to operate as such. The hydroelectric facilities continue to supply energy to the overall system, thus reducing the need for bulk energy purchases by the River Falls Municipal Utilities (“RFMU”), a division of the City of River Falls.

1.1 Purpose

The Pre-Application Document (“PAD”) is intended to provide currently existing information on the existing project facilities and operations, information on the existing environment, and information concerning known and potential impacts of the projects, as required by 18 CFR §5.6. This information is provided to the Federal Energy Regulatory Commission (“FERC”), other federal and state resource agencies, Indian tribes, and other interested stakeholders. This will allow them to identify issues and related information needs, develop study requests, and prepare documents analyzing any license application that may be filed.

1.2 Process Plan

The City filed a Notice of Intent (NOI) to file for the relicensing of Project No. 10489 and for an extension of filing the PAD on August 23, 2013. FERC granted an extension on September 3, 2013 and advised that many projects seek the flexibility of the Traditional Licensing Process (“TLP”). The new deadline for the PAD is November 29, 2013.

Therefore, concurrent with the filing of this PAD, the City of River Falls is requesting the use of the TLP. The TLP has three stages of consultation. The filing and circulation of this PAD will initiate the first stage of consultation. The City’s plan and proposed schedule for the pre-application process are shown in Table 1. The City’s proposed plan is subject to revision as various project activities are completed.

TABLE 1
Proposed Plan for River Falls Hydroelectric Project Relicensing

REQUIREMENT	TIMING	TARGET DATE
File NOI, PAD, and Request to Use Traditional Licensing Process		November 27, 2013
Comments Due on Request to Use TLP	30 days from filing of Request to Use TLP	December 27, 2013
FERC Issues Notice and Decision on TLP Request	60 days from filing of Request to Use TLP	January 26, 2014
Joint Public Meeting	30-60 days from approval to use TLP	February 25 – March 27, 2014
Comments on PAD and necessary studies	60 days from Joint Public Meeting	April 26 – May 26, 2014
Complete studies requested by resource agencies and Indian tribes	Dependent on length of studies	
Prepare Draft License Application (DLA)	No deadline	January 2016
Comments on DLA	90 days from filing of DLA	April 2016
Joint Public Meeting with disagreeing resource agency or Indian tribe	60 days from date of comments	June 2016
File License Application	No deadline	September 2016

2.0 PROPOSED LOCATION, FACILITIES, AND OPERATION

2.1 Applicant Agents

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City of River Falls
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Telephone: (715) 425-0906

2.2 Project Maps

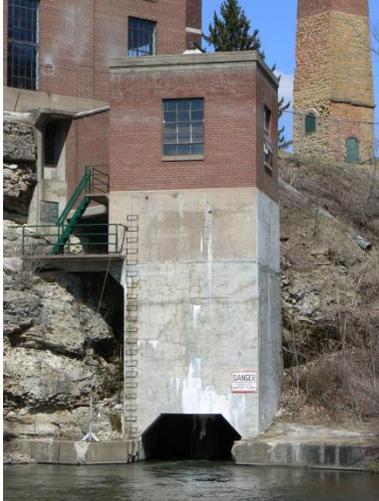
The location of the project is Section 1, Township 27 North, Range 19 West, in Pierce County, Wisconsin. The Project lies within the City of River Falls. Detailed maps showing the Project area and facilities are attached as **Appendix A**.

2.3 Existing Facilities and Components

2.3.1 Current Project as Licensed

The River Falls Hydroelectric Project consists of Junction Falls and Powell Falls. The Project is inclusive to the boundaries of the City of River Falls, in Pierce County, Wisconsin, 54022.

Junction Falls consists of a concrete gravity dam, 140 feet long, with an uncontrolled overflow spillway and a crest length of 115 feet. The headworks section of the dam is at right abutment and has two gated waterway openings; one 5 foot square for discharging excess flows; and one 6' X 200' encased pipe leading from the penstock to the powerhouse. The existing reservoir, Lake George, is 16 acres with a storage capacity of 142 acre-feet. The normal pool elevation is 865.3 feet mean sea level.



The powerhouse consists of a brick superstructure above a concrete substructure, (1) General Electric generator rated at 250 kW, 312 kVA, 2300 volts, 0.8pf 450 RPM 3 phase type ATI coupled to a Leffel hydraulic turbine 42' design head 330bhp 246kW 450 RPM Type F year 1917. The transmission line is approximately 50 feet to the existing bus which connects to the 12.4kV system through a 2400-12.4 transformer. It is currently run in "run of river" mode, and the historic average flow rate of

river is @95 cfs (USGS data retrieved 10/29/2013).

Powell Falls consists of a concrete gravity dam, 110 feet long and 22 feet high, with an uncontrolled overflow spillway. An integrated powerhouse/penstock is at the left abutment. The reservoir, Lake Louise, is 15.4 acres with a normal 37 acre feet capacity. Normal pool elevation is 821.80 feet mean sea level. There is also an intake gate integrated into the powerhouse and a 6' waste-gate adjacent to the powerhouse.

The Powerhouse consists of a brick superstructure above a concrete substructure, (1) General Electric generator rated at 125 kW, 165 kVA, 2300 volts, 0.8pf, 3 phase Type ATI coupled to a Leffel hydraulic turbine 20' design head 80bhp 134kW 240 RPM Type F year 1917. The transmission line is approximately 2,500 feet from the powerhouse to the control room at the Municipal Power Plant building, where it connects to the existing bus and to the 12.4kV system through a 2400-12.4 transformer. This unit is also run in "run of river" mode. The historic average flow rate of river is @95 cfs (USGS data retrieved 10/29/2013).



For project drawings the Project facilities from the original license application, please see **Appendix B**.

2.3.2 Primary Transmission Lines

No new transmission lines are to be installed at this time. For current transmission lines, please see **Appendix C**.

2.3.3 Energy Production Estimates

The current energy production estimate for the Project is 2,000,000 kWh/year.

2.3.4 Net Investment

The City of River Falls' annual investment in maintaining and operating the Project is approximately \$35,000. Over the course of the 30-year license, the net investment is estimated to be at least \$1.1 million.

2.4 Current Project Operation

An amendment to the operating license issued in 1997, 81 FERC 62,087 (1997), states the operators use a prescribed outline when ramping the units up or down for intake cleaning and/or maintenance, with a 5kW increase or decrease no sooner than every 15 minutes. This is to ensure a smooth water discharge downstream.

Ramping for intake grate cleaning is done only on an as need basis and scheduled so as not to be done on both units the same day. Heavy leaf load in the river during fall and excess debris in the spring are causes to shut the units off for a period of time and let the debris flow over the spillway.

With the discontinuation of the diesel generation at the River Falls Municipal Power Plant, the plant is no longer manned on a 24-hour basis. The operator makes daily visits to the Junction Falls Hydro Facility and weekly to the Powell Falls Hydro Facility. The outputs can be monitored from the Power Plant SCADA system.

2.5 Existing License

For information on the current license and amendments, please see **Appendix D**.

2.6 Future Project Plans

There are currently no new modifications and or construction at either site. There are future plans to relocate the electrical controls (substation), which would not affect the dams, the river, or hydroelectric structures. We would amend the license in regard to the connectivity descriptions.

3.0 EXISTING ENVIRONMENT AND RESOURCE IMPACTS

3.1 Description of Existing Environment

The Kinnickinnic River Watershed is located in St. Croix and Pierce Counties, and is 13,189 acres in size. It includes 283 miles of rivers and streams, 508 acres of lakes and 1308 acres of wetlands. The watershed is dominated by agriculture (57%) and grassland (22%), and is ranked high for nonpoint source issues affecting streams, lakes and groundwater. Please see <http://dnr.wi.gov/topic/Watersheds/> for more information.

3.2 Geology and Soils

The project area is characterized by a glaciated surface consisting of a thin layer of silty loess over glacial till. Faulted Precambrian granites diorites and gneisses comprise the underlying bedrock. Cambrian sandstones dolomites and shale superpose the Precambrian igneous rocks. The soils in the area consist of prairie soils including black silt loams and silt soils on plains of outwash sand and gravel. Upstream of the City of River Falls, the Kinnickinnic River flows through broad outwash plains bordered by steeply-sloped valley walls. The Junction Falls Dam is located in a steep narrow gorge on the North Branch of the Kinnickinnic River. The composition of the soils and bedrock has remained constant since the original license in 1988.

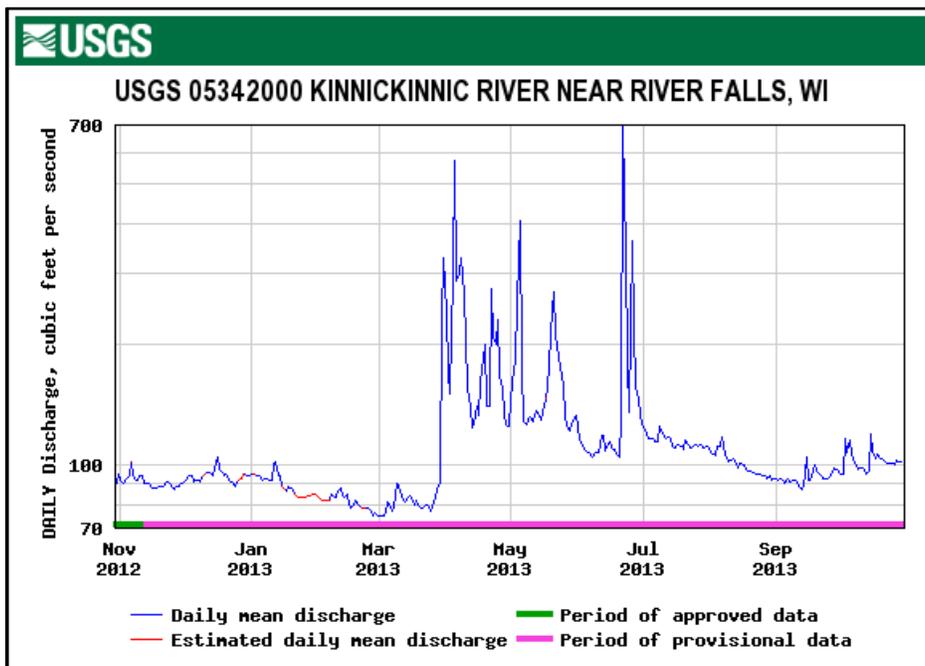
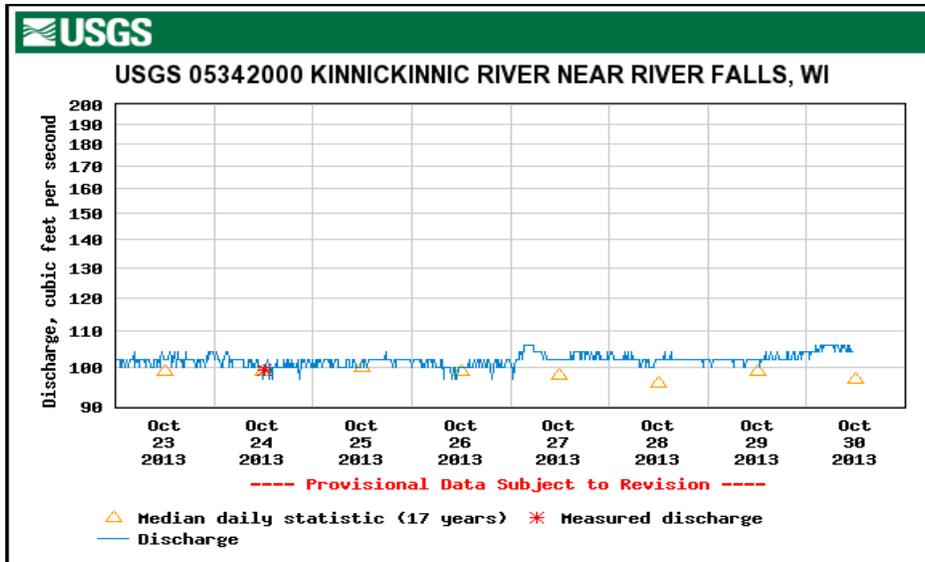
3.3 Water Resources

The project area, Junction Falls and Powell Falls, are within the City limits of River Falls, while the Kinnickinnic River runs through farmland above the reservoirs. The river below Powell Falls runs through steep-sided banks with relatively no public access until it reaches the Kinnickinnic State Park at County Highway F. Overall, the river shoreline remains undeveloped.

The project is “run-of-the-river”. As such we use the discharge flow rates of the USGS Kinnickinnic River stream monitor, which is located 350 feet upstream from County Highway F in Pierce County, Wisconsin, USGS# 05342000. This can be monitored at any time with computer/ smartphone technology via the USGS stream flow internet site.

3.3.1 Historical Discharges and Stream Flows

These stream flow parameters were derived from the flow duration curve. The curve was derived from the USGS survey data taken from 1917-1921. The following graphs display information from the USGS for the dates shown:



To see the historical flow duration curve and the 2012 USGS Water-Data Report for the Kinnickinnic River, please see **Appendix E**.

3.3.2 Previous Studies

There are numerous studies on the water quality of the Kinnickinnic River and the reservoirs of the dams. Please see Section 4.0, Preliminary Issues and Studies List, for a brief accounting.

The most recent and comprehensive surface water study was prepared by the Wisconsin Department of Natural Resources. For the December 1998 Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report, please see **Appendix F**.

Another comprehensive plan for monitoring the Kinnickinnic River is the 1995 Kinnickinnic River Water Management Plan. Due to its length, the plan will be provided in pdf form if requested by an interested party. Please contact Brian Hatch at bhatch@rfcity.org to request this document.

3.4 Environmental Resources

The Wisconsin Department of Natural Resources (<http://dnr.wi.gov/>) has collected much information on the environmental resources of the Kinnickinnic River. Pages 2-6 of **Appendix G** contain an introduction to the Kinnickinnic River Region.

3.4.1 Fish and Aquatic Resources

The Kinnickinnic River is considered a Cool (Warm Transition) Mainstem under the State's Natural Community Determinations. Natural Communities are identified based on modeled flow and temperature characteristics. For the results of the 1991 thermal monitoring, please see page 7 of **Appendix G**.

The Kinnickinnic River has one of the highest densities of brown trout in the state. Trout densities range from 2,000 to 12,000 trout per stream mile. The river is classified as an outstanding resource water above STH 35, and the remaining portion of the river is classified as Class I trout is an excellent resource water.

3.4.2 Wildlife and Botanical Resources

The Project area is within the Western Prairie Ecological Landscape, which is located on the far western edge of the state just south of the Tension Zone. It contains the only true representative prairie potholes in the state. It is characterized by its glaciated, rolling topography and a primarily open landscape with rich prairie soils and pothole lakes, ponds, and wet depressions, except for forested areas along the St. Croix River. The climate and growing season are favorable for agricultural crops. Sandstone underlies a mosaic of soils. Silty loams that can be shallow and stony cover most of the area. Alluvial sands and peats are found in stream valleys.

Historic vegetation was comprised of dry to mesic prairie grasses in the rolling areas and wet prairies in the broad depressions. Open oak savannas and barrens were found on the hilly topography, with small inclusions of sugar maple-basswood forest in small steep sites. Prairie pothole type wetlands were mainly found in St. Croix and Polk counties. Barrens were found along the river terraces of the St. Croix River. Almost half of the current vegetation is agricultural crops and almost a third of the area is grasslands, with smaller areas of open water, open wetlands, and urban areas. The major forest types are maple-basswood and oak-hickory, with smaller amounts of lowland hardwoods and lowland conifer.

Mammals inhabiting the lower Kinnickinnic Basin include white-tailed deer, raccoon, beaver, muskrat, gray squirrel, striped ground squirrel, red fox, striped skunk, and mink. Avian species include marsh hawk, broad-winged hawk, barn owl, ruffed grouse, ring-necked pheasant, great

blue heron, green heron, common loon, Canada goose, wood duck, mallard, blue-winged teal, black tern, belted kingfisher, barn swallow, American gold finch, cerulean warbler, common yellow throat, eastern kingbird, and mourning dove. Canada geese and several species of ducks nest on the wetlands within the project impoundments and on several islands in the river downstream of the project.

3.4.3 Wetlands, Riparian, and Littoral Habitat

Upper Dam Minor Watershed: The large wetland in this area is mostly forested with cottonwood, silver maple, ash, and box elder, with some interspersed open areas. This wetland likely serves as an important wildlife resource along the section of the Kinnickinnic River that runs through the City, as it is one of the only areas that is not developed close to the riverbanks.

Lower Dam Minor Watershed: The wetlands associated with Lake Louise are both forested and emergent. The trees are generally willow and cottonwood, while the emergent wetlands are cattails, willow shrubs, and reed canary grass. Lake Louise is the largest water body in the Project area, and these associated wetlands provide important buffers to its water quality, as well as adding diversity of habitat for wildlife, such as water birds, amphibians, and larger mammals.

3.4.4 Rare, Threatened, and Endangered Species

For the original licensing in 1988, the Bald Eagle was listed as threatened and endangered. Now the Bald Eagle is a frequent visitor and has successfully nested along the Kinnickinnic River.

There are approximately 2,000 species of native and naturalized seed plants in the State of Wisconsin. Pages 8 and 9 of **Appendix G** list some of the rare, threatened, and endangered plant and animal species within St. Croix and Pierce Counties. For a list of the endangered and threatened species within the Project area, please see page 10 of **Appendix G**.

3.5 Recreation and Land Use

There are abundant opportunities for recreation within the Project area. The City of River Falls is the home of the University of Wisconsin-River Falls and the South fork of the Kinnickinnic River runs through the Campus area of the University. Along with the natural areas set aside for hiking, fishing, canoeing, and biking. There has been an uptick of folks kayaking the journey down the Lower portion of the river to the State Park or out to the Saint Croix River, itself a protected National Scenic River.

For more information on recreation near the Project area, please see the excerpt of the 2009 River Falls Park Inventory in **Appendix H**. It contains information on the recreation opportunities and conservation efforts immediately adjacent to the Project area.

3.6 Aesthetic Resources

River Falls is situated on the West-Central side of the State of Wisconsin. In addition to having the University of Wisconsin presence and a renowned class 1 trout stream, River Falls is located within 30 minutes of the Saint Paul/Minneapolis Metropolitan Area, the Mississippi River, and

the Saint Croix River. The buildings that are involved with the hydroelectric generation and the dams, along with the reservoirs, have been part of the River Falls landscape for many years. There are no planned changes to the dams and or hydroelectric facilities that would have a detrimental effect on the environment.

3.7 Cultural Resources

The founding of the City is credited to Joel Foster in 1848, which soon brought more individuals to the area surrounding the Kinnickinnic River. There were names for the city such as Kinnickinnic and Greenwood, but in 1858 River Falls became the official name. Milling and lumber were important industries as Joel Foster himself opened up one of the first sawmills in the area.



Milling became the principal industry and many Yankee millers came to the area to capitalize on the river power. At one time there were five mills operating on the Kinnickinnic. Greenwood, Junction, Prairie, Cascade, and further downriver, the Dayton mill. The increase in milling activity increased the need for shipping in additional wheat and shipping out flour. In 1878 the Hudson-River Falls Rail line was established.

There were three successive years of drought and an infestation of cinch bugs that ended the viability of milling and shipping wheat from River Falls. The railroad continued until 1966 as more shipping went by truck. The Junction Mill had been using hydroelectric power in its operation and when the mill burned down it seemed the logical location for a Municipal Power Plant. With the help of local businessmen the Municipal Electric started in 1900. The Power Plant grew, adding diesel generators to the system, updating the dams and penstock. Currently only the hydroelectric facilities continue to supply energy to the system as the generators were shut down in 2011.

The University of Wisconsin started as River Falls Normal School to prepare students for teaching to educate the frontier regions. The school became a member of the University of Wisconsin System in 1971 and now comprises 226 acre campus with 32 major buildings and 2 laboratory farms with a total of 440 acres in and around the City of River Falls. With an enrollment of over 6,900, the University is a large part of River Falls community.

River Falls and the surrounding areas were once inhabited by the Dakota, and later the Ojibwa. For a more detailed history of the area around the Kinnickinnic, please see <http://www2.uwrf.edu/arc/rfhistory.php>. Properties listed or eligible for listing on the National Register of Historic Places have not been recorded in the project area.

3.8 Socio-Economic Resources

The City of River Falls population as of the 2010 Census was 15,000. Of the total population, 70.8% is in the labor force, compared to the national average of 64.4%. Of the total population,

43.3% residents hold a Bachelor's degree or higher, compared to the national average of 28.1%. Public school enrollment as of fall, 2013 school year was 3,083. The total number of housing units in 2012 was 5,878. The percentage of owner-occupied housing is 51.5%. In 2012, the City had an assessed value of \$938,063,400.

3.9 Tribal Resources

There are no tribal lands in the general vicinity of or within the project area.

3.10 River Basin Description

The Kinnickinnic River is at the south end of the St. Croix River Basin. The major land use of the area is agricultural. Agricultural practice changes have been a concern in the past, and



include more row crops, and a switch from small dairy farming to large confined animal feeding operations, which enhanced concerns over barnyard runoff, stream bank erosion, and manure management. Pierce County continues to face issues associated with growth and development stemming from the St. Paul/Minneapolis Metropolitan Area, and has struggled to maintain the area's rural and agricultural features.

4.0 PRELIMINARY ISSUES AND STUDIES LIST

Pierce and St. Croix Counties are two of the fastest growing counties in the state of Wisconsin. Thus, water quality and aquatic habitat in the streams of this watershed are threatened by nonpoint source pollution from urban development, rural residential development, and agricultural land use. The City of River Falls comprehensive stormwater management plan and ordinance are beneficial in helping to maintain the overall water quality of the Kinnickinnic River as development proceeds within the city. Several groups are also working to protect the water quality of the Kinnickinnic River Watershed.

Additional resource management plans include:

- City of River Falls Comprehensive Plan, 2005
- Comprehensive Parks and Recreation Plan, 1995-2000
- Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report, 1998
- Kinnickinnic River Water Management Plan, 1995
- Lake George Area Stormwater Treatment Concept Plan, 2005
- Lake George Management Plan, 1996
- River Falls Park Inventory, 2009

The upper Kinnickinnic River flows mainly through farmland, despite rapid development in the last two decades. The area upstream from River Falls is the most heavily pressured for development due to its proximity of Interstate 94. Although recent development on the south end

of River Falls by the Rocky Branch tributary has required monitoring for the effects of storm water run-off on the trout population on the lower section.

Because the counties where the river lies are some of the fastest growing in the state, thermal pollution and urban nonpoint pollution, as well as urban development pressure have become major concerns. An Embrace-A-Stream grant was used for production of a video about development and thermal pollution's effect on the Kinnickinnic.

The Kinnickinnic River was also degraded by many years of poor land use practices and harmful wastewater releases into the river from a treatment plant until the 1960s. A spring creek in western Wisconsin, today it has regained good water quality and supports naturally reproducing brook and brown trout. The Kiap-TU-Wish and Twin Cities Trout Unlimited Chapters have been focusing their efforts on this river for the last decade, in cooperation with efforts by the Wisconsin Department of Natural Resources. Their devotion to stewardship is assisted by the Kinnickinnic River Land Trust, a group active in preserving the lower stretch of river.

5.0 SUMMARY OF CONTACTS

The information contained in this pre-application document was collected from the City's own files and publications from the Wisconsin Department of Natural Resources. Our primary contact with the Department of Natural Resources was Mark Hazuga (Mark.Hazuga@wisconsin.gov).

Throughout the term of the license, the City has engaged with partners to conduct studies on the physical quality of the dams and the quality of the environmental resources. The collection of these studies and the information received from the Wisconsin Department of Natural Resources comprises the relevant information required for this small-scale hydroelectric project.

6.0 SUMMARY OF APPENDICES

Appendix A:	Maps
Appendix B:	Project Drawings
Appendix C:	Transmission Lines
Appendix D:	Original License & Amendments
Appendix E:	Water Resources
Appendix F:	Surface Water Resource Appraisal Report, 1998
Appendix G:	Environmental Review
Appendix H:	River Falls Park Inventory, 2009 - Excerpt