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VIA E-FILING

June 11, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Docket Room
Washington, D.C. 20426-001

RE: River Falls Hydroelectric Project, FERC Project No. 10489
Revised Study Plan

Dear Secretary Bose:

In accordance with 18 CFR § 5.13(a), the Licensee for the River Falls Hydroelectric Project, City of River Falls Municipal Utilities (RFMU or Licensee), files with the Federal Energy Regulatory Commission (FERC) the enclosed Revised Study Plan (RSP) for the River Falls Hydroelectric Project (Project) (FERC P-10489). The RSP is based on study requests submitted by FERC, resource agencies, and stakeholders. The RSP is also reflective of the discussion of the study plan meeting dated March 13, 2019, additional meetings and discussion with agencies and stakeholders, and the comment letters filed on the Proposed Study Plan (PSP) in accordance with 18 CFR § 5.12.

In accordance with 18 CFR § 5.13(b), interested parties have 15 days i.e., until June 26, 2019 to file their written comments to FERC on this RSP.

If there are any questions or comments regarding this RSP, please contact Kevin Westhuis at (715) 426-3442, or by email at kwesthuis@rfcity.org.

Sincerely,

Kevin Westhuis
Utility Director
City of River Falls Municipal Utilities
222 Lewis Street
River Falls, WI 54022

Attachment: Revised Study Plan for the River Falls Hydroelectric Project

cc: Interested Parties Mailing List

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CITY OF RIVER FALLS MUNICIPAL UTILITIES

REVISED STUDY PLAN
FOR THE RIVER FALLS HYDROELECTRIC PROJECT
(FERC NO. 10489)



Submitted by:

City of River Falls Municipal Utilities
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Prepared by:

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JUNE 2019

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CITY OF RIVER FALLS MUNICIPAL UTILITIES

RIVER FALLS HYDROELECTRIC PROJECT
(FERC NO. 10489)

REVISED STUDY PLAN

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 Project Boundary Revision 1-3
2.0 STUDY PLAN REVIEW MEETING 2-1
3.0 PROGRESS REPORTS, STUDY REPORTING, MEETINGS 3-1
4.0 COMMENTS ON THE PROPOSED STUDY PLAN 4-1
5.0 REQUESTED STUDIES NOT ADOPTED 5-1
5.1 Study Requests Related to Project Operations 5-1
5.2 Study Requests Related to Geology and Soils 5-3
5.3 Study Requests Related to Aquatic Resources 5-6
5.3.1 Fisheries Surveys 5-6
5.3.2 Mussel Survey 5-8
5.3.3 Macroinvertebrate Survey 5-11
5.3.4 Biological Impacts 5-13
5.4 Study Request Related to Aesthetic Resources 5-15
5.5 Study Request Related to Socioeconomic Resources 5-18
5.6 Agency Study Requests That Do Not Meet The Requirements of 18 CFR § 5.9(b)(7) ... 5-20
5.7 References 5-21
6.0 INDIVIDUAL STUDY PLAN PROPOSALS 6-1
6.1 Hydrologic and Hydraulic Evaluation 6-1
6.1.1 Goals and Objectives 6-1
6.1.2 Known Resource Management Goals 6-1
6.1.3 Background and Existing Information 6-1
6.1.4 Project Nexus 6-2
6.1.5 Methodology 6-3
6.1.5.1 Hydraulics 6-3
6.1.5.2 Hydrology 6-3
6.1.6 Consistency with Generally Accepted Scientific Practice 6-4
6.1.7 Deliverables and Schedule 6-4

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.1.8 Cost and Level of Effort 6-4
6.1.9 Differences between Requested and Proposed Methods 6-4
6.1.10 References 6-5
6.2 Water Quality Study 6-5
6.2.1 Goals and Objectives 6-5
6.2.2 Known Resource Management Goals 6-6
6.2.3 Background and Existing Information 6-6
6.2.4 Project Nexus 6-7
6.2.5 Methodology 6-7
6.2.6 Consistency with Generally Accepted Scientific Practice 6-10
6.2.7 Deliverables and Schedule 6-10
6.2.8 Cost and Level of Effort 6-10
6.2.9 Differences between Requested and Proposed Methods 6-10
6.2.10 References 6-11
6.3 Lake George Shoreline Habitat Assessment 6-12
6.3.1 Goals and Objectives 6-12
6.3.2 Known Resource Management Goals 6-12
6.3.3 Background and Existing Information 6-12
6.3.4 Project Nexus 6-13
6.3.5 Methodology 6-13
6.3.6 Consistency with Generally Accepted Scientific Practice 6-14
6.3.7 Deliverables and Schedule 6-14
6.3.8 Cost and Level of Effort 6-14
6.3.9 Differences between Requested and Proposed Methods 6-14
6.3.10 References 6-14
6.4 Aquatic Invasive Species Survey 6-15
6.4.1 Goals and Objectives 6-15
6.4.2 Known Resource Management Goals 6-15
6.4.3 Background and Existing Information 6-16
6.4.4 Project Nexus 6-17
6.4.5 Methodology 6-17
6.4.6 Consistency with Generally Accepted Scientific Practice 6-17
6.4.7 Deliverables and Schedule 6-18
6.4.8 Cost and Level of Effort 6-18
6.4.9 Differences between Requested and Proposed Methods 6-18
6.4.10 References 6-18
6.5 Wetland, Riparian, and Terrestrial Resources Survey 6-19

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.5.1 Goals and Objectives 6-19
6.5.2 Known Resource Management Goals 6-20
6.5.3 Background and Existing Information 6-20
6.5.3.1 Terrestrial Wildlife 6-20
6.5.3.2 Upland Plant Communities 6-22
6.5.3.3 Wetlands and Riparian Habitat 6-22
6.5.3.4 Invasive Species 6-22
6.5.3.5 Rare, Threatened and Endangered Species 6-23
6.5.4 Project Nexus 6-23
6.5.5 Methodology 6-24
6.5.6 Consistency with Generally Accepted Scientific Practice 6-25
6.5.7 Deliverables and Schedule 6-25
6.5.8 Cost and Level of Effort 6-26
6.5.9 Differences between Requested and Proposed Methods 6-26
6.5.10 References 6-26
6.6 Riverine Habitat Evaluation below Powell Falls 6-26
6.6.1 Goals and Objectives 6-27
6.6.2 Known Resource Management Goals 6-27
6.6.3 Background and Existing Information 6-27
6.6.4 Project Nexus 6-28
6.6.5 Methodology 6-28
6.6.6 Consistency with Generally Accepted Scientific Practice 6-29
6.6.7 Deliverables and Schedule 6-29
6.6.8 Cost and Level of Effort 6-29
6.6.9 Differences between Requested and Proposed Methods 6-29
6.6.10 References 6-30
6.7 Recreation Facility Inventory and Recreation Use Assessment 6-30
6.7.1 Goals and Objectives 6-30
6.7.2 Known Resource Management Goals 6-31
6.7.3 Background and Existing Information 6-31
6.7.4 Project Nexus 6-35
6.7.5 Methodology 6-35
6.7.5.1 Recreation Facility Inventory 6-35
6.7.5.2 Recreation Use Assessment 6-35
6.7.5.3 Report 6-37
6.7.6 Consistency with Generally Accepted Scientific Practice 6-38
6.7.7 Deliverables and Schedule 6-38

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.7.8 Cost and Level of Effort 6-39
6.7.9 Differences between Requested and Proposed Methods 6-39
6.7.10 References 6-42
6.8 Cultural Resources Study 6-42
6.8.1 Goals and Objectives 6-45
6.8.2 Known Resource Management Goals 6-45
6.8.3 Background and Existing Information 6-46
6.8.4 Project Nexus 6-47
6.8.5 Methodology 6-47
6.8.5.1 Archaeological Resources Survey 6-47
6.8.5.2 Historic Architectural Resources Survey 6-48
6.8.6 Consistency with Generally Accepted Scientific Practice 6-49
6.8.7 Deliverables and Schedule 6-49
6.8.8 Cost and Level of Effort 6-50
6.8.9 Differences between Requested and Proposed Methods 6-50
6.8.10 References 6-50
7.0 POWELL FALLS DECOMMISSIONING PLAN DEVELOPMENT 7-1
7.1 Goals and Objectives 7-1
7.2 Known Resource Management Goals 7-1
7.3 Background and Existing Information 7-1
7.4 Project Nexus 7-2
7.5 Methodology 7-2
7.6 Consistency with Generally Accepted Scientific Practice 7-4
7.7 Deliverables and Schedule 7-4
7.8 Cost and Level of Effort 7-5
7.9 References 7-5

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

LIST OF TABLES

Table 3.0-1: Proposed River Falls Project Pre-Filing Process Plan and Schedule 3-1

Table 3.0-2: Estimated Dates for Commencement and Completion of Field Work..... 3-3

Table 6.2-1: DO and Maximum Temperature Water Quality Standards for the Kinnickinnic River at the Project..... 6-8

Table 6.7-1: Recreation Facilities within Project Boundary..... 6-33

Table 6.7-2: Project Spot Counts/User Surveys by Month..... 6-36

Table 6.8-1: Remaining Historic Architectural Sites in the Project Vicinity 6-47

LIST OF FIGURES

Figure 1.1-1: Approximate FERC Project Boundary 1-5

Figure 6.2-1: Water Quality Survey Locations..... 6-9

Figure 6.5-1: Project Vicinity 6-21

Figure 6.7-1: Recreation Facilities and Amenities within Project Boundary 6-34

Figure 6.8-1: Proposed Area of Potential Effect..... 6-44

LIST OF APPENDICES

Appendix A – Requested Additional Information

Appendix B – Agency and Stakeholder Comment Letters on Proposed Study Plan

Appendix C – Agency and Stakeholder Study Requests

Appendix D – Study Plan Meeting and Study Consultation

Appendix E – Historic Fisheries Surveys

Appendix F – Draft Recreation Facility/Site Inventory Form

Appendix G – Draft Recreation User Survey Form

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

AIS	Aquatic Invasive Species
APE	Area of Potential Effects as pertaining to Section 106 of the National Historic Preservation Act
°C	Temperature in Degrees Celsius
CFR	Code of Federal Regulations
cfs	Cubic Foot/Feet per Second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
DO	Dissolved oxygen
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FIS	Flood Insurance Study
FQI	Floristic quality index
HEC-HMS	Hydrologic Engineering Center – Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center – River Analysis System
ILP	Integrated Licensing Process
Installed Capacity	The nameplate MW rating of a generator or group of generators
Interested Parties	The broad group of individuals and entities that may have an interest in a proceeding
IPaC	Information for Planning and Conservation
KRCP	Kinni River Corridor Plan
kW	kilowatt
License Application	Application for New License submitted to FERC no less than two years in advance of expiration of an existing license.
Licensee	City of River Falls Municipal Utilities
LOMR	Letter of Map Revision
mg/l	Milligram(s) per liter
MW	Megawatt
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHI	Natural Heritage Inventory
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PA	Program Agreement
PAD	Pre-Application Document
PM&E	Protection, Mitigation and Enhancement Measure(s)
Project	River Falls Hydroelectric Project, FERC Project No. 10489
Project Area	The area within the FERC Project Boundary.
Project Boundary	The boundary line defined in the Project license issued by FERC that surrounds those areas necessary for safe and efficient

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	operation and maintenance of the Project or for other specified Project purposes.
Project Vicinity	Area as depicted on Project Vicinity figures.
PSP	Proposed Study Plan
Relicensing	The process of acquiring a subsequent FERC license for an existing hydroelectric Project upon expiration of the existing FERC license.
Relicensing participants	Individuals who actively participate in the relicensing proceedings
RFMU	City of River Falls Municipal Utilities
RTE species	Rare, threatened, and endangered species
Run-of-river	A hydroelectric project that uses the flow of a stream with little or no reservoir capacity for storing water
SD1	Scoping Document 1
SD2	Scoping Document 2
SEH	Short Elliott Hendrickson
Service List	A list maintained by FERC of parties who formally have intervened in a proceeding.
SHPO	State Historic Preservation Officer
SPD	Study Plan Determination
Stakeholders	Individuals or organizations who may have an interest in the relicensing proceedings
SWIMS	Surface Water Integrated Monitoring System
SDR	Supporting design report
TMDL	Total Maximum Daily Load
UAB	Utility Advisory Board. A seven-person board that advises the City of River Falls City Council on matters regarding public utility property, plant, equipment owned by the city for the conduct of the electric, water, sewer, and storm sewer utilities, its facilities and infrastructure, subject to the general control and supervision of the city council and its designee.
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	United States Department of the Interior, Geological Survey
WHS	Wisconsin Historical Society
Wisconsin DNR	Wisconsin Department of Natural Resources
WisCALM	Wisconsin's Consolidated Assessment and Listing Methodology
WPDES	Wisconsin Pollutant Discharge Elimination System
WWTF	Wastewater Treatment Facility

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CITY OF RIVER FALLS MUNICIPAL UTILITIES
RIVER FALLS HYDROELECTRIC PROJECT
(FERC NO. 10489)
REVISED STUDY PLAN

1.0 INTRODUCTION

The City of River Falls Municipal Utilities (Licensee or RFMU) is the Licensee of the River Falls Hydroelectric Project (FERC No. 10489) (Project). The Project is licensed by the Federal Energy Regulatory Commission (FERC or Commission) as a two-development project. The two developments include the Junction Falls Development and the Powell Falls Development. The Junction Falls Development has one generating unit with an installed capacity of 250 kilowatts (kW) and the Powell Falls Development has one generating unit with an installed capacity of 125 kW. The Project is located along the Kinnickinnic River in the City of River Falls, in Pierce County, Wisconsin.

The FERC license expires on August 31, 2023. The Licensee declared its intent to apply for relicense of the Junction Falls Development and proposed the decommissioning of the Powell Falls Development with dam removal. The Licensee is using FERC's Integrated Licensing Process (ILP) as established in regulations issued by FERC July 23, 2003 (Final Rule, Order No. 2002) and found at Title 18 CFR, Part 5. The Licensee filed a Pre-Application Document (PAD) and Notice of Intent (NOI) for the Project on August 30, 2018. The PAD provides a complete description of the Project, including its structures, operations, and potentially affected resources. Electronic copies of the PAD and NOI are available on FERC's website (www.ferc.gov) or on the City of River Falls' website (http://www.rfcity.org/582/Hydroelectric-Relicensing).

The Licensee distributed the PAD and NOI to Federal and state resource agencies, local governments, Native American tribes, non-governmental organizations, members of the public, and others likely to be interested in the relicensing proceeding. Following the filing of the PAD, FERC prepared and filed Scoping Document 1 (SD1) on October 25, 2018. FERC also held two agency and public scoping meetings, one on November 15, 2018 and one on November 16, 2018. A visit to the Project was held on November 15, 2018. FERC also provided agencies and

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interested parties an opportunity to file comments on the PAD and the SD1 and request studies by December 28, 2018. The FERC issued Scoping Document 2 (SD2) on February 7, 2019.

On February 11, 2019, the Licensee filed its Proposed Study Plan (PSP), which responded to additional information request, proposed certain studies, and provided a rationale for why the Licensee did not propose certain studies requested by agencies and stakeholders. In accordance with 18 C.F.R. §5.11(e), the Licensee held a study plan meeting on March 13, 2019. The Licensee also consulted with agencies by telephone and email correspondence to resolve issues regarding individual study requests.

Stakeholder comments on the Licensee's PSP (including any revised information or study requests) were required to be filed by May 13, 2019. Comments must include "an explanation of any study plan concerns and any accommodations reached with [the Licensee] regarding those concerns" (18 CFR § 5.12).

Within 30 days of the due date of stakeholder comments on the PSP, i.e., by June 11, 2019, the Licensee is required to issue the Revised Study Plan (RSP). This RSP contains modifications intended to address written comments provided by agencies and stakeholders, as well as study scope changes resulting from consultation with agencies and stakeholders, including the study plan meeting. The RSP contains two new studies – Aquatic Invasive Species Survey and Riverine Habitat Evaluation below Powell Falls. The RSP also includes modifications to studies originally included in the PSP. Modified scope or timeline is included for the Water Quality Study, Lake George Shoreline Habitat Assessment, Wetland, Riparian, and Terrestrial Resources Survey, Recreation Facility Inventory and Recreation Use Assessment, and Cultural Resources Study. As requested by FERC, the RSP includes scope to develop the Powell Falls Decommissioning Plan.

Section 6.0 of this RSP provides the individual studies proposed by the Licensee to gather additional information needed to adequately analyze the potential effects of the continued operation of the Junction Falls Development on Project-related developmental and non-developmental resources and information needed to adequately analyze the potential effects of

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the proposed decommissioning and dam removal of the Powell Falls Development. The following studies are included in this RSP:

1. Hydrologic & Hydraulic Evaluation
2. Water Quality Study
3. Lake George Shoreline Habitat Assessment
4. Aquatic Invasive Species Survey
5. Wetland, Riparian, and Terrestrial Resources Survey
6. Riverine Habitat Evaluation below Powell Falls
7. Recreation Facility Inventory and Recreation Use Assessment
8. Cultural Resources Study

Individual study descriptions include information on the goals and objectives of each study; the relationship of the study plan to the issues identified in the PAD, SD1, SD2, and scoping process; known resource management goals; methodology; and scope, schedule and budget information as per the requirements of 18 CFR § 5.11.

Section 7.0 includes scope to develop the Powell Falls Decommissioning Plan. The RSP includes a proposal to develop a decommissioning plan, including a description of the methodology that will be used to develop the decommissioning plan.

In Schedule B of their letter dated December 26, 2018, FERC requested additional information about the Project. The Licensee's responses to FERC's additional information requests were originally provided in the PSP and are also included in the RSP in Appendix A.

1.1 Project Boundary Revision

Since the development of the Pre-Application Document (PAD) and PSP, the Licensee determined that the Project does not have a well-defined FERC Project Boundary. The Exhibit G on file with FERC shows the Project location but does not clearly delineate a FERC Project Boundary (Appendix D). According to FERC staff, when the Project was licensed, FERC's regulations did not require a definitive boundary to be depicted on the Exhibit G documents for minor licenses (Shana Wiseman [FERC] and Christopher Chaney [FERC], personal

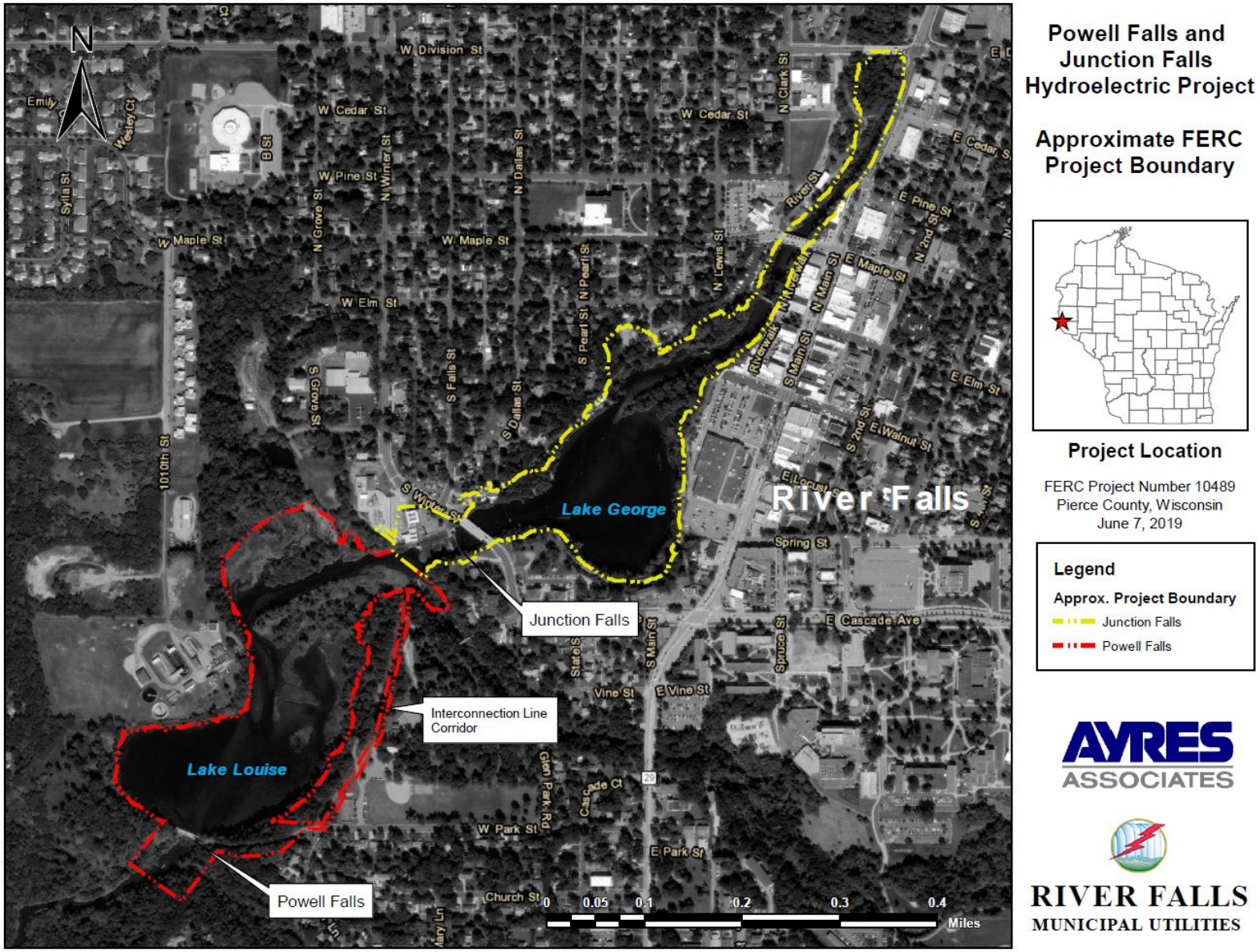
20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

communication May 2019). An approximate Project Boundary[1] has been generated based on current FERC regulations (18 CFR § 4.41[h][2]) as shown in Figure 1.1-1. The study area for studies outlined in the RSP will be based on this revised approximate Project Boundary unless otherwise noted in the RSP.

Further, the approximate Project Boundary has been divided into two portions, the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary. This distinction was made due to the proposed action for the Project (the Junction Falls Development is proposed to be relicensed and the Powell Falls Development is proposed to be decommissioned and dam removed). For certain studies, this distinction will facilitate an easier and clearer review throughout the process.

[1] A revised Exhibit G will be generated and included in the license application.

Figure 1.1-1: Approximate FERC Project Boundary



Powell Falls and Junction Falls Hydroelectric Project

Approximate FERC Project Boundary

Project Location

FERC Project Number 10489
Pierce County, Wisconsin
June 7, 2019

Legend

Approx. Project Boundary
Junction Falls
Powell Falls

AYRES ASSOCIATES

RIVER FALLS
MUNICIPAL UTILITIES

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

2.0 STUDY PLAN REVIEW MEETING

In accordance with 18 CFR § 5.11, the Licensee held an Initial Proposed Study Plan Meeting on March 13, 2019 at 9:00 a.m. at the River Falls City Hall Training Room, 222 Lewis Street, River Falls, WI, 54022. The purpose of the Proposed Study Plan Meeting was to clarify the intent and contents of the Licensee's PSP, share any initial information or study responses, and identify any outstanding issues with respect to the PSP. The agenda, presentation, and attendee list for the Initial Proposed Study Plan meeting are included in Appendix D.

Follow up consultation included telephone and email correspondence with specific agencies the stakeholders. Conference calls were held on April 10 and June 6, 2019 with the Wisconsin SHPO, FERC, and the Licensee to discuss the proposed cultural resources study. A conference call was held on April 23, 2019 with Trout Unlimited, Wisconsin DNR, FERC, and the Licensee to discuss proposed studies. The meeting summaries for these meetings are included in Appendix D.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

3.0 PROGRESS REPORTS, STUDY REPORTING, MEETINGS

Although FERC's Study Plan Determination (SPD) is not anticipated until July 11, 2019, the Licensee is proposing to begin implementation of field work for the studies proposed in the PSP starting in summer 2019 in order to take advantage of as much of the 2019 field season as possible.

Because RFMU anticipates being able to complete many of the year-one studies in 2019, we are requesting herein that FERC modify the Project Plan and Schedule to advance the Initial Study Report (ISR) submittal date to January 31, 2020; and to similarly advance the related ISR and Updated Study Report (USR) activities. The ISR will serve as the progress report, as required by 18 C.F.R. §5.11(b)(3) and will include a discussion for each of the proposed studies. The ISR will be filed with FERC and provided to agencies and stakeholders and discussed during the ISR meeting. RFMU anticipates that this proposed schedule will also allow as many of the studies and reports as possible to be submitted prior to the filing of a Draft License Application in April 2021.

RFMU proposes to accelerate the schedule contained in SD1 and SD2 as shown in Table 3.0-1.

Table 3.0-1: Proposed River Falls Project Pre-Filing Process Plan and Schedule

Responsible Party	Pre-Filing Milestone	Date Contained in SD1 and SD2	Proposed Date
RFMU	First Study Season	2019 – 2020	July 2019 – October 2019
RFMU	ISR (Progress Report)	7/10/20	1/31/20
All stakeholders	ISR Meeting	7/25/20	2/15/20
RFMU	ISR Meeting Summary	8/9/20	3/2/20
All stakeholders	Any Disputes/Requests to Amend Study Plan Due	9/8/20	4/1/20
All stakeholders	Responses to Disputes/Amendment Requests Due	10/8/20	5/1/20
FERC	Director's Determination on Disputes/Amendments	11/7/20	5/31/20

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Responsible Party	Pre-Filing Milestone	Date Contained in SD1 and SD2	Proposed Date
RFMU	Second Study Season	2020 – 2021	May 2020 – September 2020
RFMU	USR due	7/10/21	1/31/21
All stakeholders	USR Meeting	7/25/21	2/15/21
RFMU	USR Meeting Summary	8/9/21	3/2/21
All stakeholders	Any Disputes/Requests to Amend Study Plan Due	9/8/21	4/1/21
All stakeholders	Responses to Disputes/Amendment Requests Due	10/8/21	5/1/21
FERC	Director's Determination on Disputes/Amendments	11/7/21	5/31/21
RFMU	File Draft Licensing Proposal	4/3/21	4/3/21
All stakeholders	Draft Licensing Proposal Comments Due	7/2/21	7/2/21
RFMU	File Final License Application	8/31/21	8/31/21
RFMU	Issue Public Notice of License Application Filing	9/14/21	9/14/21

Based on the revised schedule, the Licensee anticipates that the ISR will be available by January 31, 2020 and the ISR meeting will occur by February 15, 2020. The estimated start and completion dates for field work for studies are provided in Table 3.0-2.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Table 3.0-2: Estimated Dates for Commencement and Completion of Field Work

Proposed Study	Estimated Field Work Start Date	Estimated Field Work Completion Date
Hydrologic & Hydraulic Evaluation	August 2019	October 2019
Water Quality Study	July 2019 May 2020	September 2019 September 2020
Lake George Shoreline Habitat Assessment	June 2020	July 2020
Aquatic Invasive Species Survey	June 2020	July 2020
Wetland, Riparian, and Terrestrial Resources Survey	August 2019	September 2019
Riverine Habitat Evaluation below Powell Falls	August 2019	September 2019
Recreation Facility Inventory Recreation Use Assessment	September 2019 May 2020	October 2019 September 2020
Cultural Resources Study	August 2019	October 2019

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

4.0 COMMENTS ON THE PROPOSED STUDY PLAN

Comments on the Licensee's RSP (including any revised information or study requests) were required to be filed by May 13, 2019. Comments must include "an explanation of any study plan concerns and any accommodations reached with [the Licensee] regarding those concerns" (18 CFR § 5.12). Further, any proposed modifications to the Licensee's PSP must address the criteria in 18 CFR § 5.9(b).

Comments on the PSP were submitted by FERC, Wisconsin Department of Natural Resources (DNR), Kiap-Tu-Wish Chapter of Trout Unlimited (Trout Unlimited), Kinnickinnic River Land Trust (KRLT), and the Wisconsin State Historic Preservation Office (SHPO). The comment letters are attached in Appendix B. Verbal comments by participants at the March 13, 2019 study plan meeting and follow-up correspondence with agency and stakeholder representatives[2] have also be taken into consideration by the Licensee in the preparation of this RSP.

FERC

In an issuance dated May 8, 2019, FERC provided written comments on the PSP. FERC provided comments on the proposed Powell Falls Decommissioning Plan, the Water Quality study, the Cultural Resources study, the Shoreline and Aquatic Invasive Species Survey, and the Wetland, Riparian, and Terrestrial Resources Survey. FERC also provided comments on the requested studies not adopted in the PSP. As stated in the May 8, 2019 written comments, FERC provided verbal comments at the March 13, 2019 study plan meeting, which the Licensee has taken into consideration in the preparation of this RSP.

FERC commented that the RSP should include a proposal to develop a decommissioning plan that includes a detailed description of the methodology that would be used to develop the Powell Falls Decommissioning Plan. FERC stated that the decommissioning plan should describe the

[2] Conference calls were held on April 10, 2019 and June 6, 2019 with the Wisconsin SHPO, FERC, and the Licensee to discuss the proposed cultural resources study. A conference call was held on April 23, 2019 with Trout Unlimited, Wisconsin DNR, FERC, and the Licensee to discuss proposed studies. The meeting summaries for these meetings are included in Appendix D.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

disposition of all Project facilities (removal, and / or modification); how the dam would be deconstructed and removed; environmental effects for resources, including cultural resources, anticipated from the decommissioning and removal, and the extent of effects to resources; proposed measures to mitigate or lessen effects; and a schedule for implementation. FERC stated that so the Commission staff can determine the feasibility of the proposed removal of Powell Falls dam and / or determine the need for different removal strategies, a decommissioning plan should include a supporting design report (SDR), as described in section 4.41(g)(3) of the Commission's regulations. The Licensee has provided this requested information in Section 7.0 of this RSP. Section 7.0 of this RSP includes scope to develop the Powell Falls Decommissioning Plan.

FERC commented on the Water Quality study. The Water Quality study has been revised in this RSP, as described in detail in Section 6.2. FERC requested an expanded study period. The Licensee has extended the study period to include data collection from May 1 to September 15, 2020, in addition to July 15 to September 15, 2019. As requested, the Licensee has modified the study to record data in 15-minute intervals, instead of hourly. FERC also requested that the study include monitoring of air temperature at a representative location. The Licensee has modified the study to include that air temperature data from a local weather station will be compared to water temperatures gathered during the survey period. FERC stated that periodic temperature and dissolved oxygen monitoring at various depths in Lake George would provide information to describe stratification in the impoundment and evaluate Project effects on water quality and aquatic habitat. The Licensee has modified the Water Quality study as described in Section 6.2 to collect periodic grab samples in Lake George.

FERC commented on the Cultural Resources study. In the written May 8, 2019 comments, requests included the development of a Project-specific APE, specific requests related to the Phase I archaeological survey, and an additional description of methods to delineate Foster Cemetery. The Cultural Resources study has been modified as described in detail in Section 6.8. The modifications take into consideration FERC's written comments, additional communication (including conference calls on April 10 and June 6, 2019) with FERC and the Wisconsin SHPO, and revised approximate Project Boundary.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

FERC commented on the Shoreline and Aquatic Invasive Species Survey. FERC requested that the Licensee modify the study plan to expand the spatial boundaries of the study to include both impoundments. In this RSP, the Licensee has added an Aquatic Invasive Species Survey, as discussed in Section 6.4, which includes survey of both impoundments.

FERC commented on the Wetland, Riparian, and Terrestrial Resources Survey. FERC requested that the Licensee modify the study plan to document the presence of any mature, hardwood trees with exfoliating bark or other crevices with the Project Boundary. As described in detail in Section 6.5, the Licensee has modified the study plan to include the documentation of mature hardwood trees with exfoliating bark or crevices that may be used by northern long-eared bat.

As stated in the May 8, 2019 written comments, FERC encouraged the Licensee to use the 90-day comment period to follow up with agencies and stakeholders and hold additional meetings if needed. In an effort to develop an RSP that resolved stakeholder concerns with study methods, the Licensee did this, as evidenced by the meetings held April 10, 2019, April 23, 2019, and June 6, 2019, as well as additional email and phone communications.

In the May 8, 2019 written comments, FERC requested that the Licensee include a provision for filing at least one progress report, as required by 18 C.F.R. §5.11(b)(3), for each of the proposed studies, and for any additional study that may be included in the RSP. FERC stated that the provision should describe the manner and extent to which information will be shared and include sufficient time for technical review of the analysis. As discussed in further detail in Section 3.0, the Licensee proposes that the ISR will serve as the progress report, as required by 18 C.F.R. §5.11(b)(3) and will include a discussion for each of the proposed studies.

FERC provided comments on the requested studies not adopted in the PSP. FERC recommended additional quantitative stream habitat data to describe the existing riverine habitat conditions, evaluate potential effects of an increase in sediment load, and inform potential license conditions. The Licensee is proposing to conduct a riverine habitat evaluation below Powell Falls as described in detail in Section 6.6. FERC also stated that mussel surveys, including documentation of habitat conditions, downstream of Powell Falls dam would provide the necessary information to evaluate project effects on any mussels or mussel habitat that may

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

occur in the affected area. The Licensee has not proposed a mussel study at this time, for reasons described in detail in Section 5.3.2.

Wisconsin DNR

The Wisconsin DNR participated in the Study Plan meeting on March 13, 2019 and a conference call on April 23, 2019, and filed written comments on May 10, 2019. In their written comments, the Wisconsin DNR stated that five studies were requested by Wisconsin DNR and not adopted: 1) assessment of current dam operations at Junction Falls; 2) fisheries/riverine habitat evaluation; 3) fisheries assessment of Lake George; 4) macroinvertebrate survey; and 5) mussel assessment downstream to St. Croix.

In regard to the assessment of current dam operations at Junction Falls, the Wisconsin DNR stated the department will review the information provided in the PAD and any additional information provided in the license application, including a project operation plan. Wisconsin DNR stated that if that information is not sufficient to demonstrate run-of-river compliance and water level maintenance, additional studies may be required under the department's water quality certification. The Licensee will develop a Project Operations Plan to be submitted with the License Application that will sufficiently describe how the Licensee will maintain run-of-river conditions throughout the duration of a subsequent license as described in Section 5.1.

In regard to the fisheries/riverine habitat evaluation, the Licensee is proposing to conduct a riverine habitat evaluation below Powell Falls, as described in detail in Section 6.6.

The Wisconsin DNR reiterates the requests for a fish survey of Lake George and macroinvertebrate survey, stating that current data are needed for management decisions and assessment of current environmental conditions, and needs for mitigation, protection, or enhancement. The Licensee maintains that the existing fisheries and macroinvertebrate information is sufficient for the FERC process and has not proposed studies in the RSP.

The Wisconsin DNR agreed that "a mussel study within the project areas is not needed at this time" due to the cold-water environmental and potential for limited host species. The Wisconsin DNR also states that an assessment of impacts to downstream mussel communities associated

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

with dam removal will be necessary prior to dam removal. The Licensee will evaluate dam removal in the Powell Falls Decommissioning Plan (as discussed in Section 7.0 below), which will include a discussion on the potential effect of dam removal on mussels. No mussel field studies are proposed by the Licensee at this time.

Regarding the requested studies not adopted as discussed above, the Licensee reiterates its specific rational provided for each request in Section 5.0.

Trout Unlimited

Trout Unlimited participated in the Study Plan meeting on March 13, 2019 and a conference call on April 23, 2019, and filed written comments on May 13, 2019. In their written comments, Trout Unlimited expressed concerns about the PSP and specifically stated that the PSP is insufficient in the following areas: hydrologic impacts, temperature and water quality impacts, sediment impacts, and biological impacts. Trout Unlimited reiterated their December 28, 2018 request for studies.

Trout Unlimited requested a Hydrologic Impacts study. The goal of the requested study is to evaluate the extent to which operation of the Project has maintained run-of-river flow conditions, as mandated by the FERC license. The Licensee believes that a study to examine past operational compliance with the license requirements is unnecessary to inform the future license. The Licensee will develop a Project Operations Plan to be submitted with the License Application that will sufficiently describe how the Licensee will maintain run-of-river conditions throughout the duration of a subsequent license. This study request and the Licensee's response is discussed in further detail in Section 5.1.

In regard to temperature and water quality impacts, Trout Unlimited stated that the study measuring dissolved oxygen and temperature within the Project area in 2019 is insufficient in both scope and duration. As discussed in detail in Section 6.2, the Licensee has extended the study period for the proposed Water Quality Study to include data collection from May 1 to September 15, 2020, in addition to July 15 to September 15, 2019. The Licensee has also modified the study to record data in 15-minute intervals, instead of hourly and to collect grab samples in Lake George to evaluate thermal stratification.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Trout Unlimited requested a Sediment Impacts study. Trout Unlimited requested this study to assess potential sediment problems related to removal of the Powell Falls Dam and evaluate options for improving water quality conditions in Lake George. This study request and the Licensee's response is discussed in further detail in Section 5.2. The Licensee believes that there is sufficient information on sediment, including from the two recent comprehensive studies of Project sediments. Further, the Licensee is now proposing to conduct a Lake George Shoreline Habitat Assessment and an Aquatic Invasive Species Survey. These studies are discussed in detail in Sections 6.3 and 6.4, respectively. These surveys will result in the collection of information on the general distribution of floating and emergent aquatic plants. The Licensee will consider the potential feasibility of a short-term drawdown of the water level within Lake George to consolidate sediment and stimulate aquatic plant growth, if needed.

Regarding biological impacts, Trout Unlimited stated in their written May 13, 2019 comments that the proposed studies are not sufficient to assess the biological conditions in Lakes George and Louise, and to evaluate any downstream biological impacts of the Project. This study request included the evaluation of several elements, including fish, macroinvertebrates, aquatic plants (periphyton and macrophytes), mussels, and aquatic invasive species. The Licensee's detailed responses to the request for a study of fish, macroinvertebrates, and mussels are provided in Section 5.3 and will not be repeated here. In regard to aquatic invasive species, the Licensee is proposing to conduct an Aquatic Invasive Species Survey as described in detail in Section 6.4. This study has been modified to include both Lake George and Lake Louise.

Regarding the requested studies not adopted, the Licensee refers to the rational provided for each request in Section 5.0. Regarding any outstanding differences in the requested and proposed studies, the Licensee refers to the rational provided for each request in Section 6.0.

KRLT

KRLT participated in the Study Plan meeting on March 13, 2019 and filed written comments on May 13, 2019. These written comments included comments on SD2 as well as comments on the PSP.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

KRLT commented on the proposed ISR date (January 31, 2020) and requests that the Licensee propose the filing of at least one progress report. As discussed in further detail in Section 3.0, the Licensee proposes that the ISR will serve as the progress report, as required by 18 C.F.R. §5.11(b)(3) and will include a discussion for each of the proposed studies. KRLT requests that the decommissioning plan be completed by or before June 11, 2019. The Licensee is proposing to develop a decommissioning plan for the Powell Falls Development to be included with the ISR in January 2020. Section 7.0 of this RSP includes scope to develop the Powell Falls Decommissioning Plan.

KRLT commented on the Water Quality Study. The Water Quality study has been revised in this RSP, as described in detail in Section 6.2. KRLT recommended that the Licensee add the following parameters to the study: turbidity, suspended solids, nutrients (various forms of phosphorus and nitrogen), trace metals, bacteria, and chlorophyll. The Licensee's proposed study is limited to DO and temperature monitoring. The Licensee believes that evaluation of additional parameters as requested by KRLT is not necessary to inform potential license conditions. KRLT commented that the proposed period of study is inadequate and stated that critical water quality thresholds can be exceeded by late-May or early June. KRLT requested that the period of study for the Water Quality Study include April – June. Further, KRLT requested that due to variances by season the study should also be continued during the second study season. As discussed in detail in Section 6.2, the Licensee has extended the study period to include data collection from May 1 to September 15, 2020, in addition to July 15 to September 15, 2019. KRLT requested that the sampling interval should be increased to 15 minutes or less, approximating continuous monitoring, at all the proposed sampling locations. As requested, the Licensee has modified the study to record data in 15-minute intervals, instead of hourly.

KRLT commented on the Shoreline and Aquatic Invasive Species Survey, stating that the study area should include both impoundments. The Aquatic Invasive Species Survey has been modified and is described in detail in Section 6.4. This study now includes both impoundments. KRLT also requested that the study plan be expanded to include April – June and more than one study season. The Licensee believes that one study period of July to August is appropriate to gather the level of detail needed at the Project to support the preparation of an Exhibit E that will

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

provide the FERC with the information needed for their National Environmental Policy Act (NEPA) analysis.

KRLT also requested that an impoundment fluctuations study for the Project be included. KRLT requested that this study use data acquired from other studies to provide information regarding the general habitat in the fluctuation zones of the Project and impacts of daily and seasonal fluctuations and project the impact of restoration. The Project is currently operated in a run-of-river mode in accordance with the FERC License, thus the impoundment level remains relatively stable and does not fluctuate. The Licensee is not proposing change to the run-of-river operation for the relicensing of the Junction Falls Development. Decommissioning will be fully evaluated and effects taken into consideration in the Powell Falls Decommissioning Plan. For these reasons, the Licensee is not proposing the impoundment fluctuation study as described by KRLT.

Wisconsin SHPO

The Wisconsin SHPO provided to the Licensee written comments on a form dated March 14, 2019 and participated in a conference call on April 10, 2019. The Wisconsin SHPO stated that the process for evaluation and assessment as proposed was appropriate, with the exception of the Phase 1 archaeological assessment. The SHPO stated that a shoreline survey is preferred over a simple visual inspection. During the conference call on April 10, 2019, the Wisconsin SHPO stated that the location of the Foster Cemetery had been documented. The Wisconsin SHPO forwarded the shapefiles to the Licensee by email so the Licensee could determine if a portion of the cemetery was located in the Project Boundary. The cemetery is located outside of the Project Boundary. The Licensee has modified the Cultural Resources study, as described in detail in Section 6.8.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.0 REQUESTED STUDIES NOT ADOPTED

As required by 18 CFR § 5.11(b)(4), if the Licensee does not adopt a requested study, an explanation of why the request was not adopted, with reference to the criteria set forth in 18 CFR § 5.9(b) must be included in the RSP[3].

In the PSP, the Licensee disagreed with and did not adopt the following study requests as part of the relicensing process:

1. Project Operations
2. Geology and Soils
3. Aquatic Resources
4. Aesthetic Resources
5. Socioeconomic Resources

As a result of the study plan meeting and subsequent consultation, the Licensee is proposing to include additional Aquatic Resources studies (Aquatic Invasive Species Survey and Riverine Habitat Evaluation below Powell Falls) as described in Section 6.0 of this RSP.

5.1 Study Requests Related to Project Operations

In a filing with the FERC on December 14, 2018, the Wisconsin DNR requested a study titled: *Assessment of Current Dam Operations at Junction Falls*. The goal of the requested study is to determine if the Project is meeting the requirements of minimum flows and run-of-river operations; including documenting how downstream river flows are managed appropriately to limit water level fluctuations. The Wisconsin DNR requested a desktop review of existing inflow and outflow data, including an evaluation report of run-or-river and operations requirements. The full study request is available in Appendix B.

The Wisconsin DNR stated in their May 10, 2019 letter, that the department will review the information provided in the PAD and any additional information provided in the license

[3] The complete study requests are available in Appendix B.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

application, including a project operation plan. Wisconsin DNR also stated that if that information is not sufficient to demonstrate run-of-river compliance and water level maintenance, additional studies may be required under the department's water quality certification.

In a filing with the FERC on December 14, 2018, the Kiap-Tu-Wish Chapter of Trout Unlimited (Trout Unlimited) requested a study titled: *Hydrologic Impacts*. Trout Unlimited reiterated this request in their May 13, 2019 comments. The goal of the requested study is to evaluate the extent to which operation of the Project has maintained run-of-river flow conditions, as mandated by the FERC license. The study objectives are to analyze existing Kinnickinnic River flow data, in conjunction with dam operations and maintenance data, to identify dam operation-induced flow irregularities, and to identify the protection, mitigation, and enhancement (PM&E) measures needed to eliminate them. The requested methodology includes a desktop analysis to demonstrate compliance with the requirement to maintain a run-of-river flow condition. The full study request is available in Appendix B.

Licensee's Response

The Licensee is not proposing the requested study of current run-of-river operations because existing information is sufficient and the requestor has failed to demonstrate the need for additional information.[4] The Licensee acknowledges the current FERC run-of-river flow conditions for the Project and is committed to maintaining run-of-river operations for the Junction Falls Development in a subsequent license.

TU references flow fluctuations in the *Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project* report (Wisconsin DNR, et. al 1999). In order to address flow inconsistencies and ensure compliance with the run-of-river operations requirement in article 401 of its FERC license, the Licensee developed an operating protocol in consultation with the Wisconsin DNR. On January 8 and supplemented on March 10, 1999, the Licensee filed a

[4] The Licensee has included additional information on Project operation in Appendix A, Section 1.1.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

request to amend the Order Modifying and Approving Operation Protocol for the Project. The FERC issued an order amending the Project Operation Plan on April 27, 1999. This Project Operation Plan continues to be followed for FERC compliance.

The Licensee believes that a study to examine past operational compliance with the license requirements is unnecessary to inform the future license. The Licensee will develop a Project Operations Plan to be submitted with the License Application that will sufficiently describe how the Licensee will maintain run-of-river conditions throughout the duration of a subsequent license.

5.2 Study Requests Related to Geology and Soils

In a filing with the FERC on December 21, 2018, the National Park Service (NPS) requested a study titled: *Sedimentation Impacts of Dam Removal*. NPS stated that a quantitative sedimentation study using numeric modeling is needed to determine impacts of the Powell Falls dam removal on sedimentation transfer and deposition downstream. Sedimentation from dam removal could affect the floodplain near the confluence of the St. Croix River and the Kinnickinnic River delta including the "Kinnickinnic Narrows" of the St. Croix. NPS recommends using the numeric modeling sedimentation study developed and submitted as part of this licensing phase by the Kiap-Tu-Wish Chapter of Trout Unlimited.

In a filing with the FERC on December 28, 2018, Trout Unlimited requested a study titled: *Sediment Impacts*. Trout Unlimited reiterated this request in their May 13, 2019 comments. Trout Unlimited stated that the proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration (by 2026) will potentially create downstream impacts caused by the mobilization of Lake Louise sediment and its associated contaminants (phosphorus, trace metals, and organic compounds). They also state that the relicensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality impacts. Trout Unlimited is requesting this study to assess sediment problems related to removal of the Powell Falls Dam and evaluate options for improving the degraded water quality conditions in Lake George.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Trout Unlimited study goals include: 1) Assess the sediment problems associated with removal of the Powell Falls dam and restoration of the Kinnickinnic River; and 2) Evaluate options for improving the degraded water quality conditions in Lake George. Trout Unlimited study objectives include: 1) Conduct additional sediment core sampling and analysis in Lake Louise, to better quantify the locations and volume of sediment with contaminants of concern; 2) Develop a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls dam, including Kinnickinnic River restoration; 3) Use a hydraulic model to simulate and quantify the downstream mobilization of sediment that may occur during and after removal of the Powell Falls dam; and 4) Determine the feasibility of improving water quality conditions in Lake George via a short-term drawdown of the water level, which will consolidate the sediment and stimulate the growth of perennial aquatic plants.

Licensee's Response

The Licensee is not proposing the requested sediment study because existing information is sufficient and the requestor has failed to demonstrate the need for additional information. Two comprehensive studies of Project sediments have recently been completed by Inter-Fluve[5]: 1) Lake George and Lake Louise Sediment Assessment (Inter-Fluve 2016) and 2) Restoration of the Kinnickinnic River through Dam Removal Feasibility Report (Inter-Fluve 2017a). The sediment assessment included an estimation of current sediment volumes in Lake George and Lake Louise, sediment contamination analysis, and potential sediment management options for removal of both dams and restoration of the river. The Dam Removal Feasibility Report built upon the initial sediment assessment and included additional analysis of the Kinnickinnic River's physical, biological, social and cultural attributes as well as potential removal of both dams, sediment management, and channel restoration. The findings of the previous studies are

[5] These reports were conducted during the City of River Falls Kinnickinnic River Corridor Project, a community-based planning process. The goal of the planning project was to prepare a future vision for the Kinnickinnic River Corridor; central to the planning process was to determine community's desired future of the two hydroelectric dams on the Kinnickinnic River (City of River Falls 2019). These reports were conducted to help inform the community's decision regarding the dams.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

described in more detail in Section 5.1 of the PAD, and the complete reports were included in Appendix E of the PAD.

Because there have been two recent studies regarding the Powell Falls impoundment (Lake Louise) sediment volume, contamination, and potential management options related to proposed dam removal recently completed, there is no need for additional studies of Project sediments, as requested, and the Licensee is not proposing to conduct a sediment study. Further, the entities requesting the sediment studies have not demonstrated that the existing information is not sufficient. Consistent with the FERC's regulations at 18 CFR § 5.18 and 18 CFR § 4.61, the Licensee will prepare an Exhibit E (Environmental Report) for the License Application that will include an analysis of resources, including geology and soils. The Licensee believes that sufficient information currently exists regarding geology and soils (including sediments) at the Project to support the preparation of an Exhibit E that will provide the FERC with the information needed for their NEPA analysis. The Lake George and Lake Louise Sediment Assessment (Inter-Fluve 2016) was a comprehensive sediment study that provides detailed information regarding the sediment specific to the impoundments, including the quality of the sediment. The Licensee believes the information provided in this report will be sufficient to inform analysis, any proposed measures, and a Decommissioning Plan.

The Licensee is proposing to develop a Decommissioning Plan for the Powell Falls Development utilizing existing sediment data to be included with the ISR. The Decommissioning Plan is discussed in Section 7.0 of this RSP and will include appropriate methods and measures pertaining to the likely steps related to decommissioning including the drawdown of Lake Louise, dam breach, sediment transport and management, storm water and erosion control, dam removal, and removal and securing of Project structures and site restoration.

The Licensee is proposing to conduct a Lake George Shoreline Habitat Assessment and an Aquatic Invasive Species Survey. These studies are discussed in detail in Sections 6.3 and 6.4, respectively. These surveys will result in the collection of information on the general distribution of floating and emergent aquatic plants. The Licensee will consider the potential

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

feasibility of a short-term drawdown of the water level within Lake George to consolidate sediment and stimulate aquatic plant growth, if needed.

5.3 Study Requests Related to Aquatic Resources

Several study requests were received that fall under the category of Aquatic Resources. Studies adopted are included in Section 6.0. Studies not adopted are described herein.

5.3.1 Fisheries Surveys

In a filing with the FERC on December 14, 2018, the Wisconsin DNR requested a study titled: *Fisheries Assessment for Lake George*. The Wisconsin DNR reiterated this request in their May 10, 2019 comments. The goal of the study is to define the diversity and abundance of the fish community in Lake George. Wisconsin DNR stated that little information is present on the fishery in Lake George and that having current fish survey information will help department staff make informed management decisions regarding the fishery. Proposed survey methods include a Spring Boat Electrofishing Survey following Wisconsin DNR Lakes Sampling Protocol.

In a filing with the FERC on December 20, 2018, the River Alliance of Wisconsin (RAW) requested a study titled: *Fishery Survey*. The proposed study includes a fisheries study in both flowages and the river in the Project Boundary to determine fish species and frequency of occurrence. RAW states that there is currently no data available about fish species present in the impoundments, as no fishery surveys of the impoundments have ever been conducted. Current and well-defined fishery information is needed by the Wisconsin DNR to make informed decisions about management of the fishery and to evaluate potential effects of project operations on fishery resources. RAW proposed the use of standard fish assessment techniques endorsed as standard operating procedure by Wisconsin DNR fishery biologists, with parameters for the fish assessment study developed through discussions with the Wisconsin DNR.

In a filing with the FERC on December 28, 2018, Trout Unlimited requested a study titled: *Biological Impacts*, which had a fisheries study aspect. Trout Unlimited reiterated this request in their May 13, 2019 comments. The study request is discussed in more detail in Section 5.3.4. The full study request is available in Appendix B.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Licensee's Response

The Licensee is not proposing the requested fisheries surveys because existing information is sufficient to support the preparation of an Exhibit E that will provide the FERC with the information needed for their NEPA analysis. Fish and aquatic resources have been well studied in the Kinnickinnic River, as outlined in Section 5.3 of the PAD and the recent Stream Classification Report for the Kinnickinnic River. The Stream Classification Report includes a summary of the Kinnickinnic River and its tributaries, fish habitat ratings, fishery survey data at designated survey stations (1990 – 2015), trout densities, and coldwater Index of Biotic Integrity (IBI) scores.

The Kinnickinnic River is considered one of the best brown trout streams in the Midwest (Wisconsin DNR 2015). Populations of both brook and brown trout in the Kinnickinnic River are near carrying capacity and natural reproduction in the river is excellent most years (Wisconsin DNR 2015). A fishery survey (Wisconsin DNR 1998) found that trout densities are generally higher in the Upper Kinni due to cooler water temperatures and more stable flows (Inter-Fluve 2017a). The Kinnickinnic River contains an exceptionally high quality and high density brown trout population throughout the mainstem (Wisconsin DNR 2015). Brook trout populations are primarily concentrated in the headwaters and tributaries (Wisconsin DNR 2015).

The Project impoundments support warmer water fish species that are habitat generalists, such as panfish and rough fish (Deuschle and Beduhn 2017). The Junction Falls impoundment (Lake George) was historically stocked with rainbow and brook trout (1951 – 1958) and was classified as a "trout, panfish lake." (Wisconsin DNR 1962a, Appendix E). Spawning habitat at the Junction Falls impoundment (Lake George) was considered fair for bass and crappie, marginal for trout and carp, and the presence of carp was categorized as a "problem" (Wisconsin DNR 1962a, Appendix E). The management recommendations for the Junction Falls impoundment were to eliminate the fish population using toxicants and restock with brown trout (Wisconsin DNR 1962a, Appendix E). Wisconsin DNR's 1971 Surface Water Inventory of Wisconsin identified warm water species including crappie, green sunfish, black bullhead, and carp in the Junction Falls impoundment (Lake George) (Inter-Fluve 2017a, Wisconsin DNR 2018b). A

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

fishery survey (Wisconsin DNR 1998) at the Junction Falls impoundment (Lake George) found that the lake has a limited fishery consisting of largemouth bass, panfish, and brown trout. Similarly, at the Powell Falls impoundment (Lake Louise) a fishery survey documented the presence of largemouth bass, panfish, and brown trout, as well as a significant carp population (Wisconsin DNR 1998). The Powell Falls impoundment (Lake Louise) was previously characterized as shallow with likely annual winterkills in the 1960's (Wisconsin DNR 1962b, Appendix E). Historically, no management of the Powell Falls impoundment (Lake Louise) was recommended (Wisconsin DNR 1962b, Appendix E).

According to Marty Engel, retired Wisconsin DNR Fisheries Biologist who worked on the Kinnickinnic River and its tributaries for more than 20 years, Lake George is a shallow small lake with limited fisheries value. The Wisconsin DNR does not regularly survey Lake George, nor does Marty recommend the Licensee survey it now, due to the limited fisheries value. (Engel Personal Communication 2019).

Licensee is not proposing to conduct fisheries surveys in the Kinnickinnic River or the Project impoundments (Lake George and Lake Louise). The fishery in the Kinnickinnic River is well studied and healthy. The Licensee believes that sufficient information currently exists regarding Project fisheries to support the preparation of an Exhibit E that will provide the FERC with the information needed for their NEPA analysis.

5.3.2 Mussel Survey

In a filing with the FERC on December 14, 2018, the Wisconsin DNR requested a study titled: *Mussel Study – Junction Falls and Powell Falls downstream to the St. Croix River*. As discussed in the PSP, the goal of the originally requested study is to determine freshwater mussel density and diversity, including characterizing mussel habitat within the Junction Falls and Powell Falls project areas, and downstream to the St. Croix River. In their May 10, 2019 comments, Wisconsin DNR stated that due to the cold-water environment and potential for limited host species, the Wisconsin DNR agrees with the Licensee that a mussel study within the project area is not needed at this time. The Wisconsin DNR added that an assessment of impacts to

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

downstream mussel communities associated with the dam removal will be necessary and can be completed prior to dam removal.

In a filing with the FERC on December 20, 2018, the RAW requested a study titled*: Mussel Survey* of both impoundments and the river within the Project Boundary. RAW stated that mussels are an important component of a river system and are sensitive to changes in flow discharge in the tailwater and to water level fluctuations in reservoirs. RAW requests that study parameters be developed through discussions with mussel specialists from the Wisconsin DNR and U.S. Fish and Wildlife Service (USFWS).

In a filing with the FERC on December 28, 2018, Trout Unlimited requested a study titled: *Biological Impacts*, which had a mussel study aspect. Trout Unlimited reiterated this request in their May 13, 2019 comments. The study request is discussed in more detail in Section 5.3.4. The full study request is available in Appendix B.

Licensee's Response

The Licensee is not proposing to conduct a mussel survey of the Kinnickinnic River because sufficient information already exists to conclude that good mussel habitat is not present in the lower river, and that mussel species are unlikely to be found. According to Wisconsin DNR, no mussel species have been recorded in the Kinnickinnic River (Wisconsin DNR 2018c). Further, Wisconsin DNR Malacologist Lisie Kitchel, has characterized the Kinnickinnic River as not good mussel habitat because it's too cold, dominated by trout, and lacks host species. (Kitchel Personal Communication 2018).

The Wisconsin DNR Natural History Inventory (NHI) did not list any mussel species in the Township Tool or Project-specific Endangered Resources review (Wisconsin DNR ER Log # 18-556). The USFWS Information for Planning and Conservation (IPaC), which allows for site-specific rare species searches, included three federally endangered mussel species (Higgins eye, snuffbox, and spectaclecase) in a site-specific search for the area within the Project Boundary. According to Wisconsin DNR Malacologist Lisie Kitchel, the IPaC data are based on county

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

records for mussels; these mussel species are known to occur in the St. Croix River (Lake St. Croix), not in the Kinnickinnic River (Kitchel Personal Communication 2018).

The Kinnickinnic River is a tributary of the St. Croix River. The St. Croix River is known for its mussel abundance and diversity. The USFWS describes the St. Croix River watershed as "the premier mussel watershed of the Upper Mississippi River, and one of the premier mussel watersheds of the world" (USFWS 2019). From the confluence with the St. Croix River, the Powell Falls dam is located at approximately river mile 9.9 of the Kinnickinnic River and the Junction Falls dam is located at approximately river mile 10.4. Mussels in the St. Croix River are well documented, with established survey locations above and below the confluence of the Kinnickinnic River (see Appendix A Section 1.3 for further detail).

The Licensee followed up with Ms. Kitchel by email in January 2019 and asked if she would expect any mussels (rare or common) to occur in the Kinnickinnic River or the impoundments (Lake Louise or Lake George). In Ms. Kitchel's email response, she stated "The Kinnie is primarily trout waters and not suitable for our native mussel species or the majority of their fish hosts. There might be a few species found at the mouth of the Kinnie and the St. Croix River, however I would not expect to find native mussels in the Kinnickinnic River proper. I encourage restoration of this river, but do not expect to find mussels there at this time or in the future."

In their May 10, 2019 comments, Wisconsin DNR stated that due to the cold-water environment and potential for limited host species, the Wisconsin DNR agrees with the Licensee that a mussel study within the project area is not needed at this time.

The Licensee also discussed a potential mussel survey with Nick Utrup (USFWS). Nick said he typically defers to Lisie Kitchel's expertise on mussels in Wisconsin. Mr. Utrup agreed that rare mussels are unlikely to be found in the Kinnickinnic River based on the river type and USFWS was unlikely to require a survey (Nick Utrup [USFWS], personal communication, May 24, 2019). This consultation record is provided in Appendix D.

Based on a lack of appropriate habitat, a mussel survey in the Project Boundary and mainstem of the Kinnickinnic River downstream of the Project is not necessary, nor is it proposed by the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Licensee. In the St. Croix River, mussels are well documented and known to occur, thus additional survey in this area is not warranted.

5.3.3 Macroinvertebrate Survey

In a filing with the FERC on December 14, 2018, the Wisconsin DNR requested a study titled: *Macroinvertebrate Survey*. The goal of the study is to assess the water quality using macroinvertebrate bio-indicators above and below the impoundments. Wisconsin DNR states that limited information exists on the macroinvertebrate community immediately upstream and downstream of the impoundments and they are likely impacted by segmentation of the river. Wisconsin DNR uses these bio-indicators to assess the health of the resource. Requested methodology includes use of the Wisconsin DNR Guidelines for Collecting Macroinvertebrate Samples from Wadable Streams, June 2000, with data analyzed using the current Wisconsin DNR WisCALM Guidance. In their May 10, 2019 comments, the Wisconsin DNR stated that the information need may not be appropriate for a full study, but that data collection is important to understand the current environment.

In a filing with the FERC on December 28, 2018, Trout Unlimited requested a study titled: *Biological Impacts*, which had a macroinvertebrate study aspect. Trout Unlimited reiterated this request in their May 13, 2019 comments. Trout Unlimited requested that macroinvertebrate data upstream and downstream of the Project is analyzed and also requested that a macroinvertebrate survey is conducted within the impoundments. The full study request is available in Appendix B.

Licensee's Response

The Trout Unlimited *Biological Impacts* study request included many of elements of an aquatic resources study, as described in other subsections of 5.3. Detailed responses to study requests for the elements other than macroinvertebrates are located in the other subsections of Section 5.3 and will not be repeated here.

The Licensee does not propose to conduct a macroinvertebrate survey because existing information is sufficient and the need for additional macroinvertebrate information has not been

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

demonstrated. Specifically, there are existing data analyzing macroinvertebrates upstream and downstream of the Project, and the data indicate a healthy, productive macroinvertebrate assemblage in the Kinnickinnic River. Macroinvertebrate data have been collected in the Project Vicinity, including at locations Wisconsin DNR specifically requested that the survey be conducted (upstream and downstream of the Project). As described in the PAD, macroinvertebrate surveys were conducted in 1995 and 1997 (Wisconsin DNR 1998) at several locations above and below the two Project impoundments. These survey samples were assessed for several biometrics to evaluate a species tolerance and general understanding of organic loading and water quality within the Kinnickinnic River. Biologic indices, including production and diversity, indicated the Kinnickinnic River is "a generally healthy aquatic community" (Inter-Fluve 2017a). Specifically, macroinvertebrate sample results were analyzed using the following biometrics: the Hilsenhoff Biotic Index (HBI), the Ephemeroptera-Plecoptera-Trichoptera (EPT) index and Margalefs' diversity index. The results of the surveys throughout the Kinnickinnic River found HBI ratings ranging from "very good" to "excellent," suggesting minimal impacts from organic loading (Wisconsin DNR 1998). The results of the sample in the Project Boundary, less than one mile upstream of the Junction Falls Development, found an HBI value of 3.62, or "very good." The highest (best) EPT values were found below the City of River Falls (downstream of the Project) (Wisconsin DNR 1998).

In addition to this macroinvertebrate analysis that indicated very good to excellent water quality, macroinvertebrate surveys were conducted again in the Project Vicinity in 2004 & 2005, both upstream and downstream of the Project, including at Wisconsin DNR Surface Water Integrated Monitoring System (SWIMS) stations 10011492 and 10020720 (two of the stations that Wisconsin DNR specified in their study request) (Wisconsin DNR 2019). The data from these surveys are available online on the Wisconsin DNR SWIMS (Wisconsin DNR 2019). Available publicly on Wisconsin DNR SWIMS are counts of species identified in the macroinvertebrate surveys (Wisconsin DNR 2019). Additional macroinvertebrate surveys have been conducted in

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

the Kinnickinnic River, including surveys conducted by the University of Wisconsin-River Falls (1997, 1999, 2001) (as described in Trout Unlimited's December 28, 2018 filing).[6]

The Licensee does not concur with Trout Unlimited's request that macroinvertebrate surveys should be conducted within the Project impoundments themselves. The Project impoundments are small (less than 16 acres each) and are known to have a warmer water temperature that provides habitat for warmwater species such as rough fish. In the impoundments burrowing species are more abundant, as are those that can tolerate warmer temperatures and lower levels of dissolved oxygen (Deuschle and Beduhn 2017). The Licensee does not believe that macroinvertebrate surveys within the impoundments themselves are warranted as they will not provide significant information that is not already known. The Wisconsin DNR did not request macroinvertebrate surveys within the Project impoundments.

Because there is a preponderance of existing information on macroinvertebrates in the Project area, upstream and downstream of the Project, and because the results of these previous macroinvertebrate surveys found a macroinvertebrate community indicative of good water quality, the Licensee proposes that a macroinvertebrate study is not warranted at this time. The Licensee believes that sufficient information currently exists regarding Project macroinvertebrates to support the preparation of an Exhibit E that will provide the FERC with the information needed for their NEPA analysis.

5.3.4 Biological Impacts

In a filing with the FERC on December 28, 2018, Trout Unlimited requested a study titled: *Biological Impacts*. The goal of the biological impacts study is to evaluate the effects of the Project on biological communities in Lakes George and Louise, and in the Kinnickinnic and St. Croix Rivers. Study objectives include: 1) Conduct biological surveys of fish, macroinvertebrates, and aquatic vegetation in Lakes George and Louise, and at Kinnickinnic

[6] The City also conducted macroinvertebrate monitoring in the Kinnickinnic River from 2010-2012 in areas upstream of the Project. Analysis of the macroinvertebrate monitoring samples was not completed by the University of Wisconsin-Stevens Point laboratory; the final report is not available.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

River locations upstream and downstream from the two lakes; 2) Determine whether aquatic invasive species are present in Lakes George and Louise and pose risks for other portions of the Kinnickinnic River; 3) Determine whether freshwater mussels (including federally-listed and state-listed threatened and endangered species) are present in the lower Kinnickinnic River and downstream St. Croix River locations, thereby posing a risk for impacts on mussels due to sediment mobilization associated with dam removal; and 4) Evaluate future improvements in physical and chemical conditions and biological communities in the Kinnickinnic River, as a result of dam removal and river restoration.

Licensee's Response

The Trout Unlimited Biological Impacts study request included many of the elements of the aquatic resources study requests discussed above, including fish, macroinvertebrates, and mussels. Detailed responses to study requests for these resources are located above and will not be repeated here.

The Licensee is proposing to evaluate aquatic invasive vegetation in Lake George and Lake Louise, as described in Section 6.4 of this RSP. The Licensee is proposing to decommission the Powell Falls Development and remove the dam such that there will be a change in the condition of Lake Louise to riverine habitat. To support an evaluation of existing and future conditions related to riparian habitat and the associated biological community, the Licensee is proposing to evaluate wetland, riparian, and terrestrial habitat and invasive species (including the shorelines of Lake George and Lake Louise) as described in Sections 6.4 and 6.5 below.

The Licensee is proposing to develop a Decommissioning Plan (as described in Section 7.0), which will include restoration plans for the area surrounding Lake Louise and areas immediately downstream of the Powell Falls dam disturbed by dam breach/removal. The Licensee agrees that removal of Powell Falls dam will change the physical and chemical conditions and biological communities in the Kinnickinnic River. However, the Licensee believes that existing studies and information combined with the proposed studies, will allow for an appropriate assessment of anticipated changes in habitat and biological communities that will occur and which will be addressed in the Decommissioning Plan.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.4 Study Request Related to Aesthetic Resources

In a filing with the FERC on December 28, 2018, the Kinnickinnic River Land Trust (KRLT) requested a study titled: *Aesthetic Value of River/Aesthetic Resources Survey*. In KRLT's request dated December 28, 2018, KRLT states that limited information exists on the valuation of the Kinnickinnic River's aesthetics. In general, the study request is to develop a valuation of aesthetic resources and impacts from a future operational period. KRLT acknowledges that aesthetic valuation can be incredibly subjective but suggests using a proposed methodology to provide some consistency and economic structure around the valuation. For methodology, KRLT proposes that the travel cost method is employed. KRLT states that this is also known as the recreation demand model method, which collects information on sites visited, quantity of visits, total distance traveled, and total time in transit (Corrigan et al, 2007). The full study request is available in Appendix B.

During the March 13, 2019 study plan meeting, NPS provided verbal comments in support of an aesthetic study. Specifically, NPS verbally stated that the Licensee should consider an aesthetic flow study at the Junction Falls Development. In a filing with FERC on December 26, 2018, NPS requested a Recreation Study, which included an aesthetics component. In the written study request, the NPS recommended that the aesthetics component would include collecting baseline information on aesthetics in the area and also assessing the impacts of the Project on aesthetic resources. Relating to the requested aesthetic flow study, the NPS requested the use a focus group of key recreation user groups and planners to identify an assessment protocol and then participate in evaluating three targeted flows to provide aesthetic enhancement at the Junction Falls Development.

Licensee's Response

The Licensee is not proposing to conduct an aesthetics resources survey. The Licensee believes that sufficient information currently exists regarding aesthetic resources and the need for additional aesthetic resource information to inform the License Application has not been demonstrated. Consistent with the FERC's regulations at 18 CFR § 5.18 and 18 CFR § 4.61, the Licensee will prepare an Exhibit E (Environmental Report) for the License Application that will

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

include an analysis of resources, including aesthetic resources. The Licensee believes that sufficient information currently exists regarding aesthetic resources at the Project to support the preparation of an Exhibit E that will provide the FERC with sufficient information for their NEPA analysis. As described in FERC's guidance document, *Preparing Environmental Documents: Guideline for Applicants, Contractors, and Staff* (FERC 2008a), the Licensee will discuss the following topics related to aesthetic resources:

- Visual and aesthetic character and quality of the project area (including detail about the features that may be affected by operations or decommissioning)
- Public's vantage point(s) for viewing natural features (for example, waterfalls, cascades) and Project structures and the quality of this view
- Federal land management restrictions on development, if applicable (for example, standards outlined in Forest Service plans)
- Significance of aesthetic resources to surrounding communities. Public use at the Project will be quantified through the proposed *Recreation Facilities Inventory and Use Assessment* study.

The Licensee will address these requirements fully in Exhibit E of the License Application.

KRLT acknowledged that a study is currently being conducted by Kelly Enterprises, LLC on behalf of the River Falls Chamber of Commerce and the City of River Falls, which will include a usage and valuation assessment of the river from a select number of perspectives. These viewpoints include how the river attracts customers, impacts business owners, and draws in anglers, kayakers, and other types of recreations. This study is anticipated to be completed in 2019. KRLT was involved in the design of study protocols for the aesthetic study being conducted by Kelly Enterprises, LLC. The aesthetic study request submitted to the FERC by the KRLT appears to duplicate the study currently underway.

The Licensee disagrees that there is limited information pertaining to aesthetics and believes that sufficient information in regard to the Project nexus on aesthetic resources is available to inform the License Application. The City of River Falls recently completed a comprehensive, two-year planning process focused on the Kinnickinnic River Corridor (City of River Falls 2019). The final plan summarizes this planning effort and includes discussions regarding the community's

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

short and long-term vision and goals for the Kinnickinnic River Corridor, which includes areas within the Project Boundary. The planning effort included community surveys, public meetings, open houses, design charettes and several studies designed to inform the Kinnickinnic River Corridor Project. Topics pertaining to aesthetic resources are addressed under the community vision summaries, opportunities section, and master planning documents included in the final plan. (City of River Falls 2019).

Further, the Licensee is proposing to conduct a recreation user survey that will include questions pertaining to aesthetics at the Project. As described in further detail in Section 6.7 of this RSP, the Licensee proposes a *Recreation Facility Inventory and Recreation Use Assessment* and has proposed to include questions on the Recreation User Survey specific to aesthetics. The Decommissioning Plan will address aesthetic concerns at the Powell Falls Development, including restoration and revegetation following the decommissioning and dam removal. The results of the aesthetic questions on the Recreation User Survey along with the discussion and analysis of aesthetic resources in Exhibit E will be used to inform any PM&E measures proposed by the Licensee in the License Application.

In regard to the NPS request for an aesthetic flow study at the Junction Falls Development, the Licensee does not agree that this study will result in information needed to support the preparation of an Exhibit E that will provide the FERC with the information needed for their NEPA analysis. The Licensee proposes to include questions on the Recreation User Survey (Appendix G) specific to aesthetics. The results of the proposed recreation study (as described in Section 6.7) along with other relevant studies conducted in connection with the relicensing will be used to inform the development of the License Application and any protection, mitigation, or enhancement measures proposed by the Licensee. The Licensee believes that the result of any information obtained in an aesthetic flow study would not be needed to inform a future Project license. The Licensee operates the Project in a run-of-river mode for the protection of environmental resources. The Licensee does not propose a change in the run-of-river operation.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.5 Study Request Related to Socioeconomic Resources

In a filing with the FERC on December 28, 2018, the Friends of the Kinni requested a study titled: *Economic Analysis of the Costs of Operation, Maintenance, and Benefits*. The requested study is an economic study that would evaluate the capital, operational and maintenance costs of the dams and associated hydropower facilities, using standard Generally Accepted Accounting Principles. Friends of the Kinni states that this analysis combined with other study results would help to define a consensus of the best use of the Kinnickinnic watershed, as well as the profitability of the Junction Falls Development under the Licensee's current proposal to maintain the Junction Falls Development until a target date of 2035-2040. The requested study has three phases: 1) a historical financial analysis; 2) projected cash flow and net profitability analysis; and 3) an economic analysis of decommissioning and removing the dams, including analyzing economic value of a restored Kinnickinnic river. The full study request is available in Appendix B.

In a filing with the FERC on December 31, 2018, the Friends of the Kinni requested a study titled: A Comprehensive Study of Recreation, Tourism, and Aesthetic Resources of the River Falls Hydroelectric Project quantifying their Economic Values in Comparison to Alternative Futures for the Same Area quantifying each Alternative's Social and Economic Impact for the General Public. The goals of this requested study are: 1) to ascertain a baseline inventory of the current recreational, tourism and aesthetic resources available at the Project, and to establish an economic value of said resources; 2) to establish an opportunity cost economic valuation for recreational, tourism, and aesthetic resources currently unavailable due to the presence of the dams and impoundments that would otherwise be available to the community in alternative futures for the area; and 3) to directly compare the value of the current opportunities with the value of potential opportunities of alternative futures, to be included with the consideration of the revenues and expenses associated with either maintenance or removal of the hydroelectric project.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Licensee's Response

RFMU is financially responsible for its utility assets and routinely conducts financial analyses to ensure that RFMU assets are managed appropriately. The Utility Advisory Board advises the City Council on matters regarding financial decisions and long-range planning for the Municipal utility. These meetings are held publicly. The City Council holds public meetings regarding the budget of RFMU, which includes budgetary items for the Project.

Due to the amount of economic information already available that will support the preparation of an Exhibit A (Project Description) and Exhibit E (Environmental Report) for the License Application consistent with the FERC's regulations at 18 CFR § 5.18 and 18 CFR § 4.61, the Licensee is not proposing to conduct an economic study. In the License Application, information on Project costs and economics will be provided. The level of detail as required by FERC's regulations is sufficient to support FERC's NEPA analysis of the Project.

The Friends of the Kinni requested analysis of decommissioning of both developments, including an economic analysis of the value of a restored river. As the Licensee has proposed to relicense Junction Falls Development and decommission and remove the dam for the Powell Falls Development, the Licensee does not agree that evaluation of an alternative scenario will help support the application and FERC's NEPA analysis of the intended proposal.

Due to the reasons described in Section 5.4, the Licensee is not proposing to conduct a study related to aesthetic resources, however, as also described in Section 5.4, the Licensee is proposing to include questions on the Recreation User Survey specific to aesthetics.

The Friends of the Kinni requested a tourism baseline and impact analysis and survey, as described in detail in their request (Appendix B). In response to item "a" of their proposed survey the Licensee is proposing to include questions about use at the Project (that would answer 'Why do people come to the Project Area?') as well as conduct counts at the Project (that would answer 'How many tourists visit the Project Area?' in the *Recreation Facility Inventory and Recreation Use Assessment*. Please note, that this proposed study will be specific to the area within the Project Boundary, and not the surrounding community and region. In response to

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

items "b" and "c" the Licensee does not propose to survey those regional communities and sites. The Licensee is not proposing to survey areas outside of the Project Boundary because they may or may not be users of the Project, and this is outside of the influence of understanding of the Project impacts to recreation and tourism. In response to item "d" dam removal and restoration is proposed for Powell Falls, and the Junction Falls Development is proposed to be relicensed. The Licensee believes that existing information in addition to the information that will be obtained in the *Recreation Facility Inventory and Recreation Use Assessment* regarding use at the Project will be sufficient to support the License Application related to this topic. In response to item "e" the Licensee believes that existing information in conjunction with the *Recreation Facility Inventory and Recreation Use Assessment* will be used to inform any protection, mitigation, and enhancement measures proposed by the Licensee in the License Application.

5.6 Agency Study Requests That Do Not Meet The Requirements of 18 CFR § 5.9(b)(7)

As defined in 18 CFR § 5.9(b), there are specific study request criteria that any requester is required to follow. FERC's handbook "*A Guide To Understanding And Applying The Integrated Licensing Process Study Criteria*," issued March 2012, provides explanation on how FERC applies the study plan criteria in evaluating study requests. In general, the study requests must describe goals and objectives, relevant resource management goals, public interest considerations, existing information concerning the subject, the nexus between Project operations and effects on the resource, study methodology, and level of effort and cost. In general, the information provided to meet the criteria is necessary for FERC to determine whether the requested information is in line with the magnitude of the potential effect of the Project on particular resources.

In a filing with FERC dated December 26, 2018, NPS described a study related to "sedimentation impacts of dam removal" under a header titled "Study Requests." The study request did not include the information required by 18 CFR § 5.9(b). The NPS study request is as follows:

> "*A quantitative sedimentation study using numeric modeling is needed to determine impacts of Powell Dam removal on sedimentation transfer and deposition downstream.*

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Sedimentation from dam removal could affect the floodplain near the confluence of the St. Croix River and the Kinnickinnic River delta including the "Kinnickinnic Narrows" of the St. Croix. We recommend using the numeric modeling sedimentation study developed and submitted as part of this licensing phase by the Kiap-Tu-Wish Chapter of Trout Unlimited. This study has been used effectively in the Upper Mississippi River."

Although the NPS did not follow the criteria defined in 18 CFR § 5.9(b) for this study request, the Licensee did respond to the request for a study on sediment. The Licensee is not proposing a sediment study, for the reasons described in detail in Section 5.2.

In a filing with FERC dated December 26, 2018, the River Alliance of Wisconsin (RAW) requested studies related to the following topics: fish, mussels, water quality, aquatic invasive species, wetland and aquatic plants, and recreation. A brief explanation of what RAW requests and a brief rationale were provided for each topic, however, the criteria defined in 18 CFR § 5.9(b) were not followed. The Licensee is proposing to conduct studies related to resources as described in Section 6.0, including water quality, aquatic invasive species, wetlands, and recreation. The Licensee is not proposing a study related to fish or mussels, as described in Section 5.3.

5.7 References

City of River Falls. 2019. City of River Falls Kinnickinnic River Corridor Plan. Available online: https://kinnicorridor.org/images/P3/KinniRiverCorridorPlan_1.14.19.pdf Accessed: February 5, 2019.

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Inter-Fluve. 2017b. June. Kinnickinnic River Corridor Plan: Reconnaissance Level Geomorphic Assessment. Submitted to the City of River Falls and SEH. Available online: http://www.kinnicorridor.org/images/docs/Geomorphic%20Assessment%2C%206-5-17.pdf Accessed August 8, 2018.

United States Fish and Wildlife Service (USFWS). 2019. Mussels of the St. Croix River. Available online: https://www.fws.gov/midwest/Endangered/clams/stcroix.html

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Wisconsin Department of Natural Resources (Wisconsin DNR), prepared by: Schreiber, K., West Central Region. 1998. Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report. Available online: http://www.rfmu.org/DocumentCenter/View/774/1998-Kinnickinnic-Priority-Watershed-Report?bidId=

Wisconsin Department of Natural Resources; Wisconsin Department of Agriculture, Trade, and Consumer Protection; and St. Croix and Pierce County Land Conservation Departments. 1999. Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project. Publication WT-522. 225 p. Available online: http://www.rfcity.org/DocumentCenter/View/856/1999-Kinnickinnic-Nonpoint-Source-Control-Plan?bidId= Accessed: February 8, 2019.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2015a. Wisconsin Department of Natural Resources, Fisheries Management Stream Classification, Report – Kinnickinnic River. Available online: https://dnr.wi.gov/topic/fishing/documents/reports/StCroixKinnickinnicR2015Comp.pdf Accessed: July 13, 2018.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

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20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.0 INDIVIDUAL STUDY PLAN PROPOSALS

The Licensee is proposing several studies to address resources for which insufficient information was previously available for the PAD or for which specific issues have been identified through agency and stakeholder comments. The individual study plans detailed below are proposed for the Project and most will commence in the summer of 2019. The Licensee proposes that the studies, unless otherwise noted in individual plans, be completed in a single field season and that a second field season for individual studies may only be required after evaluation of the ISR.

6.1 Hydrologic and Hydraulic Evaluation

6.1.1 Goals and Objectives

The objective of the hydrologic/hydraulic investigation is to develop an analytical tool and hydrologic inputs that that can be used to predict streamflow characteristics under proposed Project conditions. These characteristics include depth, velocity, top width, and floodplain inundation under a range of hydrologic conditions from normal flows to the regulatory (100-year) flood.

6.1.2 Known Resource Management Goals

The proposed decommissioning of the Powell Falls development and removal of the Powell Falls dam will create a riverine reach where an impoundment now exists. Management or enhancement of this reach and its riparian areas will be informed by expected streamflow and flooding characteristics. Also, to balance floodplain risk management with beneficial use of riparian areas, Wisconsin's floodplain management regulations require floodplain zoning consistent with existing hydraulic geometry, and as a participant in the National Flood Insurance Program (NFIP), the City will eventually need to provide technical analysis supporting a Letter of Map Revision (LOMR) when Powell Falls dam is removed.

6.1.3 Background and Existing Information

The Pierce County Flood Insurance Study (FIS) states that hydrologic (peak flow) and hydraulic (water surface profile) analyses were conducted in 2002 to support floodplain zoning in the City of River Falls. The countywide FIS document, published in 2011, lists flow rates associated with

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

the ten-year, 100-year, and 500-year floods and presents water surface elevation profiles on the Kinnickinnic River in River Falls associated with these flood events. However, recent inquiries to the Wisconsin DNR for the Hydrologic Engineering Center – Hydrologic Modeling System (HEC-HMS) hydrologic model and the unspecified hydraulic model used to develop this information were unsuccessful.

The 2002 floodplain models may be available through Federal Emergency Management Agency (FEMA). They will not, however, include current estimates of rainfall frequency, the post-removal river/floodplain morphology, or comparisons to known peak streamflows at the downstream United States Geological Survey (USGS) Gage No. 05342000. USGS Gage No. 05342000 currently has 17 years of (recent) record, dating back to 2002, and can now be used to verify relatively high-frequency floods (2-year, 10-year) and to calibrate the watershed model.

A hydraulic analysis of hypothetical post-removal conditions was conducted by Short Elliott Hendrickson (SEH) in 2017 in conjunction with the removal feasibility studies. SEH's technical memo on the analysis includes the elements listed above as missing from the FIS data, including a review of published flood frequency values and stream gage data, use of National Oceanic and Atmospheric Administration (NOAA) Atlas 14 (the current industry standard) for precipitation depths, and estimation of the post-removal channel form based on sediment investigations conducted by Inter-Fluve in 2016.

6.1.4 Project Nexus

Proposed measures at the Project include removal of the Powell Falls dam. Since all flows exceeding the powerhouse capacity pass over an uncontrolled spillway, the dam provides no flood storage and its removal is not expected to have a significant impact on flood discharges. However, the resulting drop in the water surface profile between Powell Falls and Junction Falls will not only affect floodplain depth and extent, but also flow velocities, stream and wetland ecology, sediment transport, and recreational use. A review and update of the Project flood frequency curve will also support dam safety assessments for Junction Falls, as the minimum required spillway capacity for a low hazard FERC project is the 100-year event.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.1.5 Methodology

6.1.5.1 Hydraulics

The proposed methodology is to review and refine the Hydrologic Engineering Center – River Analysis System (HEC-RAS) water surface profile model developed by SEH in 2017. To approximate the post-removal upstream channel and overbank area, this model incorporates the refusal surface identified by Inter-Fluve in their 2016 Sediment Assessment. The HEC-RAS model will then be used to calculate water surface elevations, velocities, depths, and wetted top widths for flows including a typical summer low flow, the two-year flood, the 10-year flood, and the 100-year flood. Updates to the HEC-RAS model will include the following:

- Add Junction Falls dam (SEH's study assumed both dams were removed);
- Review the model's input geometry data and site conditions to determine whether a topographic survey of the channel and bedrock near Powell Falls, prior to dam removal, will support significant model improvements.
- If judged to be beneficial during the step above, conduct a topographic survey on the downstream side of Powell Falls dam and incorporate the surveyed geometry into the model.

The profiles and other hydraulic information generated will be informational. Submittals related to floodplain zoning or the NFIP will be deferred until the decommissioning process is under way (likely 2025 or 2026).

6.1.5.2 Hydrology

The proposed study will also include a review of existing flood frequency estimates and, if appropriate, recommendations for updating the discharge values used for floodplain analysis and dam safety assessment. Analyses supporting the recommended values will include:

- Application of the methods of the USGS Guidelines for Determining Flood Flow Frequency, Bulletin 17C, to develop a flood frequency curve at the downstream USGS gage, 05342000.
- Retrieval (if possible) of the HEC-HMS model used for the Flood Insurance Study from FEMA and verification of that model against flood records at USGS gage 05342000.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- HEC-HMS simulation of the 24-hour, 100-year precipitation depth specified in NOAA Atlas 14 and using the MSE-3 temporal distribution.
- Application of the current (2017) USGS regression equations for Wisconsin.

6.1.6 Consistency with Generally Accepted Scientific Practice

The HEC-HMS model, HEC-RAS model, Bulletin 17C, and NOAA Atlas 14 are all commonly used, state-of-the-practice techniques and data sources. All are accepted or required by the Wisconsin DNR, the FERC's Dam Safety division, and FEMA for floodplain and dam safety applications.

6.1.7 Deliverables and Schedule

The following schedule is proposed for the tasks listed above.

- August 2019: Review hydrology (flood frequency); develop updated flood frequency curves
- August – September 2019: Review SEH HEC-RAS model; conduct survey if determined beneficial
- October 2019: Compute profiles and hydraulic characteristics for flows of interest
- October – December 2019: Prepare technical report

6.1.8 Cost and Level of Effort

Estimated costs for this study are approximately $17,000. The Licensee believes that the proposed level of effort is adequate to complete the hydraulic and hydrologic studies described above.

6.1.9 Differences between Requested and Proposed Methods

Wisconsin DNR requested separate studies that fall under the category of Hydrologic and Hydraulic Evaluation: 1) Stream Flows, Channel Dimensions, and Linear Gradients, and 2) Hydrologic & Hydraulic Studies for Floodplain Ordinance Requirements. The Licensee has grouped these requests into a single study. The existing SEH study (2017) evaluated much of the information requested by Wisconsin DNR in the first study request. The Licensee proposes to

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

review and refine the HEC-RAS water surface profile model developed by SEH in 2017. The updated model will be suitable for use for floodplain zoning, but submittals related to floodplain zoning or the NFIP will be deferred until the decommissioning process is under way (likely 2025 or 2026).

6.1.10 References

Federal Emergency Management Agency (FEMA). 2011, November. *Flood Insurance Study, Pierce County, WI;* FIS no. 55093CV000A.

Inter-Fluve. 2016, March. *Lake George and Lake Louise Sediment Assessment Report,* prepared for City of River Falls.

National Oceanic and Atmospheric Administration (NOAA). 2013. Atlas 14, Vol. 8, *Precipitation-Frequency Atlas of the United States, Midwestern States (Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin).*

Short Elliott Hendrickson (SEH). 2017, July. *Hydrologic and Hydraulic Analysis Technical Memo,* prepared for City of River Falls.

U.S. Geological Survey (USGS), Advisory Committee on Water Information. 2018. *Guidelines for Determining Flood Flow Frequency: Bulletin 17C*.

6.2 Water Quality Study

The Licensee proposes to conduct water quality sampling to evaluate dissolved oxygen (DO) and temperature in the Project Boundary. Data will be collected using water quality data sondes in four locations: Kinnickinnic River upstream of Lake George, Lake George, below the Junction Falls dam, and below the Powell Falls dam.

6.2.1 Goals and Objectives

The goal of this study is to collect baseline information and document concentrations of DO and temperature conditions within the Project.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.2.2 Known Resource Management Goals

Water quality standards consistent with the Clean Water Act (CWA) have been established by the Wisconsin Legislature in Chapter 281 of the Wisconsin Statutes, explained in detail in NR 102, 103, 104, 105, and 207 of the Wisconsin Administrative Code. The water quality standards for the Kinnickinnic River based on NR 102, 104, 105, and 207 include the following:

- Dissolved Oxygen (mg/l): ≥ 6.0 at any time and ≥ 7.0 during spawning season
- Maximum Water Temperature (○C): Warm Water Sport Fisheries: 31.7◦ and Cold-water Trout Fisheries: 22

6.2.3 Background and Existing Information

Historically, the Kinnickinnic River has undergone a transformation from a high-quality cold-water trout stream to a degraded, marginal trout stream, and back again to one of the premier trout fisheries in western Wisconsin (Wisconsin DNR 1998). During the late 1800s through the early 1900s, the Kinnickinnic River was degraded by agricultural activities, wastewater effluent, deforestation and development along the river. Since the mid-1930s, the Kinnickinnic River was greatly rehabilitated by conservation activities including soil erosion control programs, wastewater treatment, and fish habitat restoration projects. The 1998 Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report concluded that the most significant threat to the Kinnickinnic River and the Kinnickinnic watershed was rapid urbanization resulting from its close proximity to the Twin Cities metropolitan area (Wisconsin DNR 1998). (City of River Falls 2018a).

Today, the Kinnickinnic River is designated by the state of Wisconsin as an Outstanding Resource Water. The Project impoundments are not included in the river stretches with this designation. Upstream of the Project, beginning above State Trunk Highway (STH) 35, the Kinnickinnic River is designated as an Outstanding Resource Water (Wisc. stats. 102.10[1][d]25). The Kinnickinnic River downstream of the Project is also designated as an Outstanding Resource Water (specifically, from the Powell Falls dam to the St. Croix River) (Wisc. stats. 102.10[1][f]14). (Wisconsin DNR 2018a).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The water quality of the Kinnickinnic River is periodically monitored by the Wisconsin DNR (Wisconsin DNR 2019). In addition, other agencies, non-profit organizations, and groups have conducted water quality monitoring and studies in the Kinnickinnic River. Studies have focused on nitrogen, phosphorus, chlorophyll a, and temperature.

Trout Unlimited has been conducting water temperature monitoring of the Kinnickinnic River since 1992. Johnson (2018) reported that on average, during the 1993-2013 period of record, downstream summer average temperatures at Upper and Lower Glen Park were 2.2-2.4°C (4.0-4.4°F) warmer than the upstream summer average temperatures at Quarry Road and Division Street. The findings of water temperature monitoring efforts at the Project described in Wisconsin DNR 1998 were similar. This study resulted in the findings that the [Project] impoundments have an overall constant warming effect of about 3°C (5°F) on downstream water temperatures during base flow (Wisconsin DNR 1998).

Additional information pertaining to water quality is located in Section 4.2 of the PAD.

6.2.4 Project Nexus

State-designated DO and temperature levels are necessary for the health and survival of fish and aquatic organisms. This study will evaluate DO and water temperatures in the Project Boundary in the Kinnickinnic River upstream of Lake George, in Lake George, below the Junction Falls dam, and below the Powell Falls dam.

6.2.5 Methodology

Temperature and DO will be recorded in 15-minute intervals using water quality data sonde-type meters at four proposed locations within the Project Boundary (Figure 6.2-1). The specific locations of the meters will be determined in the field based on local conditions and the ability to mount or anchor the sondes in safe, accessible, and representative locations. Water temperature and DO data will be collected during the critical low flow, high temperature period from July 15 to September 15, 2019 and May 1 to September 15, 2020. Data sondes will be deployed mid-channel, mid-depth, as practical. The water quality data sondes will be visited approximately

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

once every two weeks, at which time data will be downloaded, the meter checked, calibrated, and then re-deployed. The meter locations will be geo-referenced using GPS.

Grab samples of water temperature and DO levels will be gathered once per month during the survey period at various depths in Lake George to provide information on stratification in the impoundment. The grab samples will be taken in approximately the same location as the 15-minute interval samples, but at varying depths.

Air temperature data from a local weather station will be compared to water temperatures gathered during the survey period.

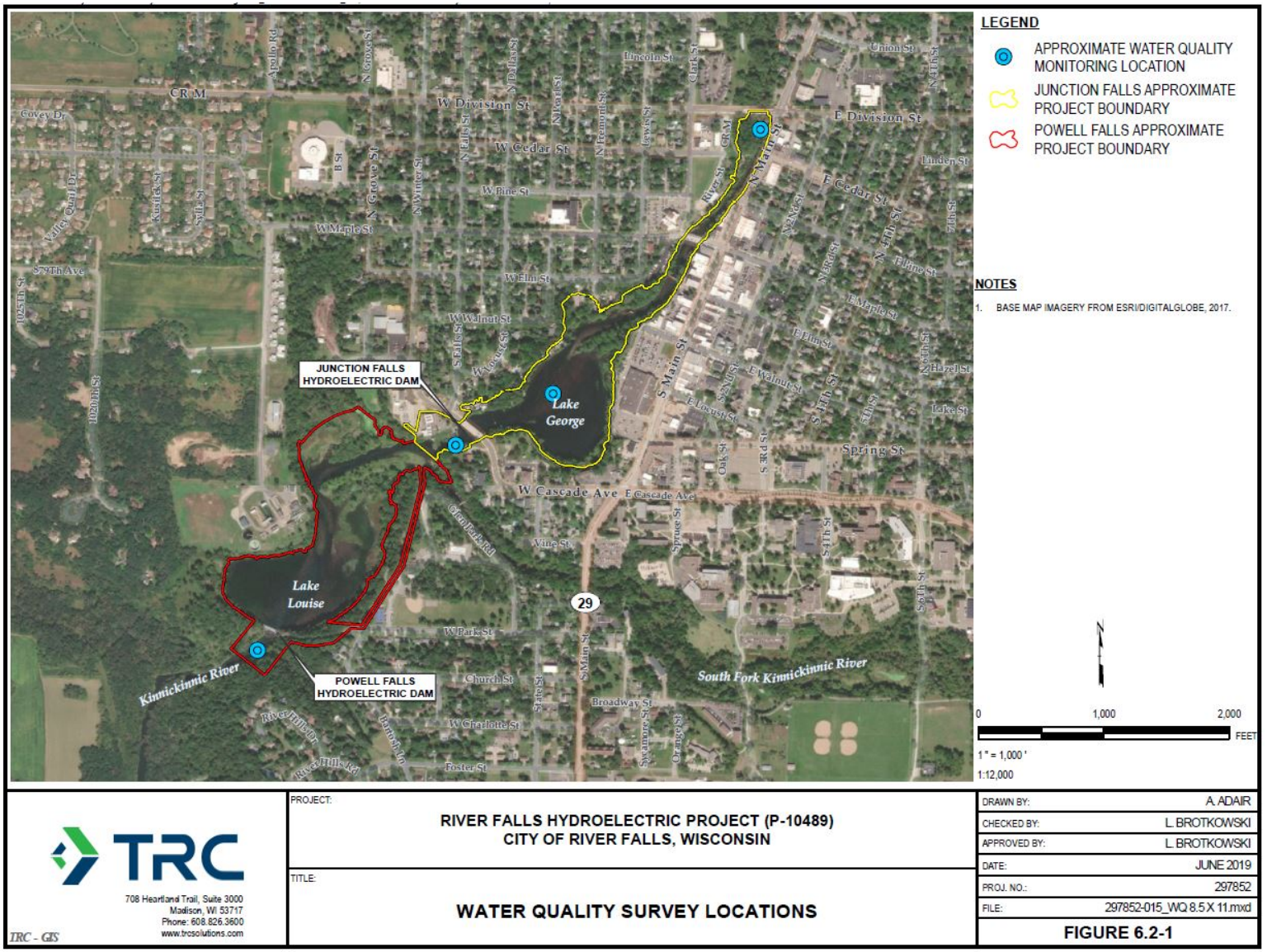
A report will be prepared describing the monitoring methods and the results. Data will be evaluated utilizing Wisconsin DNR Wisconsin's Consolidated Assessment and Listing Methodology (WisCALM) Guidance. DO and temperature data will be compared to state-designated water quality standards for the Kinnickinnic River outlined in Table 6.2-1.

An assessment of the potential effects of the Project operations on water quality will be discussed. The report will be submitted as part of the ISR.

Table 6.2-1: DO and Maximum Temperature Water Quality Standards for the Kinnickinnic River at the Project

Dissolved Oxygen (mg/l)	Maximum Water Temperature (°C)
≥6.0 at any time and ≥7.0 during spawning season	Warm Water Sport Fisheries: 31.7° Cold-water Trout Fisheries: 22°

Figure 6.2-1: Water Quality Survey Locations



20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.2.6 Consistency with Generally Accepted Scientific Practice

This study employs generally accepted practices for evaluating temperature and DO at hydroelectric projects.

6.2.7 Deliverables and Schedule

Sampling will be conducted from July 15 to September 15, 2019 and May 1 to September 15, 2020. This proposed schedule has been updated in this RSP to capture water quality data from two study seasons. Sampling data from 2019 and initial results will be summarized in the ISR anticipated to be filed with FERC in January 2020. The final data and results will be provided in the USR.

6.2.8 Cost and Level of Effort

Estimated costs for this study are approximately $75,000. The Licensee believes that the proposed level of effort is adequate to obtain information to determine whether Project waters meet state water quality standards.

6.2.9 Differences between Requested and Proposed Methods

Water quality studies were requested by Trout Unlimited, River Alliance of Wisconsin, and Wisconsin DNR. The Licensee used a combination of study requests to develop the proposed study methods, which include monitoring DO and temperature. Wisconsin DNR requested a study of DO above and below the impoundments; River Alliance of Wisconsin requested both DO and temperature monitoring above and below the impoundments. Trout Unlimited included two separate field water quality study requests. The first request was for year-round temperature monitoring in Lake George, Lake Louise, and above and below the impoundments. The second water quality study request was to monitor multiple water quality variables between April and October in Lake George and above and below the impoundments; water quality criteria to be monitored included dissolved oxygen, turbidity, suspended solids, nutrients (various forms of phosphorus and nitrogen), trace metals, bacteria, and chlorophyll. The Licensee's proposed study is limited to DO and temperature monitoring during the critical low flow, high temperature

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

period from July 15 to September 15, 2019 and May 1 to September 15, 2020 above Lake George, in Lake George, below the Junction Falls dam, and below the Powell Falls dam.

Within their first study request, Trout Unlimited also requested thermal modeling of the river, to determine the extent to which dam removal would improve the temperature regime (lower the baseline temperature) in the currently-impounded and downstream river reaches, how far down river this temperature improvement would extend, and the amount of "thermal buffering capacity" created for protection against future climate change. Removal of the Powell Falls dam will restore Lake Louise to riverine habitat and likely improve water quality and temperature within the proposed restored riverine area and the existing riverine area of the Kinnickinnic River below Powell Falls. The Licensee disagrees with the need to model or predict the level of anticipated temperature improvement post dam removal. Evaluation of thermal buffering capacity and future climate change is beyond the scope of the Licensee's proposal.

FERC provided comments on the PSP in a letter dated May 8, 2019. FERC comments have been incorporated into the revised study methods outlined above.

6.2.10 References

City of River Falls. 2018a, February 8. Feasibility Report for Hydro Facility Relicensing, River Falls, Wisconsin. Available online: http://www.kinnicorridor.org/images/docs/Final%20Feasibility%20Report%20for%20Dam%20Management%20%202.7.18-FINAL_.pdf Prepared by: SEH, Inc.

Johnson, Kent. 2018, February 2. Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls. Kiap-TU-Wish Chapter, Trout Unlimited.

Wisconsin DNR. 2019. DRAFT Wisconsin 2020 Consolidated Assessment and Listing Methodology (WisCALM) for CWA Section 303(d) and 305(b) Integrated Reporting.

Wisconsin Department of Natural Resources (Wisconsin DNR), prepared by: Schreiber, K., West Central Region. 1998. Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report. Available online:

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

http://www.rfmu.org/DocumentCenter/View/774/1998-Kinnickinnic-Priority-Watershed-Report?bidId=

Wisconsin Department of Natural Resources (Wisconsin DNR). 2017a, April. Wisconsin 2018 Consolidated Assessment and Listing Methodology (WisCALM) for CWA Section 303(d) and 305(b) Integrated Reporting. Guidance # 3200-2015-01. Available online: https://dnr.wi.gov/topic/SurfaceWater/assessments.html

Wisconsin Department of Natural Resources (Wisconsin DNR). 2018a. Outstanding and Exceptional Resource Waters. Available online: https://dnr.wi.gov/topic/SurfaceWater/orwerw.html Accessed: August 1, 2018.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2019. Surface Water Integrated Monitoring System (SWIMS). Available online: https://dnr.wi.gov/topic/surfacewater/swims/ Accessed: January 2019.

6.3 Lake George Shoreline Habitat Assessment

The Licensee proposes to a conduct shoreline habitat assessment of Lake George. The survey will map shoreline conditions around the shoreline of Lake George and map the general distribution of floating and emergent aquatic plants within Lake George.

6.3.1 Goals and Objectives

The goal of this study is to document baseline shoreline conditions surrounding Lake George and general distribution of aquatic plants within Lake George.

6.3.2 Known Resource Management Goals

This study is consistent with the Wisconsin DNR's mission, specifically to protect and enhance Wisconsin's natural resources, including air, land and water, wildlife, fish and forests, and the ecosystems that sustain all life, to provide a healthy, sustainable environment, and a full range of outdoor opportunities.

6.3.3 Background and Existing Information

The shoreline of Lake George is located near the City center of River Falls and is surrounded by parks, natural areas, and buildings associated with the downtown area. The shoreline is visible to

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

the public along public parks and trails and access point from the downtown area. The shoreline is comprised of a mix of mowed turf grass, scattered trees, and steep hillsides covered with natural vegetation.

6.3.4 Project Nexus

A survey of the shoreline habitat within Lake George would provide information on the shoreline conditions that have become established under existing Project operation.

6.3.5 Methodology

The Licensee will conduct a field assessment of the shoreline surrounding Lake George. The shoreline habitat study will follow protocols as generally outlined in the Wisconsin DNR's *Lake Shoreline & Shallows Habitat Monitoring Field Protocol* (Wisconsin DNR 2016). The assessment will be conducted from the shoreline adjacent to Lake George and also from a boat on the surface of the Lake, as safe and readily accessible. Data to be gathered around the shoreline include: percent cover of impervious surface, mowed lawn, or plants in the riparian buffer zone (up to 35 feet from the shoreline), locations with erosion concerns, total length of modified banks, density of human structures (piers, buildings, etc.), general distribution of floating and emergent aquatic plants, identification of invasive aquatic plant species within Lake George, and density of coarse woody debris (> 4 inch diameter and > 5 feet long) visible from the surface within Lake George. The shoreline will be photo documented, focusing on resources outlined above. The Licensee will consider the potential feasibility of a short-term drawdown of the water level within Lake George to consolidate sediment and stimulate aquatic plant growth, if needed, in the study report.

Resource locations will be captured with a GPS unit, mapped, and summarized in the Lake George Shoreline Habitat Assessment Report. The Lake George Shoreline Habitat Assessment will be submitted in the USR.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.3.6 Consistency with Generally Accepted Scientific Practice

Documentation of shoreline conditions, generally following the Wisconsin DNR's Lake Shoreline & Shallows Habitat Monitoring Field Protocol habitat types is an accepted means of documenting shoreline use surrounding Lake George.

6.3.7 Deliverables and Schedule

The field work will be performed between June and July 2020. This proposed schedule has been updated in this RSP to capture the most appropriate time to conduct this survey: late June and early July. For this reason, this study is proposed to be conducted in 2020 opposed to 2019.

A report will be prepared that will summarize the shoreline conditions surrounding and general distribution of aquatic plants within Lake George. A summary of shoreline conditions, captioned photographs, and maps identifying resource locations will be included in the report. This report will be provided in the USR.

6.3.8 Cost and Level of Effort

The estimated cost for the Lake George Habitat Assessment is $17,000. The Licensee believes that the proposed level of effort is adequate to complete the Lake George Shoreline Habitat Assessment described above.

6.3.9 Differences between Requested and Proposed Methods

The Licensee is following the survey protocol as requested by the Wisconsin DNR.

6.3.10 References

Wisconsin Department of Natural Resources (Wisconsin DNR). 2016, May 27. DRAFT Lake Shoreland & Shallows Habitat Monitoring Field Protocol.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2017a, December 11. Reed canary grass (*Phalaris arundinacea*). Available online: https://dnr.wi.gov/topic/invasives/fact/reedcanarygrass.html Accessed: July 23, 2018.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Wisconsin Department of Natural Resources (Wisconsin DNR). 2017b, December 11. Curly-leaf pondweed (*Potamogeton crispus*). Available online: http://dnr.wi.gov/topic/invasives/fact/curlyleafpondweed.html Accessed: July 23, 2018.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2018a. Surface Water Data Viewer. Available online: https://dnrmaps.wi.gov/H5/?viewer=SWDV Accessed: July 20, 2018.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2018b. Lake and AIS Mapping Tool. Available online: https://dnrmaps.wi.gov/H5/?viewer=Lakes_AIS_Viewer Accessed: July 15, 2018.

6.4 Aquatic Invasive Species Survey

The Licensee proposes to conduct an aquatic invasive species (AIS) survey to document botanical AIS in Lake George and Lake Louise.

6.4.1 Goals and Objectives

The goal of this study is to document the potential presence of AIS in Lake George and Lake Louise.

6.4.2 Known Resource Management Goals

This study is consistent with the Wisconsin DNR's mission, specifically to protect and enhance Wisconsin's natural resources, including air, land and water, wildlife, fish and forests, and the ecosystems that sustain all life, to provide a healthy, sustainable environment, and a full range of outdoor opportunities.

Wisconsin DNR has responsibilities for preventing and minimizing the spread of invasive species through the Invasive Species Identification, Classification, and Control Rule (Wis. Adm. Code ch. NR 40). NR 40 classifies invasive species in Wisconsin as Prohibited or Restricted, and regulates the possession, transportation, transfer, or introduction of certain invasive species. The rule establishes preventative measures to minimize the spread of invasive species.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.4.3 Background and Existing Information

The shoreline of Lake George is located near the City center of River Falls and is surrounded by parks, natural areas, and buildings associated with the downtown area.

The Invasive Species Identification, Classification, and Control Rule (Wis. Adm. Code ch. NR 40) classifies invasive species in Wisconsin as Prohibited or Restricted, and regulates the possession, transportation, transfer, or introduction of certain invasive species. The rule establishes preventative measures to minimize the spread of invasive species.

The Wisconsin DNR tracks AIS throughout the state. The Wisconsin DNR provides species information and a Lake and Aquatic Invasive Species Mapping Tool, which includes layers that provide information about the geographical distribution of aquatic invasive species. At the Project, reed canary grass (*Phalaris arundinacea*) is mapped in the Project Boundary. Reed canary grass is a 2 to 9-foot-tall grass that forms dense, persistent monospecific stands in wetlands, moist meadows, and riparian areas that outcompete desirable native plants (Wisconsin DNR 2017a). The Wisconsin Surface Water Data Viewer indicates that purple loosestrife (*Lythrum salicaria*) occurs at the Project, and that biocontrol beetles have been released in the area (Wisconsin DNR 2018a). Purple loosestrife is considered an invasive species and regulated in Wisconsin as a Restricted species under Wis. Adm. Code ch. NR 40. In the letter filed 12/31/2018 by the Friends of the Kinni, it was stated that curly-leaf pondweed (*Potamogeton crispus*) has "recently been identified by citizen scientists within the project boundaries as the predominant form of vegetation in the Upper Junction Falls Impoundment and its presence there has been confirmed by Wisconsin DNR staff." Curly-leaf pondweed is a perennial, submerged aquatic herbaceous plant regulated under Wis. Adm. Code ch. NR 40 as Restricted (Wisconsin DNR 2017b).

Outside of the Project Boundary, curly leaf pondweed (*Potamogeton crispus*) is also mapped on the Lake and Aquatic Invasive Species Mapping Tool approximately 1.5 miles downstream of the Powell Falls Development (Wisconsin DNR 2018b).

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6.4.4 Project Nexus

A survey of botanical AIS within Lake George and Lake Louise would provide information on the type and quantity of botanical AIS that have become established under existing Project operation.

6.4.5 Methodology

The Licensee will conduct a botanical AIS survey within Lake George and Lake Louise. The AIS survey will utilize a point-intercept sampling design, with sample sites located on a geo-referenced sampling grid placed over each lake. Data will be collected at up to 10 sample sites per acre. The aquatic plant community will be surveyed from a boat with a rake sampler at each sample site to determine if botanical AIS are present. A rake fullness rating that best estimates the total coverage of plants on the rake (1 - few, 2 - moderate, 3 – abundant) will be recorded at each sample site, noting general abundance of invasive and native[7] botanical species if both are present. Invasive botanical species observed will be identified. Surveys will be conducted between July and August, as recommended in the study protocols outlined in the *Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: Sampling Design, Field and Laboratory Procedures, Data Entry and Analysis, and Applications* (Hauxwell et al., 2018).

Wisconsin DNR's Early Detection Protocols will be followed to document the presence of invasive species, if observed. Survey locations will be documented with a GPS unit, mapped, and summarized in a survey report. The report will be organized by the two distinct areas at the Project: the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary. The Aquatic Invasive Species Survey Report will be submitted with the USR.

6.4.6 Consistency with Generally Accepted Scientific Practice

Documentation of botanical AIS, generally following using a point-intercept sampling design and following the Wisconsin DNR's Early Detection Protocols is an accepted means of documenting AIS in Lake George and Lake Louise. As outlined in the Wisconsin DNR Early

[7] Native plants will not be identified to species level.

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Detection Early Response Protocols, the Licensee will notify Wisconsin DNR quickly if new invasive aquatic plant species are observed during this study.

6.4.7 Deliverables and Schedule

The field work will be performed between June and July 2020. This proposed schedule has been updated in this RSP to capture the most appropriate time to conduct this survey: late June and early July. For this reason, this study is proposed to be conducted in 2020 opposed to 2019.

A report will be prepared that will summarize the botanical AIS within Lake George and Lake Louise. A list of AIS observed, captioned photographs, and maps identifying AIS locations will be included in the report. The report will be organized by the two distinct areas at the Project: the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary. This report will be provided in the USR.

6.4.8 Cost and Level of Effort

The estimated cost for the AIS survey is $20,000. The Licensee believes that the proposed level of effort is adequate to obtain information on AIS in Lake George and Lake Louise.

6.4.9 Differences between Requested and Proposed Methods

Study methodology is generally consistent with the Wisconsin DNR requests. The Wisconsin DNR request a point-intercept survey in their letter dated May 10, 2019, which is the methodology proposed by the Licensee. The Wisconsin DNR states that data should be assessed to document aquatic plant community health by calculating the floristic quality index (FQI) and other plant indexes. The purpose of this study is to document the potential presence of AIS, thus the licensee does not propose to identify native plants to species level or calculate a FQI.

6.4.10 References

Hauxwell, et al., 2009. Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: Sampling Design, Field and Laboratory Procedures, Data Entry and Analysis, and Applications. Available online: https://www.researchgate.net/profile/Michelle_Nault/publication/267832775_Recommended_Baseline_Monitoring_of_Aquatic_Plants_in_Wisconsin_Sampling_Design_Field_a

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nd_Laboratory_Procedures_Data_Entry_and_Analysis_and_Applications/links/54b98bc20cf2d11571a4b588/Recommended-Baseline-Monitoring-of-Aquatic-Plants-in-Wisconsin-Sampling-Design-Field-and-Laboratory-Procedures-Data-Entry-and-Analysis-and-Applications.pdf?origin=publication_detail Accessed June 5, 2019.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2017b, December 11. Curly-leaf pondweed (*Potamogeton crispus*). Available online: http://dnr.wi.gov/topic/invasives/fact/curlyleafpondweed.html Accessed: July 23, 2018.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2019. Wisconsin 2020 Consolidated Assessment and Listing Methodology (WisCALM) Clean Water Act Section 303(d) and 305(b) Integrated Reporting. Available online: https://dnr.wi.gov/topic/surfacewater/assessments.html Accessed: June 5, 2019.

6.5 Wetland, Riparian, and Terrestrial Resources Survey

The Licensee proposes to conduct reconnaissance level surveys to document wetland, riparian, and terrestrial resources in the Project Boundary. The survey will document common wildlife species, map habitat and mature hardwood trees with exfoliating bark or crevices that may be used by northern long-eared bat, identify and map invasive botanical species, and search for RTE botanical species.

6.5.1 Goals and Objectives

A reconnaissance level field survey of the Project Boundary with respect to wetland, riparian, and terrestrial resources will be undertaken. The survey is designed to provide information pertinent to:

1. common wildlife (bird and mammal) species,
2. major vegetation cover types,
3. invasive botanical species, and
4. the presence of mature, hardwood trees with exfoliating bark or other crevices that may be used by northern long-eared bat, RTE botanical species or associated habitats.

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6.5.2 Known Resource Management Goals

Wisconsin DNR and USFWS have responsibilities for protecting terrestrial resources such as wildlife, habitat, and RTE species. FERC must consider the effects of continued Project operations and proposed dam removal on natural resources and must balance the uses of the Project. This study will provide the necessary information to assess wetland, riparian, and terrestrial resources (wildlife, botanical, and RTE) within the Project Boundary.

This study is consistent with the Wisconsin DNR's mission, specifically to protect and enhance Wisconsin's natural resources, including air, land and water, wildlife, fish and forests, and the ecosystems that sustain all life, to provide a healthy, sustainable environment, and a full range of outdoor opportunities.

This study is consistent with USFWS relicensing goal of working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people, as well as their roles and responsibilities under federal law.

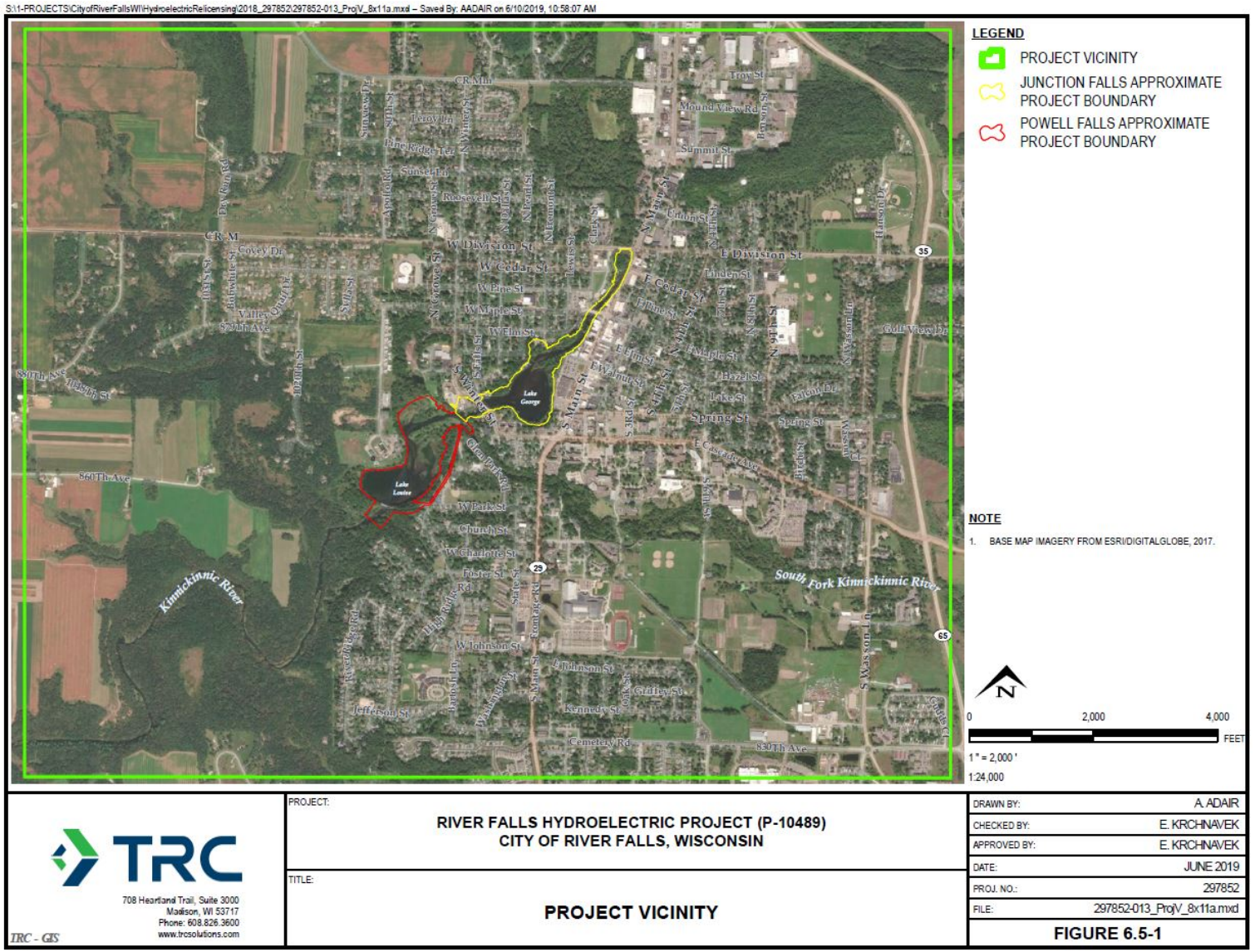
6.5.3 Background and Existing Information

The Project is located in the City of River Falls and is surrounded by urban development, parks, and natural areas. Wildlife habitats and botanical resources are influenced by surrounding non-Project lands and associated uses. Based on the available information, a variety of wildlife and botanical species occupy, or have the potential to occupy, the Project Boundary.

6.5.3.1 Terrestrial Wildlife

The wildlife species assemblage known or considered likely to occur in the Project Vicinity is typical of those found in urban landscapes in northwestern Wisconsin. The Project Vicinity is shown in Figure 6.5-1. Many of the species occurring in the Project Vicinity are seasonal migrants that travel substantial distances between breeding and wintering areas. Examples of this are avian species that breed in the area, but then winter elsewhere. Information pertaining to mammal and bird species known or considered likely to occur in the Project Vicinity is included in Section 5.4 of the PAD.

Figure 6.5-1: Project Vicinity



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6.5.3.2 Upland Plant Communities

Historically, the natural vegetation of the Project Vicinity was part of the Oak Savanna plant community consisting of bur oak (*Quercus macrocarpa*), white oak (*Quercus alba*), and bluestem, and dominated by other grasses, herbaceous plants, and some shrubs (RFMU 1987). Today, much of the land in the Project Vicinity has been altered by residential and commercial land uses. Upland plant communities within the Project Vicinity in those developed areas are dominated by maintained lawns, gardens, weeds, and trees. Within the Project Boundary, much of the land is managed by the City as natural woodlands and wetlands and maintained park lands. Common upland botanical species that occur or potentially occur within the Project Vicinity are included in Section 5.4 of the PAD.

6.5.3.3 Wetlands and Riparian Habitat

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetland, riparian, and littoral zone habitat within the Project Boundary are associated with the Kinnickinnic River. The National Wetland Inventory (NWI) depicts wetland areas classified as riverine, freshwater emergent wetlands, and freshwater forested wetlands.

In the Project Boundary, the Kinnickinnic River is classified as a perennial waterway that is permanently flooded. Palustrine emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, with the exception of mosses and lichens (Cowardin et. al. 1979). Emergent wetlands are typically dominated by grasses, sedges, rushes, and flowering herbs (Cowardin et. al. 1979). Palustrine forested wetlands are characterized by woody vegetation that is 6 meters tall or taller (Cowardin et. al. 1979).

6.5.3.4 Invasive Species

The Invasive Species Identification, Classification, and Control Rule (Wis. Adm. Code ch. NR 40) classifies invasive species in Wisconsin as Prohibited or Restricted, and regulates the possession, transportation, transfer, or introduction of certain invasive species. The rule establishes preventative measures to minimize the spread of invasive species.

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Several terrestrial and wetland invasive botanical species are known to occur in the Project Vicinity. Invasive species occur in the woodlands, wetlands, and grassland areas within the Project Boundary. These species include, but are not limited to, common buckthorn (*Rhamnus cathartica*), honeysuckle (*Lonicera* species), Canada thistle (*Cirsium arvense*), crown vetch (*Securigera varia*), garlic mustard (*Alliaria petiolata*), reed canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*).

6.5.3.5 Rare, Threatened and Endangered Species

The Project Boundary may be utilized by Federal and/or State-listed RTE species. The USFWS IPaC tool allows for RTE searches within a specified project area. The site specific USFWS IPaC search of the Project Boundary listed one bat (northern long-eared bat), three species of mussels (Higgins eye, snuffbox, and spectaclecase), and one plant (prairie bush-clover).

The Wisconsin DNR NHI is a statewide inventory of known locations of rare and endangered species and communities. The NHI Township Tool included several RTE species within Township 27 North Range 19 West; this list is included within Appendix D of the PAD. The Licensee requested an Endangered Resources Review from Wisconsin DNR. The results of this Endangered Species Review were received on July 31, 2018 (Wisconsin DNR ER Log # 18-556). The results of this site-specific review contain data that are considered sensitive and are not subject to Wisconsin's Open Records Law (per s. 23.27, Wis. Stats.). Due to the confidential nature of the results, the details of the report are not provided in this public filing. In summary, one (1) plant species was identified in the Wisconsin DNR Endangered Resources Review with required actions, 14 species or communities with recommended actions, and four (4) communities with no recommended actions.

No critical habitats are located in the Project Boundary (USFWS 2018a).

6.5.4 Project Nexus

The Project Vicinity provides habitat for a variety of wildlife and botanical species. An understanding of the wetland, riparian, and terrestrial habitat in the Project Boundary would

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

provide the best information on the wildlife, botanical, invasive, and RTE species present under existing Project operation.

6.5.5 Methodology

The wetland, riparian, and terrestrial resources survey will involve three phases of work.

1. **Aerial Photo Interpretation:** The first phase will map habitat boundaries using major vegetation cover types within the Project Boundary through aerial photo interpretation.

2. **Field Assessment:** The second phase will verify and refine habitat boundaries, document vegetative species, common wildlife, invasive botanical species, mature hardwood trees with exfoliating bark or other crevices that may be used by northern long-eared bats, and RTE botanical species observations or appropriate habitat.

3. **Summary Report:** The summary report will include a vegetative cover type map, description of vegetation cover types, lists of wildlife, botanical species, invasive species, general size and abundance of mature hardwood trees with exfoliating back or crevices, RTE species or habitat observations, and maps of invasive species locations, and photo documentation of the various habitat types and RTE species observations. The report will be organized by the two distinct areas at the Project: the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary.

Information collected during the wetland, riparian, and terrestrial resources survey will include:

- botanical species composition of each major cover type, including the dominant and more prominent associated species in each vegetation layer (tree, shrub and herbaceous layers), with aerial cover of dominant species;
- rare, unique, and particularly high-quality habitat;
- wildlife species observations (direct sighting, sign, or call) specific to each habitat type;
- invasive botanical species locations (marked with GPS unit using a point or polygon feature) and general abundance;

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- mature hardwood trees with exfoliating back or crevices that may be used as summer habitat for northern long-eared bats (noting species composition, general abundance and size within the woodland); and
- RTE botanical species observations or appropriate RTE habitat.

A reconnaissance level field survey will be conducted with a visual inspection of each habitat type. Botanical species, wildlife, invasive species, and RTE specific to each habitat type will be documented. Survey efforts will be concentrated in areas of microhabitats that might support individuals or populations of RTE species as noted by USFWS or Wisconsin DNR as potentially present. Field crews will document invasive species and RTE species observed and/or suitable habitats identified with a GPS unit (using point and/or polygon features as appropriate) and photo documentation.

6.5.6 Consistency with Generally Accepted Scientific Practice

Documentation of habitat types, wildlife observations, botanical species, invasive species, and RTE species and potential RTE species habitats observed during the proposed survey is an accepted means of documenting wetland, riparian, and terrestrial resources in the Project.

6.5.7 Deliverables and Schedule

Consultation with USFWS and Wisconsin DNR regarding rare species occurrence will take place in 2019. Desktop analysis will also be performed during 2019, prior to field work. The field work will be performed between August and September of 2019.

A report will be prepared that will summarize the wetland, riparian, and terrestrial resources encountered at the Project. Captioned photographs of habitat conditions and RTE observations will be included in the report. The report will also include habitat mapping, invasive species mapping, and descriptions of the observed resources. The report will be organized by the two distinct areas at the Project: the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary. Locations of RTE species, if observed, will be mapped and filed as Privileged under separate cover. The Wetland, Riparian, and Terrestrial Resources Survey Report will be provided in the ISR.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.5.8 Cost and Level of Effort

The estimated cost for the reconnaissance-level terrestrial resources survey is $25,000. The Licensees believe that the proposed level of effort is adequate to obtain information on habitat types, wildlife, botanical, invasive, and RTE species in the Project Boundary.

6.5.9 Differences between Requested and Proposed Methods

The Licensee is proposing a reconnaissance level survey to evaluate habitat types, wildlife, botanical, invasive, and RTE species in the Project Boundary. Wisconsin DNR requested wildlife, habitat, and terrestrial invasive species surveys. The Kinnickinnic River Land Trust and River Alliance of Wisconsin requested terrestrial invasive species surveys. No requests for a RTE botanical study were made; however, the Licensee places a high importance on determining if these species or appropriate habitat are present in the Project Boundary.

The Licensee is proposing a reconnaissance level survey that closely aligns with agency and stakeholder requested methodology. General abundance of wildlife, however, will not be evaluated as no population-level assessments are proposed.

6.5.10 References

Cowardin, L.M., V.C. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service, Washington, D.C. 131 pp.

River Falls Municipal Utility (RFMU). 1987, August. Application for License for Minor Hydroelectric Power Project: River Falls Municipal Hydroelectric Facilities (FERC No. 10489). Prepared by: HDR Techserv.

United States Fish and Wildlife Service (USFWS). 2018a. Information for Planning and Consultation (IPaC). Available online: https://ecos.fws.gov/ipac/ Accessed: July 23, 2018.

6.6 Riverine Habitat Evaluation below Powell Falls

The Licensee proposes to conduct a riverine habitat evaluation of the Kinnickinnic River between the Powell Falls dam and St. Croix River.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.6.1 Goals and Objectives

The goal of this study is to evaluate existing riverine conditions between the Powell Falls dam and St. Croix River to document baseline habitat conditions prior to dam removal.

6.6.2 Known Resource Management Goals

Wisconsin DNR and U.S. Army Corps of Engineers (USACE) have responsibilities for protecting waterways. FERC must consider the effects of proposed dam removal on the Kinnickinnic River. This study will provide the necessary information to document existing riverine habitat conditions in the Kinnickinnic River between the Powell Falls Development and its confluence with the St. Croix River.

This study is consistent with the Wisconsin DNR's mission, specifically to protect and enhance Wisconsin's natural resources, including air, land and water, wildlife, fish and forests, and the ecosystems that sustain all life, to provide a healthy, sustainable environment, and a full range of outdoor opportunities.

This study is consistent with the USACE's Regulatory Program, which is committed to protecting the Nation's aquatic resources and navigation capacity, while allowing reasonable development through fair and balanced decisions.

6.6.3 Background and Existing Information

A riverine habitat evaluation of the Kinnickinnic River was conducted by the Wisconsin DNR and summarized in the Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report (Wisconsin DNR 1998) using the Guidelines for Evaluating Stream Habitat in Wisconsin Streams. This methodology includes measurements of water characteristics (flow, water levels, and basic water quality parameters) and channel characteristics (stream width, depth, channel condition, substrate, gradient, stream order, and distance between riffles, pools, runs).

The Stream Classification Report for the Kinnickinnic River (Wisconsin DNR 2015) includes summaries of both biological and riverine fish habitat ratings, which varied from Fair to Good

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

throughout the river. The sites with Fair ratings tended to have more fine sediments, fewer riffles and sometimes less fish cover.

In addition, a recent reconnaissance level geomorphic assessment was completed for the Kinnickinnic River, which included portions of the Project Boundary (Inter-Fluve 2017, included in Appendix E of the PAD). The study described and mapped areas of shoreline erosion, channel widths, and general channel and floodplain conditions.

6.6.4 Project Nexus

A survey of riverine habitat in the Kinnickinnic River below the Powell Falls dam will provide information on existing conditions that have become established under existing Project operation.

6.6.5 Methodology

The Licensee will conduct a riverine habitat evaluation in the Kinnickinnic River between the Powell Falls dam and St. Croix River. The Licensee will conduct a desktop evaluation using existing information (longitudinal profiles, confluence of large tributaries, and/or aerial imagery) to identify distinct reaches of the Kinnickinnic River. Representative reaches, such as potential depositional reaches (e.g. areas with low slope and/or wide floodplains and backwatered reaches), transport reaches, and other distinct reaches (e.g., reaches with floodplain infrastructure) will be field verified and selected for further assessment.

The selected representative reaches will be further evaluated in the field using a transect approach (with up to three transects in each distinct study reach). The Licensee will map mesohabitats (e.g. riffle, run, pool) and collect quantitative habitat data in each mesohabitat type along each transect. Quantitative data collection will include cross-sectional profiles that measure bankfull width, bankfull depth, flood-prone width or valley width, wetted width and depth, substrate size, embeddedness, depth of fine sediment, and longitudinal slope. In addition, a pebble count of at least 100 measurements will be collected along each transect. If active point bars, lateral bars, or depositional bars are present, the median diameter of the 10 to 30 largest freshly mobilized clasts will be recorded from at least one depositional bar per transect. Large

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

woody debris, number of pools, and pool depth will be quantified for a given study reach. Photos and general descriptions of the river channel and streambanks within each study reach will be documented. General descriptions will include a visual estimate of substrate cover within habitat types, approximate size of immobile substrate within riffles, streambank stability observations, and a general description of floodplain deposits.

Survey locations will be documented with a GPS unit, mapped, and summarized in a survey report. The Kinnickinnic Riverine Habitat Evaluation Assessment Below Powell Falls Report will be provided in the ISR.

6.6.6 Consistency with Generally Accepted Scientific Practice

Methodology to document riverine habitat conditions in defined reaches using a transect approach is a scientifically accepted means of documenting existing habitat conditions.

6.6.7 Deliverables and Schedule

The field work will be performed between August and September 2019.

A report will be prepared that will summarize the riverine habitat evaluation of the Kinnickinnic River between the Powell Falls dam and confluence with the St. Croix River. A report summarizing survey observations, maps, and captioned photographs of the selected representative survey reaches will be included in the report. The Kinnickinnic Riverine Habitat Evaluation Below Powell Falls report will be provided in the ISR.

6.6.8 Cost and Level of Effort

The estimated cost for the riverine habitat evaluation is $32,000. The Licensee believes that the proposed level of effort is adequate to complete the Riverine Habitat Evaluation below Powell Falls as described above.

6.6.9 Differences between Requested and Proposed Methods

The Wisconsin DNR requested a Fisheries/Riverine Habitat Evaluation of the Kinnickinnic River upstream and downstream of the hydropower facilities following the Wisconsin DNR

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Guidelines for Evaluating Stream Habitat in Wisconsin Streams. The Licensee is limiting the study to the area below Powell Falls dam to document habitat conditions prior to dam removal.

FERC provided comments on the PSP in a letter dated May 8, 2019 and subsequent email on June 1, 2019. FERC comments have been incorporated into the revised study methods outlined above.

6.6.10 References

Inter-Fluve. 2017. June. Kinnickinnic River Corridor Plan: Reconnaissance Level Geomorphic Assessment. Submitted to the City of River Falls and SEH. Available online: http://www.kinnicorridor.org/images/docs/Geomorphic%20Assessment%2C%206-5-17.pdf Accessed: June 2019.

Wisconsin Department of Natural Resources (Wisconsin DNR), prepared by: Schreiber, K., West Central Region. 1998. Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report. Available online: http://www.rfmu.org/DocumentCenter/View/774/1998-Kinnickinnic-Priority-Watershed-Report?bidId= Accessed: June 2019.

Wisconsin Department of Natural Resources (Wisconsin DNR). 2015a. Wisconsin Department of Natural Resources, Fisheries Management Stream Classification, Report – Kinnickinnic River. Available online: https://dnr.wi.gov/topic/fishing/documents/reports/StCroixKinnickinnicR2015Comp.pdf Accessed: June 2019.

6.7 Recreation Facility Inventory and Recreation Use Assessment

6.7.1 Goals and Objectives

The goal of this study is to complete a baseline inventory of the existing public recreation sites and facilities at the Project and to compile data on the existing recreation use, access, and demand at the Project. The specific objectives of this study are as follows:

1. Conduct an inventory of existing public recreation sites and facilities at the Project (see Table 6.7-1); and

2. Conduct an updated public recreation use assessment to provide an overall assessment of recreation use and demand at each public recreation site and/or facility.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.7.2 Known Resource Management Goals

Recreation has been identified as a Project purpose by the Commission. Identifying effects of Project operation pertaining to recreation is relevant to the Commission's public interest determination in issuing new licenses for the continued operation of the Project.

6.7.3 Background and Existing Information

The Licensee provides free public access to Project lands and waters for recreational purposes. Recreation that occurs within the Project Boundary includes walking and running on trails, canoeing/kayaking, picnicking, birding, and fishing. The City provides many public recreation facilities and amenities within the Project Boundary.

Recreation facilities and amenities within the Project Boundary are shown in Figure 6.8-1 and are described in further detail below. There are three primary areas of recreation use. The first is to the west of Lake George, the Kinnickinnic River Trail, which includes a paved path, picnic tables, boat launch, and fishing pier. The second major area are the paths northeast of Lake Louise in Glen Park. The third major recreation area is the trail to Powell Falls dam and lower Kinnickinnic River, which provides access to dirt paths, fishing locations, and an area for launching kayaks and canoes. As shown in Figure 6.7-1 and Table 6.7-1, recreation facilities and amenities within the Project Boundary include: several trails, a picnic area, two fishing areas, three boat launch areas, public parking, a pedestrian bridge across the river connecting Heritage Park to Veterans' Park, and certain amenities inside Glen Park. All of these facilities and amenities are owned and managed by the City. Several recreation sites and facilities, including Glen Park and the trails south of the Powell Falls Development, also extend beyond the Project Boundary. There are additional recreation areas immediately surrounding the Project Boundary, such as additional picnic areas, and paths along the southern shore of Lake George.

The 1996 Form 80 filed March 24, 1997 reported 1,500 annual recreation days at the Project. In 2015, the City conducted a Recreation Use Survey (City of River Falls 2015). Data were collected May through September of 2015. This use survey counted the number of visitors to the Project and their activities. Specifically, three areas were studied including: 1) an area along the Kinnickinnic River Trail west of the Junction Falls impoundment (Lake George) including a

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

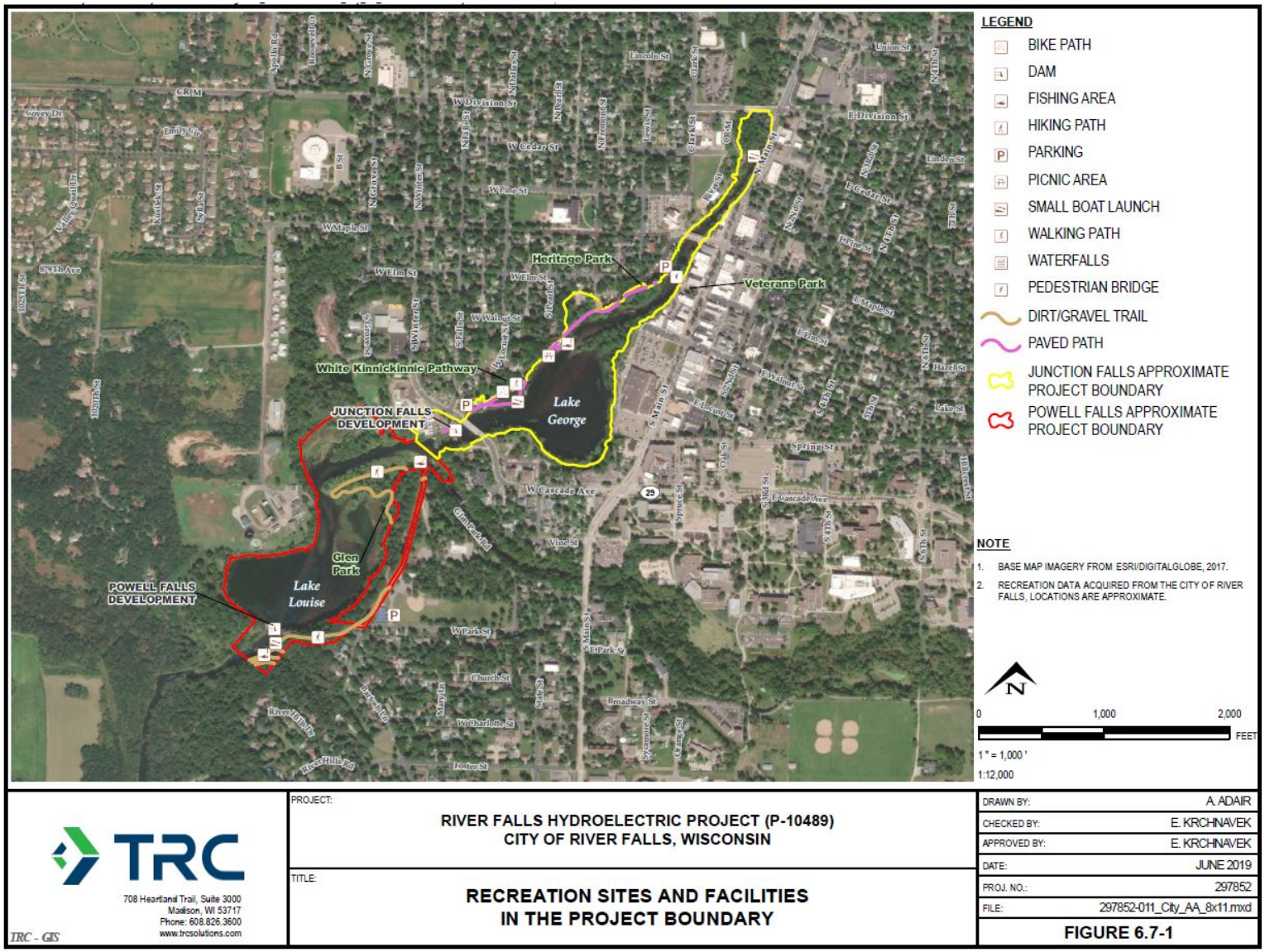
paved path, picnic tables, boat launch, and fishing pier; 2) the area northeast of Lake Louise in the Lower Glen Park area with paved and dirt trails; and 3) the trail to the Powell Falls Development and lower Kinnickinnic River at which there is also a fishing area and a place for kayaks/canoes to launch.

The results of this recreation use survey at this third area (the area near the Powell Falls Development) were reported in 2015 (City of River Falls 2015). The study report concluded that trail and water access located near the Powell Falls Development on the Lower Kinnickinnic River is a popular destination for recreation users in the region. The study report also stated that observed watercraft use included both recreationists with personal watercraft and recreationists using equipment from a kayak outfitter, and that there are three kayak outfitters in the City of River Falls with a reported total capacity of approximately 85 watercrafts per day.

Table 6.7-1: Recreation Facilities within Project Boundary

Amenity	Location	Associated Area
Trails		
Paved trail	Along the shore of Lake George and the river upstream of Lake George	Junction Falls
Trails	On the southern shore of Lake Louise	Powell Falls
Dirt trails	Provide access through woodland habitat to the Kinnickinnic River below the Powell Falls Development	Powell Falls
Picnic Areas		
Picnic area - northern shore of Lake George	On the northern shore of Lake George	Junction Falls
Fishing Areas		
Fishing Pier	On the northern shore of Lake George	Junction Falls
Informal fishing area	Just below the Powell Falls Development	Powell Falls
Informal fishing area	Just below the Junction Falls Development	Powell Falls
Boat Launch Areas		
Lake George boat launch area	On the northern shore of Lake George	Junction Falls
Kinnickinnic River boat launch area	On the Kinnickinnic River at the northern end of the Project Boundary	Junction Falls
Boat launch area below Lake Louise	Just below the Powell Falls Development	Powell Falls
Parking		
Public parking	Inside and adjacent to the Project Boundary	Both
Pedestrian Bridge		
Kinnickinnic River pedestrian bridge	Across the Kinnickinnic River connecting Heritage Park to Veterans' Park	Junction Falls
A portion of Glen Park		
Glen Park extends beyond the Project Boundary; certain amenities are located inside the Project Boundary	West of the confluence of the South Fork of the Kinnickinnic River with the mainstem, on the southern shores of Lake Louise	Powell Falls

Figure 6.7-1: Recreation Facilities and Amenities within Project Boundary



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6.7.4 Project Nexus

FERC regulations require that the License Application include a statement of the existing recreation measures or facilities to be continued or maintained and the new measures or facilities proposed by the applicant for the purpose of creating, preserving, or enhancing recreational opportunities at the Project and for the purpose of ensuring the safety of the public in its use of Project lands and waters. In addition, recreation is a recognized Project purpose at FERC-licensed projects under section 10(a) of the Federal Power Act.

6.7.5 Methodology

6.7.5.1 Recreation Facility Inventory

The Licensee will conduct a recreation facility inventory of the existing recreation sites and facilities in the Project Boundary (Table 6.7-1). For this inventory, the Licensee will develop a standardized site inventory form to evaluate each recreation site or facility. The inventory will be conducted once and information collected will include a brief description; an estimate of parking capacity provided in any parking areas located inside the Project Boundary; the location of facilities in relation to the Project Boundary; the types and number of amenities provided at each site or facility; the general condition of the facility and amenities; the entities responsible for the operation and maintenance of each facility; hours/seasons of operation; and photographs.

A draft Facility/Site Inventory Form that will be used for the Recreation Facility Inventory is available in Appendix F.

6.7.5.2 Recreation Use Assessment

The Licensee will conduct a recreation use assessment for the Project using a combination of methods – spot counts and recreation user surveys for recreation sites and facilities included in Table 6.7-1. A draft Recreation User Survey Form is available in Appendix G.

Spot Counts

Spot counts will be conducted at each recreation site and facility listed in Table 6.7-1.

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Spot counts are short duration counts, which will be utilized as a snapshot of recreation use at each survey location. Individuals conducting the count will collect data immediately upon arriving at the survey location. Once the spot count is completed, individuals conducting the count will administer a recreation user survey as described below. Consistent with standard sampling techniques, all sampling days will be randomly selected and survey routes will be completed on a rotating basis and at different times of day to account for time-of-day use patterns and to eliminate sampling bias.

Spot counts will be conducted at each survey location on two weekdays and two weekend days per month during the recreation season (Memorial Day weekend through Labor Day weekend) and on one day of the following holiday weekends: Memorial Day, Independence Day, and Labor Day. The number of vehicles parked at each parking area inside the Project Boundary and any observed recreation use will be recorded on data forms to determine the time-of-day use patterns at the sites. The number of vehicles parked will be factored into the recreation use estimates based on the occupancy rates obtained from the user survey. The spot count data will be a component in the development of the overall use levels. On the basis of this schedule, a total of 15 spot counts for the study period will be conducted as shown in Table 6.7-2 at each of the recreation sites and facilities listed in Table 6.7-1.

Table 6.7-2: Project Spot Counts/User Surveys by Month

Month (2020)	Weekdays	Weekend Days	Holidays	Total
May	0	0	1	**1**
June	2	2	0	**4**
July	2	2	1	**5**
August	2	2	0	**4**
September	0	0	1	**1**
Total	**6**	**6**	**3**	**15**

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Recreation User Surveys

The Licensee will develop a recreation user survey to determine users' perceptions with respect to the existing recreation facilities and opportunities at the Project. Among other things, the survey will ask recreationists to identify their primary reason (recreation activity) for visiting the Project, the number of people in their party, their perception of level of recreation use, and their opinions with regard to the amount and types of recreation opportunities offered within the Project Boundary.

The survey will be administered during the spot count site visits during the recreation season (Memorial Day weekend through Labor Day weekend) (see Table 6.7-2) to recreation sites and facilities listed in Table 6.7-1. The Licensee will rotate between the recreation sites and facilities listed in Table 6.7-1 located in the three primary areas of recreation use described in Section 6.7.3. The Licensee will spend up to two hours in each of the three primary areas of recreation use attempting to administer the survey to as many recreationists as possible on survey days.

6.7.5.3 Report

A report summarizing the results of the recreation facilities inventory and the recreation use assessment will be prepared. The report will include a recreation facility inventory for the existing recreation sites and facilities at the Project including a brief description of each recreation area; an estimate of parking capacity of the parking areas listed in Table 6.7-1; the location of recreation facilities in relation to the Project Boundary with a map that identifies each recreation facility; the types and number of amenities provided at each recreation site or facility; the general condition of the facility and amenities; the owners of each facility; the entities responsible for the operation and maintenance of each facility; hours/seasons of operation; and representative photographs.

The report will also include overall recreation use estimates developed from the spot count data. Recreation use data collected in 2015 by the Licensee that is available will also be factored in the development of the overall recreation use levels. Recreation use data will be summarized by season and activity type for each recreation area.

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Spot count data will also be analyzed to project future recreation use over the term of a new license. Future recreation demand at the Project under current Project operations will be estimated by analyzing current Project use data; trend data from state, regional, and national resources, as applicable; and population growth data, as applicable. Future recreation demand at the Project will be estimated based on both expected population growth in the region, and on expected changes in recreation participation. Population projections for the communities within which the Project is located will be obtained to determine the expected population growth in the region. Based on the zip code data collected as part of the Recreation User Survey, counties where the majority of the recreation users are from will be selected to serve as the basis of the population component of the recreation demand forecast. To evaluate the ability of the facilities at the Project to meet future recreation demands, projections of recreation days will be made through approximately a maximum license term, by activity at each recreation site/facility. The projections will be based in part on growth coefficients developed as part of Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment. Projections of Outdoor Recreation Participation to 2060, published by the United States Department of Agriculture (USDA) Forest Service (Cordell 2012), and use a combination of income, age, gender, and ethnicity to develop projected national participation rates (expressed as an index) for various recreational activities. Because these projections rely upon many different variables, the growth rates are more robust than simply using population projections to forecast growth in recreation demand.

Responses to the Recreation User Survey will be compiled and analyzed. The report will include a summary of responses to the Recreation User Survey.

6.7.6 Consistency with Generally Accepted Scientific Practice

Estimating use by conducting spot counts at recreation sites and conducting a recreation site inventory and assessment is a standard practice within FERC relicensing.

6.7.7 Deliverables and Schedule

Field work will occur beginning in September 2019 and will end in September 2020. The schedule for the field work and reporting is proposed as follows.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- The field work for the Recreation Facility Inventory is proposed to be conducted in September – October 2019.

- A report containing the results of the Recreation Facility Inventory will be prepared and provided in the ISR to be distributed to the relicensing parties and filed with the Commission in accordance with the Commission's ILP Process Plan and Schedule. The report will be organized by the two distinct areas at the Project: the Junction Falls Approximate Project Boundary and the Powell Falls Approximate Project Boundary.

- The field work for the Recreation Use Assessment is proposed to be conducted in May – September 2020.

- A report containing the results of the Recreation Use Assessment will be prepared and provided in the USR to be distributed to the relicensing parties and filed with the Commission in accordance with the Commission's ILP Process Plan and Schedule.

6.7.8 Cost and Level of Effort

This study is estimated to cost approximately $36,000 to complete.

6.7.9 Differences between Requested and Proposed Methods

The Licensee generally followed the recreation study protocols as requested by the FERC. Deviations from other requested recreation studies consist of the following.

The NPS recommends that the recreation demand analysis involve both assessing current demand for various recreation activities by counting use at peak times of day and week during the four seasons. The Licensee is not aware of any issues related to capacity utilization of recreation sites and facilities during the winter months. Therefore, the Licensee proposes to conduct recreation spot counts during the recreation season: Memorial Day weekend – Labor Day. The Licensee proposes to include questions about winter recreation use in the Recreation User Survey. The Licensee proposes to conduct spot counts on two weekend days per month Memorial Day weekend through Labor Day and on one day of the following holiday weekends: Memorial Day, Independence Day, and Labor Day. Consistent with FERC's Study Request and

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

standard sampling techniques, all sampling days will be randomly selected and survey routes will be completed on a rotating basis and at different times of day to account for time-of-day use patterns.

The NPS requests that the final report should include an interim, draft, and final report with sufficient time for review and comment by stakeholders. Consistent with the ILP, the Licensee will prepare an ISR for the study that would be distributed to stakeholders and conduct an ISR meeting. Stakeholders would have the opportunity to comment on the ISR.

The NPS recommends that the study make recommendations on recreation mitigation measures for the project and consider newly developed flow dependent river recreation opportunities created by dam removal and those identified in the "Kinni River Corridor Plan" (KRCP). The results of this study along with other relevant studies conducted in connection with the relicensing will be used to inform the development of the License Application and any protection, mitigation, or enhancement measures proposed by the Licensee, which will be developed at the appropriate time, after completion of the study.

The NPS recommends that the Recreation Study include an aesthetics component that would include collecting baseline information on aesthetics in the area and also assessing the impacts of the project on this resource. The Licensee is not proposing a formal aesthetics spillway flow assessment but will describe aesthetics at the Project in the License Application. The Licensee proposes to include questions on the Recreation User Survey (Appendix G) specific to aesthetics. The results of this recreation study along with other relevant studies conducted in connection with the relicensing will be used to inform the development of the License Application and any protection, mitigation, or enhancement measures proposed by the Licensee.

Kinnickinnic River Land Trust (KRLT) recommends that sampling schedule be designed to achieve a target sample size of approximately 400 responses. The Licensee has designed the sampling schedule consistent with FERC's Study Request and standard sampling techniques. The Licensee will attempt to survey as many users as possible during the sampling schedule provided herein; as such a target response number is not included.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

KRLT recommends winter sampling days for both the spot counts and recreation user surveys. The Licensee is not aware of any issues related to capacity utilization of recreation sites and facilities during the winter months. Therefore, the Licensee proposes to conduct recreation spot counts during the recreation season: Memorial Day weekend – Labor Day. The Licensee proposes to include questions about winter recreation use in the Recreation User Survey.

KRLT recommends that the study compile data to gain an understanding of where recreational opportunities are underutilized and/or where improvements in recreational opportunities could be made for the community. The results of the Licensee's proposed study along with other relevant studies conducted in connection with the relicensing will be used to inform the development of the License Application and any protection, mitigation, or enhancement measures proposed by the Licensee, which will be developed at the appropriate time, after completion of the study. The results of this study along with other relevant studies conducted in connection with the relicensing will be used to inform the development of protection, mitigation, or enhancement measures proposed by the Licensee. The Licensee is proposing to survey recreation users at the Project. The Licensee is not proposing to survey local residents because they may or may not be users of the Project and have experience with the Project recreation sites and facilities.

The Friends of the Kinni requests that the Licensee also discuss the recreation potential with the dams removed. The Licensee proposed a comprehensive Recreation Facility Inventory and Recreation Use Assessment that will allow for a baseline understanding of the public recreation facilities within the Project Boundary as well as public recreation use and demand. This information is expected to inform the License Application which will be submitted for FERC's NEPA analysis of the intended proposal (relicensing of the Junction Falls Development, and decommissioning of the Powell Falls Development with dam removal). The Licensee does not believe that analysis of the impacts of removing both dams is applicable to the intended proposal.

The Friends of the Kinni requested a comprehensive economic valuation of potential improvements and/or expansion of recreational opportunities. The Licensee's proposed recreation study is Recreation Facility Inventory and Recreation Use Assessment that will allow for a baseline understanding of the public recreation facilities within the Project Boundary as

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

well as public recreation use and demand. Then, in the License Application the Licensee will assess potential PM&E measures and provide information on the costs of PM&E measures. The Licensee does not propose to develop an economic valuation of potential improvements at this time, as it is premature and will be discussed in the License Application.

The River Alliance of Wisconsin (RAW) recommends developing a Recreation Plan for implementation during post licensing. The results of this study along with other relevant studies conducted in connection with the relicensing will be used to inform the development of the License Application and any protection, mitigation, or enhancement measures (which may include a Recreation Management Plan) proposed by the Licensee, which will be developed at the appropriate time, after completion of the recreation study.

6.7.10 References

City of River Falls. 2015. Recreation Use Survey: Summary of Findings. Available online: http://www.rfcity.org/DocumentCenter/View/1982/Summary-of-Findings-and-Data?bidId= Accessed: January 16, 2019.

Cordell, H. K. 2012. Outdoor recreation trends and futures: a technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. SRS-150. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station.

TRC. 2018. Pre-Application Document for the River Falls Hydroelectric Project (FERC Project No. 10489). August 2018.

6.8 Cultural Resources Study

The Licensee proposes to conduct a Cultural Resources Study that includes two parts:

1. **Archaeological Resources Survey**
2. **Historic Structures Survey**

The Cultural Resources Study is described below.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

In accordance with provisions of the Program Agreement (PA)[8], the Project Area of Potential Effects (APE) is defined as follows for continued operation of existing projects:

1. Lands enclosed by the Project Boundary as delineated in the license;

2. Attached or associated buildings and structures extending beyond the Project Boundary, which contribute to the eligibility of the hydroelectric generating facility for listing on the National Register of Historic Places (NRHP); and

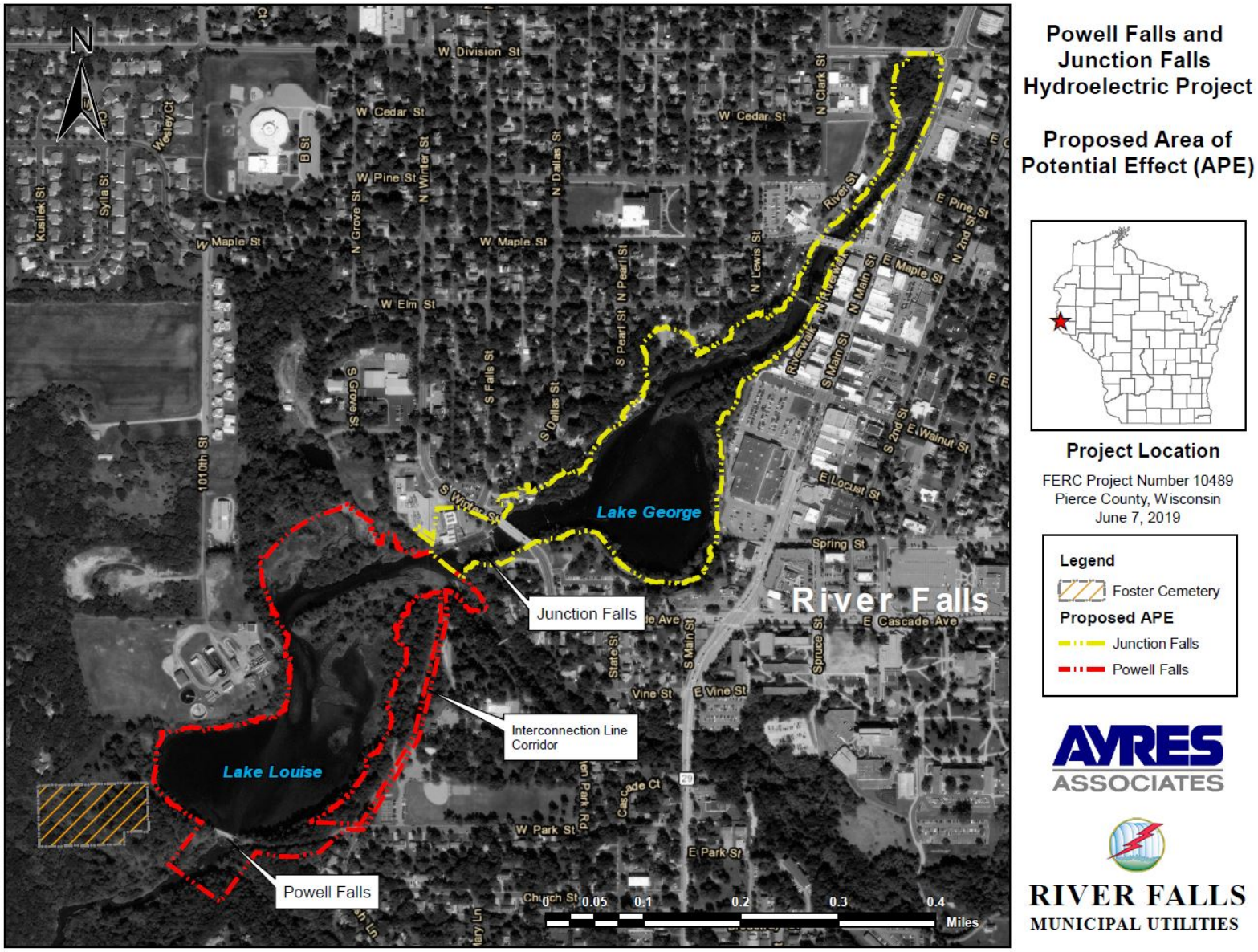
3. Lands or properties outside the Project Boundary, where the Project may cause changes in the character or use of historic properties, if any historic properties exist.

The Powell Falls development is proposed to be decommissioned, thus the APE will also need to account for ground disturbing activities associated with decommissioning and removal. The Licensee is proposing an APE as outlined in Figure 6.8-1 below. This proposed APE includes the approximate Project Boundary and areas of potential land disturbance from Powell Falls decommissioning and removal activities (which already lie in the approximate Project Boundary). As shown, the proposed APE is divided into two portions, the Junction Falls APE and the Powell Falls APE. This distinction was made due to the proposed action at the Project (the Junction Falls Development is proposed to be relicensed and the Powell Falls Development is proposed to be decommissioned and dam removed). Both the Wisconsin SHPO and FERC requested that it be divided in this way to facilitate Project review.[9] As a part of the Cultural Resources Study, the Project APE will be determined in consultation with the Wisconsin State Historic Preservation Office (SHPO) and interested Tribes.

[8] The PA is the *Programmatic Agreement among the Federal Energy Regulatory Commission; the Advisory Council on Historic Preservation; the State of Wisconsin, State Historic Preservation Officer; and the State of Michigan, State Historic Preservation Officer; for Managing Historic Properties that May Be Affected by New and Amended Licenses Issuing for the Continued Operation of Existing Hydroelectric Projects in the State of Wisconsin and Adjacent Portions of the State of Michigan*. This was executed in December 1993.

[9] This was requested in the meeting held with the Wisconsin SHPO and FERC on June 6, 2019 (Appendix D).

Figure 6.8-1: Proposed Area of Potential Effect



Powell Falls and Junction Falls Hydroelectric Project

Proposed Area of Potential Effect (APE)

Project Location

FERC Project Number 10489
Pierce County, Wisconsin
June 7, 2019

Legend

Foster Cemetery

Proposed APE

Junction Falls

Powell Falls

AYRES ASSOCIATES

RIVER FALLS MUNICIPAL UTILITIES

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6.8.1 Goals and Objectives

The first objective of the Cultural Resources Study will be to determine the Project APE. This will be done in consultation with the SHPO and interested Tribes.

The objectives of the Archaeological Resources Survey are as follows: (1) To determine whether areas within the APE are potential locations for Pre-contact and Historic period archaeological sites. If likely areas are identified, appropriate archaeological survey techniques will be used to determine presence or absence of archaeological resources. (2) To evaluate whether any archaeological sites that may be found meet the NRHP criteria of significance.

The objective of the Architectural Resources Survey is to identify architectural resources aged 50 years or older that are listed in or eligible for listing in the NRHP and may be affected by Project purposes within the Project APE.

The Cultural Resources Study will help inform the Project License Application.

6.8.2 Known Resource Management Goals

Section 106 of the National Historic Preservation Act (NHPA) (1966)[10] directs federal agencies to take into account the effects of their undertakings on any resources that are listed in or eligible for listing in the NRHP. The Commission's issuance of a new license for the continued operation and maintenance of the Projects is defined as an undertaking and is, therefore, subject to the provisions of Section 106 and its implementing regulations at 36 CFR Part 800 - *Protection of Historic Properties.* The intent of this consultation is to provide the Wisconsin SHPO, potentially interested Tribes (as identified on the Project Interested Parties Mailing List), and other interested parties the opportunity to identify historic properties potentially affected by the Project, assess the Project's effects on identified resources, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

[10] (16 U.S.C. §470f)

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

As stipulated by the regulations that implement Section 106 of the NHPA, the Wisconsin SHPO represents the interests of the State of Wisconsin and its citizens, and advises and assists FERC in determining the significance of cultural resources within the APE. The SHPO administers cultural resource management reviews under the NHPA (Section 106), which involves providing technical guidance and professional advice on the potential impact of licensed projects, such as the Project, on the state's historic architectural and archaeological resources.

6.8.3 Background and Existing Information

Existing cultural resources information is described in the PAD in Section 5.9.

No NRHP eligible archaeological sites are recorded in the Project Boundary. As described in Section 5.9 of the PAD, Foster Cemetery (47PI589/BPI-0064) is an archaeological site that was previously identified as partially located in the approximate Project Boundary. Upon further review, Foster Cemetery is not located within the approximate Project Boundary.[11] Further, the cemetery will not be disturbed in any way; no land disturbance is proposed that will affect Foster Cemetery. Thus, delineation of Foster Cemetery is no longer proposed.[12]

Historic architectural sites are also discussed in the PAD in Section 5.9. The Wisconsin Historic Preservation Division (WHPD) Architecture and History Inventory (AHI) shows there is one previously surveyed architectural resource and one NRHP-listed property in the Project Vicinity. Both of these resources are summarized in Table 6.8-1. A third resource that was in the Project Vicinity, the Fall Street Bridge (AHI No. 25349), was demolished in 1990-1991.

[11] Wisconsin SHPO provided a GIS shapefile of the cataloged location of the Foster Cemetery (BPI-0064) on April 12, 2019.

[12] This modification of scope related to this Cultural Resources study (the removal of the delineation of Foster Cemetery, as originally proposed in the PSP) was discussed with the Wisconsin SHPO and FERC during the conference call held on June 6, 2019. The Wisconsin SHPO and FERC stated that they did not have concerns with the removal of the Foster Cemetery from the study plan, based on the rationale provided by the Licensee (Appendix D).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Table 6.8-1: Remaining Historic Architectural Sites in the Project Vicinity

AHI Number	Site Name	Year Built	Material	Style	Historic Use	NRHP Status
25348	Junction Mill	1867	Brick	Astylistic Utilitarian	Mill/Power Plant	Not Eligible
25336	Glen Park Suspension Bridge[13]	1925	Concrete and wood	Suspension	Bridge	Listed

Source: WHPD AHI 2018

6.8.4 Project Nexus

At present, there is no evidence that archaeological or historic resources are currently being affected by the Project. However, the Project has the potential to directly or indirectly affect archaeological or historic resources listed in or eligible for inclusion in the NRHP.

6.8.5 Methodology

It is proposed that the first step of the Cultural Resources Study will be that the Licensee will consult with the SHPO and interested Tribes to determine a Project APE.

6.8.5.1 Archaeological Resources Survey

A Phase I archaeology survey is proposed to determine if as yet undiscovered archaeological sites exist within the Project APE. A shoreline monitoring survey will be conducted in the APE along the shorelines of Lake George (Junction Falls impoundment) and Lake Louise (Powell Falls impoundment). Shovel testing techniques will also be utilized in undisturbed areas within the APE.

Shorelines will be monitoring using a visual assessment of the impoundment shorelines, either by boat or by foot, to determine if archaeological sites/artifacts are exposed at the bank. The Project shorelines will be reviewed for areas that stand out as potential higher likelihood

[13] The Glen Park Suspension Bridge is located outside of the proposed APE as depicted on Figure 6.8-1.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

locations for an archaeological site location. Steep slopes, bedrock shores not subject to erosion, marshes and post dam construction alluvial sediments will not be shovel tested because these locations typically have not held archaeological sites and generally are not conducive to shovel testing. Wherever possible, the shoreline will be examined to determine if any archaeological sites are eroding from the shoreline. The survey will be carried out on foot and with the use of a boat to access areas not accessible on foot. The survey will consist of a visual assessment of the river bank, to determine if archaeological sites/artifacts are exposed at the bank and shovel testing where the Principal Archaeologist deems it appropriate.

Separate Phase I archaeology survey reports will be prepared for each APE (one Phase I archaeology survey report for the Junction Falls APE and one Phase I archaeology survey report for the Powell Falls APE).

6.8.5.2 Historic Architectural Resources Survey

The proposed study methods for the Historic Architectural Resources Survey are consistent with historic resource studies recently conducted to assess the potential effects of similar hydroelectric projects in the region. The proposed study methods are as follows:

Historic Structures Field Survey

A survey of architectural and engineering resources aged 50 years or older will be conducted within the APE, including Project-related facilities and non-Project related facilities. This work will be conducted according to Wisconsin SHPO standards for historic resources survey, including appropriate site maps, completion of survey files, photography, and data entry. Following background research and field work, each surveyed architectural resource will be evaluated for its NRHP eligibility. The Licensee will include a determination of Project-related effects on any resources listed or recommended eligible for listing in the NRHP.

Reporting

Based on the results of the above Historic Structures Field Survey, two Historic Architectural Resources Survey reports will be prepared (one for the Junction Falls APE and one for the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Powell Falls APE). The reports will be prepared in accordance with all applicable federal and state guidelines. Specifically, the reports will include (1) background literature review including previous studies; (2) maps and descriptions of reported historic resources within the APE; (3) research and field survey methods; (4) NRHP eligibility recommendations for the architectural resources surveyed; and (5) Section 106 effects assessments (as applicable).

6.8.6 Consistency with Generally Accepted Scientific Practice

Archaeological Resources Survey

The Archaeological Resources Survey will follow all applicable Federal and Wisconsin guidelines, including those recommended by the *Guide for Public Archaeology in Wisconsin*.

Historic Architectural Resources Survey

The Historic Architectural Resources Survey will follow all applicable Federal and Wisconsin SHPO guidelines, including those in the Wisconsin SHPO's *Survey Manual*.

6.8.7 Deliverables and Schedule

The first aspect of the Cultural Resources Study is to determine the Project APE. This consultation and determination will occur prior to beginning the Archaeological Resources Survey or the Historic Architectural Resources Survey.

Two separate Phase I archaeology survey reports will be prepared, one for each distinct APE (one for the Junction Falls APE and one for the Powell Falls APE). Two separate Historic Architectural Resources Survey reports will be prepared, one for each distinct APE (one for the Junction Falls APE and one for the Powell Falls APE).

The Archaeological Resources Survey of the Cultural Resources Study is proposed to be conducted under the following schedule:

- Phase I archaeology survey: August – October 2019
- Draft Phase I archaeology survey reports will be prepared for comment by the SHPO and Tribes. Reports will be included in the ISR.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The Historic Architectural Resources Survey of the Cultural Resources Study is proposed to be conducted under the following schedule:

- Historic structures field survey: August – October 2019
- Reports to be included in the ISR.

6.8.8 Cost and Level of Effort

The estimated cost for completion of the proposed Archaeological Resources Survey is approximately $19,000.

The estimated cost for completion of the proposed Historic Architectural Resources Survey is approximately $19,000.

6.8.9 Differences between Requested and Proposed Methods

FERC requested a Phase I archaeology survey of the Project APE. The Licensee is following survey protocols as recommended by FERC and the Wisconsin SHPO.[14] The Licensee will continue to work with the Wisconsin SHPO to confirm approval of proposed survey protocols and APE for the Project.

As mentioned above, is has been determined that the Foster Cemetery does not fall within the proposed APE and will not be disturbed. As such, a delineation of Foster Cemetery is no longer proposed.

6.8.10 References

Advisory Council on Historic Preservation (ACHP). 2007. Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects. Washington, D.C.

[14] FERC provided formal comments in their letters dated December 26, 2019 and May 8, 2019 and verbal comments during the Initial Study Plan Meeting on March 13, 2019 and a teleconference held on April 10, 2019 in conjunction with Wisconsin SHPO. Wisconsin SHPO provided written correspondence on March 14, 2019 and verbal comments during a teleconference held on April 10, 2019.

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Advisory Council on Historic Preservation (ACHP) and the Federal Energy Regulatory Commission (FERC). 2002. Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects. Washington, D.C.

Barth, R.J. 1981. An Archaeological Survey Of The Proposed Improvements in Bartosh Park, City Of River Falls, River Falls Township, Pierce County, Wisconsin.

Barth, R.J. 1984. An Archaeological Survey Of The Proposed Kinnickinnic River Bridge Project: Division.

Hodgson, J. 2015. Phase One Archaeological Investigation Results: Proposed Extension to the City of River Falls Kinnickinnic River Recreation Trail, Heritage Park to West Division Street, City of River Falls, Pierce County, Wisconsin.

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7.0 POWELL FALLS DECOMMISSIONING PLAN DEVELOPMENT

7.1 Goals and Objectives

The Powell Falls Decommissioning Plan (Decommissioning Plan) will provide a timeline and methodology for removal and disposal of the Powell Falls generating equipment and dam construction materials.

7.2 Known Resource Management Goals

The natural resources goal of the proposed decommissioning is to provide a free-flowing river reach and commensurate ecological, hydrologic, recreational, and aesthetic qualities at the present location of Powell Falls Development and Lake Louise. However, the transition from an impounded reach with infrastructure to a free-flowing reach necessarily involves physical disturbance and permanent flow regime and channel morphology changes. The resource management goals to be considered in the Decommissioning Plan include identification of likely short-term and long-term resource impacts of decommissioning, and to incorporate appropriate management measures in the Decommissioning Plan for dam removal.

7.3 Background and Existing Information

Dozens of dams have been removed in Wisconsin and Minnesota in the past thirty years. As a result, there is a wealth of published information and regional professional experience about the engineering, economic, ecological, and geomorphological aspects of dam removals in the upper Midwest. For example, nearby dam removal projects include the removal by the Wisconsin DNR of two concrete dams in the Willow River State Park in St. Croix County. These dams were located on the Willow River, approximately 3.5 miles upstream of the St. Croix River, north of River Falls.

Considerable work has also been done with respect specifically to Powell Falls Development and the lower Kinnickinnic River. Since 2016, the City of River Falls has engaged community members, stakeholder groups, consultants, and City staff in the development of the Kinnickinnic River Corridor Plan, which addresses the future of the entire river corridor in and near the City. Many of the studies used in, or arising out of, the plan development are pertinent to dam

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removal. These include a removal feasibility study, an assessment of ecological impacts of removal, a sediment study including sediment depth mapping and sampling, a hydrologic/hydraulic study, and a geomorphic assessment.

Of particular interest is the 2016 sediment assessment conducted by Interfluve, Inc. This effort included mapping sediment depths in the Junction Falls and Powell Falls impoundments; estimating total stored sediment volume and volume likely to be remobilized; analysis of sediment grain size distribution; and laboratory tests for contaminants including 16 EPA priority metals and organic compounds. Six sediment samples were analyzed from Lake Louise.

7.4 Project Nexus

The proposed studies and Decommissioning Plan development relate directly to the FERC application, in which the applicant intends to propose to decommission and physically remove the Powell Falls Dam while continuing to operate Junction falls as a hydroelectric facility.

7.5 Methodology

The Decommissioning Plan will describe methods pertaining to the dam breach and drawdown of Lake Louise, address sediment transport and management concerns, accommodate standard construction site storm water and erosion control measures, show the expected sequence of removals for the dam and appurtenance structures, and describe expectations for restoration. The Decommissioning Plan will describe the steps to be taken prior to decommissioning and dam removal activities. After receipt of the FERC Decommissioning Order, additional steps (not described in detail herein) will be taken, which may include final studies as required by FERC or resource agencies, Wisconsin DNR and USACE permitting, and drawdown of the reservoir.

The following tasks will be conducted to develop the Decommissioning Plan:

- Review literature to compare the site and structure to be removed with other dam removal case studies from Wisconsin and/or Minnesota.
- Perform site survey to establish access and disposal routes.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- Evaluate geotechnical and geomorphological considerations, such as post-removal bank stability, channel form, and long profile, based on existing information on bed and bank materials and the Kinnickinnic's hydrologic regime.

- Conduct hydraulic analyses to develop expectations for stream hydraulics during high flow and low flow conditions, using the hydraulic model developed in the "Hydrologic/Hydraulic Study" also included in this RSP, to be conducted during the summer of 2019.

- Identify appropriate environmental, health, and safety mitigation measures.

    - Environmental mitigation may also include addressing future fish passage through the removal site, aquatic habitat below and within the impoundment, historic preservation, navigation and boater safety, disposal, and site restoration. Specific mitigation concerns will be identified in consultation with the Wisconsin DNR, the SHPO, the USFWS, and other agencies and stakeholders.

    - Health and safety mitigation may include treatment of any asbestos containing materials as well as handling precautions for lead paint, petroleum-related storage tanks, and any other known site hazards.

- Investigate and document long-term maintenance and monitoring considerations. These could include turbidity, sediment deposition, channel complexity, fish passage barriers, construction-related impacts such as erosion, bank stability, oil contamination, revegetation, noxious weeds, fish and mussels, and other ecological effects of project removal. Specific field and literature studies (such as stream habitat, AIS, wildlife and endangered species) are proposed elsewhere in this RSP.

- Prepare a sediment management plan consistent with the techniques and strategies approved for other Wisconsin dam removals.

- Prepare a cofferdam sequencing plan and proposed drawdown schedule consistent with the techniques and dewatering strategies approved for other Wisconsin dam removals.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- Generate a supporting design report (SDR), as described in section 4.41(g)(3) of the Commission's regulations, to be included with the Decommissioning Plan. The Licensee will evaluate the structural stability of the dam components under selected scenarios of staged/partial removals. A complete stability analysis of every structure during the staged removal is not anticipated for normal pool and winter pool events, but the general stability of the partially-removed dam would be checked during a flood event to confirm that factors of safety are within allowable limits.

- Prepare a plan for removal and disposal of generating equipment, building materials, and any sediment for which removal is identified as the preferred option. Develop the decommissioning schedule and milestones.

- Prepare recommended after-removal performance metrics.

- The draft Decommissioning Plan will be submitted with the ISR and will include drawings and figures.

7.6 Consistency with Generally Accepted Scientific Practice

The proposed approach to developing this Decommissioning Plan is comparable to other decommissioning projects in Wisconsin. These include Gordon Dam in Douglas County, Grimh Dam in Sawyer County, Rock Falls Dam in Eau Claire County, and Woodley Dam in Polk County. The Decommissioning Plan will incorporate the findings of other concurrent licensing-related studies. The methodology outlined above follows recommendations contained in the U.S. Society on Dams' *Guidelines for Dam Decommissioning Projects.*

7.7 Deliverables and Schedule

The deliverables will include a draft and revised Decommissioning Plan report, drawings, and figures; a proposed drawdown schedule; and documentation of consultation.

The draft Decommissioning Plan will be completed for submittal with the ISR by January 31, 2020. The revised Decommissioning Plan will be submitted with the USR.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

7.8 Cost and Level of Effort

The anticipated cost for the Decommissioning Plan development described above is approximately $120,000 ($27,000 of which is for SDR development).

7.9 References

City of River Falls. 2019, January. Kinnickinnic River Corridor Plan.

Inter-Fluve. 2016, March 14. Lake George and Lake Louise Sediment Assessment Report. Available online: http://www.rfmu.org/DocumentCenter/View/1646/2016-03-14-Sediment-Assessment-Report?bidId= Submitted to: City of River Falls, WI. Prepared by: Inter-Fluve, Inc. Prepared for: City of River Falls.

United States Society on Dams. 2015. Guidelines for Decommissioning Dam Projects.

Wisconsin Department of Natural Resources (Wisconsin DNR). Dam Abandonment and Removal Fact Sheet. Available online: https://dnr.wi.gov/topic/Dams/DamRemovalAbandonment.html

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

APPENDIX A
REQUESTED ADDITIONAL INFORMATION

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

CITY OF RIVER FALLS MUNICIPAL UTILITIES

PROPOSED STUDY PLAN
FOR THE RIVER FALLS HYDROELECTRIC PROJECT
(FERC NO. 10489)

APPENDIX A – REQUESTED ADDITIONAL INFORMATION

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CITY OF RIVER FALLS MUNICIPAL UTILITIES

RIVER FALLS HYDROELECTRIC PROJECT (FERC NO. 10489)

PROPOSED STUDY PLAN – APPENDIX A

TABLE OF CONTENTS

1.0 REQUESTED ADDITIONAL INFORMATION 1-1

1.1 Project Facilities and Operations 1-1
1.2 Water Resources 1-4
1.3 Fish and Aquatic Resources 1-6
1.4 Wildlife Resources 1-19
1.5 References 1-22

LIST OF TABLES

Table 6.3-1: Fish Hosts for Mussel Species Potentially Located in the Kinnickinnic River and St. Croix River Confluence [1] 1-9

Table 6.3-2: Native Mussel Species Observed in the St. Croix River at Lakeland, MN and Prescott, WI 1-13

Table 6.3-3: Kinnickinnic River and Tributaries Trout Water Classification 1-16

Table 6.3-4: Bird Species at the Project[1] 1-20

LIST OF FIGURES

Figure 6.3-1: Mussel Sample Locations in the St. Croix River 1-12

Figure 6.3-2: Kinnickinnic River Trout Stream Classifications 1-15

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

LIST OF ATTACHMENTS

Attachment A-1 – WPDES Permit Number 0029394

Attachment A-2 – Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments (Johnson 2018)

Attachment A-3 – Email correspondence with Wisconsin DNR Malacologist, Lisie Kitchel

Attachment A-4 – St. Croix Mussel Information

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

cfs	Cubic Foot/Feet per Second
FERC	Federal Energy Regulatory Commission
IPaC	Information for Planning and Conservation
kW	Kilowatt
License Application	Application for New License submitted to FERC no less than two years in advance of expiration of an existing license.
Licensee	City of River Falls Municipal Utilities
LOMR	Letter of Map Revision
mg	Milligram
mg/L	Milligram(s) per liter
NHI	Natural Heritage Inventory
NPS	National Park Service
PAD	Pre-Application Document
Project	River Falls Hydroelectric Project, FERC Project No. 10489
Project Area	The area within the FERC Project Boundary.
Project Boundary	The boundary line defined in the Project license issued by FERC that surrounds those areas necessary for safe and efficient operation and maintenance of the Project or for other specified Project purposes.
Project Vicinity	Area as depicted on Project Vicinity figures.
RFMU	City of River Falls Municipal Utilities
rpm	revolutions per minute
Run-of-river	A hydroelectric project that uses the flow of a stream with little or no reservoir capacity for storing water
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USFWS	United States Department of the Interior, Fish and Wildlife Service
Wisconsin DNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System
WWTF	Wastewater Treatment Facility

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

1.0 REQUESTED ADDITIONAL INFORMATION

In Schedule B of their letter dated December 26, 2018, the Federal Energy Regulatory Commission (FERC) requested additional information about the River Falls Hydroelectric Project (Project) and requested that the responses to these additional information requests be provided in the Proposed Study Plan. The Licensee's responses to FERC's additional information requests are provided herein.

1.1 Project Facilities and Operations

FERC requested the following information:

1. *Section 4.2.1.2, Powell Falls Development, page 24 of the Pre-Application Document (PAD), states that an approximately 2,500-foot- long transmission line runs between the Powell Falls powerhouse to the Municipal Power Plant building, where it connects to the existing bus. Please provide: (1) the approximate width of the transmission line corridor; (2) clarification regarding ownership of the individual powerlines; and (3) a description of how the proposed decommissioning and removal of the Powell Falls development may affect the transmission line and the line's corridor.*

The Licensee's response to this request is as follows:

1. (1) The approximate width of the transmission line corridor is 20-30 feet. (2) The owner of the individual powerlines is the City of River Falls Municipal Utilities (Licensee or RFMU). (3) Following the proposed decommissioning and removal of the Powell Falls Development, electricity will no longer be transmitted through the transmission line that connects the Powell Falls Development to the Municipal Power Plant Building. RFMU will likely remove the lines and power poles. Final dispensation of the transmission lines, poles, and corridor shall be determined and specified in the Project Decommissioning Plan.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

FERC requested the following information:

2. *During the environmental site review, you indicated that the hydroelectric plants are currently operated manually while the SCADA system is being repaired. In section 4.3.1, Current Operation, of the PAD, you state that when functional, "The outputs are monitored from the project SCADA system." So that staff can accurately understand project operation, please provide a detailed description of manual project operation and how run-of-river mode is realized and monitored. In addition, please describe in detail the operations carried out by the SCADA system (i.e., turbine control, generator control, water level control, etc.) when it is functional.*

The Licensee's response to this request is as follows:

2. With the discontinuation of the diesel generation at the River Falls Municipal Power Plant in 2011, the Project is no longer manned on a 24-hour basis. The operator makes daily visits to the Junction Falls Development and weekly visits to the Powell Falls Development. Currently, the Project is manually operated in a run-of-river mode such that operators endeavor to match Project outflows to inflows by maintaining the impoundments at a constant full-pond elevation. Operations staff utilize staff gauges located at each of the Project impoundments to monitor the elevation of the impoundments. The staff gauges are located by the intake at the Junction Falls Development and by the intake at the Powell Falls Development. In addition, staff use visual observation of impoundment elevation conditions at Junction Falls (Lake George) and Powell Falls (Lake Louise) to supplement the staff gauging. To ensure stable impoundment water levels at both developments operators endeavor to maintain the impoundments at an elevation that results in a minimal overtopping of the dams. If observed spillage at the dam indicates the water level in the Junction Falls impoundment (Lake George) is rising above or falling below the spillway crest level a 5 kilowatt (kW) adjustment is made to the output of the Junction Falls Development and checked (within an hour for falling levels, and in 15 minute intervals for rising levels) to see if the water level is still falling or rising. This continues until there is a small overtopping at the dam

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

again. Project operations staff use the same methods of staff gauging combined with visual observation of spillage at the Powell Falls Development. The Project output through the powerhouse is adjusted accordingly, manually.

As part of the relicensing effort, the Licensee is proposing to develop a Project Operations Plan which will be included in the draft and final License Applications. This plan will detail how run-of-river operation will be maintained and monitored through the duration of a new license.

FERC requested the following information:

3. *Section 4.3.2, Proposed Operation, page 28 of the PAD, states the licensee proposes to cease operation and decommission the Powell Falls development by the target date of 2026. However, the PAD provides no details of how the Powell Falls development would be decommissioned nor does it provide a schedule of activities that would occur between the expiration of the existing license in 2023 and the proposed decommissioning date. In order for staff to analyze how the Powell Falls development would be decommissioned, please provide a general overview of decommissioning activities and a schedule.*

The Licensee's response to this request is as follows:

3. The Licensee is proposing to decommission the Powell Falls Development and remove the dam. In support of this proposal, the Licensee anticipates developing a Powell Falls Decommissioning Plan, which will be submitted with the Draft (April 2021) and Final License Application (August 2021) to relicense the Junction Falls Development. It is anticipated that the Decommissioning Plan will address the steps to be taken to decommission the development and remove the dam, including methods pertaining to the dam breach and drawdown of Lake Louise, sediment transport and management, storm water and erosion control, removal of the dam and appurtenant structures, and restoration. It is anticipated that FERC will approve the Decommissioning Plan as part of a License Order for the Project (anticipated in 2023).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The Licensee will detail its plans for decommissioning in the Decommissioning Plan submitted with the Final License Application. In general, the Licensee anticipates that decommissioning will include the following steps: agency coordination, final engineering plans, as needed, and other state (Wisconsin DNR) and federal (USACE) permitting, as needed (estimated timeline: 2023 – 2025). Once all approvals are in place, including FERC's approval of the Decommissioning Plan, the Licensee anticipates decommissioning the Powell Falls Development including initiating dam removal activities. As outlined in the PAD the Licensee's proposed target date for dam removal and site restoration is 2026.

1.2 Water Resources

FERC requested the following information:

4. *Section 5.2.6 Water Quality, page 51 of the PAD, provides some existing water quality data for the Kinnickinnic River, including nitrogen, total phosphorus, and total chlorophyll a. So that staff can describe baseline water quality conditions and evaluate potential cumulative effects, please provide any available information regarding the permitted discharges and effect of the River Falls Wastewater Treatment Plant on water quality in or downstream of the project area. In addition, please provide information on any Total Maximum Daily Load (TMDL) requirements or goals for phosphorus levels in the Kinnickinnic River.*

The Licensee's response to this request is as follows:

4. The Kinnickinnic River (WBIC 2601800) is not impaired (Wisconsin DNR 2018a, Wisconsin DNR 2019a). Specific to Total Phosphorus, there is a Total Maximum Daily Load (TMDL) for Lake St. Croix in eastern Minnesota (ID 82-0001) and western Wisconsin (ID 2601500), which was approved by the U.S. Environmental Protection Agency in 2012 (EPA 2012). The Project is within the Lake St. Croix TMDL Watershed.

   There is one Wisconsin Pollutant Discharge Elimination System (WPDES) permitted facility in the Project Vicinity: the RFMU Wastewater Treatment Facility (WWTF)

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

(WPDES Permit Number 0029394). The permit is included in Attachment A-1. This wastewater treatment facility discharges into Project waters (Lake Louise). As described in WPDES Permit No. 0029394, the permittee must comply with monitoring requirements and effluent limitations. A sampling point is collected after dechlorination and prior to discharge to Lake Louise. At that point, the effluent limit for Total Phosphorus is 1.5 mg/L monthly average and 20 lbs/day monthly average (Wisconsin DNR WPDES 2015). Samples are taken daily and the limit is effective year round. Further, RFMU must calculate and report the rolling 12-month sums of total monthly loads for Total Phosphorus. Total monthly loads are calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (mg/month) and by the conversion factor of 8.34. Additional details of the permitted discharges from the RFMU are described in WPDES Permit No. 002934. RFMU is in compliance with their WPDES permit.

FERC requested the following information:

5. *Section 5.2.6 Water Quality, page 51 of the PAD, summarizes water temperature data collected by Trout Unlimited since 1992. So that staff can adequately review existing information, please provide the Trout Unlimited report, Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls. In addition, please clarify if the Trout Unlimited temperature study is ongoing or not, and provide any updates if they are available.*

The Licensee's response to this request is as follows:

5. The requested report, titled Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls, WI, is periodically updated by the Kiap-TU-Wish chapter of Trout Unlimited (Trout Unlimited) (Kent

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Johnson, Trout Unlimited, personal communication, January 24, 2019). The most recent updated version of the report, dated February 2018, is included as Attachment A-2.[1]

The Trout Unlimited temperature monitoring study is ongoing. Trout Unlimited continues to conduct temperature monitoring at locations on the Kinnickinnic River and tributaries, as described and mapped in Attachment 1. Further, Trout Unlimited noted that the upstream-downstream temperature statistics (average summer and July temperatures) for the 1993-2013 time period could be updated with data through 2018. However, the magnitude of the upstream-downstream temperature differences probably would not change significantly, due to the summer temperature variation already reflected in the 1993-2013 dataset. (Kent Johnson, Trout Unlimited, personal communication, January 24, 2019).

1.3 Fish and Aquatic Resources

FERC requested the following information:

6. *Section 5.3.5 Macroinvertebrates, page 62 of the PAD, states that the Kinnickinnic River is not known to provide appropriate habitat for mussel species and lacks fish species that host mussels, but no supporting information is provided. Further, in section 3.2.4 of the Restoration of the Kinnickinnic River through Dam Removal Feasibility Report, the Wisconsin Department of Natural Resources recommends relocating native mussels prior to drawdown of the reservoir. So that staff can adequately evaluate existing information on mussels in the Kinnickinnic River, please provide any correspondence and previous surveys/reports that describe mussels and their habitats, or lack thereof in the Kinnickinnic River.*

[1] The Licensee referenced an earlier version of this report in the PAD: Johnson, Kent. 2014. Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls. Kiap-TU-Wish Chapter, Trout Unlimited.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The Licensee's response to this request is as follows:

6. The Kinnickinnic River is a Class I trout stream. Mussels rarely occur in cool water streams due to colder waters, lack of fish diversity, and lack of nutrients (Kitchel personal communication 2019).

   Email correspondence with Wisconsin DNR Malacologist, Lisie Kitchel is attached (Attachment A-3). Ms. Kitchel is a well-known and respected expert on native mussels in Wisconsin streams.

   The Licensee (through their consultant) first reached out to Ms. Kitchel in August 2018, prior to PAD submittal. In this correspondence, the Licensee stated that the United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) report included three federally endangered mussel species (Higgins eye, snuffbox, and spectaclecase) in the Project Area-specific search and asked Ms. Kitchel if any of these species occur or are likely to occur in the Kinnickinnic River. Ms. Kitchel responded that those mussel species occur in the St. Croix River (Lake St. Croix), not in the Kinnickinnic River. She checked the Wisconsin DNR records and indicated that there were no mussel records for the Kinnickinnic River. Ms. Kitchel stated the Kinnickinnic River is not good mussel habitat as it's too cold, dominated by trout, and lacks host species.

   The Licensee followed up with Ms. Kitchel by email in January 2019 and asked if she would expect any mussels (rare or common) to occur in the Kinnickinnic River or the impoundments (Lake Louise or Lake George). In Ms. Kitchel's email response, she stated "The Kinnie is primarily trout waters and not suitable for our native mussel species or the majority of their fish hosts. There might be a few species found at the mouth of the Kinnie and the St. Croix River, however I would not expect to find native mussels in the Kinnickinnic River proper. I encourage restoration of this river, but do not expect to find mussels there at this time or in the future."

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The Licensee also asked Ms. Kitchel if the Kinnickinnic River has ever been surveyed for mussels, and if so, to please provide survey reports or data. Ms. Kitchel stated that she would look for this information, but no further information was received. Based on her earlier correspondence in August 2018, however, she is unaware of available mussel records for the Kinnickinnic River.

The Licensee prepared Table 6.3-1 in response to FERC's question regarding fish host species for native mussels. The table references mussel species that potentially occur at the confluence of the Kinnickinnic River and St. Croix River[2] (based on results from the Wisconsin DNR Natural Heritage Inventory (NHI) Township Tool search for Township 27N, Range 20W [Wisconsin DNR 2019b]) and the fish species known to occur in the Kinnickinnic River (Wisconsin DNR 2015). The Wisconsin DNR 2015 report is also provided as Attachment A-4. The Wisconsin DNR 2015 report identifies one largemouth bass at Station 2 (Highway F, near the St. Croix confluence) and stickleback, sculpin, and suckers upstream (upstream of the City and impoundments) at Stations 11 & 17 (Figure 6.3-2 below). No other fish host species for mussels documented at the confluence of the Kinnickinnic River and St. Croix River were observed in the Kinnickinnic River between the Powell Falls dam and Station 3.

[2] The Project is located upstream from the confluence. The NHI Township Tool associated with the Project (Township 27N, Range 19W) did not include any mussel species (Wisconsin DNR 2018c). A site-specific Endangered Resources Review for the Project was received from the Wisconsin DNR Bureau of Natural Heritage Conservation on July 31, 2018 (Wisconsin DNR ER Log # 18-556). The results of this site-specific review contain data that are considered sensitive and are not subject to Wisconsin's Open Records Law (per s. 23.27, Wis. Stats.). Due to the confidential nature of the results, the details of the report are not provided in this public filing; however, the results did not include any mussel species.

Table 6.3-1: Fish Hosts for Mussel Species Potentially Located in the Kinnickinnic River and St. Croix River Confluence [1]

Scientific Name	Common Name	Fish Species Known in The Kinnickinnic River[2]						
		Brook Stickleback	Brook Trout	Brown Trout	Fathead Minnow	Largemouth Bass	Mottled Sculpin	White Sucker
Alasmidonta marginata	elktoe	LT	-	-	-	-	LT	LT, NI
Ellipsaria lineolata	butterfly	-	-	-	-	-	-	-
Epioblasma triquetra	snuffbox	-	-	-	-	-	LT	-
Lampsilis higginsii	Higgins eye	-	-	-	-	-	LT	-
Margaritifera monodonta	spectaclecase	-	-	-	-	-	-	-
Quadrula metanevra	monkeyface	-	-	-	LT	-	-	-
Reginaia ebena	ebony shell	-	-	-	-	NI	-	-
Tritogonia verrucosa	pistolgrip	-	-	-	-	-	-	-
Truncilla donaciformis	fawnsfoot	-	-	-	-	-	-	-

[1] Mussel species listed in the Wisconsin DNR Natural Heritage Inventory Township Tool for Township 27N, Range 20W (Wisconsin DNR 2019b)
[2] Fish species collected from the Kinnickinnic River, 2015 (Wisconsin DNR 2015 [Attachment A-4]); LT = lab transformation, fish host confirmed, NI = natural infestation – fish host confirmed (ILNHS 2017)

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

FERC requested the following information:

7. *During the scoping meeting on November 16, 2018, a meeting participant indicated there was a known population of mussels in the St. Croix River near the mouth of the Kinnickinnic River. So that staff can adequately evaluate existing information and potential effects on mussels in the St. Croix River, please provide any available information on mussels that occur in the St Croix River between the Kinnickinnic River and the Mississippi River.*

The Licensee's response to this request is as follows:

7. The St. Croix River is a major tributary of the upper Mississippi River. Major tributaries of the St. Croix River to the east (Wisconsin side) include the Namekagon River, Apple River, Willow River, and the Kinnickinnic River, among others (Wisconsin DNR 2018d). From the confluence with the St. Croix River, the Powell Falls dam is located at approximately river mile 9.9 of the Kinnickinnic River and the Junction Falls dam is located at approximately river mile 10.4. The St. Croix River is included in the National Wild and Scenic River System (Wild & Scenic Rivers 2018, NPS 2018a).

   The USFWS describes the St. Croix River watershed as "the premier mussel watershed of the Upper Mississippi River, and one of the premier mussel watersheds of the world" (USFWS 2018a). There are 41 species of native mussels in the St. Croix River (Hornbach 2019). Five federally endangered species of mussels are known to occur in the St. Croix River - spectaclecase (*Margaritifera monodonta*), snuffbox (*Epioblasma triquetra*), Higgins eye (*Lampsilis higginsii*), sheepnose (*Plethobasus cyphyus*), and winged mapleleaf (*Quadrula fragosa*) (USFWS 2018a). Of those, the USFWS IPaC tool listed three federally endangered species that occur in Pierce County: Higgins eye,

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

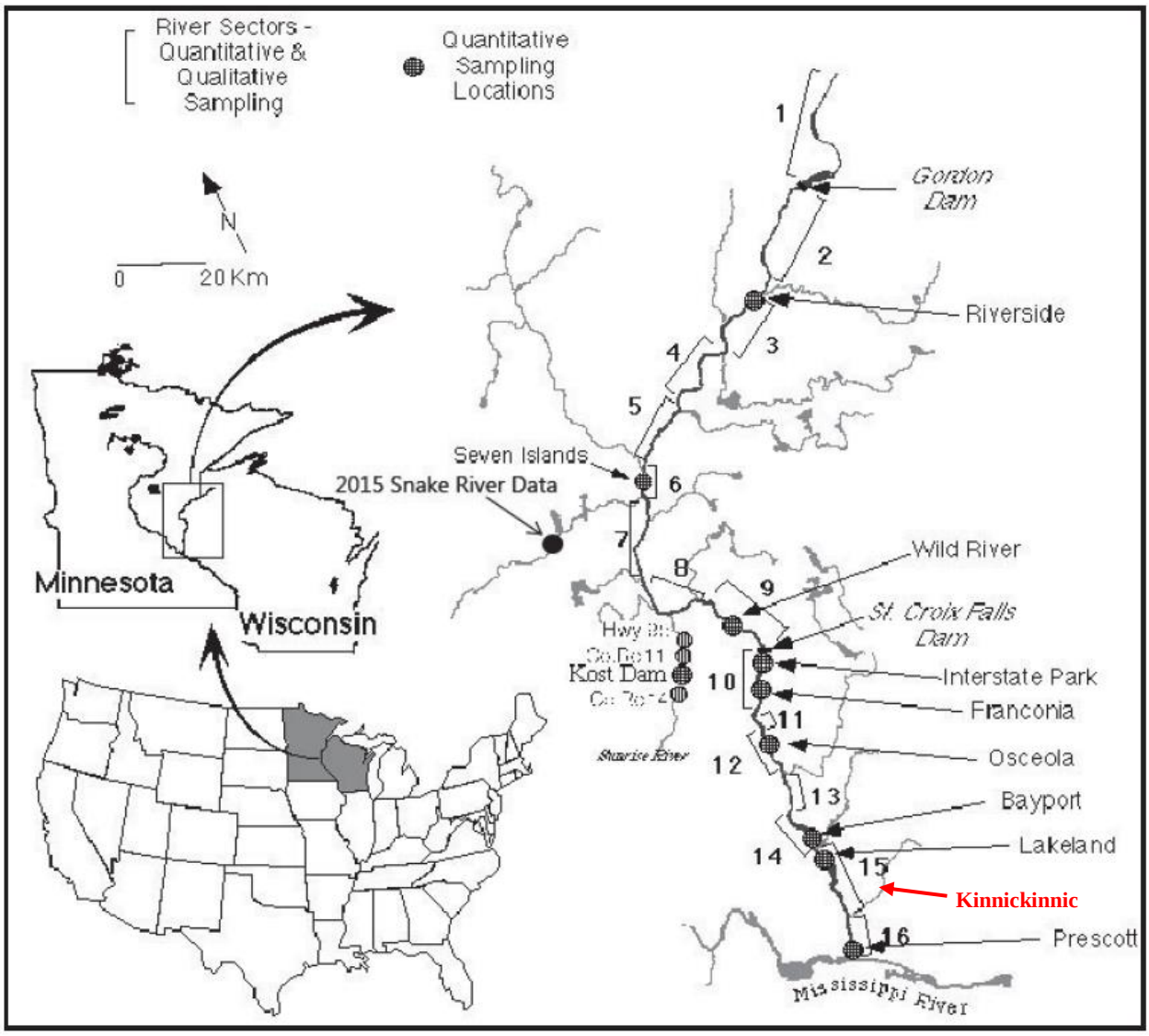
snuffbox mussel, and spectaclecase.[3] A full list of mussel species known to occur in the St. Croix River is located in Attachment A-5.

Sampling of native mussels has been conducted throughout the St. Croix River by Dan Hornbach's lab at Macalester College (Attachment A-5). The Kinnickinnic River confluence with the St. Croix River is located between the Lakeland, MN (upstream of the Kinnickinnic River) and Prescott, WI (downstream of the Kinnickinnic River) sample locations (Figure 6.3-1). Mussels species identified in Lakeland, MN (data gathered in 1995, 2000, 2002, 2004, 2010) and Prescott, WI (data gathered in 1994, 1999, 2001, 2003, 2005) are summarized in Table 6.3-2 below. Twenty-six species of native mussels have been observed in Lakeland, MN, and 25 species of native mussels have been observed in Prescott, WI. Higgins eye was the only federally endangered mussel observed in these two sample locations during the survey periods noted above.

[3] The USFWS IPaC, which allows for site-specific rare species searches, included three federally endangered mussel species (Higgins eye, snuffbox, and spectaclecase) in a site-specific search for the area within the Project Boundary. According to Wisconsin DNR Malacologist Lisie Kitchel, the IPaC data are based on county records for mussels; these mussel species are known to occur in the St. Croix River (Lake St. Croix), not in the Kinnickinnic River (Kitchel Personal Communication 2018).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Figure 6.3-1: Mussel Sample Locations in the St. Croix River



Map source: Hornbach 2019

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Table 6.3-2: Native Mussel Species Observed in the St. Croix River at Lakeland, MN and Prescott, WI

Scientific Name[1]	Common Name	Status[2]	Lakeland	Prescott
Actinonaias ligamentina	mucket	NA	X	X
Alasmidonta marginata	elktoe	NA	X	X
Amblema plicata	threeridge	NA	X	X
Cyclonaias pustulosa	pimpleback	NA	X	X
Cyclonaias tuberculata	purple wartyback	SE	X	-
Ellipsaria lineolata	butterfly	SE	X	X
Eurynia dilatata	spike	NA	X	X
Fusconaia flava	Wabash pigtoe	NA	X	X
Lampsilis cardium	pocketbook	NA	X	X
Lampsilis higginsii	Higgins eye	FE, SE	X	X
Lampsilis siliquoidea	fatmucket	NA	X	X
Lasmigona complanata	white heelsplitter	NA	X	X
Leptodea fragilis	fragile papershell	NA	X	X
Ligumia recta	black sandshell	NA	X	X
Megalonaias nervosa	washboard	NA	X	-
Obliquaria reflexa	threehorn wartyback	NA	X	X
Obovaria olivaria	hickorynut	NA	-	X
Pleurobema sintoxia	round pigtoe	NA	X	X
Potamilus alatus	pink heelsplitter	NA	X	X
Pyganodon grandis	giant floater	NA	X	X
Quadrula quadrula	mapleleaf	NA	X	X
Reginaia ebena	ebonyshell	SE	-	X
Strophitus undulatus	creeper	NA	X	X
Theliderma metanevra	monkeyface	ST	X	X
Toxolasma parvum	lilliput	NA	X	X
Tritogonia verrucosa	pistolgrip	ST	X	-
Truncilla truncata	deertoe	NA	X	X
Utterbackia imbecillis	paper pondshell	NA	X	X

Data Source: Hornbach 2019

[1] Scientific names were updated herein to reflect current nomenclature.

[2] SE (State Endangered), ST (State Threatened), FE (Federal Endangered), FT (Federal Threatened), NA (no state of federal designation)

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

FERC requested the following information:

8. *Section 5.3.3 Fish and Aquatic Communities, page 56 of the PAD, describes the Kinnickinnic River as a Class I trout stream that has sufficient natural reproduction to sustain populations of wild trout at or near carrying capacity. So that staff can evaluate existing information and potential effects of dam removal on trout spawning habitat, please provide a description of river reaches in the Kinnickinnic River that contain suitable brown trout spawning habitat. In addition, please identify and describe any tributaries downstream of the Powell Falls dam that provide suitable trout spawning habitat.*

The Licensee's response to this request is as follows:

8. The Kinnickinnic River and three of its tributaries are classified by Wisconsin DNR as Class I trout streams (see Figure 6.3-2 and Table 6.3-3 below) (Wisconsin DNR 2015). One of the Class I tributaries, Rocky Run Branch is located below the Powell Falls dam.

   Streams classified as Class I trout streams are:

   > "high quality trout waters that have sufficient natural reproduction to sustain populations of wild trout, at or near carry capacity. Consequently, streams in this category require no stocking of hatchery trout. These streams or stream sections are often small and may contain small or slow-growing trout, especially in the headwaters" (Wisconsin DNR 2018e).

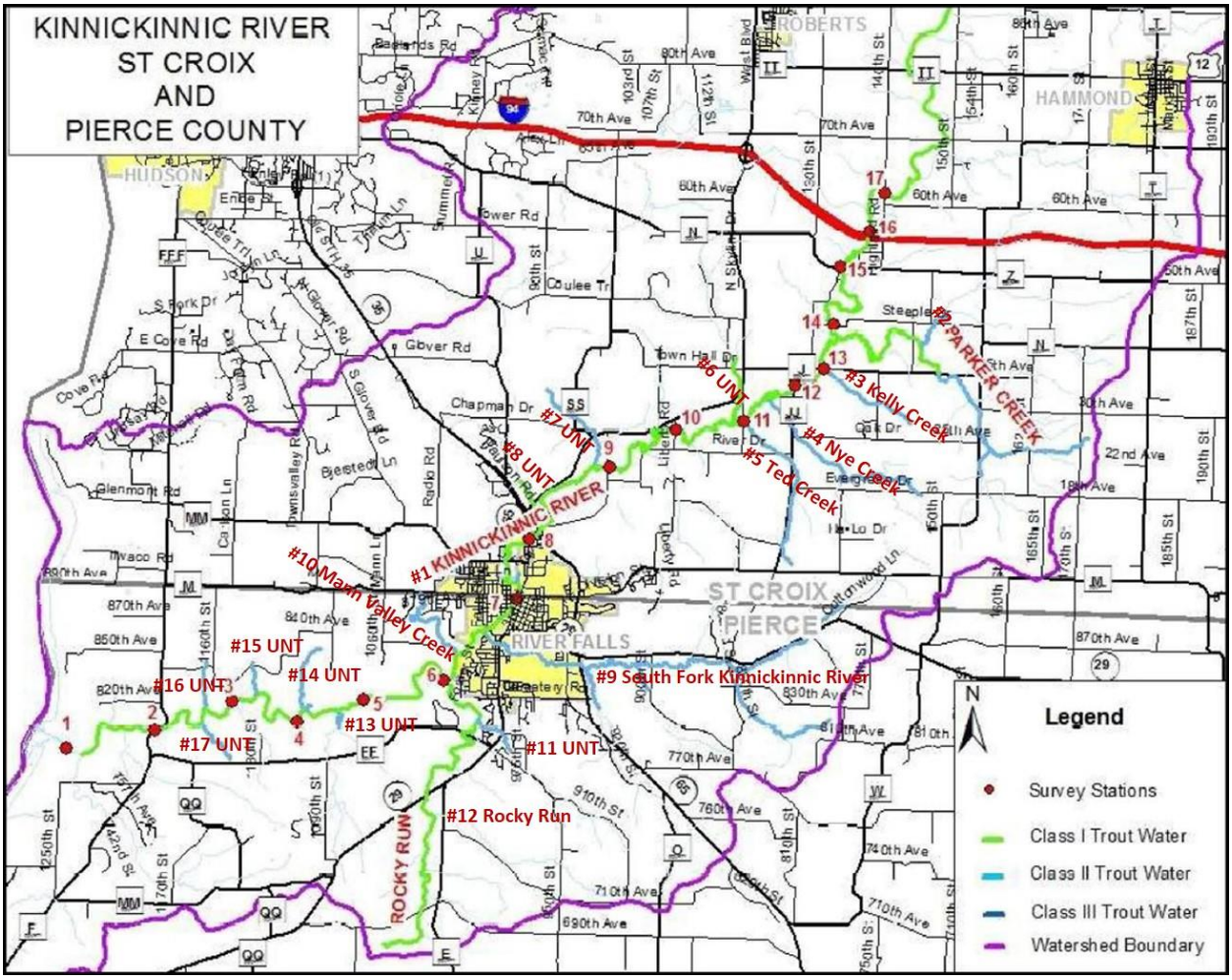
   There are several Class II trout tributaries along the Kinnickinnic River (Figure 6.3-2 and Table 6.3-3). The South Fork of the Kinnickinnic River (a spring fed Class II trout stream), enters the Kinnickinnic River between the Junction Falls dam and Powell Falls dam. Seven Class II trout streams enter the Kinnickinnic River below the Powell Falls dam.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Streams classified as Class II trout streams are:

> "Streams in this classification may have some natural reproduction, but not enough to utilize available food and space. Therefore, stocking is required to maintain a desirable sport fishery. These streams have good survival and carryover of adult trout, often producing some fish larger than average size." (Wisconsin DNR 2018e).

Figure 6.3-2: Kinnickinnic River Trout Stream Classifications



Base map source: Wisconsin DNR 2015; Tributary names from Wisconsin DNR Surface Water Data Viewer (Wisconsin DNR 2018b).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Table 6.3-3: Kinnickinnic River and Tributaries Trout Water Classification

Waterway #	Waterway Name	Trout Water Classification
1	Kinnickinnic River	Class I
2	Parker Creek	Class II
3	Kelly Creek	Class II
4	Nye Creek	Class II
5	Ted Creek	Class II
6	UNT*	Class I
7	UNT	Class II
8	UNT	Class I
9	South Fork Kinnickinnic River	Class II
10	Mann Valley Creek	Class II
11	UNT	Class II
12	Rocky Run Branch	Class I
13	UNT	Class II
14	UNT	Class II
15	UNT	Class II
16	UNT	Class II
17	UNT	Class II

*UNT = Unnamed Tributary
Data source: Wisconsin DNR 2015

The mainstem Kinnickinnic River downstream of the Powell Falls dam is a high gradient (six feet per mile), high quality trout stream, with 2,000 to 12,000 trout per stream mile (Wisconsin DNR 2018f). Nearly all of the river below Powell Falls dam, except for the last two miles, is considered prime trout spawning habitat with excellent substrate and spring seep water temperatures. At least 20 major spring seeps enter the river downstream of the Powell Falls dam. The primary limiting factor for trout production in the Kinnickinnic River below the Powell Falls dam is sand; there is limited sand in this portion of the river due to the high gradient. Sand increases as you move downstream of the high gradient area, especially in the lower two miles of the Kinnickinnic River. Movement of sediment during dam removal is unlikely to negatively affect the prime trout areas below the Powell Falls dam due to the high gradient of the River. (Engel Personal Communication 2019).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Rocky Run Branch is a spring seep fed, Class I trout stream (Wisconsin DNR 2015). This stream is 6.18 miles long and enters the Kinnickinnic River below the Powell Falls dam. This river is classified as an outstanding/exceptional resource water under NR102 as well as a Class I Trout Water under the Wisconsin DNR Fisheries Program. This river is managed by Wisconsin DNR for fishing and swimming. (Wisconsin DNR 2019c).

FERC requested the following information:

9. *Section 5.3.3 Fish and Aquatic Communities, page 61 of the PAD, describes the fish community in the impoundments. However, no information on the potential effects of impingement and entrainment was provided. So that staff can evaluate the potential effects of operation at each development on fish impingement, entrainment, and mortality, please provide: (1) clear bar spacing of the trash rack; (2) maximum intake velocity at each development; (3) turbine runner speed, diameter, and blade number; (4) a description of the fish community in each impoundment, including size classes if available; and (5) an estimate of entrainment mortality rates for juvenile and adult fish species found in the impoundments based on a similar project(s) from the Electric Power Research Institute (EPRI) Entrainment and Survival Database. This information should be filed with your draft license application.*

The Licensee's response to this request is as follows:

9. (1) The clear bar spacing of the trash rack at the Junction Falls Development is approximately 2 inches. The clear bar spacing of the trash rack at the Powell Falls Development is approximately 1.5 inches to 2 inches

   (2) The maximum velocity through the turbines is calculated to be 80 cubic feet per second (cfs) at the Junction Falls Development and 82 cfs at the Powell Falls

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Development. The maximum intake velocity is estimated to be less than 0.8 cfs at each development.[4]

(3) At the Junction Falls Development, the turbine runner speed is 450 revolutions per minute (rpm) and the diameter is 24 inches. The Licensee is conducting research to locate the blade number.

At the Powell Falls Development, the turbine runner speed is 240 rpm and the diameter is 30.5 inches. The turbine has 14 buckets and vanes on the runner.

(4) As described in Section 5.3 of the PAD, both of the Project impoundments support warmer water fish species that are habitat generalists, such as panfish and rough fish. Wisconsin DNR's 1971 Surface Water Inventory of Wisconsin identified warm water species including crappie, green sunfish, black bullhead, and carp in the Junction Falls impoundment (Lake George) (Inter-Fluve 2017a, Wisconsin DNR 2018b). A fishery survey (Wisconsin DNR 1998) at the Junction Falls impoundment (Lake George) found that the lake has a limited fishery consisting of largemouth bass, panfish, and brown trout. Similarly, at the Powell Falls impoundment (Lake Louise) a fishery survey documented the presence of largemouth bass, panfish, and brown trout, as well as a significant carp population (Wisconsin DNR 1998).

According to Marty Engel, retired Wisconsin DNR Fisheries Biologist who worked on the Kinnickinnic River and its tributaries for more than 20 years, Lake George is a shallow small lake with limited fisheries value. The Wisconsin DNR does not regularly

[4] The maximum intake velocity was estimated using the following formula; the maximum powerhouse flow capacity divided by the following value: wetted intake screen area times the trashracks apparent opening percentage. The following measurements and values were assumed regarding the trashracks and supporting beams: 2 inch spacing for the trashracks, 0.375 inch trashrack bar thickness, 2 horz beams, and 8 inch horz beam flange width. The Licensee is working to confirm these measurements and values and will provide the final estimated intake velocity in the License Application.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

survey Lake George, nor does Marty recommend the Licensee survey it now, due to the limited fisheries value. (Engel Personal Communication 2019).

Existing information will be used to develop a description of the fish community in each impoundment in the Draft License Application.

(5) An estimate of entrainment mortality rates for juvenile and adult fish species found in the impoundments based on a similar project(s) from the Electric Power Research Institute (EPRI) Entrainment and Survival Database will be provided in the Draft License Application.

1.4 Wildlife Resources

FERC requested the following information:

10. *Page 26 of the Restoration of the Kinnickinnic River through Dam Removal, as cited by section 6.2.4, Terrestrial Wildlife Resources of the PAD, states over 140 species of birds are commonly observed in the lower Kinnickinnic River area. However, a comprehensive list of waterbird species that use the project's waters and lands as habitat is not included. So that staff can evaluate potential project effects on birds, please provide a list of waterbird species and/or other migratory birds that have been observed within the project boundary.*

The Licensee's response to this request is as follows:

10. The City of River Falls is a Bird City Wisconsin community, and the City works closely with the St Croix Valley Bird Club (SCVBC) for recertification every year. The SCVBC is active in the region, and periodically conducts bird counts. Table 6.3-4 lists bird species, including waterbird and migratory bird species, that have been observed within the Project Boundary or near the Project in the City of River Falls and that may occur in the Project Boundary. Table 6.3-4 was developed using the most recent (2018) bird count survey information from the SCVBC, as well as bird sightings listed on eBird. The Licensee adds that regarding the 140 species of bird specified in FERC's reference to the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Restoration of the Kinnickinnic River through Dam Removal (Inter-Fluve 2017a), the Licensee followed up on January 24, 2019 with the author of the report, Inter-Fluve, to request clarification regarding that statement and to request the original citation for the data. In response on January 24, 2019, Inter-Fluve explained that the number was referring to bird species in the entire watershed and did not have the original data source that identified 140 species.

Table 6.3-4: Bird Species at the Project[1]

Common Name	Scientific Name	Waterbird?	Seasonal Distribution[2]
American black duck	*Anas rubripes*	Yes	Resident
American coot	*Fulica americana*	Yes	Resident
American crow	*Corvus brachyrhynchos*	No	Resident
American goldfinch	*Carduelis tristis*	No	Resident
American kestrel	*Falco sparverius*	No	Resident
American redstart	*Setophaga ruticilla*	No	Summer only
American robin	*Turdus migratorius*	No	Resident
Bald eagle	*Haliaeetus leucocephalus*	No	Resident
Baltimore oriole	*Icterus galbula*	No	Summer only
Barn swallow	*Hirundo rustica*	No	Summer only
Belted kingfisher	*Ceryle alcyon*	No	Resident
Blackpoll warbler	*Setophaga striata*	No	Through migrant
Black-and-white warbler	*Mniotilta varia*	No	Summer only
Black-capped chickadee	*Parus atricapillus*	No	Resident
Blue jay	*Cyanocitta cristata*	No	Resident
Blue-winged teal	*Anas discors*	Yes	Summer only
Brown thrasher	*Toxostoma rufum*	No	Summer only
Brown-headed cowbird	*Molothrus ater*	No	Resident
Bufflehead	*Bucephala albeola*	Yes	Winter only
Canada goose	*Branta Canadensis*	Yes	Resident
Canvasback	*Aythya valisineria*	Yes	Summer only
Cedar waxwing	*Bombycilla cedrorum*	No	Resident
Chimney swift	*Chaetura pelagica*	No	Summer only
Chipping sparrow	*Spizella passerina*	No	Summer only
Cliff swallow	*Petrochelidon pyrrhonota*	No	Summer only
Common goldeneye	*Bucephala clangula*	Yes	Resident
Common grackle	*Quiscalus quiscula*	No	Resident
Common merganser	*Mergus merganser*	Yes	Resident
Cooper's hawk	*Accipiter cooperii*	No	Resident
Dark-eyed junco	*Junco hyemalis*	No	Resident
Double-crested cormorant	*Phalacrocorax auritus*	Yes	Summer only
Downy woodpecker	*Dryobates pubescens*	No	Resident
Eastern bluebird	*Sialia sialis*	No	Summer only

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Common Name	Scientific Name	Waterbird?	Seasonal Distribution[2]
Eastern kingbird	*Tyrannus*	No	Summer only
Eastern phoebe	*Sayornis phoebe*	No	Summer only
Eastern towhee	*Pipilo erythrophthalmus*	No	Summer only
Eastern wood-pewee	*Contopus virens*	No	Summer only
European starling	*Strunus vulgaris*	No	Resident
Field sparrow	*Spizella pusilla*	No	Summer only
Gray catbird	*Dumetella carolinensis*	No	Summer only
Great blue heron	*Ardea herodias*	Wader	Summer only
Green heron	*Butorides virescens*	Wader	Summer only
Hairy woodpecker	*Dryobates villosus*	No	Resident
Hooded merganser	*Lophodytes cucullatus*	Yes	Summer only
House finch	*Haemorhous mexicanus*	No	Resident
House sparrow	*Passer domesticus*	No	Resident
House wren	*Troglodytes aedon*	No	Summer only
Indigo bunting	*Passerina cyanea*	No	Summer only
Killdeer	*Charadrius vociferus*	No	Summer only
Lesser scaup	*Aythya affinis*	Yes	Summer only
Mallard	*Anas platyrhynchos*	Yes	Resident
Mourning dove	*Zenaida macroura*	No	Resident
Nashville warbler	*Oreothlypis ruficapilla*	No	Summer only
Northern cardinal	*Richmondena cardinalis*	No	Resident
Northern flicker	*Colaptes auratus*	No	Resident
Northern rough-winged swallow	*Stelgidopteryx serripennis*	No	Summer only
Northern shoveler	*Spatula clypeata*	Yes	Summer only
Osprey	*Pandion haliaetus*	Yes	Summer only
Ovenbird	*Seiurus aurocapilla*	No	Summer only
Palm warbler	*Setophaga palmarum*	No	Summer only
Pied-billed grebe	*Podilymbus podiceps*	Yes	Summer only
Pileated woodpecker	*Dryocopus pileatus*	No	Resident
Pine warbler	*Setophaga pinus*	No	Summer only
Purple finch	*Haemorhous purpureus*	No	Resident
Red-bellied woodpecker	*Melanerpes carolinus*	No	Resident
Red-breasted merganser	*Mergus serrator*	Yes	Resident
Red-breasted nuthatch	*Sitta canadensis*	No	Resident
Red-winged blackbird	*Agelaius phoeniceus*	No	Resident
Ring-billed gull	*Larus delawarensis*	No	Resident
Ring-necked duck	*Aythya collaris*	Yes	Summer only
Rock dove (Rock pigeon)	*Columba livia*	No	Resident
Rose-breasted grosbeak	*Pheucticus ludovicianus*	No	Summer only
Ruby-crowned kinglet	*Regulus calendula*	No	Summer only
Ruby-throated hummingbird	*Archilocus colubris*	No	Summer only
Scarlet tanager	*Piranga olivacea*	No	Summer only
Song sparrow	*Melospiza melodia*	No	Resident
Tennessee warbler	*Oreothlypis peregrina*	No	Summer only
Tree swallow	*Tachycineta bicolor*	No	Summer only

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Common Name	Scientific Name	Waterbird?	Seasonal Distribution[2]
Trumpeter swan	*Cygnus buccinator*	Yes	Resident
Turkey vulture	*Cathartes aura*	No	Summer only
Warbling vireo	*Vireo gilvus*	No	Summer only
White-breasted nuthatch	*Sitta carolinensis*	No	Resident
White-throated sparrow	*Zonotrichia albicollis*	No	Resident
Wild turkey	*Meleagris gallopavo*	No	Resident
Wood duck	*Aix sponsa*	Yes	Summer only
Yellow warbler	*Setophaga petechia*	No	Summer only
Yellow-bellied sapsucker	*Sphyrapicus varius*	No	Resident
Yellow-rumped warbler	*Setophaga coronata*	No	Summer only
Yellow-throated vireo	*Vireo flavifrons*	No	Summer only

Source: [1] SCVBC 2018 and eBird 2019; [2] Wisconsin DNR 2008

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20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

ATTACHMENT A-1

WPDES PERMIT NUMBER 0029394

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NOTICE OF FINAL DETERMINATION TO REISSUE

A WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES) PERMIT No. WI-0029394-09-0

COPY

Permittee: River Falls Municipal Utility WWTF, 222 Lewis St Suite 228, River Falls, WI, 54022

Facility Where Discharge Occurs: River Falls Municipal Utility WWTF, 432 Apollo Rd, River Falls, WI

Receiving Water And Location: Lower Kinnickinnic Pond (Lake Louise) of the Kinnickinnic River Watershed in the St. Croix River Drainage Basin located in Pierce County

Brief Facility Description: The River Falls wastewater treatment facility has an annual average design flow of 1.8 million gallon per day (MGD), and had an actual annual average flow of 1.30 MGD in 2014. Primary treatment consists of communitors/bar screen, 4 pump lift station, magnetic flow metering, primary auto-rotating screens/dewatering screw compactor and vortex grit removal and classifier. Secondary treatment includes two parallel oxidation ditches, two final clarifiers, and a biological anaerobic phosphorus reduction unit. Chlorination is achieved in two baffled units, then dechlorinated by injecting sulfur dioxide into the baffled unit between the chlorination chamber and the effluent weir. Following dechlorination, the treated wastewater is discharged through a 14"outfall pipe to the Kinnickinnic River, which discharges above normal water level of the river over a rip-rap area. Biosolids are treated and shipped to the West Central Wisconsin Biosolids Facility (WCWBF) for further treatment and disposal.

There are no changes in operation since the last permit. Changes in permit requirements proposed for this issuance include 1) the addition of an effluent mass limit for phosphorus due to potential downstream impacts, 2) effluent monitoring for various forms of nitrogen due to facility size and its discharge to the Mississippi River basin, and 3) removal of the effluent mercury limit due to low levels.

Permit Drafter's Name, Address and Phone: Angela Parkhurst, DNR, WCR Headquarters, 1300 W. Clairemont Ave, , Eau Claire, WI, 54701, (715) 839-3836

Basin Engineer's Name, Address, and Phone: Peter Skorseth, 890 Spruce Street, , Baldwin, WI 54002, (715) 684-2914

Date Permit Signed/Issued: May 6, 2015
Date of Effectiveness: July 1, 2015
Date of Expiration: June 30, 2020

Following the public notice period the Department has made a final determination to reissue the WPDES permit for the above-named permittee for this existing discharge. The permit application information from the WPDES permit file, comments received on the proposed permit and applicable Wis. Adm. Codes were used as a basis for this final determination.

The Department has the authority to issue, modify, suspend, or revoke WPDES permits and to establish effluent limitations and permit conditions under ch. 283, Stats.

Following is a summary of significant comments and any significant changes which have been made in the terms and conditions set forth in the draft permit:

Comments Received from the Applicant, Individuals or Groups and Any Permit Changes as Applicable

None

Comments Received from EPA or Other Government Agencies and Any Permit Changes as Applicable

None

As provided by s. 283.63, Stats., and ch. 203, Wis. Adm. Code, persons desiring further adjudicative review of this final determination may request a public adjudicatory hearing. A request shall be made by filing a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date the permit was signed (see permit signature date above). Further information regarding the conduct and nature of public adjudicatory hearings may be found by reviewing ch. NR 203, Wis. Adm. Code, s. 283.63 Stats., and other applicable law, including s. 227.42, Stats.

Information on file for this permit action may be inspected and copied at either the above named permit drafter's address or the above named basin engineer's address, Monday through Friday (except holidays), between 9:00 a.m. and 3:30 p.m. Information on this permit action may also be obtained by calling the permit drafter at (715) 839-3836 or by writing to the Department. Reasonable costs (usually 20 cents per page) will be charged for copies of information in the file other than the public notice and fact sheet. Pursuant to the Americans with Disabilities Act, reasonable accommodation, including the provision of informational material in an alternative format, will be made to qualified individuals upon request.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
West Central Region Headquarters
1300 W. Clairemont Ave.
Eau Claire, WI 54701

Scott Walker, Governor
Cathy Stepp, Secretary
Dan Baumann, Regional Director
Telephone (715) 839-3700
FAX (715) 839-6076
TDD (715) 839-2786



COPY

Kevin Westhuis
Utility Director
River Falls Municipal Utility WWTF
222 Lewis St
River Falls, WI 54022

SUBJECT: WPDES Permit Reissuance No. WI-0029394-09-0
River Falls Municipal Utility WWTF, 432 Apollo Rd, River Falls, WI

Dear Permittee:

Your Wisconsin Pollutant Discharge Elimination System (WPDES) Permit is enclosed. The conditions of the enclosed permit reissuance were determined using the permit application, information from your WPDES permit file, other information available to the Department, comments received during the public notice period, and applicable Wisconsin Administrative Codes. All discharges from this facility and actions or reports relating thereto shall be in accordance with the terms and conditions of the enclosed permit.

This enclosed permit requires you to submit monitoring results to the Department on a periodic basis. Monitoring forms, which must be submitted electronically, are available on the Department's web page. Go to the DNR Switchboard page at http://dnr.wi.gov/topic/switchboard/ to log in and access your monitoring forms. For your convenience, there is a 'Summary of Reports Due' at the end of the enclosed permit that shows a synopsis of the required reports and monitoring forms.

The WPDES permit program has been approved by the Administrator of the U.S. Environmental Protection Agency pursuant to Section 402(b) of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. Section 1342 (b)). The terms and conditions of the enclosed permit are accordingly subject to enforcement under ss. 283.89 and 283.91, Stats., and Section 309 of the Federal Act (33 U.S.C. Section 1319).

The Department has the authority under chs. 160 and 283, Stats., to establish effluent limitations, monitoring requirements, and other permit conditions for discharges to groundwater and surface waters of the State. The Department also has the authority to issue, reissue, modify, suspend, or revoke WPDES permits under ch. 283, Stats.

The enclosed permit contains water quality-based effluent limitations that are necessary to ensure the water quality standards for Lower Kinnickinnic Pond (Lake Louise) of the Kinnickinnic River Watershed in the St. Croix River Drainage Basin located in Pierce County are met. You may apply for a variance from the water quality standard used to derive the limitations pursuant to s. 283.15, Stats., by submitting an application to the Director of the Bureau of Water Quality, P.O. Box 7921, Madison, Wisconsin 53707 within 60 days of the date the permit was issued (see "Date Permit Signed/Issued" after the signature on the front page of the enclosed permit). This statute also allows the permittee to apply for a variance to the water quality standard when applying for reissuance of the permit. Subchapter III of ch. NR 200, Wis. Adm. Code, specifies the procedures that must be followed and the information that must be included when submitting an application for a variance.

If your permit contains a stringent Water Quality Based Effluent Limit for Phosphorus, there is a Compliance Schedule requirement to complete a Phosphorus Operational Evaluation and Optimization Report. To streamline the Report preparation and review process the Department has prepared a Worksheet which should be used to develop the report. The worksheet may be found at : http://dnr.wi.gov/topic/surfacewater/phosphorus.html.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

To challenge the reasonableness of or necessity for any term or condition of the enclosed permit, s. 283.63, Stats., and ch. NR 203, Wis. Adm. Code, require that you file a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date the permit was issued (see "Date Permit Signed/Issued" after the signature on the front page of the enclosed permit). For permit-related decisions that are not reviewable pursuant to s. 283.63, Stats., it may be possible for permittees or other persons to obtain an administrative review pursuant to s. 227.42, Stats., and s. NR 2.05(5), Wis. Adm. Code, or a judicial review pursuant to s. 227.52, Stats. If you choose to pursue one of these options, you should know that Wisconsin Statutes and Administrative Code establish time periods within which requests to review Department decisions must be filed.

Sincerely,

Michael Vollrath
Wastewater Field Supervisor

Dated: May 5, 2015

cc: Legal Permit File, Peter Skorseth - BAL
Cyndi Barr, WT/3
U.S. Fish and Wildlife Service (Electronic Copy via Email)
EPA – Region V (Electronic Copy via Email)

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WISCONSIN
DEPT. OF NATURAL RESOURCES

COPY

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

River Falls Municipal Utility WWTF

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
432 Apollo Rd, River Falls, WI
to
Lower Kinnickinnic Pond (Lake Louise) in the Kinnickinnic River Watershed of the St. Croix River Basin located in Pierce County

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By Michael Vollrath
Michael Vollrath
Wastewater Field Supervisor

May 5, 2015
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - July 01, 2015 **EXPIRATION DATE - June 30, 2020**

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS 1

1.1 SAMPLING POINT(S) 1
1.2 MONITORING REQUIREMENTS 1
1.2.1 Sampling Point 701 - PRIOR TO STATIC SCREEN 1

2 IN-PLANT REQUIREMENTS 2

2.1 SAMPLING POINT(S) 2
2.2 MONITORING REQUIREMENTS AND LIMITATIONS 2
2.2.1 Sampling Point 106 - Field Blank 2

3 SURFACE WATER REQUIREMENTS 3

3.1 SAMPLING POINT(S) 3
3.2 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS 3
3.2.1 Sampling Point (Outfall) 001 - AFTER THE CHLORINE TANK 3

4 LAND APPLICATION REQUIREMENTS 7

4.1 SAMPLING POINT(S) 7
4.2 MONITORING REQUIREMENTS AND LIMITATIONS 7
4.2.1 Sampling Point (Outfall) 002 - SLUDGE TO WCWBF 7

5 STANDARD REQUIREMENTS 8

5.1 REPORTING AND MONITORING REQUIREMENTS 8
5.1.1 Monitoring Results 8
5.1.2 Sampling and Testing Procedures 8
5.1.3 Recording of Results 8
5.1.4 Reporting of Monitoring Results 8
5.1.5 Compliance Maintenance Annual Reports 9
5.1.6 Records Retention 9
5.1.7 Other Information 9
5.2 SYSTEM OPERATING REQUIREMENTS 9
5.2.1 Noncompliance Reporting 9
5.2.2 Flow Meters 10
5.2.3 Raw Grit and Screenings 10
5.2.4 Sludge Management 10
5.2.5 Prohibited Wastes 10
5.2.6 Bypass 11
5.2.7 Scheduled Bypass 11
5.2.8 Controlled Diversions 11
5.2.9 Proper Operation and Maintenance 11
5.3 SEWAGE COLLECTION SYSTEMS 12
5.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows 12
5.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program 13
5.3.3 Sewer Cleaning Debris and Materials 14
5.4 SURFACE WATER REQUIREMENTS 14
5.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit 14
5.4.2 Appropriate Formulas for Effluent Calculations 14
5.4.3 Effluent Temperature Requirements 15
5.4.4 Visible Foam or Floating Solids 15
5.4.5 Surface Water Uses and Criteria 15
5.4.6 Percent Removal 15
5.4.7 Fecal Coliforms 15
5.4.8 Seasonal Disinfection 15
5.4.9 Applicability of Alternative Wet Weather Mass Limitations 16

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.4.10 Total Residual Chlorine Requirements (When De-Chlorinating Effluent) 16
5.4.11 Whole Effluent Toxicity (WET) Monitoring Requirements 16
5.4.12 Whole Effluent Toxicity (WET) Identification and Reduction 16
5.5 LAND APPLICATION REQUIREMENTS 17
5.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations 17
5.5.2 General Sludge Management Information 17
5.5.3 Sludge Samples 17
5.5.4 Land Application Characteristic Report 17
5.5.5 Calculation of Water Extractable Phosphorus 18
5.5.6 Monitoring and Calculating PCB Concentrations in Sludge 18
5.5.7 Annual Land Application Report 19
5.5.8 Other Methods of Disposal or Distribution Report 19
5.5.9 Approval to Land Apply 19
5.5.10 Soil Analysis Requirements 19
5.5.11 Land Application Site Evaluation 19
5.5.12 Sludge Hauling 19

6 SUMMARY OF REPORTS DUE **20**

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
701	Representative influent samples shall be collected prior to the rotating screens.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - PRIOR TO STATIC SCREEN

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	Monitoring during calendar years 2017, 2018, and 2019. See Mercury subsection below.

1.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

2 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
106	The field blank shall be collected using standard handling procedures every day that mercury samples are collected at influent and effluent.

2.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point 106 - Field Blank

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Blank	Monitoring during calendar years 2017, 2018, and 2019. See Mercury subsection below.

2.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

3 Surface Water Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
001	Representative effluent samples shall be collected after dechlorination and prior to discharge to Lower Kinnickinnic Pond.

3.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 001 - AFTER THE CHLORINE TANK

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
BOD_5, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective Nov-Apr annually
BOD_5, Total	Weekly Avg	31 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective May-Oct annually
BOD_5, Total	Weekly Avg	465 lbs/day	Daily	Calculated	Limit effective May-Oct annually
Suspended Solids, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective Nov-Apr annually
Suspended Solids, Total	Weekly Avg	31 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective May-Oct annually
Suspended Solids, Total	Weekly Avg	465 lbs/day	Daily	Calculated	Limit effective May-Oct annually
Nitrogen, Ammonia (NH_3-N) Total	Daily Max	35 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective Nov-Apr annually
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	5.7 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective Nov-Apr annually
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	2.0 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May-Oct annually
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	7.5 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective Nov-Apr annually
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	30 lbs/day	3/Week	Calculated	Limit effective May-Oct annually

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	113 lbs/day	3/Week	Calculated	Limit effective Nov-Apr annually
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg - Variable	lbs/day	3/Week	Calculated	See Ammonia Nitrogen subsection below
Nitrogen, Ammonia Variable Limit		lbs/day	3/Week	Calculated	See Ammonia Nitrogen subsection below
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	Monitoring during calendar years 2017, 2018, and 2019. See mercury subsection below.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	
Fecal Coliform	Geometric Mean	400 #/100 ml	2/Week	Grab	Limit effective May-Sept annually
Chlorine, Total Residual	Daily Max	38 µg/L	Daily	Grab	Limit effective May-Sept annually
Chlorine, Total Residual	Weekly Avg	24 µg/L	Daily	Grab	Limit effective May-Sept annually
Phosphorus, Total	Monthly Avg	1.5 mg/L	Daily	24-Hr Flow Prop Comp	Limit effective year round
Phosphorus, Total	Monthly Avg	20 lbs/day	Daily	Calculated	Limit effective year round. See Phosphorus TMDL subsection below.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate and report the rolling 12 month sums of total monthly loads. See Phosphorus TMDL subsection below.
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET subsection below
Chronic WET		rTU_c	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET subsection below

3.2.1.1 Average Annual Design Flow

The average annual design flow of the permittee's wastewater treatment facility is 1.8 MGD.

3.2.1.2 Mercury Monitoring

The permittee shall collect and analyze all mercury samples for the calendar years 2017, 2018, and 2019 according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.1.3 Ammonia Nitrogen Non-Wet Weather and Alternative Wet Weather Mass Limit

This parameter (ammonia nitrogen) has a mass limit based on weather conditions for the months November through April each year. The applicable non-wet weather mass limit is 86 pounds/day. The applicable wet weather mass limit is 94 pounds/day. Report the applicable mass limit on the Discharge Monitoring Report form in the variable limit column. See Standard Requirements for "Applicability of Alternative Wet Weather Mass Limitations" and "Appropriate Formulas for Effluent Calculations".

Note: 1000 ug/l = 1 mg/L (divide ug/L by 1000 to convert to mg/L).

3.2.1.4 Whole Effluent Toxicity (WET) Testing

Primary Control Water: The Kinnickinnic River

Instream Waste Concentration (IWC): 30%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 30, 10, 3, 1% (if the IWC ≤30%) or 100, 75, 50, 25, 12.5% (if the IWC >30%) and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:**

1st Test: Oct-Dec, 2015

2nd Test: Jan-March 2016

3rd Test: April-June 2017

4th Test: July -Sept 2018

5th Test: Oct-Dec 2019

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in Oct-Dec 2020.

Chronic tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Chronic:**

1st Test: Oct-Dec, 2015

2nd Test: Jan-March 2016

3rd Test: April-June 2017

4th Test: July -Sept 2018

5th Test: Oct-Dec 2019

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in Oct-Dec 2020.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: If $LC_{50} \geq 100$, then $TU_a = 1.0$. If LC_{50} is < 100, then $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Relative Toxic Unit - Chronic (rTU_c) is greater than 1.0 for either species. The rTU_c shall be calculated as follows: If $IC_{25} \geq IWC$, then $rTU_c = 1.0$. If $IC_{25} < IWC$, then $rTU_c = IWC \div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90 day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

3.2.1.5 Phosphorus Total Maximum Daily Load (TMDL) Monitoring and Limitations

The Lake St. Croix TMDL Waste Load Allocation (WLA) for Total Phosphorus was approved by the U.S. Environmental Protection Agency August 2012. The approved TMDL WLA limits for Total Phosphorus are: 1.5 mg/L monthly and 20 lbs/day monthly average. In addition, calculate and report rolling 12-month sums of total monthly loads for Total Phosphorus. Total monthly loads should be calculated by multiplying the monthly average discharge concentration (mg/L) by the total flow for the month (MG/month) and by the conversion factor of 8.34. Sum the total monthly loads from the most recent twelve months.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

4 Land Application Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
002	As long as sludge is shipped to the West Central Wisconsin Biosolids Facility (WCWBF) for disposal, representative sludge samples shall be collected once per year from the sludge digestion ditch and monitored for List 1 parameters. Sludge samples shall be collected prior to hauling and test results shall be reported on Form 3400-49 "Waste Characteristics Report". Hauled sludge reports shall be submitted on Form 3400-52 "Other Methods of Disposal or Distribution Report" following each year that sludge is hauled.

4.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

4.2.1 Sampling Point (Outfall) 002 - SLUDGE TO WCWBF

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Grab	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Grab	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Grab	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Grab	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Grab	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Grab	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Grab	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Grab	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Grab	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Grab	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Grab	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Grab	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Grab	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Grab	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Grab	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Grab	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Grab	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Grab	

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

5.1 Reporting and Monitoring Requirements

5.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a principal executive officer, a ranking elected official or other duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

5.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

5.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

5.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

pollutant concentration as < 0.1 mg/L.

- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.

- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD_5 and Total Suspended Solids shall be considered to be limits of quantitation

- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

5.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

A separate CMAR certification document, that is not part of the electronic report form, shall be mailed to the Department at the time of electronic submittal of the CMAR. The CMAR certification shall be signed and submitted by an authorized representative of the permittee. The certification shall be submitted by mail. The certification shall verify the electronic report is complete, accurate and contains information from the owner's treatment works.

5.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

5.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

5.2 System Operating Requirements

5.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

5.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

5.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

5.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

5.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

5.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

5.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

5.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

5.3 Sewage Collection Systems

5.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

5.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

5.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

5.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:

  ◦The date and location of the overflow;
  ◦The surface water to which the discharge occurred, if any;
  ◦The duration of the overflow and an estimate of the volume of the overflow;
  ◦A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
  ◦The estimated date and time when the overflow began and stopped or will be stopped;

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

◦The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
◦Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
◦A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
◦Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
◦To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
◦The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at http://dnr.wi.gov/topic/wastewater/SSOreport.html. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

5.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

5.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall by August 1, 2016 submit to the Department verification that a CMOM program for the sewage collection system has been developed which is consistent with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall develop and maintain written documentation of the CMOM program components, and shall verify each year with the submittal of the Compliance Maintenance Annual Report required under the 'Compliance Maintenance Annual Reports' section of this permit that the CMOM program documentation is current and meets the requirements in NR 210.23, Wis. Adm. Code.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

- The permittee shall implement a CMOM program consistent with the permittee's program documentation and with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall annually conduct a self-audit of activities to ensure the CMOM program is being implemented as necessary to meet the requirements contained in the CMOM program documentation.
- The permittee shall make available CMOM program documentation, a record of implementation activities and the results of the self-audit to the Department on request.

5.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

5.4 Surface Water Requirements

5.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

5.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

5.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

5.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

5.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

5.4.7 Fecal Coliforms

The limit for fecal coliforms shall be expressed as a monthly geometric mean.

5.4.8 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitation for fecal coliforms apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.4.9 Applicability of Alternative Wet Weather Mass Limitations

- An alternative wet weather mass limitation applies when:
  - The applicable mass limitation (based on annual average design flow) is exceeded; and
  - The permittee demonstrates to the satisfaction of the Department that the discharge exceedance is caused by and occurs during a wet weather event. For the purposes of this demonstration, a wet weather event occurs during and immediately following periods of precipitation or snowmelt, including but not limited to rain, sleet, snow, hail or melting snow during which water from the precipitation, snowmelt or elevated groundwater enters the sewerage system through infiltration or inflow, or both. The permittee shall present demonstrations to the Department by attaching them to the Wastewater Discharge Monitoring Report Form(s).

Note: In making this demonstration, the permittee may want to consider presenting a discussion of normal effluent flow rates, the effluent flow rates that resulted in the exceedance and identification of the event, including intensity and duration, which caused the high flow rates. A graph of effluent flow over time may also be helpful.

5.4.10 Total Residual Chlorine Requirements (When De-Chlorinating Effluent)

Test methods for total residual chlorine, approved in ch. NR 219 - Table B, Wis. Adm. Code, normally achieve a limit of detection of about 20 to 50 micrograms per liter and a limit of quantitation of about 100 micrograms per liter. Reporting of test results and compliance with effluent limitations for chlorine residual and total residual halogens shall be as follows:

- Sample results which show no detectable levels are in compliance with the limit. These test results shall be reported on Wastewater Discharge Monitoring Report Forms as "< 100 µg/L". (Note: 0.1 mg/L converts to 100 µg/L)

- Samples showing detectable traces of chlorine are in compliance if measured at less than 100 µg/L, unless there is a consistent pattern of detectable values in this range. These values shall also be reported on Wastewater Discharge Monitoring Report Forms as "<100 µg/L." The facility operating staff shall record actual readings on logs maintained at the plant, shall take action to determine the reliability of detected results (such as re-sampling and/or calculating dosages), and shall adjust the chemical feed system if necessary to reduce the chances of detects.

- Samples showing detectable levels greater than 100 µg/L shall be considered as exceedances, and shall be reported as measured.

- To calculate average or mass discharge values, a "0" (zero) may be substituted for any test result less than 100 µg/L. Calculated values shall then be compared directly to the average or mass limitations to determine compliance.

5.4.11 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition" (PUB-WT-797*, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

5.4.12 Whole Effluent Toxicity (WET) Identification and Reduction

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

This standard requirement applies only to acute or chronic WET monitoring that is not accompanied by a WET limit. Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including some or all of the following actions:
  - (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
  - (b) Identify the compound(s) causing toxicity
  - (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
  - (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

5.5 Land Application Requirements

5.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

5.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

5.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

5.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

5.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

5.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note**: It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.
- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil	3611B - Alumina
3640A - Gel Permeation	3660B - Sulfur Clean Up (using copper shot instead of powder)
3630C - Silica Gel	3665A - Sulfuric Acid Clean Up

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

5.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

5.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

5.5.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

5.5.12 Sludge Hauling

If sludge is hauled to another facility, the permittee is required to submit Form 3400-52 to the Department. Information shall include the quantity of sludge hauled, the name, address, phone number, contact person, and permit number of the receiving facility. Form 3400-52 shall be submitted annually by January 31 following each year sludge is hauled.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

6 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	9
General Sludge Management Form 3400-48	prior to any significant sludge management changes	17
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	17
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	19
Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	19
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	8

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
West Central Region - Baldwin, 890 Spruce Street, Baldwin, WI 54002

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ATTACHMENT A-2

EVALUATING THE THERMAL AND HYDROLOGICAL IMPACTS OF KINNICKINNIC RIVER HYDROPOWER IMPOUNDMENTS (JOHNSON 2018)

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Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls, WI

Summary of Monitoring Results

Thermal:

Since 1992, the Kiap-TU-Wish Chapter of Trout Unlimited has been conducting temperature monitoring of the Kinnickinnic River and three tributaries (Sumner Creek, South Fork of the Kinnickinnic River, and Rocky Branch Creek) in the vicinity of River Falls, Wisconsin (Figure 1).

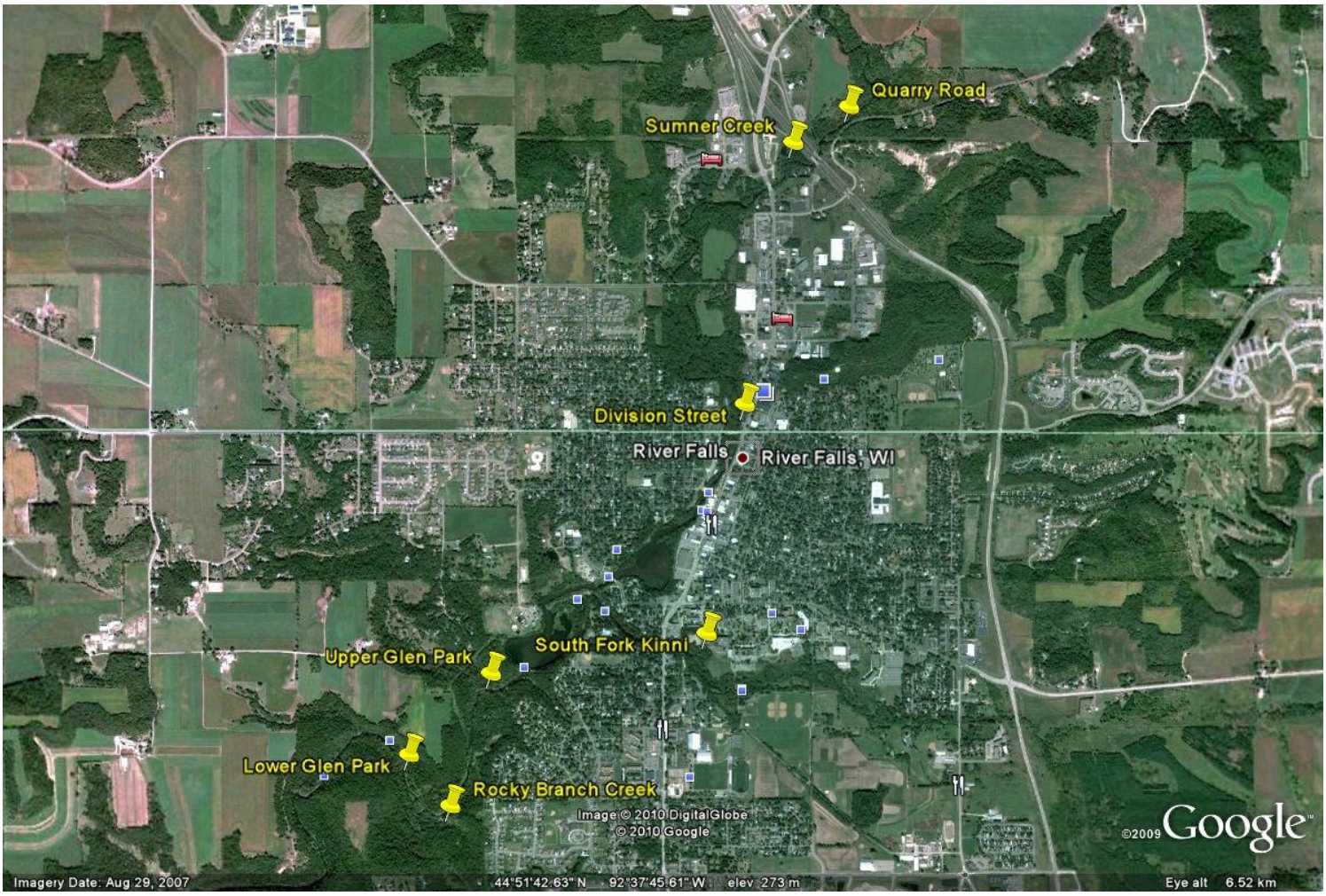

Figure 1. Kiap-TU-Wish temperature monitoring sites on the Kinnickinnic River and tributaries in River Falls, WI.

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Temperature monitoring at these eight sites has typically been conducted during the mid-April to mid-October period each year, using electronic instrumentation that continuously measures river temperatures at 10-minute intervals. The temperature data obtained at each monitoring site can be compared to critical temperature thresholds that must be maintained to support healthy coldwater communities in the Kinnickinnic River and its tributaries. These thresholds[1] are as follows:

Temperatures ≤ 17º C = river temperatures optimal for macroinvertebrate survival
Temperatures ≤ 19º C = river temperatures optimal for brown trout growth
Temperatures ≤ 20º C = river temperatures optimal for brown trout survival

Temperatures **>** 19º C = river temperatures exceed physiological limit for brown trout
Temperatures **>** 22º C = river temperatures exceed the survival tolerance threshold and upper metabolic limit for brown trout
Temperatures **>** 25º C = river temperatures exceed the lethal threshold for brown trout

The temperature monitoring data obtained at four Kinnickinnic River monitoring sites can be used to evaluate the thermal impacts of the two impoundments (Lake George and Lake Louise) created by the City of River Falls hydropower facilities. The two monitoring sites at Quarry Road and Division Street are reference or control sites located upstream from the two hydropower impoundments. The two monitoring sites at Upper and Lower Glen Park are possible impact sites situated downstream from the two hydropower impoundments.

A preliminary assessment by Kiap-TU-Wish of the temperature monitoring data obtained at the Quarry Road, Division Street, and Upper and Lower Glen Park monitoring sites indicates that summer (June-August) river temperatures are notably higher downstream from the two hydropower impoundments. On average during the 1993-2013 period of record, downstream summer average temperatures at Upper and Lower Glen Park are 2.2-2.4º C (4.0-4.4° F) warmer than the upstream summer average temperatures at Quarry Road and Division Street. This temperature differential is even greater in July (the warmest summer month), with downstream temperatures 2.3-2.8º C (4.3-4.9° F) higher than upstream temperatures. Furthermore, throughout the summer period, the downstream temperatures at Upper and Lower Glen Park more frequently exceed the critical temperature thresholds that support healthy coldwater macroinvertebrate and brown trout communities in the Kinnickinnic River. For instance, during the summer of 2012, the temperature threshold of 19º C was exceeded for a cumulative total of 8.8 days (10% of the summer period) at Division Street. In comparison, this threshold was exceeded for a cumulative total of 38.9 days (42% of the summer period) at Upper Glen Park, thereby posing a much greater thermal risk to the downstream coldwater community.

The Wisconsin Department of Natural Resources has conducted assessments of Kiap-TU-Wish's Kinnickinnic River temperature monitoring data in 2011[2] and 2017 (Figure 2). Both assessments have noted that a warming trend in water temperature has been occurring at the Quarry Road and

[1] Bell, J.M. 2006. The assessment of thermal impacts on habitat selection, growth, reproduction, and mortality in brown trout (*Salmo trutta* L): A review of the literature. Report prepared for the Vermillion River Watershed Joint Powers Board, by Applied Ecological Services, Inc. Brodhead, WI. 23 p.
[2] Mitro, M., J. Lyons, and S. Sharma 2011. Wisconsin Initiative on Climate Change Impacts: Coldwater Fish and Fisheries Working Group Report. 31 p.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Upper and Lower Glen Park monitoring sites, consistent with the observed warming trend in Wisconsin air temperature during the same time periods. However, the warming trends at the Upper and Lower Glen Park monitoring sites begin at a much higher baseline temperature, indicating that these downstream monitoring sites will be much more sensitive to any future impacts of climate change.

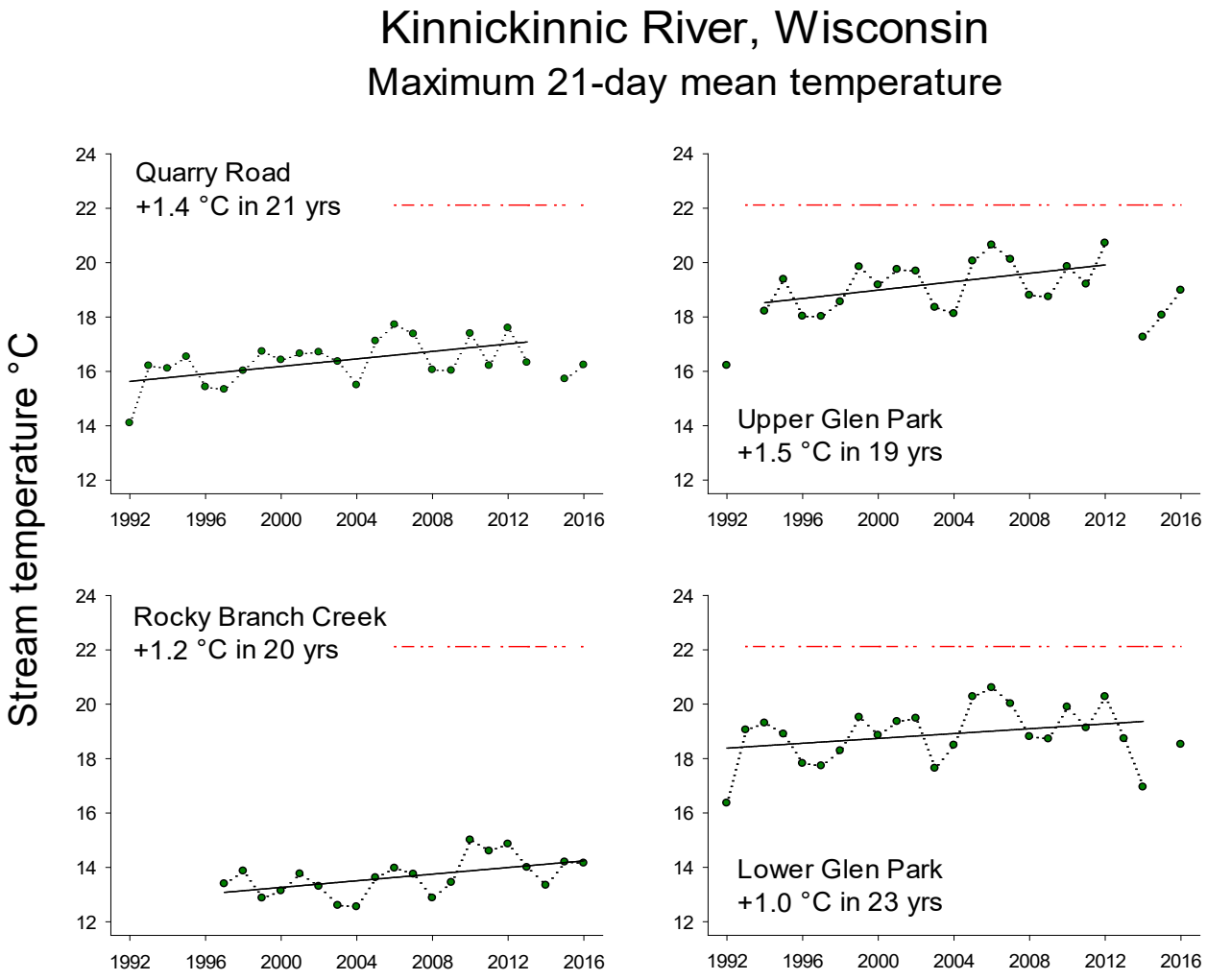

Figure 2. Maximum 21-day mean temperature by year (1992-2016) at three Kinnickinnic River sites (Quarry Road, Upper Glen Park, and Lower Glen Park) and one Rocky Branch Creek site. The regression line (solid line) for each river site shows the extent of river warming during the monitoring period, with a comparison to the critical temperature threshold for brown trout[3] (dashed red line).

[3] Wehrly, K., L. Wang, and M. Mitro. 2007. Field-based estimates of thermal tolerance limits for trout: Incorporating exposure time and temperature fluctuation. Transactions of the American Fisheries Society 136: 365-374.

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The increased sensitivity of downstream water temperatures to air temperature has also been documented by a Kiap-TU-Wish regression analysis of April-September 2012 water temperatures vs. April-September 2012 air temperatures at the four upstream and downstream Kinnickinnic River monitoring sites.

Hydrological:

The United States Geological Survey (USGS) operates a Kinnickinnic River monitoring station (number 05342000) at County Highway F, near Kinnickinnic State Park, approximately five miles west of River Falls. The station measures river stage (water height) and flow at 15-minute intervals, and 15-minute precipitation amounts in 0.01-inch increments. The City of River Falls, Kinnickinnic River Land Trust, and the Kiap-TU-Wish Chapter of Trout Unlimited provide annual cost-share funding to help support the operation of this USGS monitoring station, which has been operating continuously since July 2002.

During periods of stable river flow (baseflow), when precipitation and runoff are not occurring, the Kinnickinnic River hydrograph can be examined to determine whether the City of River Falls hydropower facilities are operating in a "run-of-river" mode, as required by the FERC Permit. The "run-of-river" condition is critical for maintaining the Kinnickinnic River habitats that support healthy coldwater macroinvertebrate and brown trout communities. Sudden decreases in water flow can de-water macroinvertebrate habitats and trout redds, while sudden increases in water flow can de-stabilize the river channel, thereby increasing bank erosion, decreasing water clarity, and damaging in-stream habitat.

On a number of occasions, recreational users along the lower Kinnickinnic River (downstream from River Falls) have noted sudden flow fluctuations that are likely attributed to irregular operation of the City of River Falls hydropower facilities. For instance, a Kiap-TU-Wish Chapter member observed a dramatic decrease in Kinnickinnic River flow (from 126 cfs to 53 cfs) on July 11, 2008, during the 15:00-18:45 CDT time period. The Wisconsin Department of Natural Resources (WDNR) subsequently linked this flow irregularity to a gate malfunction at the lower hydropower facility. Given these observations of irregular flows, the Kiap-TU-Wish Chapter of Trout Unlimited recommends that a thorough assessment be conducted (using USGS Kinnickinnic River flow data) of the extent to which the City of River Falls hydropower facilities have maintained a "run-of-river" condition during the 2002-2013 period.

TROUT UNLIMITED

Prepared by:

Kent Johnson
Kiap-TU-Wish Chapter, Trout Unlimited
Updated 2/2/18

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ATTACHMENT A-3

EMAIL CORRESPONDENCE WITH WISCONSIN DNR MALACOLOGIST, LISIE KITCHEL

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Brotkowski, Lesley <LBrotkowski@trcsolutions.com>
Sent: Saturday, August 11, 2018 4:33 PM
To: Kitchel, Lisie E - DNR <Lisie.Kitchel@wisconsin.gov>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Krchnavek, Elizabeth <EKrchnavek@trcsolutions.com>
Subject: Mussels in the Kinnickinnic River

Hi Lisie,

We're pulling together the Pre-Application Document (PAD) for the FERC relicensing of the River Falls Hydroelectric Project in River Falls, Pierce County, WI. The USFWS IPaC report lists Higgin's eye, snuffbox, and spectaclecase in the Project Area-specific search. No mussel species were listed in the WDNR NHI review.

Do you know if any of these species occur or are likely to occur in the Kinnickinnic River? These species seem to prefer large rivers like the Mississippi.

Thank you. I hope you're having a nice summer!

Lesley Brotkowski
Senior Consultant
150 North Patrick Boulevard, Brookfield, WI 53045
C: 402-238-7789 | F: 207-621-8226
LinkedIn | Twitter | Blog | Flickr | www.trcsolutions.com

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Kitchel, Lisie E - DNR <lisie.kitchel@wisconsin.gov>
Sent: Tuesday, August 14, 2018 12:23 AM
To: Brotkowski, Lesley
Cc: Laatsch, Cheryl - DNR; Krchnavek, Elizabeth
Subject: RE: Mussels in the Kinnickinnic River

Those mussel species occur in the St. Croix River (Lake St. Croix) not in the Kinnickinnic River.
In fact I checked and we have NO mussel records for the Kinnickinnic, too cold, too trouty, not good mussel habitat, lacks host species.

The IPAC report lists them because they list the federal species by COUNTY, so those species turn up in their county list.
You can indicate there are no state or federally listed mussel species in the Kinnickinnic River, none in the project area.
That said, you still should avoid downstream impacts that would reach Lake St. Croix, otherwise no mussel concerns.

We are committed to service excellence.

Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Lisie Kitchel

Phone: (608) 266-5248

Cell: (608) 220-5180

Lisie.Kitchel@wi.gov

From: Brotkowski, Lesley
To: Kitchel, Lisie E - DNR
Cc: Laatsch, Cheryl - DNR; Krchnavek, Elizabeth
Subject: Re: Mussels in the Kinnickinnic River
Date: Tuesday, August 14, 2018 6:34:23 AM
Attachments: image001.jpg

Thank you Lisie. Much appreciated!

Take care,
Lesley

Lesley Brotkowski
TRC
402-238-7789

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Brotkowski, Lesley <LBrotkowski@trcsolutions.com>
Sent: Thursday, January 10, 2019 12:13 PM
To: Kitchel, Lisie E - DNR <Lisie.Kitchel@wisconsin.gov>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Krchnavek, Elizabeth <EKrchnavek@trcsolutions.com>
Subject: RE: Mussels in the Kinnickinnic River

Hi Lisie,

We're evaluating study request and additional information requests for the River Falls Hydroelectric Project.

FERC requested available information on mussels that occur in the St. Croix River between the Kinnickinnic River and the Mississippi River. I found some good information on the website of Dan Hornbach, professor at Macalester College in Minnesota. He's done a lot of mussel research in the St. Croix and includes some mussel data on his website: https://www.macalester.edu/~hornbach/stcroix/musseldata.html . Has WDNR done mussel surveys in this location? Do you know of any other good references that describe native mussels in this area?

While doing some mussel research, I noticed that zebra mussels are documented in the St. Croix, but I have found no reference to them in the Kinnickinnic River. Do you know if zebra mussels or any other invasive mussels occur in the Kinnickinnic River?

FERC is also requesting information on mussel habitat potential within the Kinnickinnic River. Based on your email below, I understand there are no mussel records in the Kinni and mussel habitat is not ideal. Would you expect any mussels (rare or common) to occur in the Kinnickinnic River or the impoundments (Lake Louise or Lake George)? Has the Kinni ever been surveyed for mussels? If so, could you please provide me with survey reports or data? What host species would need to be present in order for mussels to occur?

Thank you for your assistance! My response to FERC is due no later than February 11, 2019.

Thank you,
Lesley

From: Helsel, Daniel R - DNR
Sent: Tuesday, January 15, 2019 2:50 PM
To: Lepsch, Jodi A - DNR Jodi.Lepsch@wisconsin.gov>
Cc: Hazuga, Mark J - DNR <Mark.Hazuga@wisconsin.gov>
Subject: FW: Mussels in the Kinnickinnic River

Hey Jodi – can you please Lesley's request for AIS information below and see if you/Beaver Creek or other AIS sources, have any information related to zebra mussels. Don't worry about the general mussel information, Lisie handles that data. Please copy me and Cheryl with your response. Thanks, Dan

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Lepsch, Jodi A - DNR
To: Brotkowski, Lesley
Cc: Hazuga, Mark J - DNR; Helsel, Daniel R - DNR; Laatsch, Cheryl - DNR; Selle, Alexander J - DNR
Subject: RE: Mussels in the Kinnickinnic River
Date: Wednesday, January 16, 2019 9:45:25 AM

Hi Lesley

To our knowledge, zebra mussels are not in the Kinnickinnic River. I don't t have a record of any AIS specific surveys that have been completed but enough other field work has been done that I believe if they were there they would have been noticed and reported.

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Jodi Lepsch
Phone: (715) 838-8385
Jodi.Lepsch@Wisconsin.gov

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Brotkowski, Lesley <LBrotkowski@trcsolutions.com>
Sent: Friday, January 18, 2019 9:35 AM
To: Kitchel, Lisie E - DNR <Lisie.Kitchel@wisconsin.gov>
Cc: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Krchnavek, Elizabeth <EKrchnavek@trcsolutions.com>
Subject: RE: Mussels in the Kinnickinnic River

Hi Lisie,

One more question in addition to those below. The attached 2017 Interfluve report states the following:

> "WDNR staff (pers. comm.; Heath, Karns, and Kitchel) confirmed that little mussel research has been conducted along the Kinnickinnic River, and one past survey, completed up- and downstream of River Falls, found no mussels being present."

Do you have a copy of this survey that you could share? If not, do you remember what year it was conducted and how long the search area was downstream?

Thank you!
Lesley

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Kitchel, Lisie E - DNR
To: Brotkowski, Lesley
Cc: Laatsch, Cheryl - DNR; Krchnavek, Elizabeth
Subject: RE: Mussels in the Kinnickinnic River
Date: Friday, January 18, 2019 3:06:16 PM

I will look for that survey and send. The issue with the Kinnie is that it is typically cooler trout waters and a bit chilly for mussels.
Not to say that mussels can't be there, but our experience is that mussels rarely occur in cool water streams due to colder waters and lack of fish diversity, also lack of nutrients in true coldwater trout streams.
I would love to look in the Kinnie for mussels, so if you want to put together a plan we could help out, with ID's for sure.

I will give a call and we can discuss.

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Lisie Kitchel
Phone: (608) 266-5248
Cell: (608) 220-5180
Lisie.Kitchel@wi.gov

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From: Kitchel, Lisie E - DNR
To: Brotkowski, Lesley
Cc: Laatsch, Cheryl - DNR; Krchnavek, Elizabeth
Subject: RE: Mussels in the Kinnickinnic River
Date: Friday, January 18, 2019 3:15:45 PM

One more point I realized I had not mentioned before. We don't find native mussels in true coldwater trout streams, due to lack of fish hosts and nutrients. We sometimes find a few species of mussels in coolwater trout streams who use darters and sculpins as hosts and are small slow growing (think cold water and lack of algal diversity) species. That said, those species could be present, so let me know what we can do if you decide a mussel survey is warranted. We have a list of consultants that we can provide.

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Lisie Kitchel
Phone: (608) 266-5248
Cell: (608) 220-5180
Lisie.Kitchel@wi.gov

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Brotkowski, Lesley
To: Kitchel, Lisie E - DNR
Cc: Laatsch, Cheryl - DNR; Krchnavek, Elizabeth
Subject: RE: Mussels in the Kinnickinnic River
Date: Friday, January 18, 2019 4:18:04 PM
Attachments: 2015 WDNR stream classification report_Kinni.pdf

Thanks Lisie. Would you consider the Kinni a "true coldwater trout stream" or "coolwater trout stream" from a mussel perspective? It seems like there's likely to be a transition as we get closer to the St. Croix, but a lower chance of mussels as one moves upstream?

The attached 2015 WDNR report identifies largemouth bass (one) at Station #2 (Hwy F) and stickleback, sculpin, and suckers upstream (above the City and impoundments) at stations #11 & 17. Based on host species, it seems like there could be some common mussel species (likely in limited numbers), but probably not any state or federally listed species. Becca Winterringer pulled this table together for me:

Mussel hosts for Fish species recently identified in the Kinnickinnic River

Scientific Name	Common Name	Brook Stickleback	Brook Trout	Brown Trout	Fathead Minnow	Largemouth Bass	Mottled Sculpin	White Sucker
Actinonaias ligamentina	Mucket					X		
Alasmidonta marginata	Elktoe							X
Amblema plicata	Threeridge					X		
Fusconaia ebena / Reginaia ebenus	**Ebonyshell**					X		
Lampsilis siliquoidea	Fatmucket					X		X
Lampsilis teres	**yellow (slough) sandshell**					X		
Lasmigona compressa	creek heelsplitter						X	
Lasmigona costata	fluted shell							X
Pyganodon grandis	giant floater	X				X		X

Bolded Species indicate State Listed status. Stream Classification Report KINNICKINNIC RIVER WBIC: 2601800 Pierce and St. Croix County Category 2 and 5 Trout Fishing Regulation Class I Trout Stream
Freshwater Mussel Host Database. 2017. The freshwater mussel host database, Illinois Natural History Survey & Ohio State University Museum of Biological Diversity, 2017.
http://wwx.inhs.illinois.edu/collections/mollusk/data/freshwater-mussel-host-database. (January 2019).
Recent (2015) surveys identified the following species in the Kinnickinnic River: brown trout, brook trout, fathead minnow, white sucker, mottled sculpin, brook stickleback, and largemouth bass (Wisconsin DNR 2015)

We know there are rare mussels in the St. Croix, ~ 16 miles downstream of the Powell Falls dam. There are likely to be some, but probably not many, common mussel species in the Kinni. The likelihood of rare species in the Kinni itself seems low, at least above Hwy F. Decommissioning plans will be drafted such that we'd use a slow drawdown and minimize sediment releases to the extent practicable. We'd anticipate that released sediment would remain suspended in the water column (opposed to deposited), which would minimize potential impact to mussels. While it would be interesting to know about mussel distribution (if any) in the Kinni, I guess I'm struggling with how much value a mussel survey would bring to the EA. What are your thoughts on survey needs?

Thank you,
Lesley

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Kitchel, Lisie E - DNR <Lisie.Kitchel@wisconsin.gov>
Sent: Monday, January 21, 2019 5:50 PM
To: Brotkowski, Lesley <LBrotkowski@trcsolutions.com>
Subject: RE: Mussels in the Kinnickinnic River

Lesley – regarding mussels in the Kinnickinnic River in Wisconsin. The Kinnie is primarily trout waters and not suitable for our native mussel species or the majority of their fish hosts. There might be a few species found at the mouth of the Kinnie and the St. Croix River, however I would not expect to find native mussels in the Kinnickinnic River proper. I encourage restoration o this river, but do not expect to find mussels there at this time or in the future.

Let me know if you would like to discuss this further or have any questions.

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Lisie Kitchel
Phone: (608) 266-5248
Cell: (608) 220-5180
Lisie.Kitchel@wi.gov

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

From: Brotkowski, Lesley
To: "Kitchel, Lisie E - DNR"
Cc: "cheryl.laatsch@wisconsin.gov"; Krchnavek, Elizabeth
Subject: RE: Mussels in the Kinnickinnic River
Date: Monday, January 21, 2019 7:34:00 PM

Hi Lisie,

Thank you for the information. We appreciate your expertise on this topic.

Take care,
Lesley

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

ATTACHMENT A-4

ST. CROIX MUSSEL INFORMATION

Endangered Species

Midwest Region

Midwest Endangered Species Home
What We Do
Featured Species
Species Information
State and County Lists
Species Lists
Fact Sheets and Brochures
Field Office Contacts
Regional Office Contacts
Contact Us



The Midwest Region includes Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin. Find a location near you

Endangered Species Program

Conserving and restoring threatened and endangered species and their ecosystems

Great Lakes RESTORATION

Mussels of the St. Croix River

The St. Croix River watershed is the premier mussel watershed of the Upper Mississippi River, and one of the premier mussel watersheds of the world.



This endangered winged mapleleaf mussel was tagged and then placed back in the St. Croix River. Biologists gain population and other information by tagging and then recapturing mussels at a later date.
Photo by USFWS; Phil Delphey

Forty-one mussel species live in the St. Croix River ("Dan Hornbach's Lab" Macalester College, 04 Feb. 2013). Of these, Wisconsin and Minnesota have listed 15 and 20 as state-endangered or state-threatened species, respectively. Five species of mussels that occur in the St. Croix River are also listed as endangered under the Federal Endangered Species Act: Higgins eye, sheepnose, snuffbox, spectaclecase and winged mapleleaf.

North America is the world's great mussel continent; the richest species aggregations found in any watersheds worldwide are found in North America. North America's best mussel watersheds have species numbers in the upper 30s. Thus, with its 41 species, the St. Croix is among the world's greatest mussel watersheds.

The uncommon richness of mussel species in the St. Croix parallels the uncommon richness of the flora and fauna of the watershed as a whole. The watershed has many uncommon Midwestern species, including some species that were once endangered or threatened and have now recovered – including gray wolves, bald eagles, and peregrine falcons – and some that are still endangered, such as the Karner blue butterfly. One expert characterized the St. Croix as a sanctuary containing the best-preserved (least human-impacted) remnant of pre-settlement natural communities in the Upper Mississippi drainage, and the very best preserved pre-settlement aquatic community in the Upper Mississippi drainage.

The biological diversity of the St. Croix River watershed may be due in large part to the relative lack of intensive agricultural. In contrast, the Minnesota River historically supported a mussel fauna very similar to the St. Croix River, but its watershed supports widespread and intensive agriculture that has greatly modified runoff patterns and river habitats. It now supports only low densities of a few mussel species.

In a sense, the St. Croix watershed is an island of near-pre-settlement conditions surrounded by the more developed and altered North America of the Twentieth Century. Local popular sentiment, increasing involvement and commitment by state and Federal conservation and other agencies, and the Federal Wild and Scenic River designation of the Namekagon-St. Croix reflect the watershed's value and offer practical vehicles for protecting the watershed from what may be disastrous decimation of its mussel fauna should zebra mussels successfully invade.

Back to Freshwater Mussels

Midwest Endangered Species Home

Last updated: October 10, 2018

USFWS Ecological Services Field Offices in the Upper Midwest
Illinois | Chicago | Indiana | Iowa | Michigan | Minnesota | Missouri | Ohio | Wisconsin

USFWS Midwest Region Sites
Home | Ecological Services | Endangered Species | Environmental Contaminants
Wind Energy | Ecological Services Field Offices

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Coastal Conservation | Endangered Species | Environmental Contaminants | Fisheries and Habitat Conservation

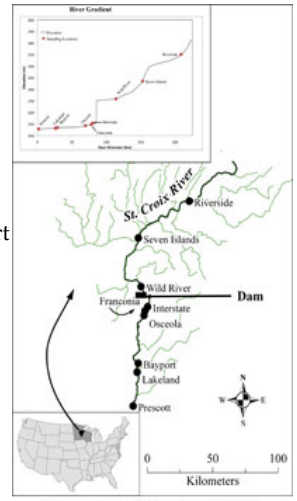


About Dan
People in the Lab
St. Croix Mussel Data
St. Croix River Info
St. Croix Endangered Mussels
MN River Mussel Data
MN River Info
Bivalve Gill Morphology
Freshwater Mussel Links
EREN Research Projects

MACALESTER COLLEGE

The St. Croix River

The St. Croix River is a sixth-order steam draining a 20,018 km2 area in east-central Minnesota and northwestern Wisconsin. The 276 km mainstream includes a 1,889 ha natural lake at its mouth and two small reservoirs created by the 3.7 m high Gordon Dam and the 18 m high St. Croix Falls Dam. Historically, the St. Croix River has hosted 110 species of fish representing 24 families. There are 41 mussel species in the basin. In 1968, with the enactment of the National Wild and Scenic Rivers Act, 165 km of the St. Croix River became one of the first eight rivers to become part of the National Wild and Scenic River way system. In 1972, 87 km of the lower St. Croix River were added to the system.



Click on image for a larger version

Pictures of different river stages of the St. Croix River

- St. Croix River - normal flow
  - St. Croix River at 4,000 cubic feet per second (cfs)--"normal" levels
- St. Croix River - flood of 2001
  - St. Croix River at 40,000 cfs
  - St. Croix River at 55,000 cfs

Some useful links to information on the St. Croix River

- USGS Discharge Data at Taylors/St. Croix Falls
- USGS Discharge Data at Danbury, WI
- River Stage at Stillwater, MN
- St. Croix National Scenic Riverway - NPS
- St. Croix Watershed Research Station
- Science Museum of Minnesota - St. Croix Research Rendezvous
- St. Croix River Association
- Bridges and Structures of the Saint Croix River

Contact Dan Hornbach | Macalester College, 1600 Grand Avenue, St. Paul MN 55105 | Disclaimer



About Dan
People in the Lab
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St. Croix River Info
St. Croix Endangered Mussels
MN River Mussel Data
MN River Info
Bivalve Gill Morphology
Freshwater Mussel Links
EREN Research Projects

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Mussels of the St. Croix River

There are 41 species of native mussels in the St. Croix River as well as two species of introduced bivalves (zebra mussels and Asian clams).

There are five federally endangered species of mussels - the spectaclecase (*Cumberlandia monodonta*), the snuffbox (*Epioblasma triquetra*), the Higginsi Pearly Mussel (*Lampsilis higginsii*), the sheepnose *(Plethobasus cyphyus*), and the winged mapleleaf (*Quadrula fragosa*). In addition there are a number of species listed as endangered or threatened in the states of Minnesota and Wisconsin.

Summary of the distribution of mussels in the St. Croix based on quantitative sampling completed by the Macalester team.

Map of the St. Croix River that provides interactive access to more of the data on mussels in the river.

List of species and their conservation status.

There have been a number of qualitative and quantitative studies of the mussel assemblages of the St. Croix River. Much of the information has been summarize in:

Hornbach, D.J. 2001. Macrohabitat factors influencing the distribution and abundance of naiads in the St. Croix River, MN and WI, USA, pp. 213-230. *In* G. Bauer and W. Wächtler [eds] Ecology and Evolutionary Biology of the Freshwater Mussels Unionoidea. Ecological Studies Vol. 145 Springer Verlag: Berlin.

In this paper Hornbach has examined the factors which may help to explain the distribution of mussel species in the river. More information.

In addition Hornbach and researchers at Macalester College have been conducting quantitative studies of populations at 9 sites on the St. Croix River. The methods used can be examined here.

In 2015 we sampled locations on the Snake River Watershed of the St. Croix as part of our LCCMR project examining sediment impact on mussels of the Minnesota River Watershed. The Snake River is being used as a reference site. We revisited sites early surveyed by the MN DNR using a catch-per-unit-effort method (collecting all mussels within a specified time period.

Contact Dan Hornbach | Macalester College, 1600 Grand Avenue, St. Paul MN 55105 | Disclaimer



About Dan
People in the Lab
St. Croix Mussel Data
St. Croix River Info
St. Croix Endangered Mussels
MN River Mussel Data
MN River Info
Bivalve Gill Morphology
Freshwater Mussel Links
EREN Research Projects

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Conservation Status of St. Croix Mussels

E = Endangered, T = Threatened, SC = Special Concern

Scientific Name	Common Name	Federal Listing	Minnesota Listing	Wisconsin Listing	Reference
Actinonaias ligamentina	mucket		T		1, 2
Alasmidonta marginata	elktoe		T		1, 2
Amblema plicata	threeridge				1, 2
Anodontoides ferussacianus	cylindrical papershell				1
Arcidens confragosus	rock-pocketbook		E	T	1, 2
Corbicula fluminea	Asian clam				1, 2
Cumberlandia monodonta	spectaclecase	E	E	E	1, 2
Cyclonaias tuberculata	purple wartyback		E	E	1, 2
Dreissena polymorpha	zebra mussel				2
Ellipsaria lineolata	butterfly		T	E	1, 2
Elliptio crassidens	elephant-ear		E	E	(Reference needed)
Elliptio dilatata	spike		T		1, 2
Epioblasma triquetra	snuffbox	E	E	E	1, 2
Fusconaia ebena	ebonyshell		E	E	1, 2
Fusconaia flava	Wabash pigtoe				1, 2
Lampsilis cardium	pocketbook				1, 2
Lampsilis higginsii	Higgins eye	E	E	E	1, 2
Lampsilis siliquoidea	fatmucket				1, 2
Lampsilis teres	yellow sandshell		E	E	(Reference needed)
Lasmigona complanata	white heelsplitter				1, 2
Lasmigona compressa	creek heelsplitter		SC		1
Lasmigona costata	fluted-shell		T		1, 2
Leptodea fragilis	fragile papershell				1, 2
Ligumia recta	black sandshell		SC		1, 2
Megalonaias nervosa	washboard		E		1, 2
Obliquaria reflexa	threehorn wartyback				1, 2
Obovaria olivaria	hickorynut				1, 2
Plethobasus cyphyus	sheepnose	E	E	E	(Reference needed)
Pleurobema sintoxia	round pigtoe		SC		1, 2
Potamilus alatus	pink heelsplitter				1, 2
Potamilus ohiensis	pink papershell				1, 2
Pyganodon grandis	giant floater				1, 2
Quadrula fragosa	winged mapleleaf	E	E	E	1, 2
Quadrula metanevra	monkeyface		T	T	1, 2
Quadrula nodulata	wartyback		T	T	1, 2

Quadrula pustulosa	pimpleback				1, 2
Quadrula quadrula	mapleleaf				1, 2
Simpsonaias ambigua	salamander mussel		E	T	1, 2
Strophitus undulatus	squawfoot				1, 2
Toxolasma parvus	lilliput				1, 2
Tritogonia verrucosa	pistolgrip		E	T	1, 2
Truncilla donaciformis	fawnsfoot	T			1, 2
Truncilla truncata	deertoe				1, 2
Utterbackia imbecillis	paper pondshell				(Reference needed)

References:
1 - Bell Museum voucher specimen
2 - Observed by our laboratory (Aquatic Ecology laboratory, Macalester College)

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EREN Research Project

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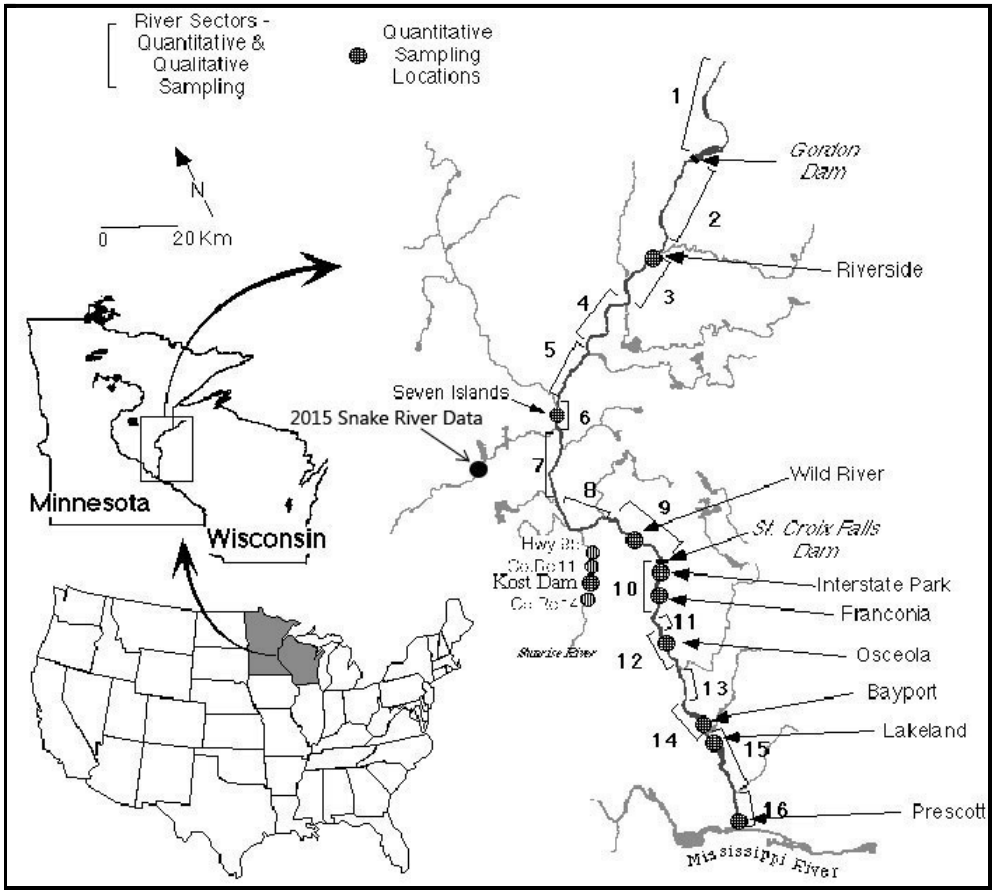
St. Croix Quantitative Sampling Locations

The map below has links to mussel data for the St. Croix River. Click on a sector or sampling location for access to more information.

Quantitative methods

What constitutes a "juvenile" mussel

Graph of river gradient



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EREN Research Projects

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St. Croix River Quantitative Sampling Method

Typically 100 quadrants are taken at each location.

Substrate analysis, water depth and water velocity at the sediment-water interface is measured for each quadrat.

Click here to get an explanation of what constitutes a juvenile mussel.







Sieving Sediment

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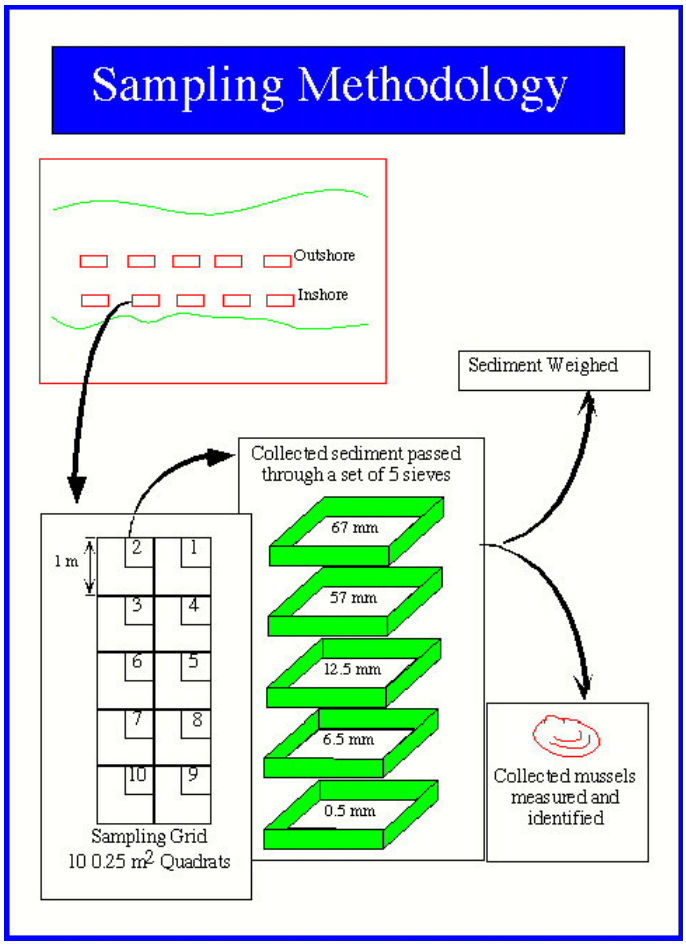



Measuring Mussels





Weighing Sediment

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MN River Info
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EREN Research Projects

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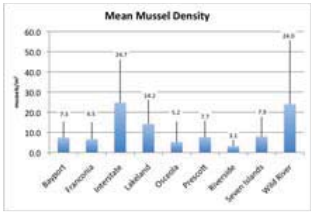
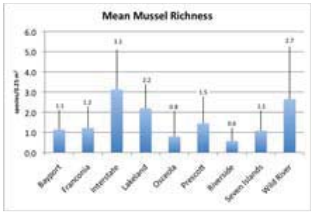
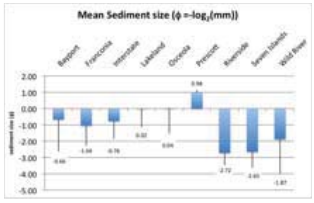
St. Croix Quantitative Data

Summary Data from Quantitative sampling - mussel density, mussel richness and sediment size. Click on the image for a larger size.







A map of locations can be found here.
An overview of the methods used to collect these data can be found here.

Summary of Mussel Assemblages Based on Quantitative Sampling 1991-2009

Distribution of Mussels - % found at each site

Dominant species - shaded blue
2nd most abundant species - shaded green

Species	Bayport	Franconia	Interstate	Lakeland	Osceola	Prescott	Riverside	Seven Islands	Wild River
Actinonaias ligamentina	0.33	5.58	5.84	0.64	4.19	0.42	58.16	65.99	35.74
Alasmidonta marginata	0.00	0.35	0.59	0.07	0.47	0.10	0.77	1.51	0.38
Amblema plicata	63.83	2.01	1.02	41.84	2.64	29.30	1.53	0.50	0.52
Cyclonaias tuberculata	0.00	1.05	2.10	0.14	0.47	0.00	2.04	1.51	3.79
Ellipsaria lineolata	0.00	0.35	2.23	0.99	0.16	0.21	0.00	0.00	0.00
Elliptio dilatata	3.06	4.36	2.65	9.12	1.24	6.47	22.70	12.59	24.35
Epioblasma triquetra	0.00	3.84	2.78	0.00	1.40	0.00	0.51	0.00	0.00
Fusconaia ebena	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00
Fusconaia flava	13.33	6.11	4.27	15.05	18.76	19.60	3.83	0.50	1.81
Lampsilis cardium	0.11	3.05	0.89	0.78	1.09	3.02	1.79	6.05	2.45
Lampsilis higginsii	0.00	0.52	0.02	1.13	0.16	1.25	0.00	0.00	0.00
Lampsilis siliquoidea	0.55	1.13	0.17	0.35	0.00	1.36	1.28	0.50	3.29

Lasmigona complanata	0.00	0.09	0.09	0.07	0.62	0.21	0.00	0.00	0.05
Lasmigona compressa	0.00	0.00	0.04	0.00	0.00	0.00	0.26	0.00	0.02
Lasmigona costata	0.00	0.00	0.23	0.00	0.00	0.00	0.51	3.53	2.45
Leptodea fragilis	0.87	2.18	1.80	1.27	1.40	1.04	0.26	0.76	1.22
Ligumia recta	0.00	0.52	0.25	0.14	0.31	0.52	2.81	2.52	1.19
Megalonaias nervosa	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
Obliquaria reflexa	7.65	0.61	1.91	11.94	1.71	17.94	0.00	0.00	0.17
Obovaria olivaria	0.00	1.31	1.55	0.00	0.62	0.10	1.02	0.76	2.81
Pleurobema sintoxia	1.20	4.71	3.21	3.18	3.26	9.59	0.00	0.76	1.88
Potamilus alatus	0.98	1.22	0.87	0.99	2.17	0.42	0.00	0.00	1.12
Potamilus ohiensis	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00
Pyganodon grandis	0.77	0.17	0.02	0.21	0.16	0.73	0.00	0.25	0.05
Quadrula fragosa	0.00	0.09	0.13	0.00	0.31	0.00	0.00	0.00	0.00
Quadrula metanevra	0.00	14.22	2.02	0.42	3.72	1.04	0.00	0.00	0.00
Quadrula pustulosa	4.37	2.97	6.73	3.75	5.12	2.71	1.53	1.51	8.15
Quadrula quadrula	0.33	0.09	0.02	0.78	0.16	0.10	0.00	0.00	0.00
Strophitus undulatus	0.22	0.35	0.13	0.35	0.93	0.10	0.00	0.50	1.12
Toxolasma parvus	0.33	0.09	0.19	0.14	0.00	1.46	0.51	0.00	0.05
Tritogonia verrucosa	0.00	2.36	2.65	0.07	6.98	0.00	0.00	0.00	0.00
Truncilla donaciformis	0.33	1.22	3.59	0.00	0.93	0.00	0.26	0.00	0.00
Truncilla truncata	1.09	37.43	51.50	5.94	40.78	1.04	0.00	0.25	6.89
UNKNOWN ADULT	0.22	0.26	0.11	0.07	0.00	0.00	0.26	0.00	0.14
UNKNOWN JUVENILE	0.11	1.75	0.40	0.21	0.00	0.10	0.00	0.00	0.31
Utterbackia imbecillis	0.33	0.00	0.00	0.21	0.00	0.31	0.00	0.00	0.05
Total number of mussels collected	915	1146	5289	1415	645	959	392	397	4197
Number of 0.25 m2 quadrats	500	700	820	400	500	500	500	200	700

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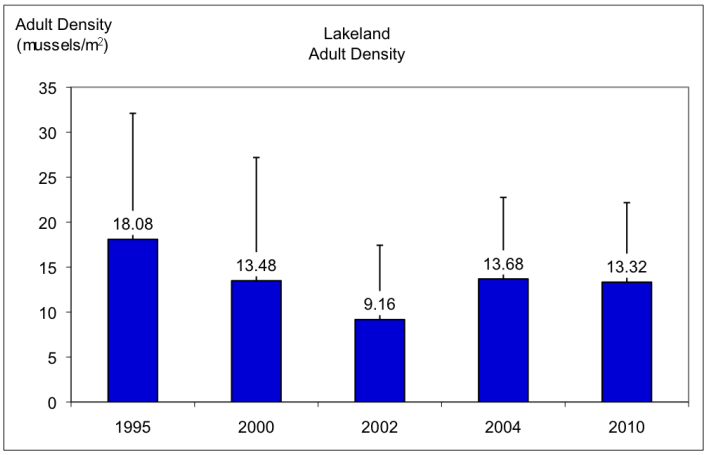
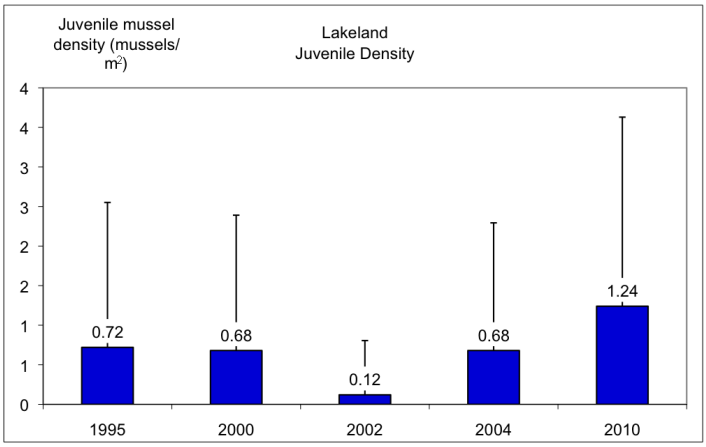
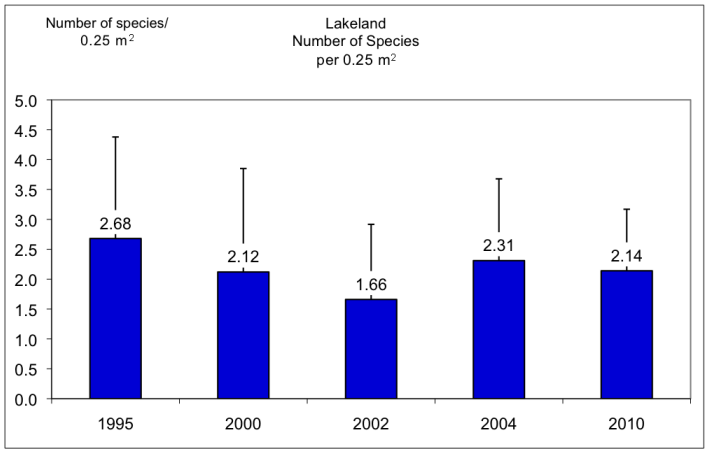
Lakeland, MN

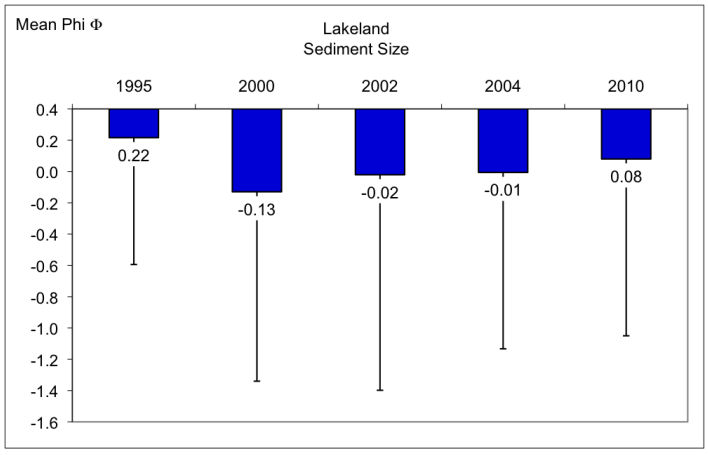
Sampled in 1995, 2000, 2002, 2004, 2010











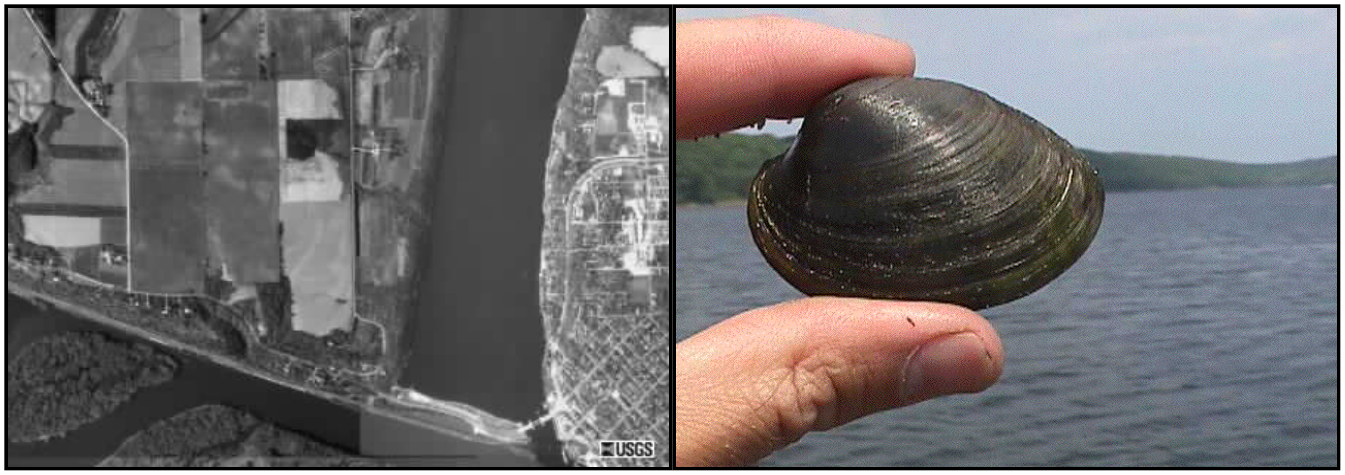
Community Composition - Percent composition each year

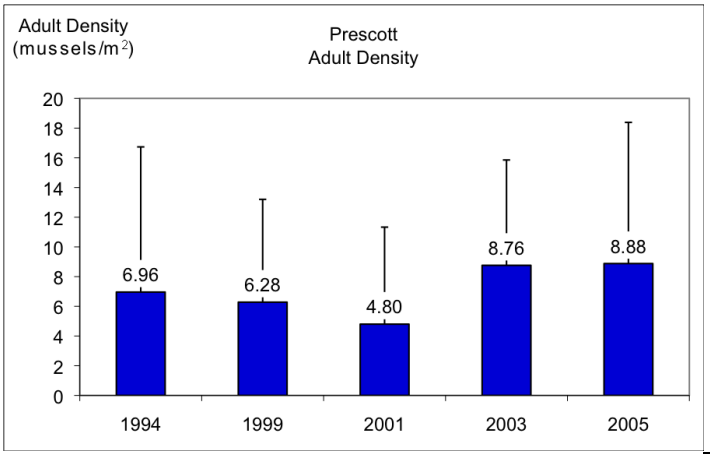
Species	1995	2000	2002	2004	2010
Actinonaias ligamentina	1.06	0.56	0.00	0.56	0.28

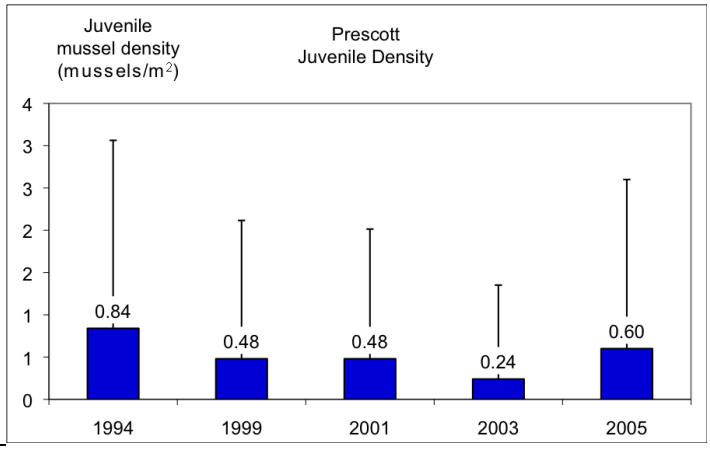
Alasmidonta marginata	0.21	0.00	0.00	0.00	0.00
Amblema plicata	43.19	36.72	42.67	44.57	55.77
Cyclonaias tuberculata	0.00	0.28	0.00	0.28	0.00
Ellipsaria lineolata	0.64	0.85	0.43	1.95	1.37
Elliptio dilatata	10.64	14.97	4.74	4.18	3.57
Fusconaia flava	11.28	15.25	18.10	17.83	15.39
Lampsilis cardium	0.21	0.00	3.45	0.56	0.55
Lampsilis higginsii	1.28	0.28	2.59	0.84	2.47
Lampsilis siliquoidea	0.21	0.28	0.43	0.56	0.28
Lasmigona complanata	0.00	0.28	0.00	0.00	0.00
Leptodea fragilis	2.13	1.41	0.43	0.56	1.65
Ligumia recta	0.00	0.00	0.43	0.28	0.00
Megalonaias nervosa	0.00	0.28	0.43	0.00	0.00
Obliquaria reflexa	10.21	10.45	12.07	15.60	7.42
Pleurobema sintoxia	2.55	4.24	3.45	2.79	2.75
Potamilus alatus	1.06	1.13	1.72	0.28	1.37
Pyganodon grandis	0.64	0.00	0.00	0.00	0.55
Quadrula metanevra	0.64	0.00	0.86	0.28	0.00
Quadrula pustulosa	3.40	3.39	3.88	4.46	1.92
Quadrula quadrula	1.28	0.56	0.86	0.28	0.00
Strophitus undulatus	0.43	0.28	0.43	0.28	0.00
Toxolasma parvus	0.00	0.56	0.00	0.00	0.28
Tritogonia verrucosa	0.00	0.28	0.00	0.00	0.00
Truncilla truncata	8.72	7.34	2.59	3.06	3.02
UNKNOWN ADULT	0.00	0.00	0.00	0.28	0.55
UNKNOWN JUVENILE	0.21	0.28	0.00	0.28	0.00
Utterbackia imbecillis	0.00	0.28	0.43	0.28	0.82

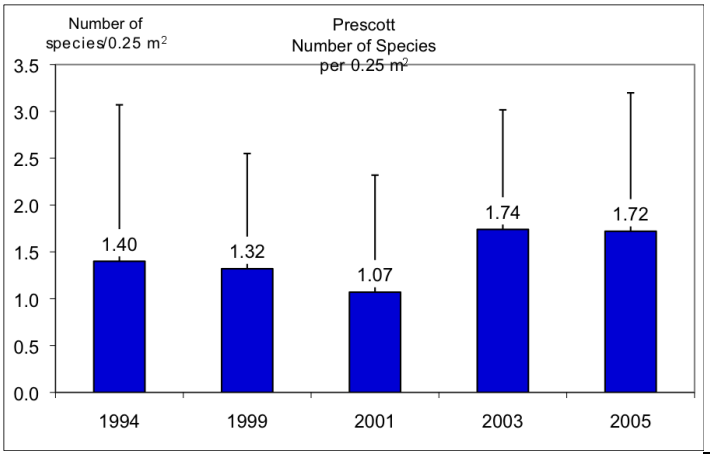
Prescott, WI

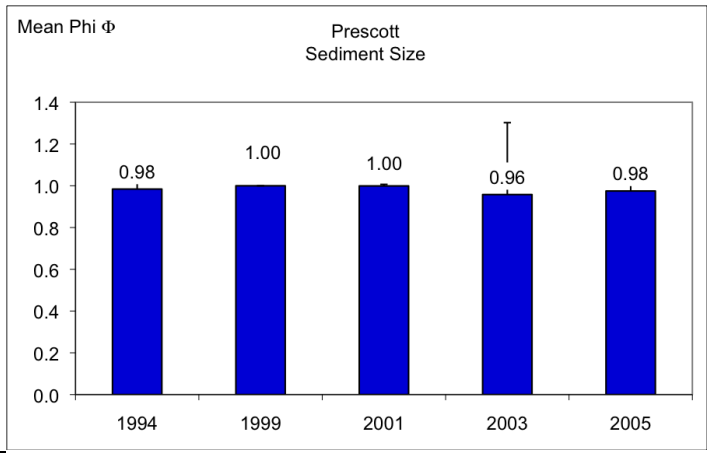
Sampled in 1994, 1999, 2001, 2003, 2005











Community Composition - Percent composition each year

Species	1994	1999	2001	2003	2005
Actinonaias ligamentina	0.00	1.18	0.00	0.44	0.42

Alasmidonta marginata	0.51	0.00	0.00	0.00	0.00
Amblema plicata	25.13	32.35	32.58	24.44	33.33
Ellipsaria lineolata	0.00	0.00	0.00	0.44	0.42
Elliptio dilatata	5.13	7.06	10.61	3.56	7.59
Fusconaia ebena	0.00	3.53	1.52	0.00	0.00
Fusconaia flava	22.05	26.47	21.97	18.22	12.66
Lampsilis cardium	1.54	4.12	1.52	4.44	2.95
Lampsilis higginsii	0.51	0.59	3.03	1.33	1.27
Lampsilis siliquoidea	1.03	0.00	2.27	2.22	1.27
Lasmigona complanata	0.51	0.59	0.00	0.00	0.00
Leptodea fragilis	1.03	0.00	3.03	0.89	0.84
Ligumia recta	2.05	0.59	0.00	0.00	0.00
Obliquaria reflexa	20.51	11.76	15.15	18.67	21.10
Obovaria olivaria	0.00	0.59	0.00	0.00	0.00
Pleurobema sintoxia	6.67	3.53	2.27	18.22	12.24
Potamilus alatus	1.54	0.00	0.00	0.44	0.00
Pyganodon grandis	1.03	0.00	0.76	1.33	0.42
Quadrula metanevra	1.54	0.59	0.76	1.33	0.84
Quadrula pustulosa	2.05	2.35	3.03	2.67	3.38
Quadrula quadrula	0.51	0.00	0.00	0.00	0.00
Strophitus undulatus	0.51	0.00	0.00	0.00	0.00
Toxolasma parvus	1.03	4.12	1.52	0.00	1.27
Truncilla truncata	4.62	0.59	0.00	0.00	0.00
UNKNOWN JUVENILE	0.51	0.00	0.00	0.00	0.00
Utterbackia imbecillis	0.00	0.00	0.00	1.33	0.00

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APPENDIX B
AGENCY AND STAKEHOLDER
COMMENT LETTERS ON PROPOSED STUDY PLAN

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426
May 08, 2019

OFFICE OF ENERGY PROJECTS

Project No. 10489-016 – Wisconsin
River Falls Hydroelectric Project
City of River Falls Municipal Utilities

Kevin Westhuis, Utility Director
City of River Falls Municipal Utilities
222 Lewis Street
River Falls, WI 54022

Reference: Staff Comments on the Proposed Study Plan for the River Falls Hydroelectric Project

Dear Mr. Westhuis:

We have reviewed the City of River Falls Municipal Utilities' (City of River Falls) proposed study plan for the River Falls Hydroelectric Project filed on February 11, 2019. We provided verbal comments on the proposed study plan during the March 13, 2019 study plan meeting. We expect City of River Falls to take those comments into consideration during the development of the revised study plan, which is due to be filed on June 11, 2019. In addition, we are providing written comments pursuant to section 5.12 of the Commission's regulations on the proposed Powell Falls decommissioning plan,[1] Water Quality, and the Cultural Resources studies. Comments are provided in the attached Schedule A. We have also provided comments on requested studies not adopted in your proposed study plan. Comments are provide in attached Schedule B.

The 90-day comment period for the proposed study plan is intended to be used to resolve stakeholder concerns with study methods. We encourage City of River Falls to follow up with agencies and stakeholders, and hold additional meetings if needed.

Please include in your schedule a provision for filing at least one progress report, as required by 18 C.F.R. §5.11(b)(3), for each of the proposed studies, and for any additional study that may be included in the revised study plan. This provision should

[1] In its PAD filed on August 30, 2018, City of River Falls proposes to file a decommissioning plan with the final license application. Although the decommissioning plan was not included as a proposed study in the proposed study plan, we consider it a proposed study.

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describe the manner and extent to which information will be shared, and include sufficient time for technical review of the analysis.

If you have any questions, please contact Shana Wiseman at shana.wiseman@ferc.gov or (202) 502-8736.

Sincerely,

Janet Hutzel, Chief
Midwest Branch
Division of Hydropower Licensing

Enclosure: Schedule A – Comments on the Proposed Study Plan
Schedule B – Comments on Requested Studies Not Adopted

Schedule A
Project No. 10489-016

Comments on the Proposed Study Plan

Powell Falls Decommissioning Plan

Section 5.6(d)(3)(i)(C) of the Commission's regulations requires a description of any known or potential adverse impacts and issues associated with the construction, operation or maintenance of the proposed project, including continuing and cumulative impacts. Furthermore, section 5.6(d)(3)(i)(D) of the Commission's regulations require a description of any existing or proposed project facilities or operations, and management activities undertaken for the purpose of protecting, mitigating impacts to, or enhancing resources affected by the project. The Preliminary Application Document (PAD) states that City of River Falls Municipal Utilities (City of River Falls) intends to remove Powell Falls dam. The PAD further states that City of River Falls proposes to develop a decommissioning plan that would provide additional detail of the removal of Powell Falls dam, including specific measures to avoid and mitigate environmental effects associated with dam removal. In the Proposed Study Plan (PSP), several studies, including geology and soils and aquatic resources, were not adopted because City of River Falls states that existing information is sufficient to prepare a license application that would allow Commission staff to evaluate effects of dam removal.

Without a decommissioning plan, it is not possible to conclude whether the existing information would be adequate to evaluate the specific measures to avoid and mitigate environmental effects associated with dam removal or if additional studies would be needed. For example, although the PAD identified mobilization and downstream transport of both contaminated and uncontaminated sediments in Lake Louise following dam removal, the PAD did not describe the potential spatial and temporal changes to stream geometry caused by the transported sediment or the effects of the transported sediment on other resources and infrastructure. A decommissioning plan, which should be submitted as part of the initial study report, would clarify a single proposed action and enable Commission staff to determine if adequate information exists or if additional studies are needed to evaluate the removal of Powell Falls dam.[2] Therefore, City of River Falls' revised study plan should include a proposal to develop a decommissioning plan that includes a detailed description of the methodology that would be used to develop the decommissioning plan. The decommissioning plan should describe, at a minimum, the disposition of all project facilities (removal, and / or modification); how the dam would be deconstructed and removed; any environmental effects for all resources, including cultural resources, anticipated from the surrender, and the extent of any effects to all resources; any proposed measures to mitigate or lessen any effects; and a schedule for implementing any measures. Further, so that Commission

[2] Section 5.15(e)(4) of the Commission's regulations state that if significant changes in the project proposal or that significant new information to the study objectives has become available, a new study request may be made.

staff can determine the feasibility of the proposed removal of Powell Falls dam and / or determine the need for different removal strategies, a decommissioning plan should include a supporting design report, as described in section 4.41(g)(3) of the Commission's regulations.

Water Quality Study

In section 6.2.5, *Methodology,* City of River Falls states that it would continuously monitor water temperature and dissolved oxygen concentration at hourly intervals at four locations from July 1, 2019 to September 15, 2019. Although several years of temperature data in the project vicinity were collected and referenced in the PAD, the existing reports only provide a broad summary of water temperature in the vicinity of the project.[3] As such, these reports are of limited value for staff to identify periods of critical river temperatures for fish and other aquatic species. However, the 2003 Thermal Study of the Kinnickinnic River[4] indicates that water temperature downstream of Powell Falls dam can exceed critical temperature thresholds for both brown trout and brook trout, by mid-June. Based on this information, and lack of specificity from other available data, an expanded study period would be necessary to describe existing conditions and inform staff's analysis of project effects on water temperature and dissolved oxygen concentration.

The 2003 Thermal Study shows that temperature downstream of Powell Falls dam can increase or decrease rapidly, in as little as 10 minutes, following precipitation events. Furthermore, little quantitative data for dissolved oxygen in the vicinity of the project is available and it is not clear if one-hour intervals are adequate to describe dissolved oxygen levels at the project. As such, continuous monitoring with samples at 15-minute intervals would ensure that adequate water quality information is collected for staff to describe existing conditions and evaluate project effects, including the removal of Powell Falls dam. In addition, air temperature data from a local weather station should be used to describe ambient air temperature conditions during the study. If suitable air temperature data is not available, monitoring air temperature at a representative location would provide the necessary data to describe ambient air temperature.

The 2003 Thermal Study also indicates some temperature differences between the Junction Falls outflow from the turbine and spillway flow. Thermal and chemical stratification may occur in Lake George, but there is little information to describe stratification patterns in Lake George. Periodic temperature and dissolved oxygen

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[3] *See*: (1) Wisconsin Department of Natural Resources. 1998. Kinnickinnic River Priority Watershed Surface Water Resource Appraisal Report; (2) Johnson, Kent. 2014. Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls. Kiap-TU-Wish Chapter, Trout Unlimited.

[4] United States Army Corps of Engineers, Jim. B. Noren. 2003. Kinnickinnic River at River Falls, Wisconsin: Thermal Study.

monitoring at various depths in Lake George would provide information to describe stratification in the impoundment and evaluate project effects on water quality and aquatic habitat.

Cultural Resources Study

In section of 6.6.5.1, *Archaeological Resources Survey*, City of River Falls proposes to conduct a Phase I archaeological survey of access paths to the Powell Falls development during the decommissioning and dam removal, in addition to conducting a shoreline monitoring survey. An area of potential effect (APE) for the Powell Falls development should be established after consultation with the Wisconsin State Historic Preservation Office (Wisconsin SHPO) and, any federally-recognized tribes that have expressed an interest in the project, rather than rely on the APE as defined in the Programmatic Agreement (Wisconsin statewide PA) executed in 1993.[5] The Wisconsin statewide PA was executed for the continued operation of hydroelectric projects, so it, and the APE defined in it, should be applicable for the Junction Falls development. However, the Powell Falls development is proposed to be decommissioned, in which case, the Wisconsin statewide PA and its defined APE would not be applicable for the development. Also, the extent of ground disturbing activities associated with the removal of the Powell Falls dam should be included in an APE.

In addition, the proposed Phase I archaeological survey should also include areas within the APE that would be affected by ground disturbing activities associated with the removal of the Powell Falls dam. Finally, the cultural resources study does not address the potential adverse effects that could occur on properties listed on, or eligible for, the National Register of Historic Places (historic properties or National Register) within the area of land associated with the proposed decommissioning of the Powell Falls development. If the development would be decommissioned, the project land would transfer out of Federal control, which could result in an adverse effect on known or unknown historic properties because the land would no longer be under the purview of section 106 of the National Historic Preservation Act. The proposed Phase I survey should be expanded to land within the existing project boundary for the Powell Falls development that is not developed (e.g., farmland or forested land), regardless of the ownership of the land. This Phase I survey should not be limited to shoreline monitoring.

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[5] The Wisconsin Statewide Programmatic Agreement is entitled *Programmatic Agreement among the Federal Energy Regulatory Commission; the Advisory Council on Historic Preservation; the State of Wisconsin, State Historic Preservation Officer; and the State of Michigan, State Historic Preservation Officer; for Managing Historic Properties that May Be Affected by New and Amended Licenses Issuing for the Continued Operation of Existing Hydroelectric Projects in the State of Wisconsin and Adjacent Portions of the State of Michigan*.

Additionally, City of River Falls propose to delineate the Foster Cemetery, a known historic cemetery. During a cultural resources meeting, Wisconsin SHPO stated that existing information is available concerning the location of the Foster Cemetery. The revised study plan for the cultural resources study should include methods that would be used to delineate the Foster Cemetery.

In the event that any historic properties would be adversely affected by project operation or maintenance of the Junction Falls development, City of River Falls would need to develop a draft Historic Properties Management Plan (HPMP) to avoid, lessen, or mitigate for any project-related adverse effect on National Register-eligible properties for the development. A draft HPMP should be developed after consultation with Wisconsin SHPO, the federally-recognized tribes who have an active interest in the project, and interested parties, and filed with the City of River Falls' preliminary licensing proposal or draft license application.

The draft HPMP should, at a minimum, address the following elements:

1. identification of the APE for the project and inclusion of a map or maps that clearly show the APE in relation to the existing and proposed project boundary;
2. completion, if necessary, of identification of historic properties within the project's APE; continued use and maintenance of historic properties;
3. treatment of historic properties threatened by project-induced shoreline erosion, other project-related ground-disturbing activities, and vandalism;
4. consideration and implementation of appropriate treatment that would minimize or mitigate unavoidable adverse effects on historic properties;
5. treatment and disposition of human remains that may be discovered, taking into account any applicable State laws and the Advisory Council's "Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects," February 23, 2007;
6. discovery of previously unidentified properties during project operation;
7. public interpretation of the historic and archaeological properties at the project;
8. a list of activities (i.e., routine repair, maintenance, and replacement in kind at the project) not requiring consultation with the Wisconsin SHPO because these activities would have little or no potential effect on historic properties;
9. a procedure to address effects on historic properties in the event of a project emergency; and
10. a review of the HPMP by the applicant, Wisconsin SHPO and consulting parties to ensure that the information continues to assist the applicant in

managing historic properties and updating the HPMP based on agency and tribal consultations.

Shoreline and Aquatic Invasive Species Survey

In section 6.3, *Shoreline and Aquatic Invasive Species Survey*, City of River Falls defines the spatial boundaries for the study as the shoreline of Lake George and body of Lake George, the upper impoundment. However, this geographic range excludes Lake Louise, the 15.4 acre impoundment downstream of the study area and within the project boundary. Further, section 6.3.3*, Background and Existing Information,* identifies an emergent population of reed canary grass within the project boundary; however, there is no documentation of aquatic invasive plants that may be occupying deepwater habitats. As discussed in the study plan meeting, the removal of the Powell Falls development could mobilize the contents of Lake Louise and potentially introduce waters downstream of the project to invasive aquatic plants found within the impoundment. So that invasive plant species are accurately documented throughout the entirety of project waters, please modify the study plan to expand the spatial boundaries of the study include both impoundments.

Wetland, Riparian, and Terrestrial Resources Survey

Section 6.4, *Wetland, Riparian, and Terrestrial Resources Survey*, states that City of River Falls would document botanical species composition of each major cover type, including the dominant associated species in each vegetation layer. However, it is not clear whether the presence of hardwoods with exfoliating bark or other crevices would be documented, as those trees may be less abundant than other, more dominant vegetation. Mature hardwood trees with exfoliating bark may provide seasonal, summer habitat for the northern long-eared bat. So that potential rare, threatened, and endangered species habitat is accurately reported, please modify the study plan to document the presence of any mature, hardwood trees with exfoliating bark or other crevices with the project boundary.

Schedule B
Project No. 10489-016

Comments on Requested Studies not Adopted

Riverine Habitat Evaluation

In section 5.3.2, *Fisheries/Riverine Habitat Evaluation*, City of River Falls states that it is not proposing riverine habitat surveys because existing information, including surveys completed by the Wisconsin Department of Natural Resources (Wisconsin DNR) and a reconnaissance level geomorphic assessment, are sufficient for an environmental analysis. While some general habitat ratings are available from previous Wisconsin DNR surveys and some qualitative and semi-quantitative habitat information are available in the reconnaissance assessment, a thorough assessment of habitat conditions between Powell Falls dam and the confluence with the St. Croix River has not been completed. Considering the potential effects of dam removal and sediment deposition within this reach, we recommend additional quantitative stream habitat data to describe the existing riverine habitat conditions, evaluate potential effects of an increase in sediment load, and inform potential license conditions.

Mussel Surveys

In section 5.3.3, *Mussel Surveys*, City of River Falls states that sufficient information exists to conclude that good mussel habitat is not present in the lower Kinnickinnic River, and that mussel species are unlikely to be found. Cold water temperature may deter mussel colonization in the Kinnickinnic River; however, no surveys for mussels have been completed in the river and there is no specific information to describe the presence or absence of mussels in the Kinnickinnic River. Numerous species of mussels and several listed mussels inhabit the St. Croix River and could potentially inhabit the Kinnickinnic River downstream of Powell Falls dam. Removal of Powell Falls dam could result in the mobilization and transport of sediment to the Kinnickinnic River, and ultimately to the St. Croix River, and could negatively affect mussels and their habitat. Mussel surveys, including documentation of habitat conditions, downstream of Powell Falls dam would provide the necessary information to evaluate project effects on any mussels or mussel habitat that may occur in the affected area.

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May 10, 2019

Federal Energy Regulatory Commission
Kimberly D. Bose, Secretary
888 First Street, N.E.
Washington, DC 20426

City of River Falls
Kevin Westhuis, Utility Director
222 Lewis Street
River Falls, WI 54022

Re: RE: Wisconsin Department of Natural Resources Comments on Proposed Study Plan for the River Falls Hydroelectric Project P-10489, City of River Falls, Pierce County, Wisconsin

Dear Ms. Bose and Mr. Westhuis,

The department has carefully considered our role and responsibilities as part of the Federal Power Act and the relicensing and decommissioning process administered by the Federal Energy Regulatory Commission (FERC). The department is requesting studies to further understand the current environment, and the potential need for mitigation, enhancement, and protection measures that are part of the resource evaluation for the proposed relicensing of Junction Falls and decommission and removal of Powell Falls. In addition, the department recognizes the necessity of contemporary information for the preparation of an environmental assessment that meets the requirements of National Environmental Policy Act (NEPA) (42 USC §4321).

The department attended a meeting hosted by the City of River Falls and FERC on March 13th where the City and the stakeholders discussed the Proposed Study Plan, including the studies that were not proposed by the City and the methodologies for the studies that are proposed. Additionally, the department participated in a follow-up meeting with the City and FERC on April 23, 2019.

As noted in our previous letter dated December 14, 2018 "The department has limited information regarding natural resource information associated with the two hydroelectric dams and their impoundments. Studies associated with Powell Falls dam removal and river restoration, and Junction Falls relicensing of the existing hydroelectric dam have different purposes, from a short term, long term, and cumulative impact."

The department has reviewed of the City's Proposed Study Plan submitted on 2/11/2019, and understand the City is proposing to adopt or partially adopt seven of the studies requested by the department (Table 1) and declined to adopt five other study requests submitted by the department (Table 2). While the department welcomes the adoption of seven studies, the department also recognizes the importance of the information associated with the five unadopted studies for mitigation, enhancement and operations of the project as highlighted below.

Study Request Not Adopted:

1. Assessment of Current Dam Operations at Junction Falls: The department will review the information provided in the PAD, and any additional information provided in the license application, including a project operation plan. If the information provided through the licensing process is not sufficient to demonstrate run-of-river compliance and how water levels are maintained, additional studies may be required by the department's water quality certification.

2. Aquatic and Invasive Species (AIS) Survey: An assessment of the current AIS community is necessary to understand the needs for management associated with dam removal, dam operations, and long-term management of Lake George. The department requires a point-intercept survey be completed to document the current conditions of Lake George. It is necessary to follow the departments Early Detection Protocols to ensure data collection and assessments can be adequately compared and evaluated for management of possible movement of AIS associated with dam removal, and the possibility of the AIS becoming re-established; and for the long-term management of Lake George as part of management of the impoundment. AIS can have short-term and long-term adverse effects not only on dam operations, but also on public recreation, water quality, fish, and wildlife. Data should be assessed to document aquatic plant community health by calculating the floristic quality index and other plant indexes. The point intercept methodology is highlighted by Wisconsin's Consolidated Assessment and Listing Methodology and may be used to assess the health of waterbodies.

3. Riverine Habitat Evaluation – The department completed quantitative riverine habitat assessments of the Kinni in 1998 and qualitative assessment in 2015. Riverine habitat is affected by the day to day and maintenance operations of the project and understanding the present-day riverine habitat will be critical as dam removal plans and long-term mitigation/enhancement actions are developed. It's important to note the 2015 qualitative information cited is a limited visual inspection of the river conducted as a secondary exercise to other field work and the descriptive, quantitative habitat data for the river is more than 20 years old. Present day surveys are needed to properly assess current conditions as changes in fish cover, sedimentation, erosion, and channel morphology may have occurred in the past 21 years;

4. Fisheries Assessment of Lake George: Understanding the present condition of the fisheries in Lake George is directly related to future mitigation and enhancement actions that will be address through recreation and fisheries management plans. In addition, present day information is critical to the thorough analysis of existing resources required under NEPA. The department has judicially requested present day fisheries in Lake George recognizing 1) there is enough information for the downstream and upstream cold-water stream segments of the Kinni River and 2) although non-existent, fisheries data from Lake Louise is not applicable given the proposed removal of the Powell Falls dam. The department agrees that present day fisheries data exist, but only for the river sections. The department disagrees that the river data can be used as a tool to document conditions in Lake George. Historical fish records indicate that Lake George was a brown trout fishery, with other common species, and no indication of invasive species or rough fish. Current fish community data will inform the department and FERC of management needs associated with invasive species, management of sport and non-sport fish, quality of the fishery and any needs for mitigation, protection, or enhancement, and assist in the assessment of the fishery as a recreational resource.

5. Macroinvertebrate Data Collection: Documenting the present-day condition of the aquatic resources that may be affected by the operation of the project and using that same information for preparation of the environmental assessment and management plans is a critical role of the relicensing process. As noted in Wisconsin's 2020 Consolidated Assessment and Listing Methodology (WisCalm) submitted to the EPA under § 303(d) and §305(b) of the Clean Water Act, macroinvertebrates indices of biotic integrity (MIBI) respond to local environmental stressors such as nutrient enrichment, habitat degradation, and sedimentation – all of which have the potential to be influenced by the River Falls project. Macroinvertebrates as a primary indicator of water quality and can be used as early warning of changing river conditions.

   While studies between 1995 and 2005 indicate a healthy macroinvertebrate assemblage in the Kinni River, contemporary information is not available. Due to possible changes in sediment transport, water temperatures,

and aquatic species assemblage, new data is needed to understand the current environment. This information need may not be appropriate for a full study, but the data collection is important to understand the current environment as well as needs for restoration, mitigation, protection, and enhancement.

6. Mussel Assessment Below Junction Falls Downstream to the St. Croix River Associated with Dam Removal: Limited information exists within the project areas. Due to the cold-water environment and potential for limited host species, the department agrees that a mussel study within the project area is not needed at this time. However, an assessment of impacts to downstream mussel communities associated with the dam removal will be necessary and can be completed prior to dam removal. The assessment will need to be approved by the department and should include sequence of events for dam removal and restoration, along with proper best management practices and protections for the mussel beds that have been documented downstream of the project area.

We appreciate your willingness to work with the department on the development of the Final Study Plans. We are happy to discuss our study request, and requests for additional information. If you have any questions, please feel free to contact me at cheryl.laatsch@wisconsin.gov or 920-387-7869.

Sincerely,

Cheryl Laatsch

Cheryl Laatsch, State FERC Coordinator

e-copy via email: Lesley Brotkowski, TRC; Dan Helsel, DNR FIL/BRF; DNR Internal Project Team

TABLE 1. CITY OF RIVER FALLS ADOPTED OR PARTIALLY ADOPTED STUDIES REQUESTED BY THE DEPARTMENT

Studies Proposed	Methodology Comments
Hydrologic and Hydraulic Evaluation	Use HEC-RAS/HEC-HMS to approximate the post removal upstream channel and over bank area and calculate water surface elevations, velocities, depths and wetted top widths for typical flows and map the floodplain *Note some differences in methodology from DNR study request*
Water Quality Study	Conduct Dissolved Oxygen (DO) and temperature monitoring recorded hourly from July 1 to Sept 15, 2019 *Note some differences in methodology from DNR study request*
Shoreline and Aquatic Invasive Species Survey	Field assessment of the shoreline surrounding Lake George and botanical AIS within the lake. Study will generally follow DNR's *Lake Shoreline & Shallow Habitat Monitoring Field Protocol* (2016). *Note some differences in methodology from DNR study request*
Wetland, Riparian and Terrestrial Resource Survey	Reconnaissance level survey to document wetland, riparian and terrestrial resources within the project boundary, including wildlife species, map habitat, invasives and search for rare, threatened or endangered species *Note some differences in methodology from DNR study request*
Recreation Facility Inventory and Recreation Use Assessment	Conduct baseline inventory of public recreation sites at the project and compile data on existing uses, accesses and demand at the project
Cultural Resource Study	This includes an archaeological resource and historic structures surveys

TABLE 2. STUDIES REQUESTED BY THE DEPARTMENT AND NOT ADOPTED BY CITY	
Studies Requested	**Summary Notes of Licensee Rationale For Not Adopting the Requested Study**
Assessment of current dam operations at Junction Falls (also requested by TU)	Existing information is sufficient, and requestor has failed to demonstrate the need for additional information. Project Operation Plan (1999) addresses inconsistencies and ensure compliance with run-of-river (ROR). Project Operation Plan will be submitted with FERC License Application to sufficiently describe how ROR will be maintained during subsequent license
Fisheries/Riverine habitat evaluation	Existing information is sufficient and the need for additional fisheries habitat information has not been demonstrated. DNR did riverine habitat assessments of the Kinni in 1998 and 2015 which is adequate for FERC's EA
Fisheries assessment of Lake George (also requested by River Alliance and TU)	Existing information is sufficient and the need for fisheries information has not been demonstrated *(page 29 of 310)*. Fish and aquatic resources well studied in Kinnickinnic River. Cites DNR's 1998 fish survey at both impoundments and cites Marty Engel who suggests a survey is not necessarily due to limited fisheries value.
Macroinvertebrate survey (also requested by TU for river and impoundment macro samples)	Existing information is sufficient and the need for additional macroinvertebrate information has not been demonstrated. Data indicate a healthy, productive macroinvertebrate assemblage in Kinni (1995 and 1997 data from DNR and in the project vicinity in 2004 and 2005)
Mussel study downstream to St. Croix (also requested by River Alliance and TU)	Sufficient information already exists, and good mussel habitat is not present in the lower river. Cites emails from Lisie Kitchel that Kinni is too cold and lacks host species.

Study Requests
Relicense of Junction Falls and Removal of Powell Falls

ASSESSMENT OF CURRENT DAM OPERATIONS AT JUNCTION FALLS

- Goals and Objectives: Determine if the project is meeting the requirements of minimum flows and run-of-river operations; including documenting how downstream river flows are managed appropriately to limit water level fluctuations.

- Relevant DNR Management Goals: Assess the current operations to ensure that the operations are not having an adverse impact on the river, and for the operations to mimic the natural river flows

- Existing Information: Historical and current information addressing the relationship between the hydro operations and water levels was not adequately discussed in the PAD. Basic information states that the dam operates in run-of-river mode and uses manual gate operations. The PAD states that the operators use a "prescribed outline" when ramping the units up and down. The PAD states that the operator makes weekly visits to the Powell Falls dam, and daily visits to the Junction Falls dam.

- Operation nexus to resource and how informs license: Ensure Junction Falls is meeting the intent of run-of-river, and not causing divergence in flows that harm the downstream aquatic ecosystem.

- Methodology: Desktop review of existing inflow and outflow data, including an evaluation report of run-or-river and operations requirements.

- Level of Effort and Cost: Staff time is expected to be 20-40 hours at $125 per hour equaling $2500-$5000 for data analysis and report.

STREAM FLOWS, CHANNEL DIMENSIONS, AND LINEAR GRADIENT

- Goals & Objective: Determine the impact the proposed project has on the existing stream flows, channel dimensions and linear gradient of the Kinnickinnic River

- Relevant DNR Management Goals: The proposed study would investigate the impacts the project would have on the existing stream flows, channel dimensions, and linear gradient of the river. The study would be completed in conjunction with the hydrologic and hydraulic (H&H) analysis requested for floodplain ordinance requirements. The impacts that the project may cause on the existing stream flows, channel dimensions and linear gradient may alter any resource, recreational, and developmental management plans for the future.

- Existing Information: Use of the existing H&H and geometric data available from the August 2002 study completed for the Kinnickinnic River. May also need to refer to existing management efforts (recreational, resource, habitat) to investigate the impacts the proposed project would have.

- Operation nexus to resource and how informs license: The removal of the Powell Falls hydroelectric dam and other development may impact the existing stream flow, velocities, channel dimensions, and linear gradient depending on what is proposed. The results of a H&H, completed in conjunction with the floodplain investigation, would demonstrate additional conditions to take into consideration for various management and developmental purposes. This may include fisheries management, habitat, dredging, water quality, development, etc.

- Methodology: The analysis would use the existing H&H information completed for the Kinnickinnic River. Additional flow rates may need to be calculated, such as the 2, 5, 10, 25, 50, and 100-year flood events, to determine the impacts on the stream flows, channel dimensions, velocities, and linear gradient. Additional surveys may also be required.

- Level of effort and costs: The analysis must be completed by a licensed professional engineer in the State of Wisconsin. Depending on the scope of the project, additional surveys and cross sections may be required, in addition to hydrologic flow rate calculations, and model revisions. A minimum of 40 hours of desktop analysis at $125 per hour equals $5000 for desktop review.

HYDROLOGIC & HYDRAULIC STUDIES FOR FLOODPLAIN ORDINANCE REQUIREMENTS

- Goals & Objectives: Determine the impact the proposed project has on the base flood elevations (100-year event) for the Kinnickinnic River, which is currently considered a Zone AE.

- Relevant DNR Management Goals: The proposed study would investigate the impacts the dam removal and any other development occurring within the mapped floodway, has on the existing base flood elevations for the Kinnickinnic River. If any development occurring within the mapped floodway causes an impact (increase, decrease, floodway top width change), a Letter of Map Revision (LOMR) from FEMA and potential legal arrangements from affected property owners would be required. The proposed study would also ensure that the provisions of the local community's (City of River Falls, Pierce County, St. Croix County) floodplain ordinance are met, as participants in the National Flood Insurance Program (NFIP)

- Existing Information: August 20, 2002 City of River Falls Flood Insurance Study (FIS), HEC-HMS model (using TP-40 rainfall values). According to the 2011 Pierce County FIS, "the flood elevations upstream of the Junction Falls (Lake George) and Powell Falls (Lake Louise) dams were based on the HEC-HMS model. The model uses the storage indication method to calculate high-water elevation based on the hydrographs generated in the model. Rating curves for the dams were based on information in the River Falls Municipal Hydroelectric Facilities, FERC Project No. 10489-000, City of River Falls, Wisconsin."

- Operation nexus to resource and how informs license: The removal of the Powell Falls hydroelectric dam, and other development within the mapped floodway could impact the existing base flood elevations for the Kinnickinnic River. The results of the hydrologic and hydraulic (H&H) analysis for the floodplain ordinance requirements would demonstrate any additional actions required as part of the overall project.

- Methodology: According to the existing 2011 FIS for Pierce County, the August 2002 analysis was completed using HEC-HMS. The U.S. Army Corps of Engineer's step-backwater program, HEC-RAS, is typically required for riverine floodplain analyses. However, further investigation into the existing HEC-HMS model would be required. The analysis may need to include a check to the existing hydrologic flow rates, especially with the updated Atlas 14 rainfall values. Depending on the development within the floodway, additional cross-sectional survey may be required (LIDAR and field survey). The analysis will also need to include updated mapping to reflect any changes or revisions to the mapped floodplain (floodfringe, floodway, elevations, etc.). If the project does impact the base flood elevations for the Kinnickinnic River, the MT-2 application process through FEMA will also need to be completed.

- Level of effort and costs: The analysis must be completed by a licensed professional engineer in the State of Wisconsin. Depending on the scope of the project, additional survey and cross sections may be required, in addition to hydrologic flow rate calculations, and model revisions. A minimum of 80 hours of desktop analysis at $125 per hour equals $10, 000 for desktop review. Additionally, the cost of a Letter of Map Revision (LOMR) through FEMA starts at approximately $8250.

AQUATIC AND TERRESTRIAL INVASIVE SPECIES SURVEY

- Goals & Objectives Evaluate the presence/absence of invasive species listed in NR40, including habitat preferences within the project area.

- Relevant DNR Management Goal: Minimize the transport and establishment of existing invasive species and establish management practices to reduce new invasive species.

- Existing Information: Limited information is available.

- Operation nexus to resource and how informs license: The project may influence invasive species that have the potential to directly or indirectly cause economic or environmental harm or harm to human health, including harm to native species, biodiversity, natural scenic beauty and natural ecosystem structure, function or sustainability; harm to the long-term genetic integrity of native species; harm to recreational, commercial, industrial and other uses of natural resources in the state; and harm to the safety or wellbeing of humans, including vulnerable or sensitive individuals. – per NR40.

- Methodology: WDNR Early Detection Early Response Protocols. Additionally, use current standards of scientific principles.

- Level of effort and costs: 40 hours of field work and reporting at $125 per hour equals $5000. Mobilization, equipment, and supplies are estimated at $10,000.

EVALUATE WILDLIFE HABITAT

- Goals & Objectives: Document wildlife diversity, habitat types, and general abundance within the project area. The goal of this study is to evaluate the effects of the distribution and composition of vegetation and wildlife habitats, including wetlands, and the effects operations of those actions on wildlife inhabiting those habitats.

- Relevant DNR Management Goals: The department has responsibility to manage wildlife, including listed species. This information will be beneficial to understanding the current environment, and potential needs for resource management associated with Junction Falls.

- Existing Information: Information is limited. To our knowledge, the PAD does not include any field assessment or survey of wildlife habitat or use.

- Operation nexus to resource and how informs license: Both the removal of Powell Falls and the relicensing of Junction Falls has the potential to have short term and long-term impacts on habitat use. Proper management of the resource will help to minimize any adverse impacts associated with the removal, restoration, and relicensing activities.

- Methodology: Using a qualified biologist knowledgeable in area vegetation and wildlife, identify, classify, and delineate on a map major vegetation cover types within project area. You may use existing aerial photography, on the ground surveys, or a combination of the two to identify and map the cover types.

  Ground-truth any remote-sensing mapping efforts, record all wildlife observed (directly or indirectly) and any terrestrial invasive species observed during survey efforts. Describe each cover type by species composition, successional stage, and aerial extent (acreage) within the survey area, including invasive species. As an example, the methodology expressed in the following reference could be used.
  https://www.fs.fed.us/research/publications/gtr/gtr_wo89/gtr_wo89.pdf

- Level of effort and costs: 40 hour of desktop review, field work, and data summary at an estimated $125 per hour equals $5000. Mobilization, travel, and equipment are estimated at $2000.00.

FISHERIES/RIVERINE HABITAT EVALUATION

- Goals & Objectives: Define, measure and assess the stream habitat conditions upstream and downstream of the hydropower facilities.

- Relevant DNR Management Goals: Obtaining recent habitat assessment information is critical for future management actions and establishing baseline data.

- Existing Information: The department conducted instream habitat assessment in 1996 following Guidelines for Evaluating Stream Habitat in Wisconsin Streams upstream and downstream of the hydropower facilities.

- Operation nexus to resource and how informs license: Having updated instream habitat assessment information is critical for evaluating the effects of the project on the stream ecosystem, and especially considering removal of one dam is being proposed. It will provide baseline data to current conditions. The data can be used to help guide potential restoration design efforts for the Powell Falls removal, and the river management associated with Junction Falls.

- Methodology: Guidelines for Evaluating Stream Habitat in Wisconsin Streams.

- Level of effort and costs: 40 hours of field work, and an 12 hours of data analysis at $125 per hour equals $6,500. Mobilization, travel, and equipment costs are estimated at $15,000.

FISHERIES ASSESSMENT FOR LAKE GEORGE

- Goals & Objectives Define the diversity and abundance of the fish community in Lake George.

- Relevant DNR Management Goal: Understand the existing environment. The department manages public water for recreational use, such as fishing, protection and management of species, and overall health of the fishery of the state.

- Existing Information: Little information is present on the fishery in Lake George.

- Operation nexus to resource and how informs license: Having current fish survey information will help department staff make informed management decisions regarding the fishery.

- Methodology: Spring Boat Electrofishing Survey following WDNR Lakes Sampling Protocol

- Level of effort and costs: 1-night electrofishing survey of the entire shoreline during spring time when water temperatures are between 55-70 degrees F. Cost~$5,000 includes an estimated 30 hours of labor /survey prep and 10 hours of data analysis and summary report generation at $125 per hour. Mobilization, travel, and equipment is estimated at $10,000.

MACROINVERTEBRATE SURVEY

- Goals & Objectives: Assess the water quality using macroinvertebrate bio-indicators below and above the impoundments.

- Relevant DNR Management Goals: The department is charged with managing the water quality of the waters of the state and meeting designated criteria under the Clean Water Act.

- Existing Information: Limited information exists on the macroinvertebrate community immediately downstream and upstream of the impoundments.

- Operation nexus to resource and how informs license: Macroinvertebrates are likely impacted by segmentation of the river, and impoundments can impact communities due to changing thermal and/or flow regimes. These bio-indicators are used to assess the health of the resource.

- Methodology: Wisconsin DNR Guidelines for Collecting Macroinvertebrate Samples from Wadable Streams, June 2000. Data should be analyzed using the current WDNR WISCALM Guidance.

    - Samples should be collected at four existing stations including two sites upstream and two sites downstream from both impoundments. Samples should be collected from Main Street (Swims Station 10011492), Maple Street (SWIMS Station 10037539), near Glenn Park (Swims Station 10020720) and at the confluence with Rocky Branch (SWIMS Station 10011488).

- Level of effort and costs: 1 day of field work with an estimated 20 hours of field and data analysis at $125 per hour equals$2500. Lab analysis at state certified lab estimated to cost $1000. Mobilization, travel, and equipment is estimated at $2000.00.

CONTINUOUS DISSOLVED OXYGEN MONITORING

- Goals & Objectives Monitor dissolved oxygen (DO) continuously downstream and upstream of the impoundments, to document current conditions, and determine if water quality criteria are being met.

- Relevant DNR Management Goals DO is critical for the health and survival of aquatic organisms, and the Wisconsin has minimum state water quality standards for DO.

- Existing Information Limited information is available on DO levels immediately downstream and upstream of impoundments.

- Operation nexus to resource and how informs license: Dam operations can influence downstream DO levels depending on withdrawal location, and eutrophication of the impoundment.

- Methodology: Wisconsin DNR Guidelines for Deployment of Continuous Dissolved Oxygen Meters Data Evaluation and Data Storage, February 2007. Data should be analyze using the DNR WISCALM Guidance.

- Level of effort and costs: 30 hours of instrument deployment, maintenance, and retrieval for 1 person at two locations, plus 10 hours data analysis. 40 hours at $125 per hour equals $5000. Cost for equipment, travel, and mobilization are estimated at $5000.00.

AQUATIC PLANT SURVEY – LAKE GEORGE

- Goals & Objectives: The goal of the aquatic plant study is to provide baseline data on the condition of the aquatic plant community in Lake George.

- Relevant DNR Management Goals: The proposed aquatic plant study will provide baseline aquatic plant information to determine if management practices would be needed to enhance the existing aquatic plant community, and overall health of Lake George as a bio indicator.

- Existing Information: No data is available.

- Operation nexus to resource and how informs license: The study results will provide baseline aquatic plant data. The data informs the department of the effects on the surface water resource and would be used to formulate management options.

- Methodology: The information collected from this study includes an assessment of the frequencies of occurrence of different plant species, as well as estimates of species richness, abundance, and maximum depth of plant colonization. The aquatic invasive species study should be conducted according to WDNR's Recommended Baseline Monitoring of Aquatic Plants in Wisconsin 2010.

- Level of effort and costs: 40 hours of fieldwork and reporting at $125 per hour equals $5000. Mobilization, equipment, and supplies estimated at $10,000.

AQUATIC AND TERRESTRIAL INVASIVE SPECIES SURVEY

- Goals & Objectives: The goal of the invasive species study is to provide baseline data on the presence/absence of NR 40 listed aquatic and terrestrial invasive species. This data will be used to determine if management actions will be required to manage existing invasive species and prevent the spread of other nearby invasive species.

- Relevant DNR Management Goals: The proposed invasive species study would provide information on invasive species within the project area, and downstream of Powell Falls. This information will help department staff determine if any management measures would be needed to manage existing invasive species and prevent the movement of adjacent invasive species populations.

- Existing Information: There is limited information on invasive species within the project area.

- Operation nexus to resource and how informs license: The presence of the dams could influence the movement and establishment of invasive species throughout the project area. The results of the invasive species study will assist resource agencies in determining if any protection, restoration, or enhancement measures would be necessary.

- Methodology The aquatic invasive species study should be conducted according to WDNR's AIS Early Detection Monitoring Protocols. Need to document terrestrial invasive species monitoring protocols

- Level of effort and costs: 40 hours of field work and staff time at $125 per hour equals $5000. Mobilization, equipment, and supplies is estimated $10,000.

SHORELINE HABITAT ASSESSMENT OF LAKE GEORGE

- Goals & Objectives: The goal of the shoreline habitat study is to provide baseline data on the condition of the shoreline habitat for Lake George.

- Relevant DNR Management Goals: The goal of the shoreline habitat study is to provide baseline data on the condition of the shoreline habitat for Lake George. Data collected will be used to determine the need for restoration and protection efforts.

- Existing Information: Little is known about the shoreline habitat conditions of Lake George.

- Operation nexus to resource and how informs license: Data collected from the shoreline habitat monitoring will be used to identify areas of the shoreline that require restoration or protection.

- Methodology: Data to be gathered lake-wide include: percent cover of impervious surface, mowed lawn, or plants in the riparian buffer zone, number of parcels with erosion concerns, total length of modified banks, density of human structures (piers, buildings, etc.), general distribution of floating and emergent aquatic plants, and density of coarse woody habitat. The shoreline habitat study should be conducted according to WDNR's Lake Shoreline & Shallows Habitat Monitoring Field Protocol

- Level of effort and costs: 40 hours of field work and staff time at $125 per hours equals $5000. Mobilization, equipment, and supplies is estimated at $15,000.

MUSSEL STUDY - JUNCTION FALLS AND POWELL FALLS DOWNSTREAM TO THE ST. CROIX RIVER

- Goals & Objectives: The goal of the study is to determine freshwater mussel density and diversity, including characterizing mussel habitat within the Junction Falls and Powell Falls project areas, and downstream to the St. Croix River.

  The study would provide information on freshwater mussels species present, their diversity, density, and a better understanding of not only baseline conditions and associated management needs for Junction Falls relicensing; but, it will also provide important information necessary to understand potential impacts associated with the Powell Falls dam removal, and guide both the department and the City on options to minimize impacts from the removal, and options for restoration efforts if needed.

- Relevant DNR Management Goals: This information will help the resource agencies determine if any best management practices are needed to protect listed species; and any management measures to protect or enhancement the existing freshwater mussel population.

- Existing Information: There is limited information on freshwater mussel species in or near the project area. Several state and federally listed mussels have been documented at the confluence of the Kinnickinnic and St Croix Rivers. The department has provided historical information, and listed species information to the City.

- Operation nexus to resource and how informs license: The removal of Powell Falls hydroelectric dam, and the operations of the Junction Falls Project could influence the freshwater mussel species located at the study area, and downstream to the St Croix River. The results of the survey will provide essential information to determine if any protection measures, restoration, or enhancements would be necessary as a management requirement associated with the relicensing of the Junction Falls dam and/or the restoration associated with the removal of the Powell Falls dam.

- Methodology: A qualitative and quantitative survey for freshwater mussels should be conducted. Methods should follow the WDNR's Guidelines for Sampling Freshwater Mussels in Wadable Stream.

- Level of Effort and Cost: An estimate of 40 hours of field work and 40 hours to analyze data and draft a report at an estimated $125 per hour equals $10,000 for staff time. Mobilization, including travel time and equipment is estimated at $20,000.

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KIAP-TU-WISH CHAPTER TROUT UNLIMITED
Conserving, protecting, and restoring cold water fisheries and their watersheds in Polk, Pierce, and St. Croix Counties, Wisconsin.

May 12, 2019

RE: River Falls Hydroelectric Project, FERC Project No. P-10489

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Kevin Westhuis, Utility Director
City of River Falls
222 Lewis Street
River Falls, WI 54022

Dear Ms. Bose and Mr. Westhuis:

On December 28, 2018, the Kiap-TU-Wish Chapter of Trout Unlimited (Kiap-TU-Wish) submitted our request for studies ("Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River") to evaluate the potential environmental impacts of the River Falls Hydroelectric Project and identify the protection, mitigation, and enhancement (PM&E) measures needed to sustain or improve the environmental resources affected by this project.

Subsequently, Kiap-TU-Wish has: 1) reviewed the City's Proposed Study Plan submitted to FERC on February 11, 2019; 2) participated in the March 13, 2019 stakeholders meeting with City and FERC staff; and 3) participated in an April 23, 2019 conference call with City, FERC, and Wisconsin Department of Natural Resources (WDNR) staff.

After reviewing the City's Proposed Study Plan and participating in the March 13 and April 23 discussions, we are very concerned that the City's proposed studies are insufficient to adequately assess the environmental impacts of the project and inform PM&E measures. Specifically, the City's Proposed Study Plan falls short in the following areas:

1. Hydrologic Impacts: The City proposes no assessment of existing Kinnickinnic River flow data, to evaluate the extent to which the River Falls Hydroelectric Project has maintained the minimum flow and "run-of-river" conditions required by the FERC license. Downstream from the project area, Kinnickinnic River flow irregularities have been noted by recreational users and documented at the USGS monitoring station. However, the City's study plan does not attempt to correlate the observed flow irregularities with concurrent dam operation and maintenance practices. Our study recommends an evaluation of the available USGS Kinnickinnic River flow record, to determine whether license requirements have been met, and whether additional PM&E measures are needed to ensure compliance.

c/o Scott Wagner, President | P.O. Box 483 | Hudson, Wisconsin 54016-0483 | 651-398-8418

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2. Temperature and Water Quality Impacts: The City's proposed water quality study measuring dissolved oxygen (DO) and temperature within the project area in 2019 is insufficient in both scope and duration. Lake George is currently listed by WDNR as an impaired water, due to high concentrations of phosphorus and an elevated pH. Excessive summer algal blooms create unsightly conditions, severely limit recreational use, and potentially impact the lake's biota. Lake George has also created a warm water ecosystem, with downstream thermal impacts on the Kinnickinnic River. The Lake George water quality impairment (since 2002) and warm water temperature regime are exclusively due to the presence of the hydroelectric project. Our two-year study recommends that a broader array of water quality variables be analyzed during the April-October period each year, to adequately assess the degraded water quality conditions in Lake George, evaluate any downstream water quality impacts on the Kinnickinnic River, and inform PM&E measures necessary to improve the resource.

3. Sediment Impacts: The City proposes no study of the sediment impacts associated with re-licensing of the project. Our proposed study will assess sediment problems related to removal of the Powell Falls Dam, including impacts associated with sediment transport downstream, offsite sediment removal for disposal or re-use, and/or sediment re-distribution in floodplain areas during Kinnickinnic River restoration work. The Kiap-TU-Wish sediment study will also evaluate options for improving the impaired water quality conditions in Lake George.

4. Biological Impacts: The City's proposed biological studies fall far short of providing useful information to assess the degraded biological conditions in Lakes George and Louise, and to evaluate any downstream biological impacts of the project. Project re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to create in-lake and downstream biological impacts. As such, our studies minimally recommend an assessment of biological conditions in Lake George and/or at locations upstream and downstream of the hydropower impoundments, including surveys of fish, macroinvertebrates, aquatic plants (periphyton and macrophytes), mussels, and aquatic invasive species. A much better understanding of current biological conditions within the project area is also needed to inform PM&E measures necessary to improve the resource.

For the reasons noted above, as well as for those detailed in the responses to FERC criteria within our December 28, 2018 request for studies, Kiap-TU-Wish stands behind our "Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River". These recommended studies were developed by a Kiap-TU-Wish science team with extensive (100 years +) experience in water resources and environmental management. In our professional opinion, these studies are necessary to: 1) Evaluate the environmental impacts of the continuing operation of the River Falls Hydroelectric Project; 2) Inform the PM&E measures necessary to improve the resource; and 3) Provide critical information to inform the mitigation plan and restoration measures necessary for Powell Falls Dam removal.

The Kinnickinnic River is one of the finest coldwater streams in Wisconsin and is nationally renowned, providing extensive opportunities for public use and enjoyment. As such, adequate studies are needed to ensure that re-licensing of the River Falls Hydroelectric Project will protect and improve this valuable ecological and recreational resource.

We appreciate the opportunities to discuss all proposed studies with the City, FERC, and other invested stakeholders, and we are willing to answer all questions on our proposed studies.

Thank you for your consideration of this important issue.

Sincerely,

Gareth Horvath, Vice President
Kiap TU Wish Chapter of Trout Unlimited

Cc: Scott Wagner, President, Kiap-TU-Wish Chapter
Lesley Brotkowski, TRC

KIAP-TU-WISH CHAPTER TROUT UNLIMITED

Conserving, protecting, and restoring cold water fisheries and their watersheds in Polk, Pierce, and St. Croix Counties, Wisconsin.

Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River

Kiap-TU-Wish Chapter of Trout Unlimited

December 28, 2018

Studies determined by the Kiap-TU-Wish Chapter of Trout Unlimited as necessary to be performed by the City of River Falls for the River Falls Hydroelectric Project in Pierce County, Wisconsin (FERC Project P-10489), consistent with 18 CFR 4.38(b)(5).

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Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River

Study I. Temperature Impacts

Background Information:

The Kiap-TU-Wish Chapter of Trout Unlimited (Kiap-TU-Wish) has a goal of maintaining a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. However, the Kinnickinnic River is threatened by increased temperatures caused by the River Falls hydropower impoundments (Johnson 2018), a warming climate (Mitro et al. 2011; Johnson 2018), urban stormwater runoff (Johnson 1995), and reduced river flow due to groundwater withdrawals in the watershed (Juckem 2009). To better understand these threats to the coldwater ecosystem, Kiap-TU-Wish has been conducting temperature monitoring of the Kinnickinnic River since 1992. One of the primary objectives of this monitoring work is to evaluate the thermal impacts of the City of River Falls hydropower facilities on the Kinnickinnic River.

Kiap-TU-Wish temperature monitoring is conducted at five Kinnickinnic River sites (two upstream and three downstream of the City of River Falls hydropower facilities), and at three sites on Kinnickinnic River tributaries (Sumner Creek, South Fork of the Kinnickinnic River, and Rocky Branch Creek) (Figure 1). Monitoring is generally conducted during the mid-April to mid-October period each year; although monitoring has also been conducted during four winters (1995, 1998, 2003, 2006). Monitoring is conducted via the use of electronic instrumentation that continuously measures river temperatures at 10-minute intervals, generating approximately 22,000 temperature measurements/monitoring site/year.

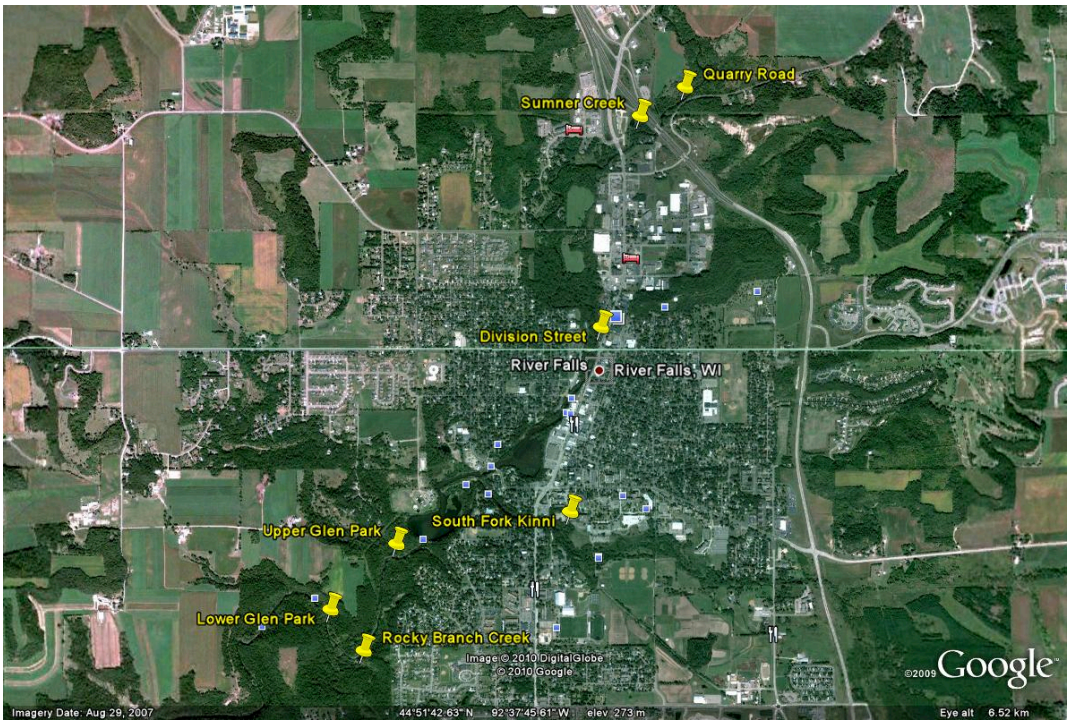

Figure 1. Kiap-TU-Wish temperature monitoring sites on the Kinnickinnic River and tributaries in River Falls, WI.

Evidence of Temperature Impacts:

- The two City of River Falls hydropower dams and impoundments (Lakes George and Louise) have transformed a 0.7-mile reach of the Kinnickinnic River from a coldwater to a warm water ecosystem. Lakes George and Louise are classified by the Wisconsin Department of Natural Resources (WDNR) as a warm water sport fishery (WWSF), while the remainder of the Kinnickinnic River is classified as a cold Class I trout fishery (WDNR, et al., 1999).
- The two City of River Falls hydropower impoundments (Lakes George and Louise) have a significant warming influence on the downstream Kinnickinnic River in the summer, and a cooling influence in the winter.
- The Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project (Kinni NPS Plan) (WDNR et al., 1999) notes (p. 94): "The downstream reach (below Lake Louise and Powell Dam)….has elevated water temperatures…caused by the two upstream impoundments and stormwater runoff". "The impoundments have an overall constant warming effect of about 3° C (5° F) on downstream water temperatures during base flow (Schreiber, 1998)."
- The Kinni NPS Plan (WDNR et al., 1999) notes about Lake George (p. 94): "Warming in the shallow areas tends to cause a general increase in downstream water temperatures".
- On average (1993-2013), the downstream Kinnickinnic River summer (June-August) temperature is 4.2° F higher than the upstream temperature (59.7° F upstream vs. 63.9° F downstream) (Johnson 2018; Kiap-TU-Wish, unpublished data).
- On average (1993-2013), the downstream Kinnickinnic River July temperature is 4.7° F higher than the upstream temperature (61.0° F upstream vs. 65.7° F downstream) (Johnson 2018; Kiap-TU-Wish, unpublished data).
- A climate vulnerability analysis of Kiap-TU-Wish data (1992-2009) by WDNR (Mitro, et al., 2011; Johnson 2018) noted that a warming trend is occurring at both upstream and downstream Kinnickinnic River sites. However, the warming trend is greater at downstream sites and begins at a much higher baseline temperature, indicating that the downstream Kinnickinnic River may be much more sensitive to future climate change impacts.
- Future climate change impacts (Mitro, et al., 2011) must be a critical consideration for evaluating future hydropower-related temperature impacts on the currently-impounded and downstream reaches of the Kinnickinnic River. With higher system-wide temperatures due to climate change, thermal impacts due to the hydropower impoundments will further exacerbate downstream warming, possibly creating future temperature regimes that are unsuitable for a coldwater ecosystem.

Recommended Study Elements to Evaluate Temperature Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration by 2026 may reduce summer heating and winter cooling caused by Lake Louise, thereby improving the temperature regime of the lower Kinnickinnic River. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to impose temperature impacts on the downstream river. To assess future temperature regimes created by these two scenarios, the following study of temperature impacts is recommended:

Ia. Conduct year-round temperature monitoring of Lakes George and Louise (1-2 years), to better understand in-lake temperature dynamics. In addition to lateral and longitudinal characterization of

temperature, vertical profiling work should be conducted to determine the extent of seasonal thermal stratification in the two hydropower impoundments.

Conduct additional winter temperature monitoring at upstream and downstream Kinnickinnic River sites, to better understand the winter temperature impacts of Lakes George and Louise.

Ib. Conduct thermal modeling of the Kinnickinnic River, to determine the extent to which dam removal would improve the temperature regime (lower the baseline temperature) in the currently-impounded and downstream river reaches, how far down river this temperature improvement would extend, and the amount of "thermal buffering capacity" created for protection against future climate change. With a lower downstream baseline temperature, the Kinnickinnic River could better utilize the significant groundwater inputs to the lower five miles of the river (river flow approximately doubles from Main Street in River Falls to County Road F near the river mouth). The thermal model could also be used to evaluate the temperature impacts of the hydropower impoundments (or absence thereof) under several future climate change scenarios, as outlined by WDNR (Mitro, et al., 2011). With enhancements and additional monitoring data (**Ia**), the existing U.S. Army Corps of Engineers (USACE) thermal model created for the Lake George Stormwater Treatment Concept Plan (City of River Falls 2005) could be used for this effort.

Goals and Objectives of the Temperature Impacts Study (Criterion #1)

The goal of this study is to quantitatively assess the current and future temperature impacts of the River Falls hydropower project on the Kinnickinnic River. Monitoring the temperature regime would provide further direct evidence of the thermal impacts of the two hydropower impoundments (Lakes George and Louise) on the Kinnickinnic River. The study objective is to obtain monitoring data from Lakes George and Louise and the Kinnickinnic River upstream and downstream of the hydropower project (**Ia**). The temperature monitoring data could then be used to adapt and apply the previously-developed thermal model CE-QUAL W2 (Noren 2003), to quantify future Kinnickinnic River temperature improvements associated with Powell Falls Dam removal and future temperature impacts caused by the continuing presence of the Junction Falls Dam and Lake George (**Ib**). With a warming trend already occurring in the Kinnickinnic River (Mitro, et al., 2011; Johnson 2018), the thermal model could also be used to determine whether climate change will further compound temperature impacts caused by the continuing presence of the Junction Falls Dam and Lake George.

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. The resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. A suitable temperature regime is critical for achieving this goal.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts.

Existing Information and the Need for More Information (Criterion #4)

Since 1992, the Kiap-TU-Wish Chapter of Trout Unlimited has been conducting temperature monitoring of the Kinnickinnic River and three tributaries in the vicinity of River Falls, Wisconsin (see **Background Information**, above).

Using the Kiap-TU-Wish temperature monitoring data, Johnson (2018) evaluated the thermal impacts of the hydropower project on the Kinnickinnic River and summarized monitoring results. Mitro et al. (2011) also used the Kiap-TU-Wish data to assess the additional impact of climate change on the Kinnickinnic River. Noren (2003) applied Kinnickinnic River and River Falls stormwater temperature data to develop a CE-QUAL W2 numerical hydraulic model that simulates the effects of the hydropower impoundments and stormwater runoff on the Kinnickinnic River thermal regime.

Existing temperature data and the new monitoring data and thermal modeling generated by this study should be applied to quantitatively predict the future impacts of the River Falls hydropower project on the thermal regime of the Kinnickinnic River with Powell Falls Dam removal and the continuing presence of the Junction Falls Dam and Lake George.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The proposed Powell Falls Dam removal and re-licensing for the continuing operation of the Junction Falls Dam and presence of Lake George would change the thermal regime of the Kinnickinnic River. The recommended temperature monitoring and thermal modeling would inform re-licensing requirements by providing quantitative information on the current and future thermal impacts of the hydropower project. There are a number of potential protection, mitigation, and enhancement measures (PM&E measures) that could reduce the adverse thermal effects of the project on the coldwater ecosystem of the Kinnickinnic River. These PM&E measures could become part of the re-licensing requirements.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Methods for conducting the recommended temperature monitoring of Lakes George and Louise and the Kinnickinnic River are standard limnological practices described by WDNR (2004), Hastings et al. (2011), Toohey et al. (2014), Dauwalter et al. (2017), and others. CE-QUAL W2 (Version 3.1) is a two-dimensional hydrodynamic and water quality model suitable for relatively long and narrow water bodies that exhibit vertical and longitudinal gradients. The original model, known as LARM (Laterally Averaged Reservoir Model), was developed by Edinger and Buchak (1975). Since then, the model was renamed CE-QUAL W2, and it has been continually updated by the U.S. Army Corps of Engineers Research and Development Center. In its present version 3.1, the model has been applied to successfully model lakes, reservoirs, estuaries, and rivers (Cole and Wells 2002).

Level of Effort and Cost of the Study, and Why the Study Is Needed (Criterion #7)

We estimate that the two-year water temperature monitoring component of this study (**Ia**) would cost $20,000. The monitoring would be conducted using commercially-available data-logging thermometers. Data would be downloaded and analyzed, with monitoring results presented in a brief report.

We estimate that application of the CE-QUAL W2 thermal model (**Ib**) to quantify current and future temperature impacts of the hydropower project would cost $75,000. Some fieldwork and perhaps some additional monitoring would be needed to quantify river flows and channel dimensions. Existing and new temperature data (via this study) would be used to adapt the previously-used CE-QUAL W2 model to allow simulation of the future thermal regime of the Kinnickinnic River, with Powell Dam removal and the continuing operation of the Junction Falls Dam.

The study is needed to provide a quantitative prediction of the effects of the hydropower project on the thermal regime of the Kinnickinnic River. The study would also be very beneficial for setting quantitative trigger points to initiate earlier removal of the Junction Falls Dam, to protect the coldwater ecosystem of the Kinnickinnic River, as described in the City of River Falls Resolution No. 6234, Paragraph v (Resolution Recommending Re-Licensing of Hydropower Project P-10489) (February 27, 2018).

Study II. Hydrologic Impacts

Background Information:

The Federal Energy Regulatory Commission (FERC) license for the City of River Falls hydropower project requires that a downstream "run-of-river" condition be maintained at all times. Maintaining a "run-of-river" condition is critical for protecting the Kinnickinnic River habitats that support healthy coldwater macroinvertebrate and trout communities. Sudden decreases in water flow can de-water macroinvertebrate habitats and trout redds, while sudden increases in water flow can de-stabilize the river channel, thereby increasing bank erosion, decreasing water clarity, and damaging in-stream habitat.

The United States Geological Survey (USGS) operates a Kinnickinnic River monitoring station (number 05342000) at County Highway F, near Kinnickinnic State Park, approximately five miles west (downstream) of River Falls. The station continuously measures river stage (water height) and flow at 15-minute intervals year-round, generating approximately 35,000 stage and flow measurements per year. A one-year record of flow data exists for the 1999 water year (October 1998-September 1999), while a continuous record of flow data exists from July 2002 to present. The City of River Falls, Kinnickinnic River Land Trust, and the Kiap-TU-Wish Chapter of Trout Unlimited provide annual cost-share funding to help support the ongoing operation of this station.

The City of River Falls measures and records the daily water levels of Lakes George and Louise.

During periods of stable river flow (baseflow), when precipitation and runoff are not occurring, the Kinnickinnic River hydrograph can be examined to determine whether the City of River Falls hydropower facilities are operating in a "run-of-river" mode, as required by the FERC license.

Evidence of Hydrologic Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 93-94): "The condition of the Kinnickinnic River downstream from the City of River Falls is worse than the condition upstream. Increased temperatures from the two lakes and flow fluctuations caused by dam management procedures contribute to adverse impacts on the Kinnickinnic River ecosystem".

- The Kinni NPS Plan notes (WDNR et al., 1999) (p. 94): "The downstream reach (below Lake Louise and Powell Dam)….is impacted….by flashy stream flows caused by urban runoff and hydropower manipulations".
- The Kinni NPS Plan notes (WDNR et al., 1999) (p. 8): "The impoundments were also shown to have significant impacts on stream flow during trash rack cleaning operations".
- On a number of occasions, recreational users along the lower Kinnickinnic River (downstream from River Falls) have noted sudden flow fluctuations that are likely attributed to irregular operation of the City of River Falls hydropower facilities. In one instance, a Kiap-TU-Wish Chapter member observed a dramatic decrease in Kinnickinnic River flow (from 126 cfs to 53 cfs) on July 11, 2008, during the 15:00-18:45 CDT time period, as measured at the USGS monitoring station (Figure 2). The WDNR (Marty Engel, personal communication) subsequently linked this flow irregularity to a gate malfunction at the lower hydropower facility (Powell Falls Dam).

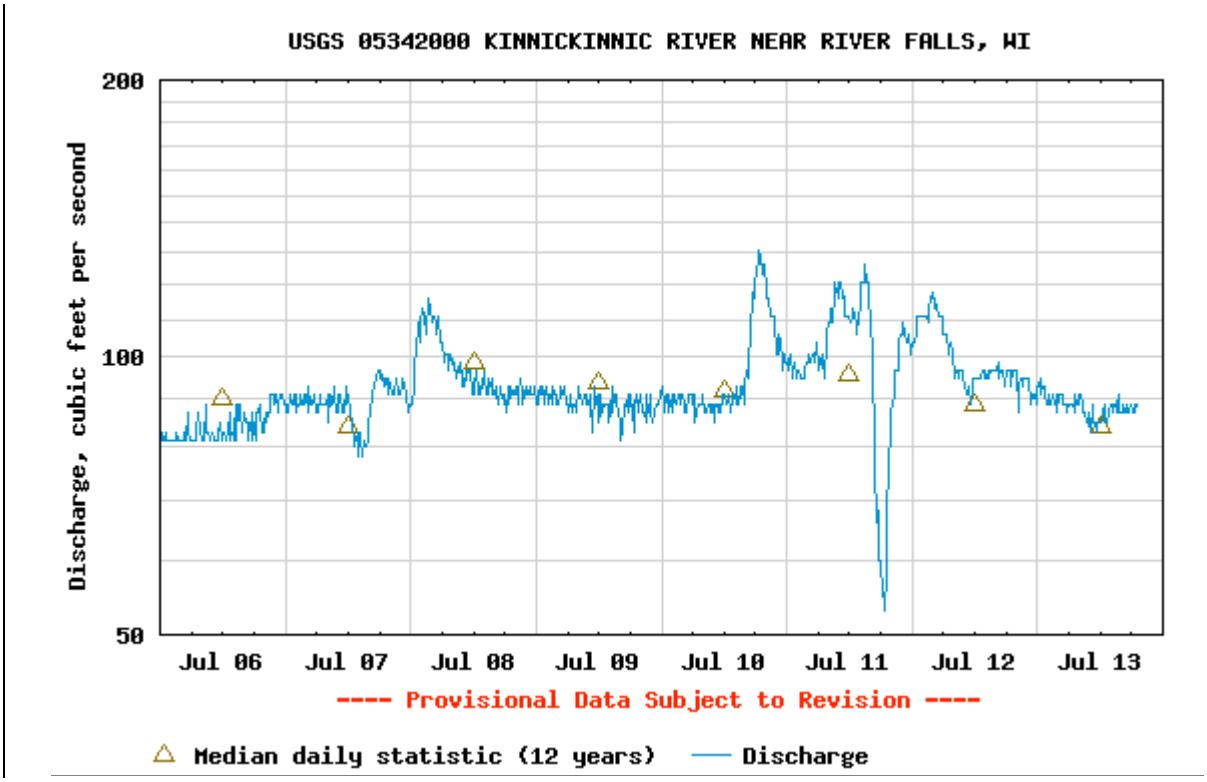

Figure 2. Hydropower-related Kinnickinnic River flow irregularity on July 11, 2008.

Recommended Study Elements to Evaluate Hydrologic Impacts:

Given these past observations of irregular Kinnickinnic River flows, the following study of hydrologic impacts is recommended, to determine whether the City of River Falls hydropower facilities have been maintaining a "run-of-river" condition, as required by the FERC license:

IIa. Using the 15-minute USGS Kinnickinnic River flow data, conduct a thorough assessment of the extent to which the City of River Falls hydropower facilities have maintained a "run-of-river" condition

during the 1999 and 2002-2018 periods. Examine the Kinnickinnic River hydrograph during periods of stable river flow (baseflow), when precipitation and runoff are not occurring, to determine the frequency, magnitude, and duration of flow and stage irregularities.

IIb. Assemble and review observational reports of flow irregularities by recreational users, the public, and other sources. These reports may have been received by the City of River Falls, WDNR, and/or FERC.

IIc. Correlate Kinnickinnic River flow irregularities with concurrent dam operation and maintenance practices. Obtain and review any pertinent records kept by the City of River Falls hydropower utility, to determine if the operation and/or maintenance of the hydropower facilities has resulted in abnormal (non "run-of river") flow conditions.

IId. Identify PM&E measures that would eliminate flow irregularities related to dam operation and maintenance.

Goals and Objectives of the Hydrologic Impacts Study (Criterion #1)

The goal of the hydrologic impacts study is to evaluate the extent to which operation of the River Falls hydropower project has maintained run-of-river flow conditions, as mandated by the FERC license. The study objectives are to analyze existing Kinnickinnic River flow data, in conjunction with dam operations and maintenance data **(IIa-IIb)**, to identify dam operation-induced flow irregularities (**IIc**), and to identify the PM&E measures needed to eliminate them **(IId**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. The resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. A normal hydrologic regime is critical for achieving this goal.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts.

Existing Information and the Need for More Information (Criterion #4)

Via the USGS monitoring station, Kinnickinnic River flow and stage data are available at 15-minute intervals in 1999 and during the 2002-2018 period. Although River Falls Municipal Utilities has indicated that it maintains dam operation and maintenance records and impoundment stage data, this information does not appear to be publicly available. In spite of these two existing sources of information, there has not been an analysis of compliance with the FERC license requirement for the hydropower project to maintain a run-of-river condition.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

Past evidence suggests that operation of the River Falls hydropower project adversely affects river flow (see **Evidence of Hydrologic Impacts**, above). An analysis of existing information is needed to determine compliance with the FERC license requirement to maintain a run-of-river condition, and to identify the PM&E measures necessary to ensure that the River Falls hydropower project meets this license requirement.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

The proposed study methodology is a desktop analysis, including an evaluation report, of USGS Kinnickinnic River flow data and concurrent River Falls Municipal Utilities dam operation and maintenance information, to identify the frequency, duration, and magnitude of dam operation-induced flow irregularities. Methodology for this study would be consistent with any past analyses by FERC or hydropower licensees to demonstrate compliance with the requirement to maintain a run-of-river flow condition.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the cost of the hydrologic impacts study (**IIa-IId**) would be $10,000. Given past observations of irregular Kinnickinnic River flows due to the River Falls hydropower project, this study is needed to evaluate the extent to which project operation has maintained run-of-river flow conditions, as mandated by the FERC license. However, this study would not be needed if: 1) The Powell Falls Dam is removed as scheduled by 2026; **and** 2) The Junction Falls Dam is upgraded with an automated penstock gate and trash rack cleaning system.

Study III. Water Quality Impacts

Background Information:

Very little water quality monitoring of the Kinnickinnic River and Lakes George and Louise has been conducted. WDNR (Schreiber, 1998) evaluated baseline water resource conditions in the Kinnickinnic River Watershed in 1996-1997, to inform the development of the Kinni NPS Plan (WDNR et al., 1999). However, the extent of water quality monitoring was minimal, and no recent assessment of water quality has been conducted by WDNR or other agencies.

Evidence of Water Quality Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): “Lake George is a shallow, eutrophic 18-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity”.
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): “Lake Louise is a shallow, eutrophic 15-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity”.

The two hydropower impoundments (Lakes George and Louise) have extended water residence times, creating in-lake water and sediment quality problems. In the presence of ample sunlight, favorably warm water temperatures, and adequate nutrient sources, summer algae blooms occur, creating unsightly (green) conditions, reduced water clarity, odors, possible human health impacts, and reduced oxygen concentrations (Figure 3).



Figure 3: Surface algae and shallow water conditions in Lake George (above) and Lake Louise (below)

The highly eutrophic conditions in both lakes severely limit their recreational use, in spite of their close proximity to the heart of River Falls. The extended water residence time also allows suspended sediment (silt) from upstream sources (both urban and agricultural) to accumulate in the lakes. Besides in-filling the lakes, the suspended sediment carries contaminants (phosphorus, trace metals, and organic compounds (PAHs and pesticides)) that are deposited in the lake bottom, with possible impacts on benthic invertebrates and fish. Large numbers of Canada geese and ducks congregate on Lakes George and Louise in the fall and winter, resulting in phosphorus, nitrogen, and bacterial loading to the lakes. Biological, chemical, and physical processes can transfer sediment contaminants to the overlying water column in the lakes, thereby causing in-lake and downstream water quality problems. For instance, increased water flows through the impoundments during storm runoff events can re-suspend the fine silt and contaminants from the lake bottom, with impacts on in-lake and downstream water quality. Water and sediment contaminants can also be transferred to biota through bioaccumulation and biomagnification processes, with implications for aquatic and human health (typically via fish consumption). Experience has shown that remediation of sediment contamination is often difficult, costly, time consuming, and disruptive to the local environment and community (Parkerton and Maruya, 2013).

Recommended Study Elements to Evaluate Water Quality Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration by 2026 will substantially eliminate the current water quality impacts caused by Lake Louise, thereby improving water quality in the lower Kinnickinnic River. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to create in-lake and downstream water quality impacts. To better assess the degraded water quality conditions in Lake George and evaluate downstream effects, the following study of water quality impacts is recommended:

III. Conduct seasonal (April-October) water quality monitoring of Lake George and at upstream and downstream Kinnickinnic River locations for two years, to better assess in-lake water quality problems and possible downstream water quality impacts. Water quality monitoring should be conducted during both baseflow and storm runoff conditions, to fully characterize in-lake and downstream impacts. Monitoring will also help determine whether applicable state water quality standards are being met (example: phosphorus standard of 75 ug/l, per WI Chapter NR 102). Monitoring of multiple water quality variables is recommended: dissolved oxygen, turbidity, suspended solids, nutrients (various forms of phosphorus and nitrogen), trace metals, bacteria, and chlorophyll (estimate of algal presence). Document the seasonal timing and spatial extent of floating algal mats on Lake George (such as those in Figure 3), using weekly photography. In addition to longitudinal water quality characterization at upstream, in-lake, and downstream locations, in-lake vertical profiling work and/or continuous monitoring of dissolved oxygen, temperature, pH, and conductivity should be conducted, to determine the extent of stratification and dynamic changes (daily, weekly, monthly) that occur in Lake George. With possible decreased in-lake dissolved oxygen concentrations due to eutrophication and increased sediment oxygen demand, an upstream-downstream comparison of diel oxygen fluctuations should also be conducted via continuous monitoring.

Goals and Objectives of the Water Quality Impacts Study (Criterion #1)

The goal of the water quality impacts study is to evaluate the effects of the River Falls hydropower project on water quality in Lake George and downstream in the Kinnickinnic River. The study objective is to obtain

water quality monitoring data from Lake George, and from upstream and downstream locations in the Kinnickinnic River. The monitoring data will be analyzed to evaluate the water quality condition of Lake George and assess any downstream impacts on the Kinnickinnic River (**III**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. An additional resource management goal is to provide an aesthetic and recreational river in the heart of River Falls, for ready access and enjoyment by residents and visitors. Good water quality is critical for achieving both of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The City of River Falls is currently engaging the community in a Kinnickinnic River corridor planning process (Kinni Corridor Project), to develop a long-term vision, plan, and implementation strategy for river corridor improvements that benefit hydrologic conditions, ecological values and best practices, floodplain restoration and flood control, economic development opportunities, and recreational opportunities. Although Lakes George and Louise are prominent features along the river corridor, both lakes have water quality problems that limit their future usefulness.

Existing Information and the Need for More Information (Criterion #4)

As noted above (**Background Information)**, very little water quality monitoring of the Kinnickinnic River and Lakes George and Louise has been conducted. As such, more information is needed to determine the water quality impacts of the River Falls hydropower project on Lake George and the Kinnickinnic River.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

Past evidence suggests that operation of the River Falls hydropower project adversely affects water quality in Lakes George and Louise (see **Evidence of Water Quality Impacts**, above); but little water quality information is available to determine the extent of the problem and compliance with state water quality standards. However, FERC re-licensing requires state water quality certification by the WDNR. The recommended study will provide information on the water quality impacts of the River Falls hydropower project and suggest PM&E measures that may be needed to improve Lake George water quality.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Standard physical and chemical limnological practices (Green et al. 2015; MPCA 2014) would be used to conduct the recommended water quality monitoring of Lake George and the Kinnickinnic River. A combination of discrete sampling and continuous monitoring would be conducted during baseflow and storm runoff conditions, to temporally and spatially characterize multiple water quality variables: dissolved oxygen, temperature, pH, conductivity, turbidity, suspended solids, nutrients (various forms of phosphorus

and nitrogen), trace metals, bacteria, and chlorophyll (estimate of algal presence). WDNR has developed guidelines for the deployment of continuous dissolved oxygen meters, including data evaluation and storage.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the cost of a two-year water quality impacts study (**III**) would be $70,000. The study is needed to determine how the continuing operation of the Junction Falls Dam affects water quality in Lake George and the Kinnickinnic River. The study could also suggest PM&E measures that may be needed to improve Lake George water quality.

Study IV. Sediment Impacts

Background Information:

The extended water residence times in Lakes George and Louise allow suspended sediment (silt) from upstream sources (both urban and agricultural) to accumulate in both lakes. Besides in-filling the lakes, the suspended sediment carries contaminants (phosphorus, trace metals, and organic compounds (PAHs and pesticides)) that are deposited in the lake bottom, with possible impacts on water quality, benthic invertebrates, and fish.

In 1989-1990, the City of River Falls collected a limited number of sediment core samples from Lake George, with analysis of trace metals, organic compounds, and total Kjeldahl and ammonia nitrogen (City of River Falls, unpublished data).

More recently, Inter-Fluve (2016) conducted a sediment study of Lakes George and Louise for the City of River Falls. The study estimated the volumes and types of sediment that have accumulated in both lakes, and bathymetric lake maps were created. The study also assessed the magnitude and distribution of sediment contamination in Lakes George and Louise, with sediment core samples analyzed for inorganic (trace metals) and organic (PCBs and PAHs) pollutants. Finally, the study estimated the volumes of sediment that would be mobilized from the river channels of Lakes George and Louise with passive dam removals.

Evidence of Sediment Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): “Lake George is a shallow, eutrophic 18-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity”.
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): “Lake Louise is a shallow, eutrophic 15-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity”.
- During their historical presence in River Falls, Lakes George and Louise have substantially filled with sediment. The estimated volume of impounded sediment in Lake George is 166,800 cubic yards, consisting of 80% sands and 20% silts and clays. The estimated volume of impounded sediment in Lake Louise is 163,800 cubic yards, consisting of 65% sands and 35% silts and clays (Inter-Fluve 2016).
- Concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life, and Environmental Protection

Agency (EPA) regional screening levels (RSLs) established to protect human health (Inter-Fluve 2016). In Lake George, several trace metals (lead and mercury) and organic compounds (3 PAH congeners and total PCBs) exceed SQGs, while several trace metals (arsenic and hexavalent chromium) and an organic compound (2 PAH congeners) exceed RSLs. The extent of sediment contamination is greater in Lake Louise, where several trace metals (arsenic, cadmium, mercury, and nickel) and organic compounds (4-4' DDD, lindane, and 11 PAH congeners) exceed SQGs, while several trace metals (arsenic and hexavalent chromium) and an organic compound (4 PAH congeners) exceed RSLs.

Removal of the Powell Falls Dam (by 2026) and eventual removal of the Junction Falls Dam (by 2035-2040) have the potential to mobilize sediment from Lake Louise and Lake George, respectively. With passive sediment management after dam removal, an estimated 45,100 cubic yards of Lake Louise sediment could be transported downstream, while an estimated 73,900 cubic yards of Lake George sediment could be transported downstream (Inter-Fluve 2016).

The transport of sediment after dam removal has the potential to impact the downstream Kinnickinnic River and its riparian areas. Sediment impacts could include episodic high concentrations of suspended solids, affecting macroinvertebrates and fish, and siltation of critical aquatic habitats for periphyton, macrophytes, macroinvertebrates, and fish (including spawning habitat). Depending on sediment transport distance, high concentrations of suspended solids and siltation could also impact freshwater mussels in the St. Croix River, including the federally-endangered species Higgin's Eye Pearly Mussel (*Lampsilis higginsi*), Snuffbox (*Epioblasma triquetra*), and Spectaclecase (*Cumberlandia monodonta*).

The downstream movement of sediment from Lakes George and Louise would be accompanied by adsorbed phosphorus, adding to the phosphorus load that the Kinnickinnic River contributes to the St. Croix River at Lake St. Croix. In August 2012, the EPA approved the final Total Maximum Daily Load (TMDL) for phosphorus in Lake St. Croix (eastern Minnesota and western Wisconsin). The Lake St. Croix TMDL report (MPCA and WDNR 2012) calls for a significant reduction in phosphorus loading from St. Croix River tributaries, including the Kinnickinnic River.

As noted above (see **Evidence of Sediment Impacts**), concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life. These contaminants may be toxic to aquatic life in Lakes George and Louise, and when transported downstream, they may also have adverse impacts on aquatic life in the lower Kinnickinnic River and the St. Croix River.

Inter-Fluve (2017) examined the feasibility of removing the two River Falls hydropower dams and recommended potential sediment management practices to limit the downstream impacts of sediment transport.

Re-licensing of the River Falls hydropower project and the continuing operation of the Junction Falls Dam would retain Lake George for an extended time period before dam removal in 2035-2040. As noted above (see **Evidence of Sediment Impacts**), Lake George is a shallow, eutrophic impoundment that is nearly filled with sediment and experiences summer algae blooms and turbidity. High nutrient loading from the agricultural watershed, River Falls stormwater runoff, and waterfowl make Lake George highly eutrophic, with unsightly mats of algae present during much of the open-water season (Figure 3). In addition, the

unconsolidated, fine sediment in Lake George is readily re-suspended by wind, carp, and river currents, creating turbid water conditions. Due to excessive algal levels and turbid water conditions, very little submersed or emergent aquatic vegetation grows in Lake George. The shallow water and poor water quality constrain public use, such that minimal water-based recreation occurs on Lake George, despite its close proximity to downtown River Falls. Project re-licensing with the continuing operation of the Junction Falls Dam demands an examination of ways to improve water quality conditions in Lake George for the duration of its existence. One option for doing so involves temporary water drawdown in the lake, to consolidate sediment and stimulate the germination of perennial aquatic plants (Kenow et al. 2016).

Recommended Study Elements to Evaluate Sediment Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration (by 2026) will potentially create downstream impacts caused by the mobilization of Lake Louise sediment and its associated contaminants (phosphorus, trace metals, and organic compounds). In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality impacts. To assess sediment problems related to removal of the Powell Falls Dam and evaluate options for improving the degraded water quality conditions in Lake George, the following study of sediment impacts is recommended:

IVa. Using the results of the Inter-Fluve sediment study (2016) and feasibility report on dam removal (2017) as guidance, conduct additional sediment core sampling and analysis in Lake Louise, to better quantify the locations and volume of sediment with contaminants of concern (those exceeding Wisconsin SQGs and EPA RSLs). Sediment contaminants to be analyzed should include phosphorus, trace metals, and organic compounds (PCBs and PAHs). More detailed information on locations of contaminants of concern, contaminant levels, and the volume of contaminated sediment is necessary to inform the development of a sediment management plan that will minimize the impacts of Powell Falls Dam removal. The impacts of contamination may occur when Lake Louise sediment is transported downstream, moved offsite for disposal or re-use, and/or re-distributed in floodplain areas during Kinnickinnic River restoration work. Inter-Fluve (2017) notes that permit regulations for dam removal will likely require re-sampling and testing of lake areas where sediment contaminant concentrations exceed thresholds of concern. At that point, WDNR can also provide guidance on the extent of additional sediment sampling and analysis in Lake Louise.

IVb. Develop a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam, including Kinnickinnic River restoration work. Such impacts may be associated with downstream mobilization of sediment and its associated contaminants, as well as surficial exposure of sediment contaminants after lake drawdown. The management plan should also identify the best practices needed to minimize contamination impacts if Lake Louse sediment is moved offsite and/or re-distributed in floodplain areas during Kinnickinnic River restoration work. The Inter-Fluve feasibility report (2017) notes the importance of sediment management in conjunction with dam removal and river restoration projects.

IVc. Use a numerical hydraulic model (RMA-2 with Sed 2D) (Nairn, et al. 2006) to simulate and quantify the downstream mobilization of sediment that may occur during and after removal of the Powell Falls Dam. The sediment management plan (**IVb**) will help inform the assumptions needed for model development and application. Apply the model to: 1) Estimate the extent of sediment deposition in the

Kinnickinnic River channel, the riparian areas, and the St. Croix River at Lake St. Croix; 2) Simulate the concentrations and duration of elevated suspended solids levels in the lower Kinnickinnic River and Lake St. Croix; and 3) Estimate the quantity of contaminants delivered to the lower Kinnickinnic River and Lake St. Croix.

IVd. Determine the feasibility of improving water quality conditions in Lake George via a short-term drawdown of the water level, which will consolidate the sediment and stimulate the growth of perennial aquatic plants. In addition to improving water quality, establishment of perennial aquatic plants would also provide critical in-lake habitat for fish and wildlife.

Goals and Objectives of the Sediment Impacts Study (Criterion #1)

The goals of the sediment impacts study are: 1) Assess the sediment problems associated with removal of the Powell Falls Dam and restoration of the Kinnickinnic River; and 2) Evaluate options for improving the degraded water quality conditions in Lake George. Study objectives are: 1) Conduct additional sediment core sampling and analysis in Lake Louise, to better quantify the locations and volume of sediment with contaminants of concern **(IVa**); 2) Develop a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam, including Kinnickinnic River restoration (**IVb**); 3) Use a hydraulic model to simulate and quantify the downstream mobilization of sediment that may occur during and after removal of the Powell Falls Dam (**IVc**); and 4) Determine the feasibility of improving water quality conditions in Lake George via a short-term drawdown of the water level, which will consolidate the sediment and stimulate the growth of perennial aquatic plants (**IVd**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. Resource management goals for the St. Croix River include reducing phosphorus loading to improve water quality, and protecting the diverse fish and mussel populations, including several federally-endangered mussel species. Managing the sediment impacts associated with dam removal projects is critical for achieving all of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The St. Croix River is a National Wild and Scenic River that is extensively used for recreational purposes.

Existing Information and the Need for More Information (Criterion #4)

As described above (**Background Information**), past studies of the sediment characteristics in Lakes George and Louise have been conducted by the City of River Falls (1989-1990) and Inter-Fluve (2016). The Inter-Fluve study determined that concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life, and Environmental Protection Agency (EPA) regional screening levels (RSLs) established to protect human

health. However, more detailed information on locations of contaminants of concern, contaminant levels, and the volume of contaminated sediment in Lake Louise is necessary to inform the development of a sediment management plan that will minimize the impacts of Powell Falls Dam removal. Inter-Fluve (2016, 2017) estimated the volume of sediment that could be mobilized with passive management during Powell Falls Dam removal. However, application of a hydraulic flow and sediment transport model is needed to quantify the extent of sediment mobilization and its downstream impacts. Finally, with re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040), options need to be evaluated for improving the degraded water quality conditions in Lake George.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The proposed removal of the Powell Falls Dam (by 2026) and the eventual removal of the Junction Falls Dam (by 2035-2040) will potentially create downstream impacts caused by the mobilization of sediment and its associated contaminants. In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality impacts that need to be addressed. The recommended studies would inform PM&E measures that are needed to remediate sediment impacts related to dam removal and improve water quality conditions in Lake George.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Methods for conducting additional core sampling and contaminant analysis of Lake Louise sediment are those used and described by Inter-Fluve (2016).

Development of a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam will likely be a permit requirement, to be completed with WDNR oversight, input, and approval. Furthermore, the allowance for sediment to be released downstream will require a WDNR waters permit and WDNR fisheries input (Inter-Fluve 2016).

The numerical hydraulic flow and sediment transport model is a standard tool that was developed by the U.S. Army Corps of Engineers and has been widely used to simulate river flow and sediment transport. This approach has been applied to assess sediment mobilization associated with dam removal projects on many rivers worldwide (Nairn et al. 2006).

Numerous studies have evaluated the effectiveness of lake drawdown as a method to consolidate sediment and establish perennial aquatic plants. This has become a standard practice to improve water quality and aquatic habitat in regulated rivers worldwide, with demonstrated success in the Upper Mississippi River and impoundments in Wisconsin and Minnesota (Kenow et al. 2016).

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

Additional core sampling and contaminant analysis of Lake Louise sediment (**IVa**) is estimated to cost $25,000. Development of a sediment management plan to minimize the sediment impacts associated with Powell Falls Dam removal (**IVb**) is estimated to cost $25,000. Application of the hydraulic flow and sediment transport model to evaluate the downstream impacts of sediment mobilization (**IVc**) is estimated to

cost $75,000. Evaluation of lake drawdown as a method to improve water quality and aquatic habitat in Lake George (**IVd**) is estimated to cost $5,000. The sediment impacts study is needed to fully evaluate and minimize sediment problems related to removal of the Powell Falls Dam, and to evaluate options for improving the degraded water quality conditions in Lake George.

Study V. Biological Impacts

Background Information:

Regular WDNR fisheries surveys (1996, 2004-2018) have been conducted at Kinnickinnic River locations upstream and downstream from the two City of River Falls hydropower impoundments. However, no WDNR fisheries surveys have been conducted in Lakes George and Louise (Marty Engel, WDNR, personal communication).

Occasional macroinvertebrate surveys have been conducted by the WDNR (1995-1998), University of Wisconsin-River Falls (1997, 1999, 2001), and the City of River Falls (2004-2012), at Kinnickinnic River locations upstream and downstream from the two City of River Falls hydropower impoundments (Garry, 2006). However, no known macroinvertebrate surveys have been conducted in Lakes George and Louise.

Evidence of Biological Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 36): "The entire main stem of the Kinnickinnic River is classified by WDNR as a cold Class I trout fishery. The two impoundments in the City of River Falls, Lake Louise and Lake George, support a warm water sport fishery (WWSF)".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake George….has a limited warmwater and coldwater sport fishery consisting of largemouth bass, panfish, and brown trout".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake Louise…. has a limited warmwater and coldwater sport fishery consisting of largemouth bass, panfish, and brown trout. The lake also supports a significant carp population".
- The temperature, hydrologic, and water quality conditions created by the two City of River Falls hydropower impoundments have significantly impacted a 0.7-mile reach of a coldwater resource, as evidenced by the classification of Lakes George and Louise by WDNR as warmwater sport fisheries.
- Concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) (Inter-Fluve 2016), suggesting that these areas of contamination may be directly toxic to aquatic life, especially benthic macroinvertebrates. If mobilized as a result of dam removal, these sediment contaminants may also have adverse impacts on aquatic life in the lower Kinnickinnic River and the St. Croix River.

The primary impact of the River Falls hydropower project on Kinnickinnic River ecology is the dramatic conversion of a coldwater river system to warmwater impoundments (Lakes George and Louise) upstream of the dams. Due to changes in temperature and hydrologic regimes, water quality, and sedimentation, the impacts of these two impoundments have profoundly affected the river's biological communities, including fish, macroinvertebrates, aquatic plants, and river-related wildlife.

Recommended Study Elements to Evaluate Biological Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration (by 2026) will substantially eliminate the current biological impacts caused by Lake Louise and greatly improve the health of biological communities in the restored river reach. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to create in-lake and downstream biological impacts. To better assess the degraded biological conditions in Lakes George and Louise and evaluate downstream effects, the following study of biological impacts is recommended:

Va. Conduct a comparative assessment of available Kinnickinnic River fisheries and macroinvertebrate survey results from locations upstream and downstream of Lakes George and Louise, to determine if downstream biological impacts are evident, especially via alterations in aquatic community composition and abundance. Multiple biotic metrics and indices can be used to make this comparison. If existing data are insufficient and/or do not reflect current conditions, conduct additional biological surveys of fish and macroinvertebrates communities at Kinnickinnic River locations upstream and downstream from the two lakes.

Vb. Conduct fisheries and macroinvertebrate surveys of Lakes George and Louise, to characterize current biological conditions and assess the in-lake biological impacts of these two hydropower impoundments, especially via alterations in aquatic community composition and abundance. Compare the in-lake fish and macroinvertebrate communities with those at upstream and downstream Kinnickinnic River locations (**Va**).

Vc. Conduct Kinnickinnic River surveys of aquatic vegetation (periphyton and macrophytes) at locations upstream and downstream of the two City of River Falls hydropower impoundments, to evaluate the extent to which increased downstream temperatures, nutrient availability, and primary productivity have enhanced nuisance growths of aquatic vegetation, potentially impacting habitat quality for trout and macroinvertebrates (BC Ministry of Environment, Lands, and Parks, 2001; DeNicola, 1996).

Vd. Conduct aquatic macrophyte surveys of Lakes George and Louise, to determine the species composition, abundance, and spatial distribution of submersed and emergent aquatic plants.

Ve. Through survey work, determine the extent to which Lakes George and Louise may be harboring aquatic and terrestrial invasive species, as defined by Wisconsin's invasive species rule (NR 40). This information is needed to evaluate any risks posed for other portions of the Kinnickinnic River and to develop appropriate management strategies.

Vf. Coordinate with the WDNR, Minnesota Department of Natural Resources, the U.S. Army Corps of Engineers St. Paul District, the U.S. Fish and Wildlife Service, the National Park Service, and the U.S. Geological Survey Upper Midwest Environmental Science Center to obtain the most recent information about the species composition and the spatial extent of freshwater mussels in the lower Kinnickinnic River, and in the St. Croix River (Lake St. Croix) at locations downstream of the Kinnickinnic River confluence. Determine the presence of federally-listed and state-listed threatened and endangered mussel species. If existing data are insufficient and/or do not reflect current conditions, conduct additional biological surveys of mussel presence in the lower Kinnickinnic River and the St. Croix River. Information on mussel presence can be used in conjunction with model

simulations of sediment mobilization associated with dam removal (**IVc**), to assess the impacts of dam removal on the Kinnickinnic and St. Croix River mussel communities.

Vg. To evaluate improvements in physical and chemical conditions and biological communities in the Kinnickinnic River as a result of dam removal and river restoration, conduct pre- and post-restoration monitoring of the 0.7-mile Kinnickinnic River reach currently impacted by Lakes George and Louise. Establish monitoring goals and objectives and develop a monitoring plan that can identify key changes in temperature regime, habitat, water quality, sediment characteristics, and biological communities. Study elements **Ia**, **III**, **IVa**, and **Va-Ve** may serve in part as documentation of pre-restoration temperature, water quality, sediment, and biological conditions. However, additional pre-restoration monitoring may be needed, depending on the recommendations in the monitoring plan.

Goals and Objectives of Biological Impacts Study (Criterion #1)

The goal of the biological impacts study is to evaluate the effects of the River Falls hydropower project on biological communities in Lakes George and Louise, and in the Kinnickinnic and St. Croix Rivers. Study objectives are: 1) Conduct biological surveys of fish, macroinvertebrates, and aquatic vegetation in Lakes George and Louise, and at Kinnickinnic River locations upstream and downstream from the two lakes (**Va-Vd**); 2) Determine whether aquatic invasive species are present in Lakes George and Louise and pose risks for other portions of the Kinnickinnic River (**Ve**); 3) Determine whether freshwater mussels (including federally-listed and state-listed threatened and endangered species) are present in the lower Kinnickinnic River and at downstream St. Croix River locations, thereby posing a risk for impacts on mussels due to sediment mobilization associated with dam removal (**Vf**); and 4) Evaluate future improvements in physical and chemical conditions and biological communities in the Kinnickinnic River, as a result of dam removal and river restoration (**Vg**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. An important resource management goal for the St. Croix River is to protect the diverse fish and mussel populations, including several federally-endangered mussel species. Managing the biological impacts associated with the River Falls hydropower project and future dam removal is critical for achieving both of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The St. Croix River is a National Wild and Scenic River that is extensively used for recreational purposes. Recreational opportunities in both river corridors depend heavily on healthy and diverse biological communities.

Existing Information and the Need for More Information (Criterion #4)

As described above (**Background Information**), very limited information exists about the biota of the Kinnickinnic River, with nearly a complete lack of information about biological communities in Lakes

George and Louise. The information on biological impacts of the River Falls hydropower project is needed to inform the re-licensing process. With re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040, options need to be evaluated for improving the degraded water quality and biological conditions in Lake George and managing the presence of any invasive species. In addition, information about biological communities is needed to assess the impacts and benefits of removing the Powell Dam (by 2026) and the Junction Falls Dam (by 2035-2040).

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The near-term removal of the Powell Falls Dam (by 2026) and the eventual removal of the Junction Falls Dam (by 2035-2040) will affect aquatic life in the Kinnickinnic and St. Croix Rivers. The proposed biological studies would inform PM&E measures that are needed to protect aquatic life in the Lower Kinnickinnic and St. Croix Rivers during dam removal. In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality and biological impacts. Surveys of aquatic life in Lake George would inform PM&E measures that are needed to remediate these impacts and improve in-lake conditions.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Numerous standardized protocols are available for surveying biological communities in lakes, rivers, and riparian corridors. Protocols for surveying fish populations can be found in Plafkin, et al. (1989), Lyons, et al. (1996), and WDNR (2001 and 2007). Protocols for monitoring macroinvertebrates include those provided by Hilsenhoff (1987 and 1988), Plafkin, et al. (1989), WDNR (2000), MPCA (2017), and Garry (2017). Scott, et al. (2002), Hauxwell, et al. (2010), and Bowden, et al. (2017) document protocols for monitoring macrophytes. Additional protocols for monitoring a wide variety of riparian area elements can be found in MPCA (2002) and MDNR (2007). WDNR protocols should be used for surveys of aquatic invasive species (WDNR 2012) and freshwater mussels (WDNR 2015). Methodologies for conducting this study of biological impacts should be consistent with the protocols described above and others using acceptable, standardized practices.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the biological surveys of the Kinnickinnic River and Lakes George and Louise, including surveys of fish, macroinvertebrates, macrophytes, and invasive species (**Va-Ve**), will cost $70,000. The cost for compilation and evaluation of available information on freshwater mussel presence in the St. Croix River (**Vf**) is estimated to be $10,000. Pre- and post-restoration monitoring of the Kinnickinnic River reach currently impacted by Lakes George and Louise (**Vg**) is estimated to be $50,000.

The study of biological impacts is needed to assess the effects of re-licensing and the continuing operation of the Junction Falls Dam (until 2035-2040), and to evaluate the impacts and benefits of removing the Powell Dam (by 2026) and the Junction Falls Dam (by 2035-2040). Study information can also be used to develop any PM&E measures and license requirements that are needed to comply with federal and state endangered species laws, control any aquatic and/or terrestrial invasive species found in the project area, and improve the degraded water quality conditions in Lake George.

Study Design and Implementation

All of the study elements recommended above (in Studies I-V) should be designed and conducted by qualified water resource professionals, including those in consulting firms, water resource agencies, and non-governmental organizations with expertise and knowledge of the subject matter. This is especially critical for those study elements needed to gain federal and/or state regulatory approval for project re-licensing. Faculty and students at the University of Wisconsin River Falls also have the expertise to help design and implement some of the recommended study elements.

The study protocols used for monitoring, data collection, and/or analysis should be consistent with those used by water resource agencies (Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, Metropolitan Council Environmental Services, Wisconsin Department of Natural Resources, National Park Service, U.S. Geological Survey, U.S. Environmental Protection Agency) and/or as documented in peer-reviewed literature and reports (see **References**, below).

The study costs noted are best estimates of the resources needed to complete them; however these costs can be better quantified after detailed study designs have been completed. Some cost efficiencies can likely be achieved by bundling study elements that are similar in design and logistics. If study costs are a concern for the City of River Falls, City staff should meet with all stakeholders who submit study requests, to assess options that would minimize costs yet achieve the desired study outcomes.

Kiap-TU-Wish would greatly appreciate the opportunity to work with the City of River Falls and their water resource consultants on study design, selection of appropriate protocols and methodologies, and data analysis.

From the Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project:

"This plan does not take a position relative to the future of the dams in River Falls. However, it is important to recognize that the dams do create both positive and negative impacts for the ecosystem and human users of the watershed that should be analyzed prior to major reinvestment in the future."

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December 28, 2018

Kinnickinnic River Land Trust

We work with the community to conserve and protect the beauty and health of the Kinnickinnic River and its watershed.

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Kevin Westhuis, Utility Director
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River Falls, WI 54022

Electronic Filing

Re: Kinnickinnic River Land Trust Comments on Scoping Document 2 (SD2) and Study Requests for dams licensed by FERC under Project P-10489.

Dear Ms. Bose and Mr. Westhuis,

The Kinnickinnic River Land Trust (KRLT) appreciates the opportunity to comment on the Scoping Document 2 (SD2) for the hydro facilities license by FERC under Project P-10489. KRLT is submitting these recommendations for the areas that the SD2 and the meeting on March 13, 2018 did not adequately address.

The Kinnickinnic River is a unique recreational resource and highly rated trout fishery in northwest Wisconsin. Due to the unique resources and public interest, we recognize an extensive public process has been used to develop the basis for the City's PAD proposal to relicense Junction Falls dam and decommission and remove the Powell Falls dam. KRLT asks the City of River Falls (CRF) and FERC to incorporate our feedback as they work with the licensee (CRF) to require appropriate studies and study periods as part of the removal and restoration process.

KRLT's comments on the SD2 are outlined in **Appendix A**. KRLT is recommending amendments and clarifications of the studies proposed by the licensee on February 11, 2019 and summarized in the SD2. **Appendix B**.

To save time and costs, the KRLT urges CRF to follow FERC recommendation to establish a regular schedule of progress meetings with the stakeholders listed in the mailing list in the SD2 that goes beyond the minimum required dates in Appendix A. The meetings create opportunities to collaborate and would reduce the potential for misunderstandings and prepare the group to work through issues during the multi-year study process leading to the Final License Application filing by or before 8/31/2021. KRLT is willing to work with CRF and the Utility and their consultants on study design, selection of consultants, appropriate protocols and methodologies, data analysis.

Sincerely,

Charlene Brooks
Executive Director

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Appendix A
Comments on the Scoping Document 2 (SD2) for FERC No. 10489-016

KRLT recommends that the licensee consider the following issues critical to the proposed relicensing. KRLT asks that FERC address the issues in the Environmental Assessment (EA) and the Proposed Study Plan (PSP) to gather necessary information for the EA.

FERC did not include comments on the PAD or PSP in SD2 as those are considered during the study plan development process. KRLT comments on the PSP are in Appendix B.

FERC also did not include comments or recommendations on protection, mitigation and enhancement (PM&E) measures in the SD2 as FERC stated these will be addressed in the National Environmental Policy Act (NEPA) analysis and/or any license order that is issued for this project. FERC will request final terms, conditions, recommendations and comments when FERC issues our Ready for Environmental Analysis (REA) notice, following the filing of the license application. Based on the schedule in the SD2 the Final License Application filing is due by or before 8/31/2021. The dates for the REA and other milestones will be set AFTER the license applications is filed.

KRLT is submitting our comments again on the PM&E related items to maintain our position as a stakeholder regarding the importance of concerning these in the PSP and related pre-filing milestone steps.

In SD2: Appendix A: River Falls Project Process Plan and Schedule (page 21), there appears to be a error under the responsible party for the Pre-Filing Milestone of **File Revised Study Plan** due 6/11/2019. The Responsible Party is listed as **AEP Generation Resources**. KRLT believes the Responsible Party for this step is the Licensee, **City of River Falls**.
KRLT requests that FERC update the schedule or explain this reference in SD2: Appendix A.

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
AEP Generation Resources	File Revised Study Plan	6/11/19	5.13(a)
All stakeholders	Revised Study Plan Comments Due	6/26/19	5.13(b)
FERC	Director's Study Plan Determination	7/11/19	5.13(c)

1. Junction Falls Hydro ROR Operations – projections for the expected license period 30 – 50 years

CRF is not adopting the Study requests on Project Operations. In the PSP dated February 11, 2019 on Page 5-2 the licenses response is that 'The Licensee acknowledges the current FERC run-of-river flow conditions for the Project and is committed to maintaining run-of-river operations for the Junction Falls Development in a subsequent license." This ROR operation must ensure that adequate flow is discharged from the dam and that water level fluctuations in the flowage will be minimal.

To better evaluate the effectiveness of current ROR operations as reference for the future operating plan, the Licensee should install instream flow and sediment monitoring stations immediately above and below the project area. This will enable the Licensee to establish baseline information during the remaining period of the current license. This data will inform the Environmental Assessment (EA) by FERC that will be included as part of the Integrated License Process (ILP). Evaluation of this data will also inform environmental protection, mitigation or enhancement (PM&E) measures relevant to the license for Junction Falls.

To build efficiencies, the Licensee can collaborate with KRLT and the United States Geologic Survey (USGS) to identify appropriate monitoring locations and process. A full monitoring station supported by the USGS is not necessary as many viable alternative technologies for temperature, flow and stage are

available. These new stations will supplement the current USGS monitoring station at the Country Road F bridge approximately 15 miles downstream from the project area just above the confluence with the St Croix River where groundwater and tributaries contribute significantly to the outflow and conditions at times. This sensible step will provide specific, proximate information about the flow rate and turbidity conditions in the project area and in the downstream outflow feeding into the existing monitoring station.

KRLT also requests that the final license include defined operating headwater band elevations the Licensee proposes to operate within. To protect fish and wildlife habitat, KRLT recommends that the project continue to be operated within a narrow headwater band, that is, a few inches above and below the normal headwater target elevation at most.

Lastly, KRLT strongly believes the Licensee should also provide current and historical data on how well they are adhering to the ROR conditions of the current license as part of the publicly available information. This should include records of the required consultations with the Fisheries Manager at the USF&WLS, per the current conditions of license. Any demonstration of improper management with existing ROR PM&E measures should prompt FERC to enforce new strategies, such as automated cleaning gates.

2. Junction Falls Single Hydro Facility Project Economics – Temporal Scope 30 to 50 years

In preparation for the proposed licensing, projections on the economic value of the project inclusive of the costs of relicensing, overall profitability and expected public benefit of continued operations should be prepared by the Licensee. Estimates for the project operation should include reasonable, anticipated maintenance and identified source of funding for contingent or extra-ordinary events or expenses, such as 100-Year flood event, or damage to the turbine and power generation equipment that would result in less than full-operation. The Junction Falls dams have been damaged by significant flooding at least twice in the past so evaluation of risk and associated cost is a reasonable scenario to evaluate. The impaired equipment condition exists at the Powell Falls facility today, so an evaluation can be based on a comparison to the existing hydro facility as one possible risk projection.

KRLT recommends this as prudent risk management of the proposed hydro project operations for the expected license period, a minimum of 30 years per FERC statutory requirements. Utility Advisory Commission Memorandum from January 15, 2018 include consideration of a 40-year license period. We understand that assumptions will need to be made to create this economic impact projection. The value of the exercise comes not only from the final scenarios and associated range of profitability estimates, but the inventory of risk assumptions that can be reviewed periodically based on actual operations. This information will also serve to inform the public regarding the life-time value of the hydro facility if it is licensed for a final time by FERC as the Licensee proposed in the PAD. The Licensee has started to gather the necessary information they need to evolve that into appropriate scenarios and related net profitability estimates. This information should be developed and provided as a supplement to the PAD.

In the January 2018 Utility Advisory Board Resolution regarding relicensing of the Hydroelectric project P-10489 the findings included that the Junction Falls Facility:

- Is currently capable of generating $40,000 in net revenues per year from power generation; and
- Was reconstructed in 1990 at of a cost of $950,000 and will be fully depreciated in 2030; and
- Is currently in good operating condition with no significant capital expenditures anticipated for more than 20 years.

The resolution did not include an estimate of the cost of relicensing as an expense or clarify how that expense would impact the overall profitability of the operation over the remaining life of the facility. Financial Considerations in the January 15, 2018 memo to the Utility Advisory Board regarding **Scenario 3: Relicense and maintain the Junction Falls facility** included projected base project costs of $1,931,184 translating to projected annual increase in residential property taxes of $28.39 and projected annual increase in residential

utility bill of $3.37. Assumed in Scenario 3 is the timely removal of the Powell Fall facility and restoring the adjacent reclaimed impoundment by pursuing non-city funding sources estimated at $946,115 of the Base Project Costs and included 30% construction Contingency and 30% Engineering, Administrative, Legal and Fiscal Expenses totaling $670,070.

Looking beyond the financial responsibilities associated with the relicensing process and current facility operating costs for Junction Falls Dam, the licensee needs to consider other expenditures. The final license from FERC may require additional PM&E scenarios that increase the project's operating costs. Lastly, the current economic models fail to recognize staff time association with on-going compliance measures and report preparation associated with FERC license.

The February 13, 2018 River Falls City Council Agenda and package included a Feasibility Report for Hydro Facility Relicensing dated February 8, 2018 prepared by Short Elliot Hendrickson Inc. (SHE) project consultants for the City. Table 3 on Page 17 of that study indicated Option 2: FERC License Application (Relicensing) costs in the range of $218,000 to $444,00. This would be in addition to the investment in the community planning process costs the City pursued following license extension in 2014. This cost scenario did not break out just relicensing Junction Falls and the operating costs roughly estimated in the memo to the Utility Advisory Board.

This wide range and estimating approach are useful to guide the decision makers in deciding to pursue relicensing but is less than adequate to inform the operating profitability once a new license is granted by FERC. It also has no assessment of risk to fully operating the facility. KRLT request that the licensee create a more comprehensive operating model data as part of the ILP and in preparation for the EA.

Appendix B – Proposed Study Plan Comments

On February 11, 2019 the City of River Falls (CRF) submitted their Proposed Study Plan (PSP) for FERC Project No. 10489. This plan was in response to FERC pre-filing milestones schedule set out in Scoping Document 2 (SD2) Appendix A: for the Integrated Licensing Process (ILP). The Pre-Application Document (PAD) was submitted on August 30, 2018.

The following studies are included in Section 6.0 of the PSP:
1. Hydrologic & Hydraulic Evaluation
2. Water Quality Study
3. Shoreline and Aquatic Invasive Species Survey
4. Wetland, Riparian, and Terrestrial Resources Survey
5. Recreation Facility Inventory and Recreation Use Assessment
6. Cultural Resources Study

Kinnickinnic Land Trust representatives attended the Proposed Study Plan Meeting on March 13, 2019 at 9:00 am at the River Falls City Hall, Training Room, located at 222 Lewis Street, River Falls, WI 54022. The CFR representatives gathered feedback from the attendees on concerns about the PSP. As of the date of this letter the CRF has not contacted KRLT to address the concerns raised at that meeting or reached any accommodation regarding the PSP. No additional meeting notifications are on file with FERC.

KRLT encourages the Licensee to include engagement with stakeholders during the development of reports and studies and related recommendations and to go beyond the minimum required dates in the ILP schedule in the SD2. Appendix A. This will create a more collaborative process and provide skill resources for analysis and scenario development, concept testing and gain support for final recommendations. KRLT is willing to work with CRF and the Utility and their consultants on study design, selection of consultants, appropriate protocols and methodologies, data analysis.

From the PSP, CRF proposes the **Initial Study Report (ISR)** will be available January 31, 2020. This proposed date is almost 6 months earlier than the date for the same Pre-Filing Milestone in SD2: Appendix A. CRF has also proposed not filing the any Study Progress Reports as a result of the earlier date for the ISR.

KRLT asks that CRF amend their schedule to include provision for filing at least one progress report, as required by C.F.R. § 5.11(b)(3) for each of the proposed studies and for any additional study that may be included in the revised study plan proposal. (See comments in Appendix A on SD1: Appendix A schedule and decommission planning.)

Table 4.0-2: Estimated Dates for Commencement and Completion of Field Work

Proposed Study	Estimated Field Work Start Date	Estimated Field Work Completion Date
Hydrologic & Hydraulic Evaluation	July 2019	October 2019
Water Quality Study	July 2019	September 2019
Shoreline and Aquatic Invasive Species Survey	July 2019	September 2019
Wetland, Riparian, and Terrestrial Resources Survey	July 2019	September 2019
Recreation Facility Inventory and Recreation Use Assessment	July 2019	June 2020
Cultural Resources Study	July 2019	October 2019

KRLT also concurs with FERC, that although the decommissioning plan was not included in detail as a proposed study in the PSP submitted February 11, 2019, CRF should include it and any necessary additional studies in the Revised Proposed Study Plan due by or before June 11, 2019.

On May 8, 2019 Janet Hutzel, Chief of the Midwest Branch FERC Division of Hydropower Licensing submitted comments on the Proposed Study Plan. KRLT and other stakeholders raised this same concern at the PSP meeting on March 13, 2019 when discussing Requested Studies Not Adopted by CRF about the gap in the PSP. KRLT concurs with and supports the comments on Schedule A of May 8, 2019 letter from Janet. Specifically:

*"**Powell Falls Decommissioning Plan***
Section 5.6(d)(3)(i)(C) of the Commission's regulations requires a description of any known or potential adverse impacts and issues associated with the construction, operation or maintenance of the proposed project, including continuing and cumulative impacts. Furthermore, section 5.6(d)(3)(i)(D) of the Commission's regulations require a description of any existing or proposed project facilities or operations, and management activities undertaken for the purpose of protecting, mitigating impacts to, or enhancing resources affected by the project. The Preliminary Application Document (PAD) states that City of River Falls Municipal Utilities (City of River Falls) proposes to develop a decommissioning plan that would provide additional detail of the removal of Powell Falls dam, including specific measures to avoid and mitigate environmental effects associated with dam removal. In the Proposed Study Plan (PSP), several studies, including geology and soils and aquatic resources, were not adopted because City of River Falls states that existing information is sufficient to prepare a license application that would allow Commission staff to evaluate effects of dam removal.

*Without a decommissioning plan, it is not possible to conclude whether the existing information would be adequate to evaluate the specific measures to avoid and mitigate environmental effects associated with dam removal or if additional studies would be needed…. **Therefore, City of River Falls' revised study plan should include a proposal to develop a decommissioning plan that includes a detailed description of the methodology that would be used to develop the decommissioning plan**. The decommissioning plan should describe, at a minimum, the disposition of all project facilities (removal, and / or modification); how the dam would be deconstructed and removed; any environmental effects for all resources, including cultural resources, anticipated from the surrender, and the extent of any effects to all resources; any proposed measures to mitigate or lessen any effects; and a schedule for implementing any measures."*

Specific Proposed Study comments
The following comments from the Kinnickinnic River Land Trust outline concerns we and other stakeholders raised about the effectiveness, adequacy and completeness of the PSP and information that may be gathered to adequately analyze the potential effects of the continued operation of the Junction Falls Development on Project-related developmental and non-developmental resources and information needed to adequately analyze the potential effects of the proposed decommissioning and dam removal of the Powell Falls Development.

These concerns address criteria and proposed modifications to the PSP as provided in 18 CFR § 5.9(b).

A. Water Quality Study (PSP Page 6-5 to 12)
CRF is proposing to conduct sampling during a single study season at 4 locations from July 1 to September 15, 2019. This is proposed as baseline data on dissolved oxygen (DO) and temperature. KRLT recommends CRF include turbidity, suspended solids, nutrients (various forms of phosphorus and nitrogen), trace metals, bacteria, and chlorophyll as these are important inputs to understanding water quality as it is currently entering the project boundary as outlined in 6.2.4. These water quality conditions and the nutrient loads can have an acute effect on the health of organisms in the Kinnickinnic, including fish or insects as well as algae bloom that develops each summer in both impoundments.

The data are necessary for preparation of the exhibits for the NEPA analysis and resource issues outlined in SD2 4.2.2. and 4.2.9 Aquatic Resources, 4.2.5 and 4.2.12 Recreation. The costs difference for testing additional chemical compounds at the site should be nominal compared to the value of the data.

The proposed period of study is also is also missing a critical timeframe, based on the 2003 Thermal Study of the Kinnickinnic River[1] indicating that the water temperatures downstream of Powell Falls dam can exceed critical thresholds for native trout by late-May or early June.

The City of River Falls *North Kinnickinnic River Monitoring Project 2012 Summary* prepared by SEH, Inc. for the CRF engineering department has additional supporting data for an expanded timeframe on Page 2-3 as follows as one documented study of the variability of precipitation and effects on the Kinnickinnic River.

"River Falls Precipitation:

Due to the major influence of precipitation on river flow, temperature, and water quality, an analysis of seasonal precipitation is conducted as a part of this project. A total of 20.46 inches of precipitation was recorded in River Falls during the April-September 2012 period, 1.23 inches less than the normal total of 21.69 inches for the April-September time period. Rain fell on 59 days, or 32% of the April-September 2012 period.

April, May, and June were all wetter than normal, with a slight rainfall excess of 0.21 inch evident in April, a significant excess of 2.85 inches evident in May, and a moderate excess of 1.24 inches evident in June. The combined rainfall of 14.57 inches in April, May, and June was 4.30 inches above normal, and accounted for 71% of the total April-September 2012 precipitation. In contrast, July, August, and September were all drier than normal. A slight rainfall deficit of 0.30 inch was evident in July, but significant deficits of 2.78 inches and 2.45 inches were evident in August and September, respectively. The combined rainfall of 5.89 inches in July, August, and September was 5.53 inches below normal, and accounted for only 29% of the total April-September 2012 precipitation. The largest rain events of the monitoring year occurred on May 6 (1.40 inches), May 24 (1.61 inches), June 14 (1.79 inches), and June 20 (2.05 inches). Due to an extremely dry September 2011 and below-normal winter snowfall, abnormally dry conditions persisted in the North Kinnickinnic River Monitoring Project Area until early May 2012, when above-normal precipitation in May and June brought drought conditions to an end. However, with a much drier-than normal August and September 2012, severe drought conditions developed in the North Kinnickinnic River Monitoring Project Area by early October 2012.

Besides being slightly drier than normal, the April-September 2012 monitoring period was slightly warmer than normal. The mean air temperature in River Falls during the April- September 2012 period was 65.3º Fahrenheit (F), 1.6º F higher than the normal mean of 63.7º F for this time period. The months of April, May, June, and July were all warmer than normal, with May (+3.9º F) and July (+3.9º F) experiencing the greatest departures. The months of August and September were both cooler than normal, with temperature departures of -1.1º F and -1.3º F, respectively."

KRLT urges that the April – June timeframe be included in the Water Quality Study to encompass a full range of the seasonal precipitation and effects in the specific project areas and cumulative project. Due to variances by season the study should also be continued during the second study season. This can be done by incorporating available data from those time frames in year one and positioning the activities of the second study season to include sampling at the 4 proposed sites. The CRF could also work with USGS to reactivate the gage at (USGS05341854, Kinni River at Steeple Drive near Hammond, WI) to provide inflow water quality data above the project boundary to inform the studies, draft operational plan and EA.

Kinnickinnic River temperature can also fluctuate rapidly with precipitation events. The sampling interval of an hour does not align with the data in the same 2003 Thermal Study that indicate the temperature can change in as little as 10 minutes. The sampling interval should be increased to 15 minutes or less, approximating continuous monitoring, at all the proposed sampling locations.

[1] United States Army Corps of Engineers, Jim. B. Noren. 2003. Kinnickinnic River at River Falls, Wisconsin: Thermal Study

B. Shoreline and Aquatic Invasive Species Survey (PSP page 6-12 to 15)
KRLT concurs with Janet Hutzel, Chief of the Midwest Branch FERC Division of Hydropower Licensing comments. The study area should include both impoundments to ensure there is identification of information for the issues existing or emerging invasive species with the removal of Powell Falls development and cumulative effect in the project.

The proposed period of study is also is also missing a critical timeframe for early and late effects and emergency of aquatic invasive species. The study period should be expanded to include April – June timeframe and more than one study season to more appropriately evaluate the impacts to the specific project and cumulative effects.

The Proposed Study Plan should be amended to include impoundment fluctuations study for the project as part of resources issues and concerns to be analyzed in the EA for the Project for effects of decommission Powell Falls project and continued operations of Junction Falls project on wetlands, shoreline vegetation, littoral aquatic vegetation and associated wildlife. Amendments to the specific study criteria required by FERC as recommended as follows:

6.3.1 Goals and Objectives – add the following:
Use data acquired from other studies to provide information regarding the general habitat in the fluctuation zones of the Project and impacts of daily and seasonal fluctuations and project the impact of restoration.

6.3.2 Known Resource Management Goals – add the following:
The area of impoundment above Powell Falls dam will be relatively steep sided when the natural river course is restored. KRLT is proposing that the CRF analyze existing fluctuations data, historic and sediment survey information and develop a desk-top study of potential fluctuations to inform operation plans for Junction Falls when relicensed, including additional releases that may be necessary to maintain ROR operations.

The December 14, 2018 letter from Cheryl Laatsch, Wisconsin State FERC Coordinator from WI DNR included recommended study of STREAM FLOWS, CHANNEL DIMENSIONS, AND LINEAR GRADIENT included the relevant DNR management goals:

- investigate the impacts the project and decommissioning would have on the existing stream flows, channel dimensions, and linear gradient of the river along with the hydrologic and hydraulic study necessary for floodplain ordinance requirements.

6.3.3 Background and Existing information. Sources are already cited in the PAD and PSP, including:

- Two comprehensive studies of Project sediments have recently been completed by Inter-Fluve2: 1) Lake George and Lake Louise Sediment Assessment (Inter-Fluve 3-2016) and 2) Restoration of the Kinnickinnic River through Dam Removal Feasibility Report (Inter-Fluve 1-2017);
- A fishery survey (Wisconsin DNR 1998) at the Junction Falls impoundment (Lake George);
- Macroinvertebrate data have been collected (upstream and downstream of the Project) conducted in 1995 and 1997 (Wisconsin DNR 1998);
- Dam Removal Scenario: Summary of Ecological Impacts (Inter-Fluve 6-2017) in this study Inter-fluve recommended topographical data be collected to understand the stream bed:
  "Based on the 2016 City's bathymetry survey within the two impoundments, and cursory review of as-built drawings of the two dams, the total vertical drop at Junction Falls from the projected sill of the upper most cascade (toe of the existing dam) to the toe of the lowest cascade is approximately 21-feet. **Existing survey data depicting the vertical height and spacing of each natural cascade (lower, middle, upper) at Junction Falls is unknown at this time, and is recommended to be collected for further design and assessment. The total vertical drop at Powell Falls from the toe of the dam to the downstream stream elevation is approximately 4.5-ft but should be confirmed via a topo survey**."
- Recommendations for additional bathymetric study in July 2017 Hydrologic & Hydraulic Analysis Summary (SEH)

Refer to Table 6.1-2 List of Resources and Project Studies Complete beginning on page 120 of the Pre-Application Document submitted by the Licensee

6.3.4 Project Nexus – add the following
Fluctuation of the project impoundment above Junction Falls has a direct effect on the lower impoundment and restored stream bed and surrounding area including vegetation (on the shoreline and in wetlands), invertebrates, fish and wildlife that inhabit the fluctuation zones.

The project influences invasive species that have the potential to directly or indirectly cause economic or environmental harm to: human health; native species biodiversity; natural scenic beauty; and natural ecosystem structure, function or sustainability; the long-term genetic integrity of native species; recreation, commercial, industrial and other uses of natural resources in the project area and downstream resources; and the safety or well-being of humans, including vulnerable or sensitive individuals, per Wisconsin Invasive Species Rule NR40. The impoundment formed behind the Junction Falls dam and Powell Falls dam provides lentic (slow moving, lake-like) habitat which is more conducive for submerged exotic aquatic plant growth than if the dam was not present and the system was more riverine (Baxter, 1977).

As stated in a technical memo provided to the licensee by Short Elliot Hendrickson, Inc (SHE) on June 19, 2017, "the two impoundments both isolate and perpetuate the risk of invasive species establishment (SEH, 2017.)" Understanding the current invasive populations are key to develop mitigation efforts that will protect the Kinnickinnic River, adjacent land and downstream confluences with the St. Croix River, and the public from potential dispersal that may occur during Project activities. This information will assist FERC in completing the EA and developing relevant PM&E conditions for a future license.

6.3.5 Methodology – add the following:
The following methodology is proposed to the impoundments fluctuations study consistent with similar studies for hydroelectric projects on the Macomb and lower Oswegatchie developments in New York and the Willow River developments in Wisconsin:

1. Observe and photo or video document representative habitat types and shoreline slopes within the fluctuation zone or comparable sites in the South Fork tributary or North Kinnickinnic River.
2. Compile and analyze historical and existing impoundment elevation data to assess the extent of water-level fluctuations and seasonal occurrence and annual variations during the year.
3. Complete additional typographical or bathymetry data gathering as recommended in prior studies and summaries to understand an accurate representation of the water surface profiles through each of the respective falls in a dam removal scenario.[2]
4. Meet with representatives of the public interest and agency resources to review the historical impoundments fluctuation data, the photo or video documentation and results of related studies to determine the potential effects of the current Junction Falls operations and project the effect of the removal and restoration of the river below Junction Falls. Part of this discussion may include developing scenarios for restoration that would optimize the operation and flow over time along with potential conditions that would result in impairment to ROR operation.

6.3.6 Consistency with Generally Accepted Scientific Practice - no changes

6.3.7 Deliverables and Schedule – add the following
A written report documenting the observations and data collection, analysis of existing impoundments elevation data, restored streambed elevation data and resulting recommendations will be developed as a deliverable from the study. The report will evaluate the effects of the existing fluctuation regime and incorporate relevant results

[2] Kinni Corridor Plan – Hydrologic & Hydraulic Analysis Summary (page 6), Kinnickinnic River Hydraulics – Proposed Conditions (SEH July 2017)

or data from relates studies of the Kinnickinnic River. Study plan dates will be incorporated into Table 4.0-2 of the PSP.

6.3.8 Cost and Level of Effort – add the following

Evaluation of the historical and projected fluctuation levels using existing data and studies would be a desk-top exercise with limited additional field time, as photo and video data will be collected during other studies or can be easily added to those plans. Typographic and bathymetry data should also be collected in both impoundments. The estimated additional cost range is $5,000 to $7,500 to the estimated cost of $18,000 in PSP 6.3.8.

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HP-05-07 (8/15/03)

For SHPO Use Only. Case # 13-0908/PI

REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL UNDERTAKING

Submit one copy with each undertaking for which our comment is requested. Please print or type. Return to:

Wisconsin Historical Society, Division of Historic Preservation, Office of Preservation Planning, 816 State Street, Madison, WI 53706

RECEIVED
FEB 12 2019
BY: .....

Please Check All Boxes and Include All of the Following Information, as Applicable:

I. GENERAL INFORMATION

☐ **This is a new submittal.**
☑ **This is supplemental information relating to Case #:** 13-0908/PI **and title:** _____
☑ **This project is being undertaken pursuant to the terms and conditions of a programmatic or other interagency agreement.**
The title of the agreement is Programmatic Agreement for Wisconsin

a. Federal Agency Jurisdiction (Agency providing funds, assistance, license, permit): FERC No. 10489

b. Federal Agency Contact Person: Shana Wiseman Phone: 202-502-8736

c. Project Contact Person: Kevin Westhuis Phone: (715) 426-3442

d. Return Address: 222 Lewis Street, River Falls, WI Zip Code: 54022

e. Email Address: kwesthuis@rfcity.org

f. Project Name: River Falls Hydroelectric Project

g. Project Street Address: (see attached map)

h. County: Pierce City: River Falls Zip Code: 54022

i. Project Location: Township 27 N, Range 19 W, E/W (circle one), Section 1, 2, Quarter Sections _____

j. Project Narrative Description—Attach Information as Necessary.

k. Area of Potential Effect (APE). Attach Copy of U.S.G.S. 7.5 Minute Topographic Quadrangle Showing APE.

II. IDENTIFICATION OF HISTORIC PROPERTIES

☑ Historic Properties are located within the project APE per 36 CFR 800.4. Attach supporting materials.
☐ Historic Properties are not located within the project APE per 36 CFR 800.4. Attach supporting materials.

III. FINDINGS

☐ No historic properties will be affected (i.e., none is present or there are historic properties present but the project will have no effect upon them). Attach necessary documentation, as described at 36 CFR 800.11.
☑ The proposed undertaking will have no adverse effect on one or more historic properties located within the project APE under 36 CFR 800.5. Attach necessary documentation, as described at 36 CFR 800.11.
☐ The proposed undertaking will result in an adverse effect to one or more historic properties and the applicant, or other federally authorized representative, will consult with the SHPO and other consulting parties to resolve the adverse effect per 36 CFR 800.6. Attach necessary documentation, as described at 36 CFR 800.11, with a proposed plan to resolve adverse effect(s).

Authorized Signature: Lesley Brotkowski Date: February 11, 2019

Type or print name: Lesley Brotkowski, TRC Environmental

IV. STATE HISTORIC PRESERVATION OFFICE COMMENTS

Process for Evaluation and assessment is appropriate.*

☐ Agree with the finding in section III above.
☐ Object to the finding for reasons indicated in attached letter.
☒ Cannot review until information is sent as follows: _____

Authorized Signature: [signature] Date: 3/14/19

* Except: Phase 1 Archaeological assessment of shoreline is preferred to simple visual inspection.

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APPENDIX C
AGENCY AND STAKEHOLDER STUDY REQUESTS

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

December 14, 2018

Federal Energy Regulatory Commission
Kimberly D. Bose, Secretary
888 First Street, N.E.
Washington, DC 20426

City of River Falls
Kevin Westhuis, Utility Director
222 Lewis Street
River Falls, WI 54022

Re: RE: Wisconsin Department of Natural Resources Comments on Preliminary Application Document and Scoping Document 1 for the River Falls Hydroelectric Project P-10489, City of River Falls, Pierce County, Wisconsin

Dear Ms. Bose and Mr. Westhuis,

The department appreciates the opportunity to participate in the process to relicense the Junction Falls hydroelectric dam and the removal of the Powell Falls hydroelectric dam, as proposed in the Preliminary Application Document (PAD), and the Scoping Document 1 (SD1). Both of these dams are licensed by FERC under Project P-10489.

The Project is licensed as a two-development project, which includes the Junction Falls dam and Powell Falls dam, located on the Kinnickinnic River. The Kinnickinnic River is a unique recreational resource and highly rated trout fisheries in northwest Wisconsin. Due to the unique resources and public interest, we recognize an extensive public process has been used to develop the basis for the City's PAD proposal to relicense Junction Falls dam and decommission and remove the Powell Falls dam. With the information in the PAD, the department have carefully considered our responsibilities under the Clean Water Act and Navigable Waters Public Trust Doctrine for the proposed relicensing of Junction Falls and decommission and removal of Powell Falls.

The department has limited information regarding natural resource information associated with the two hydroelectric dams and their impoundments. Studies associated with Powell Falls dam removal and river restoration, and Junction Falls relicensing of the existing hydroelectric dam have different purposes, from a short term, long term, and cumulative impact.

Our requests for information and studies focus on the continued operation of the Junction Falls dam and our information and study requests related to Powell Falls dam are limited. After the department reviews the FERC Environmental Assessment (EA), and at a time more contemporary with the dam removal, the department will identify needed information and study requirements applicable to Powell Falls dam in our State issued Water Quality Certification (WQC).

The department feels that a more efficient and responsive management approach is to require appropriate studies as part of the removal and restoration process. The department plans to include requirements for additional studies as part of the plans and requirements identified in the WQC. The information below will likely be required as part of the approvals in the WQC.

- Pre-removal hazardous evaluation of decommissioned buildings
  - See https://dnr.wi.gov/files/PDF/pubs/wa/WA651.pdf)
- Drawdown Plan for Lake Louise
- Sediment Transport and Management Plan
- Storm Water and Erosion Control Plan (during removal and post removal)
- Dam and Appurtenances Removal Plan
  - See https://dnr.wi.gov/topic/Dams/DamRemovalAbandonment.html
- Post Removal Wetland Delineation and Functional Assessment
  - See https://dnr.wi.gov/TOPIC/WETLANDS/delineation.html
  - See https://dnr.wi.gov/topic/wetlands/function.html
- Post Removal Fisheries/Mussel Survey and Habitat Assessment

As the City begins to evaluate the array of study requests, and determine their study proposal and next steps, the department will continue to provide guidance and recommendations.

Please be aware that Scientific Collectors Permits may be required to complete various surveys. Please work with the department to obtain appropriate permits and approvals prior to the collection of data.

To save time and costs, the department recommends that the City meet with the stakeholders who have requested studies to explore options to minimize costs, and still achieve desired data collection. We also recommend exploring the use of students at the University of Wisconsin River Falls.

Sincerely,



Cheryl Laatsch
State FERC Coordinator

e-copy via email: Lesley Brotkowski, TRC
Dan Helsel, DNR FIL/BRF
DNR Internal Project Team

Study Requests
Relicense of Junction Falls and Removal of Powell Falls

ASSESSMENT OF CURRENT DAM OPERATIONS AT JUNCTION FALLS

- Goals and Objectives: Determine if the project is meeting the requirements of minimum flows and run-of-river operations; including documenting how downstream river flows are managed appropriately to limit water level fluctuations.

- Relevant DNR Management Goals: Assess the current operations to ensure that the operations are not having an adverse impact on the river, and for the operations to mimic the natural river flows

- Existing Information: Historical and current information addressing the relationship between the hydro operations and water levels was not adequately discussed in the PAD. Basic information states that the dam operates in run-of-river mode and uses manual gate operations. The PAD states that the operators use a "prescribed outline" when ramping the units up and down. The PAD states that the operator makes weekly visits to the Powell Falls dam, and daily visits to the Junction Falls dam.

- Operation nexus to resource and how informs license: Ensure Junction Falls is meeting the intent of run-of-river, and not causing divergence in flows that harm the downstream aquatic ecosystem.

- Methodology: Desktop review of existing inflow and outflow data, including an evaluation report of run-or-river and operations requirements.

- Level of Effort and Cost: Staff time is expected to be 20-40 hours at $125 per hour equaling $2500-$5000 for data analysis and report.

STREAM FLOWS, CHANNEL DIMENSIONS, AND LINEAR GRADIENT

- Goals & Objective: Determine the impact the proposed project has on the existing stream flows, channel dimensions and linear gradient of the Kinnickinnic River

- Relevant DNR Management Goals: The proposed study would investigate the impacts the project would have on the existing stream flows, channel dimensions, and linear gradient of the river. The study would be completed in conjunction with the hydrologic and hydraulic (H&H) analysis requested for floodplain ordinance requirements. The impacts that the project may cause on the existing stream flows, channel dimensions and linear gradient may alter any resource, recreational, and developmental management plans for the future.

- Existing Information: Use of the existing H&H and geometric data available from the August 2002 study completed for the Kinnickinnic River. May also need to refer to existing management efforts (recreational, resource, habitat) to investigate the impacts the proposed project would have.

- Operation nexus to resource and how informs license: The removal of the Powell Falls hydroelectric dam and other development may impact the existing stream flow, velocities, channel dimensions, and linear gradient depending on what is proposed. The results of a H&H, completed in conjunction with the floodplain investigation, would demonstrate additional conditions to take into consideration for various

management and developmental purposes. This may include fisheries management, habitat, dredging, water quality, development, etc.

- Methodology: The analysis would use the existing H&H information completed for the Kinnickinnic River. Additional flow rates may need to be calculated, such as the 2, 5, 10, 25, 50, and 100-year flood events, to determine the impacts on the stream flows, channel dimensions, velocities, and linear gradient. Additional surveys may also be required.

- Level of effort and costs: The analysis must be completed by a licensed professional engineer in the State of Wisconsin. Depending on the scope of the project, additional surveys and cross sections may be required, in addition to hydrologic flow rate calculations, and model revisions. A minimum of 40 hours of desktop analysis at $125 per hour equals $5000 for desktop review.

HYDROLOGIC & HYDRAULIC STUDIES FOR FLOODPLAIN ORDINANCE REQUIREMENTS

- Goals & Objectives: Determine the impact the proposed project has on the base flood elevations (100-year event) for the Kinnickinnic River, which is currently considered a Zone AE.

- Relevant DNR Management Goals: The proposed study would investigate the impacts the dam removal and any other development occurring within the mapped floodway, has on the existing base flood elevations for the Kinnickinnic River. If any development occurring within the mapped floodway causes an impact (increase, decrease, floodway top width change), a Letter of Map Revision (LOMR) from FEMA and potential legal arrangements from affected property owners would be required. The proposed study would also ensure that the provisions of the local community's (City of River Falls, Pierce County, St. Croix County) floodplain ordinance are met, as participants in the National Flood Insurance Program (NFIP)

- Existing Information: August 20, 2002 City of River Falls Flood Insurance Study (FIS), HEC-HMS model (using TP-40 rainfall values). According to the 2011 Pierce County FIS, "the flood elevations upstream of the Junction Falls (Lake George) and Powell Falls (Lake Louise) dams were based on the HEC-HMS model. The model uses the storage indication method to calculate high-water elevation based on the hydrographs generated in the model. Rating curves for the dams were based on information in the River Falls Municipal Hydroelectric Facilities, FERC Project No. 10489-000, City of River Falls, Wisconsin."

- Operation nexus to resource and how informs license: The removal of the Powell Falls hydroelectric dam, and other development within the mapped floodway could impact the existing base flood elevations for the Kinnickinnic River. The results of the hydrologic and hydraulic (H&H) analysis for the floodplain ordinance requirements would demonstrate any additional actions required as part of the overall project.

- Methodology: According to the existing 2011 FIS for Pierce County, the August 2002 analysis was completed using HEC-HMS. The U.S. Army Corps of Engineer's step-backwater program, HEC-RAS, is typically required for riverine floodplain analyses. However, further investigation into the existing HEC-HMS model would be required. The analysis may need to include a check to the existing hydrologic flow rates, especially with the updated Atlas 14 rainfall values. Depending on the development within the floodway, additional cross-sectional survey may be required (LIDAR and field survey). The analysis will also need to include updated mapping to reflect any changes or revisions to the mapped floodplain (floodfringe, floodway, elevations, etc.). If the project does impact the base flood elevations for the Kinnickinnic River, the MT-2 application process through FEMA will also need to be completed.

- Level of effort and costs: The analysis must be completed by a licensed professional engineer in the State of Wisconsin. Depending on the scope of the project, additional survey and cross sections may be required, in addition to hydrologic flow rate calculations, and model revisions. A minimum of 80 hours of desktop analysis at $125 per hour equals $10, 000 for desktop review. Additionally, the cost of a Letter of Map Revision (LOMR) through FEMA starts at approximately $8250.

AQUATIC AND TERRESTRIAL INVASIVE SPECIES SURVEY

- Goals & Objectives Evaluate the presence/absence of invasive species listed in NR40, including habitat preferences within the project area.

- Relevant DNR Management Goal: Minimize the transport and establishment of existing invasive species and establish management practices to reduce new invasive species.

- Existing Information: Limited information is available.

- Operation nexus to resource and how informs license: The project may influence invasive species that have the potential to directly or indirectly cause economic or environmental harm or harm to human health, including harm to native species, biodiversity, natural scenic beauty and natural ecosystem structure, function or sustainability; harm to the long−term genetic integrity of native species; harm to recreational, commercial, industrial and other uses of natural resources in the state; and harm to the safety or wellbeing of humans, including vulnerable or sensitive individuals. – per NR40.

- Methodology: WDNR Early Detection Early Response Protocols. Additionally, use current standards of scientific principles.

- Level of effort and costs: 40 hours of field work and reporting at $125 per hour equals $5000. Mobilization, equipment, and supplies are estimated at $10,000.

EVALUATE WILDLIFE HABITAT

- Goals & Objectives: Document wildlife diversity, habitat types, and general abundance within the project area. The goal of this study is to evaluate the effects of the distribution and composition of vegetation and wildlife habitats, including wetlands, and the effects operations of those actions on wildlife inhabiting those habitats.

- Relevant DNR Management Goals: The department has responsibility to manage wildlife, including listed species. This information will be beneficial to understanding the current environment, and potential needs for resource management associated with Junction Falls.

- Existing Information: Information is limited. To our knowledge, the PAD does not include any field assessment or survey of wildlife habitat or use.

- Operation nexus to resource and how informs license: Both the removal of Powell Falls and the relicensing of Junction Falls has the potential to have short term and long-term impacts on habitat use. Proper management of the resource will help to minimize any adverse impacts associated with the removal, restoration, and relicensing activities.

- Methodology: Using a qualified biologist knowledgeable in area vegetation and wildlife, identify, classify, and delineate on a map major vegetation cover types within project area. You may use existing aerial photography, on the ground surveys, or a combination of the two to identify and map the cover types.

  Ground-truth any remote-sensing mapping efforts, record all wildlife observed (directly or indirectly) and any terrestrial invasive species observed during survey efforts. Describe each cover type by species composition, successional stage, and aerial extent (acreage) within the survey area, including invasive species. As an example, the methodology expressed in the following reference could be used. https://www.fs.fed.us/research/publications/gtr/gtr_wo89/gtr_wo89.pdf

- Level of effort and costs: 40 hour of desktop review, field work, and data summary at an estimated $125 per hour equals $5000. Mobilization, travel, and equipment are estimated at $2000.00.

FISHERIES/RIVERINE HABITAT EVALUATION

- Goals & Objectives: Define, measure and assess the stream habitat conditions upstream and downstream of the hydropower facilities.

- Relevant DNR Management Goals: Obtaining recent habitat assessment information is critical for future management actions and establishing baseline data.

- Existing Information: The department conducted instream habitat assessment in 1996 following Guidelines for Evaluating Stream Habitat in Wisconsin Streams upstream and downstream of the hydropower facilities.

- Operation nexus to resource and how informs license: Having updated instream habitat assessment information is critical for evaluating the effects of the project on the stream ecosystem, and especially considering removal of one dam is being proposed. It will provide baseline data to current conditions. The data can be used to help guide potential restoration design efforts for the Powell Falls removal, and the river management associated with Junction Falls.

- Methodology: Guidelines for Evaluating Stream Habitat in Wisconsin Streams.

- Level of effort and costs: 40 hours of field work, and an 12 hours of data analysis at $125 per hour equals $6,500. Mobilization, travel, and equipment costs are estimated at $15,000.

FISHERIES ASSESSMENT FOR LAKE GEORGE

- Goals & Objectives Define the diversity and abundance of the fish community in Lake George.

- Relevant DNR Management Goal: Understand the existing environment. The department manages public water for recreational use, such as fishing, protection and management of species, and overall health of the fishery of the state.

- Existing Information: Little information is present on the fishery in Lake George.

- Operation nexus to resource and how informs license: Having current fish survey information will help department staff make informed management decisions regarding the fishery.

- Methodology: Spring Boat Electrofishing Survey following WDNR Lakes Sampling Protocol

- Level of effort and costs: 1-night electrofishing survey of the entire shoreline during spring time when water temperatures are between 55-70 degrees F. Cost~$5,000 includes an estimated 30 hours of labor /survey prep and 10 hours of data analysis and summary report generation at $125 per hour. Mobilization, travel, and equipment is estimated at $10,000.

MACROINVERTEBRATE SURVEY

- Goals & Objectives: Assess the water quality using macroinvertebrate bio-indicators below and above the impoundments.

- Relevant DNR Management Goals: The department is charged with managing the water quality of the waters of the state and meeting designated criteria under the Clean Water Act.

- Existing Information: Limited information exists on the macroinvertebrate community immediately downstream and upstream of the impoundments.

- Operation nexus to resource and how informs license: Macroinvertebrates are likely impacted by segmentation of the river, and impoundments can impact communities due to changing thermal and/or flow regimes. These bio-indicators are used to assess the health of the resource.

- Methodology: Wisconsin DNR Guidelines for Collecting Macroinvertebrate Samples from Wadable Streams, June 2000. Data should be analyzed using the current WDNR WISCALM Guidance.

    - Samples should be collected at four existing stations including two sites upstream and two sites downstream from both impoundments. Samples should be collected from Main Street (Swims Station 10011492), Maple Street (SWIMS Station 10037539), near Glenn Park (Swims Station 10020720) and at the confluence with Rocky Branch (SWIMS Station 10011488).

- Level of effort and costs: 1 day of field work with an estimated 20 hours of field and data analysis at $125 per hour equals$2500. Lab analysis at state certified lab estimated to cost $1000. Mobilization, travel, and equipment is estimated at $2000.00.

CONTINUOUS DISSOLVED OXYGEN MONITORING

- Goals & Objectives Monitor dissolved oxygen (DO) continuously downstream and upstream of the impoundments, to document current conditions, and determine if water quality criteria are being met.

- Relevant DNR Management Goals DO is critical for the health and survival of aquatic organisms, and the Wisconsin has minimum state water quality standards for DO.

- Existing Information Limited information is available on DO levels immediately downstream and upstream of impoundments.

- Operation nexus to resource and how informs license: Dam operations can influence downstream DO levels depending on withdrawal location, and eutrophication of the impoundment.

- Methodology: Wisconsin DNR Guidelines for Deployment of Continuous Dissolved Oxygen Meters Data Evaluation and Data Storage, February 2007. Data should be analyze using the DNR WISCALM Guidance.

- Level of effort and costs: 30 hours of instrument deployment, maintenance, and retrieval for 1 person at two locations, plus 10 hours data analysis. 40 hours at $125 per hour equals $5000. Cost for equipment, travel, and mobilization are estimated at $5000.00.

AQUATIC PLANT SURVEY – LAKE GEORGE

- Goals & Objectives: The goal of the aquatic plant study is to provide baseline data on the condition of the aquatic plant community in Lake George.

- Relevant DNR Management Goals: The proposed aquatic plant study will provide baseline aquatic plant information to determine if management practices would be needed to enhance the existing aquatic plant community, and overall health of Lake George as a bio indicator.

- Existing Information: No data is available.

- Operation nexus to resource and how informs license: The study results will provide baseline aquatic plant data. The data informs the department of the effects on the surface water resource and would be used to formulate management options.

- Methodology: The information collected from this study includes an assessment of the frequencies of occurrence of different plant species, as well as estimates of species richness, abundance, and maximum depth of plant colonization. The aquatic invasive species study should be conducted according to WDNR's Recommended Baseline Monitoring of Aquatic Plants in Wisconsin 2010.

- Level of effort and costs: 40 hours of fieldwork and reporting at $125 per hour equals $5000. Mobilization, equipment, and supplies estimated at $10,000.

AQUATIC AND TERRESTRIAL INVASIVE SPECIES SURVEY

- Goals & Objectives: The goal of the invasive species study is to provide baseline data on the presence/absence of NR 40 listed aquatic and terrestrial invasive species. This data will be used to determine if management actions will be required to manage existing invasive species and prevent the spread of other nearby invasive species.

- Relevant DNR Management Goals: The proposed invasive species study would provide information on invasive species within the project area, and downstream of Powell Falls. This information will help department staff determine if any management measures would be needed to manage existing invasive species and prevent the movement of adjacent invasive species populations.

- Existing Information: There is limited information on invasive species within the project area.

- Operation nexus to resource and how informs license: The presence of the dams could influence the movement and establishment of invasive species throughout the project area. The results of the invasive species study will assist resource agencies in determining if any protection, restoration, or enhancement measures would be necessary.

- Methodology The aquatic invasive species study should be conducted according to WDNR's AIS Early Detection Monitoring Protocols. Need to document terrestrial invasive species monitoring protocols

- Level of effort and costs: 40 hours of field work and staff time at $125 per hour equals $5000. Mobilization, equipment, and supplies is estimated $10,000.

SHORELINE HABITAT ASSESSMENT OF LAKE GEORGE

- Goals & Objectives: The goal of the shoreline habitat study is to provide baseline data on the condition of the shoreline habitat for Lake George.

- Relevant DNR Management Goals: The goal of the shoreline habitat study is to provide baseline data on the condition of the shoreline habitat for Lake George. Data collected will be used to determine the need for restoration and protection efforts.

- Existing Information: Little is known about the shoreline habitat conditions of Lake George.

- Operation nexus to resource and how informs license: Data collected from the shoreline habitat monitoring will be used to identify areas of the shoreline that require restoration or protection.

- Methodology: Data to be gathered lake-wide include: percent cover of impervious surface, mowed lawn, or plants in the riparian buffer zone, number of parcels with erosion concerns, total length of modified banks, density of human structures (piers, buildings, etc.), general distribution of floating and emergent aquatic plants, and density of coarse woody habitat. The shoreline habitat study should be conducted according to WDNR's Lake Shoreline & Shallows Habitat Monitoring Field Protocol

- Level of effort and costs: 40 hours of field work and staff time at $125 per hours equals $5000. Mobilization, equipment, and supplies is estimated at $15,000.

MUSSEL STUDY - JUNCTION FALLS AND POWELL FALLS DOWNSTREAM TO THE ST. CROIX RIVER

- Goals & Objectives: The goal of the study is to determine freshwater mussel density and diversity, including characterizing mussel habitat within the Junction Falls and Powell Falls project areas, and downstream to the St. Croix River.

  The study would provide information on freshwater mussels species present, their diversity, density, and a better understanding of not only baseline conditions and associated management needs for Junction Falls relicensing; but, it will also provide important information necessary to understand potential impacts associated with the Powell Falls dam removal, and guide both the department and the City on options to minimize impacts from the removal, and options for restoration efforts if needed.

- Relevant DNR Management Goals: This information will help the resource agencies determine if any best management practices are needed to protect listed species; and any management measures to protect or enhancement the existing freshwater mussel population.

- Existing Information: There is limited information on freshwater mussel species in or near the project area. Several state and federally listed mussels have been documented at the confluence of the Kinnickinnic and St Croix Rivers. The department has provided historical information, and listed species information to the City.

- Operation nexus to resource and how informs license: The removal of Powell Falls hydroelectric dam, and the operations of the Junction Falls Project could influence the freshwater mussel species located at the study area, and downstream to the St Croix River. The results of the survey will provide essential information to determine if any protection measures, restoration, or enhancements would be necessary as a management requirement associated with the relicensing of the Junction Falls dam and/or the restoration associated with the removal of the Powell Falls dam.

- Methodology: A qualitative and quantitative survey for freshwater mussels should be conducted. Methods should follow the WDNR's Guidelines for Sampling Freshwater Mussels in Wadable Stream.

- Level of Effort and Cost: An estimate of 40 hours of field work and 40 hours to analyze data and draft a report at an estimated $125 per hour equals $10,000 for staff time. Mobilization, including travel time and equipment is estimated at $20,000.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

DEC 1 9 2018

REPLY TO THE ATTENTION OF:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, Northeast
Washington, District of Columbia 20426

Re: Scoping Document 1, River Falls Hydroelectric Project, Kinnickinnic River, City of River Falls, Pierce County, Wisconsin, Federal Energy Regulatory Commission Project 10489-016

Dear Ms. Bose:

EPA appreciates the opportunity to review the document referenced above, dated October 25, 2018. We are providing scoping comments pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act. The Federal Energy Regulatory Commission (FERC) is the lead agency under NEPA, and the City of River Falls Municipal Utilities (City) is the project proponent. EPA offers comments with the goal of facilitating project efficiency by identifying environmental issues and recommending solutions early in the planning process. We also aim to assist with meeting project goals in a manner that best protects natural resources and human health. Please find EPA's project recommendations in the enclosed detailed comments.

The River Falls Hydroelectric Project consists of two developments. The upper 250-kilowatt (kw) Junction Falls development contains a 140-foot-long by 32-foot-high concrete dam and an impoundment with a surfaced area of 15.5 acres. The lower 125 kw Powell Falls development contains a 110-foot-long by 16.5-foot-high concrete dam and an impoundment with a surface area of 15.4 acres. The City is seeking a new license from FERC to continue operating the Junction Falls development in a run-of-river mode, without changes to structures or operations. The City also proposes decommissioning the Powell Falls development and removing the dam by 2026. EPA recognizes the potential for significant long-term benefits to the Kinnickinnic River from dam removal if it the project is well-planned, with appropriate protective measures.

The scoping notice states that FERC's current intent is to prepare an environmental assessment (EA), and there is a possibility that an environmental impact statement (EIS) may be required. FERC explains that the current process will satisfy NEPA scoping requirements irrespective of whether FERC issues an EA or EIS.

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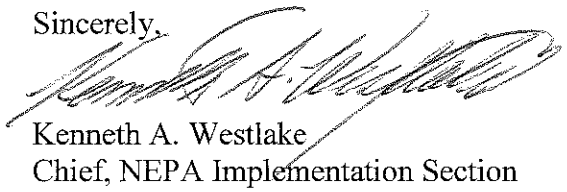
If you would like to discuss our recommendations, please contact Jen Blonn Tyler, the lead reviewer for this project, at 312-886-6394 or tyler.jennifer@epa.gov. Please send all future NEPA documents related to this project to Ms. Tyler at the address listed above.

Sincerely,



Kenneth A. Westlake
Chief, NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Cc via email:

Shana Wiseman, FERC
Pete Fasbender, U.S. Fish and Wildlife Service
Eric Hanson, U.S. Army Corps of Engineers
Cheryl Laatsch, Wisconsin Department of Natural Resources

EPA'S DETAILED SCOPING COMMENTS ON THE RIVER FALLS HYDROELECTRIC PROJECT, KINNICKINNIC RIVER, CITY OF RIVER FALLS, PIERCE COUNTY, WISCONSIN, FEDERAL ENERGY REGULATORY COMMISSION PROJECT 10489-016

Project Description

Potential impacts from the removal of the Powell Falls development could vary greatly depending on project design, deconstruction practices, restoration methodologies, and mitigation. It is important for the National Environmental Policy Act (NEPA) document to clearly assess such project elements. Without this information, it would be difficult to identify best practices and gauge the significance of impacts. A thorough description of all stages of the project is also needed for the public and resource agencies to provide appropriate feedback to inform the project design.

Recommendations for the NEPA Document:

- Describe the current Junction Falls and Powell Falls developments, including their histories, types of dam, current conditions, construction materials, impoundment acreages and depths, supporting facilities, and other features of the developments.
- For the Powell Falls development, describe information on proposed deconstruction sequencing, including the proposed timeline and the specific proposed steps to accomplish dam removal.
- Provide information pertaining to construction access and how work would be done (i.e., construction staging from the river bank vs. in-stream river work). If cofferdams or other temporary dewatering measures are proposed, then discuss those measures, their impacts, and the lengths of time they would be installed. EPA recommends that equipment not be placed in the active river, and that dewatering measures such as temporary portable dams or cofferdams be installed to isolate river flow from any active work areas.
- Clearly analyze alternatives for controlling sediments, including active management strategies such as mechanical removal.
- Describe any plans for restoring the river that are connected to the proposed dam removal.

Disclosure of Project Impacts and Protective Measures in the NEPA Document

FERC's Scoping Document 1 explains that the City of River Falls proposes to decommission the Powell Falls development and remove the dam by 2026. The City plans to develop a decommissioning plan that would include measures to avoid or mitigate effects on: soils and sediment, water quality, fish and aquatic habitat, wildlife, special-status species, terrestrial, recreation, and cultural resources (page 9). Based on Scoping Document 1, it is unclear whether FERC intends to require that the above measures be included within the NEPA document or in a separate, future decommissioning plan. FERC's Regulations Implementing NEPA state that environmental assessments serves to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact (18 CFR 380.2). Disclosure of project impacts and protective measures is fundamental to this determination.

Recommendations for the NEPA Document:

- Clearly describe the anticipated impacts from relicensing the Junction Falls development and decommissioning and removing the Powell Falls development.

- In the NEPA document, thoroughly consider measures to avoid, minimize, and mitigate environmental impacts.
- If the proposed project would rely on protective measures to avoid significant impacts, then ensure that commitments to implement such measures are included in the NEPA document. Without clear commitments, there is no certainty that protective measures would be implemented.

Sediment, Materials Management and Erosion Related to the Powell Falls Development

The City of River Falls Municipal Utilities submitted an August 30, 2018 Pre-Application Document (PAD) to FERC. The PAD states that removal of Powell Falls dam has the potential to affect the estimated 163,800 cubic yards of sediment impounded in Lake Louise, and concerns include contaminated sediments as well as mobilization and release of sediments downstream (PAD page 122). The PAD discusses the results of a 2015 sediment assessment, which identified sediments with arsenic, cadmium, and other contaminants. EPA stresses the importance of careful planning and clear commitments to avoid harming water quality through the spread of contaminated sediments.

Recommendations for the NEPA Document:

- Describe sediments that may be impacted by the removal of the Powell Falls development. Include: (1) information on the type and quantity of sediments, (2) a description of sediment contaminant testing methodologies, and (3) the results of sediment contaminant testing to ensure that sediments are suitable for their proposed placement. If in-water placement of sediments is proposed, discuss how sediment, elutriate, biological, and bioaccumulation testing indicate that in-water placement of these dredged materials would not cause an adverse impact on biota or water quality.
- Fully assess options for sediment dispersion or removal, and consider whether mitigation of deleterious impacts resulting from the remobilization of previously-impounded sediments may be required. Potential remedial measures may include full or partial removal of impounded materials, staged removal of a dam to control sediment remobilization, and/or stabilizing sediment exposed through dam removal.
- If dredging is proposed, then discuss plans for disposal of any contaminated or uncontaminated sediments. Consider whether sediment behind the dam is suitable for beneficial re-use (i.e., land application, brownfield restoration, upland fill, landfill cover, etc.), and include information on the placement locations for all dredged sediment.
- If dredging is proposed, include a map/figure outlining the proposed dredging location(s).
- Discuss the potential for erosion due to project implementation. Consider if or how dam removal would increase the possibility of bank scour or in-stream erosion.
- Discuss, for each alternative, whether bank erosion control or in-stream grade control measures are necessary. If needed, describe where they are proposed and how they would be designed.
- Discuss disposal plans for non-sediment components of the dam and appurtenant structures. Include a details on where materials from the dam itself, paved roads, and abutments would be disposed.
- Discuss the effects the proposed project could have on erosion and channel instability over the time before the river adjusts to a new, stable channel. Include information on fluvial geomorphology changes expected or possible in the new channel as it forms post-

dam removal, and the potential for these fluvial processes to affect any proposed restoration efforts.

Water Quality

The Kinnickinnic River is an approximately 40-mile tributary to the St. Croix River, and the St. Croix River is a major tributary of the Upper Mississippi River. In the project vicinity, the Kinnickinnic River and the South Fork of the Kinnickinnic River are not listed by the Wisconsin Department of Natural Resources (WDNR) as impaired waters under Section 303 (d) of the Clean Water Act (CWA).

Recommendations for the NEPA Document:

- Assess likely effects of the dam removal (both positive and negative) on water quality in the Kinnickinnic River. Consider how the project would contribute to the overall water quality of the river.
- Discuss plans for monitoring water quality during and following dam removal.
- Coordinate with WDNR on the CWA Section 401 water quality certification process, and provide a summary in the NEPA document.
- Commit to measures to protect water quality, such as measures for controlling sediments prior to dam removal.

Wetlands

National Wetlands Inventory data indicate that freshwater forested/shrub and emergent wetlands are present adjacent to Lake Louise. Direct impacts could result from the placement of any dredged or fill material into the Kinnickinnic River or adjacent wetlands. Indirect wetland impacts could be attributed to the loss of wetland hydrology associated with the drop in water level following dam removal. Some wetland functions and values could be lost if existing wetlands revert to upland areas. There is the potential for the development of new wetlands in areas currently inundated by the Powell Falls impoundment. There is also uncertainty around the quality, location, and acreage of wetlands that may develop post-dam removal.

Recommendations for the NEPA Document:

- Provide a wetland delineation and robust analysis of direct and indirect wetland impacts associated with all project alternatives. Include access, staging, clearing areas, and areas within and adjacent to the river pool upstream that could be affected by dam removal.
- Demonstrate that wetland impacts would be avoided, unavoidable impacts would be minimized, and mitigation would be provided for unavoidable, minimized impacts (as required by the CWA Section 404(b)(1) Guidelines).
- Provide information on proposed mitigation for direct and indirect impacts to wetlands that would meet the requirements of the 2008 U.S. Army Corps of Engineers (Corps) Mitigation rule (40 CFR 230). Include proposed mitigation ratios, mitigation type, mitigation location(s), etc.
- Coordinate with the Corps on CWA Section 404 permit requirements and ensuring that the project would comply with Executive Order 11990 (Protection of Wetlands). Summarize coordination in the environmental document.

Threatened and Endangered Species and Habitat

Continuing to operate the Junction Falls development and decommissioning and removing the Powell Falls development would impact species in the project area. The PAD summarizes information from the U.S. Fish and Wildlife (USFWS) Information for Planning and Conservation tool, as well as the WDNR Natural History Inventory. Initial findings indicate the presence of threatened and endangered species in the project area.

Recommendations for the NEPA Document:

- Identify all state- and federally-listed threatened and endangered species known to occur in the project area.
- Disclose historic impacts on species from the Junction Falls and Powell Falls developments, including fish impingement and entrainment.
- Assess potential impacts to threatened and endangered species from the proposed actions.
- Consider best practices for protecting species, and commit to protective measures where needed. For example, consider seasonal restrictions on tree clearing to protect the northern long-eared bat.
- Coordinate with USFWS and WDNR on methodologies for assessing impacts and opportunities to protect species. Describe coordination in the NEPA document.
- Describe any anticipated habitat loss due to vegetation removal. Disclose the types and acreages of shrubby areas or trees that are proposed to be cleared for construction. Disclose whether these clearing areas are in wetlands or streams.
- If any tree clearing/removal would be in wetland areas, then specify whether trees would be mechanically cleared (bulldozed) or cut at their base (leaving the trunks intact). This differentiation in tree removal is important to regulatory requirements under Sections 404 and 401 of the CWA.
- Consider voluntary mitigation for any tree loss associated with the project. Mitigation might include, but is not limited to, replanting of native tree species adjacent to the river, or assisting local, county, or state agencies with any appropriate ongoing or planned reforestation plans. Document any mitigation measures to compensate for the loss of trees.

Invasive Species

The spread of noxious weeds and exotic (non-indigenous) plants is a threat to biodiversity. Many noxious weeds can out-compete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem. Activities to remove the Powell Falls development may include ground clearing activities in addition to bringing in equipment that could contain invasive species. Early recognition and control is essential to stopping the spread of infestation and avoiding future widespread use of herbicides, which could have more adverse impacts on biodiversity and nearby water quality.

Recommendations for the NEPA Document:

Prepare a vegetation management plan to address control of invasive species. Include a list of noxious weeds and exotic plants known to exist in the resource area. Detail a strategy for prevention, early detection of invasion, and control procedures for each species. Include procedures for cleaning equipment before it enters the river. Provide details in the EA.

Resiliency

The National Climate Assessment finds that in the Midwest extreme heat, heavy downpours, and flooding will affect infrastructure and water quality.[1] It is important for FERC to assess the current condition and likely integrity of the project's physical infrastructure over the term of the license for the Junction Falls development.

Recommendations for the NEPA Document:

- Consider precipitation and temperature trends and modeled future conditions for the project area, which are available in the National Climate Assessment.
- Assess whether the existing Junction Falls project structures are likely to be resilient to changing precipitation and temperature conditions over the life of the license.
- Consider how restoration efforts on the Kinnickinnic River, after removal of the Powell Falls development, may be impacted by changing climate conditions.
- If needed, incorporate resiliency and adaptation measures or plans. See EPA's Adaptation Resource Center[2] for assistance.

Air Quality Impacts

The proposed project would result in diesel exhaust, dust, and other air emissions from dam removal activities.

Recommendations for the NEPA Document:

- Discuss existing air quality conditions in the project area as well as air quality impacts that could result from this project.
- Discuss the National Ambient Air Quality Standards and any applicable state or local air quality requirements.
- Consider the recommendations in the enclosed Construction Emissions Control Checklist for activities using diesel engines, including material hauling and site preparation work.

Historic and Cultural Resources

Scoping Document 1 explains that the EA will consider effects of the proposed project on properties that are included in or eligible for inclusion in the National Register of Historic Places.

Recommendations for the NEPA Document:

Consult with the Wisconsin State Historic Preservation Office under Section 106 of the National Historic Preservation Act regarding potential impacts to the Powell Falls development and/or any other sites within the project's Area of Potential Effect. Summarize coordination in the NEPA document.

River Restoration Monitoring and Maintenance

EPA is excited for the possibility of the restoration of the Kinnickinnic River over the long-term. The success of restoration may vary greatly based on upfront planning and continued maintenance and monitoring activities.

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[1] U.S. Global Change Research Program, 2017 Climate Science Special Report: Fourth National Climate Assessment, Volume 1, available at: https://www.globalchange.gov/browse/reports

[2] EPA's Climate Adaptation Resource Center, available at: https://www.epa.gov/arc-x

Recommendations for the NEPA Document:

- Discuss the potential for restoration activities along the affected river stretches following removal of the dam and its appurtenant structures, and define goals to measure success in restoration.
- Include details on monitoring any restoration efforts associated with this project. Consider vegetation density, invasive species, observed wildlife, and wildlife habitat. Discuss the intervals at which (after construction and restoration activities are complete) project performance would be measured. Clearly state which entity(s) (e.g., state resource agency, local government, non-governmental organization) would be responsible for monitoring and maintenance activities.
- Consider developing an Adaptive Management Plan (AMP) with a description of actions to be undertaken if it is determined that restoration is not fully successful. We recommend the AMP include action triggers based on monitoring. We recommend including the AMP or a summary of it as part of the NEPA document.

Correspondence

To assist the public and resource agencies in gaining a full understanding of project impacts, protective measures, and project benefits, EPA recommends that the project team include copies of comments from federal and state resource and regulatory agencies in an appendix to the NEPA document.

U.S. Environmental Protection Agency
Construction Emission Control Checklist

Consider applicable measures from the following list.

Mobile and Stationary Source Diesel Controls

Purchase or solicit bids that require the use of vehicles that are equipped with zero-emission technologies or the most advanced emission control systems available. Commit to the best available emissions control technologies for project equipment to meet the following standards.

- On-Highway Vehicles: On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses, etc.).[3]
- Non-road Vehicles and Equipment: Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks, etc.).[4]
- Marine Vessels: Marine vessels hauling materials for infrastructure projects should meet, or exceed, the latest U.S. EPA exhaust emissions standards for marine compression-ignition engines (e.g., Tier 4 for Category 1 & 2 vessels, and Tier 3 for Category 3 vessels).[5]
- Low Emission Equipment Exemptions: The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available

Consider requiring the following best practices through the construction contracting or oversight process:

- Establish and enforce a clear anti-idling policy for the construction site.
- Use onsite renewable electricity generation and/or grid-based electricity rather than diesel-powered generators or other equipment.
- Use electric starting aids such as block heaters with older vehicles to warm the engine.
- Regularly maintain diesel engines to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance (e.g., blue/black smoke indicates that an engine requires servicing or tuning).
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Repower older vehicles and/or equipment with diesel- or alternatively-fueled engines certified to meet newer, more stringent emissions standards (e.g., plug-in hybrid-electric vehicles, battery-electric vehicles, fuel cell electric vehicles, advanced technology locomotives, etc.).

[3] http://www.epa.gov/otaq/standards/heavy-duty/hdci-exhaust.htm
[4] http://www.epa.gov/otaq/standards/nonroad/nonroadci.htm
[5] http://www.epa.gov/otaq/standards/nonroad/marineci.htm

Fugitive Dust Source Controls

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Occupational Health

- Reduce exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Position the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, reducing the fume concentration to which personnel are exposed.
- Use enclosed, climate-controlled cabs pressurized and equipped with high-efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

United States Department of the Interior

NATIONAL PARK SERVICE
Midwest Region, Wisconsin Field Office
626 E. Wisconsin Ave., Suite 400
Milwaukee, WI 53202

December 21, 2018

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC. 20426

Electronic Filing

Re: National Park Service Comment on Pre-Application Document and Study Requests; River Falls Hydroelectric Project, FERC Project No. 10489; Kinnickinnic River, City of River Falls, Pierce County, Wisconsin

Dear Secretary Bose:

The National Park Service (NPS) respectfully submits the following comments in response to the Federal Energy Regulatory Commission (FERC) Scoping Document 1, Request for Comments on the Pre-application Document (PAD), and study request for the River Falls Hydroelectric Project, FERC Number 10489, dated October 25, 2018.

The Project is licensed as a two-development project owned and operated by River Falls Municipal Utilities (RFMU). The RFMU intends to apply for relicense of the upper 250-kilowatt (kW) Junction Falls development and proposes to decommission the lower 125-kW Powell Falls development. The Licensee requested that the Federal Energy Regulatory Commission use the Integrated Licensing Process (ILP) for relicensing.

Background

We offer the following comments and recommendations pursuant to section 10(a) of the Federal Power Act (18 CFR 4.38(a), 5.41(f)(4)-(6), and 16.8(a); the Outdoor Recreation Act (Public Law 88-29); the National Park Service Organic Act (39 Stat. 535); and the National Wild and Scenic Rivers Act (Section 11(b)).

It is the policy of the NPS to represent the national interest regarding recreation and to assure that hydroelectric projects subject to relicensing recognize the full potential for meeting present and future public outdoor recreation demands while maintaining and enhancing a quality environmental setting for those projects. Identifying opportunities to improve the recreation experience is consistent with NPS policy and FERC guidelines to identify future potential recreation needs.

The NPS, through its Hydropower Assistance Program, has participated since 2013 in communications and licensing activities with the licensee and other stakeholders; we recently participated in FERC's scoping meetings November 15 and 16, 2018.

Comments

The Kinnickinnic River is a unique, high quality river that is tributary to the St. Croix River, a designated National Wild and Scenic River. The Kinnickinnic River is designated by the Wisconsin Department of Natural Resources as a Class I Trout Stream and, downstream of Powell Falls Dam, an Outstanding Resource Water. Its designations rise from the river's provision of outstanding water quality and recreational opportunities including trout fishing, paddling, and other nature-based recreation.

Wild and Scenic Rivers Act Section 7(a) Determination

The NPS has responsibility for conducting a WSR Act Section 7(a) review for projects affecting the State-administered portions of designated Wild and Scenic Rivers. An evaluation and determination under the "invade the area and unreasonably diminish the scenic, recreational, and fish and wildlife values" evaluation standard is required under Section 7(a) of the National Wild and Scenic Rivers Act (Public Law 90-542).

The Kinnickinnic River flows into the Saint Croix National Scenic Riverway (Riverway), a congressionally-designated component of the National Wild and Scenic Rivers System and unit of the National Park System. The River Falls Hydroelectric Project license application, which includes a proposal for dam removal on the Kinnickinnic River, meets the criteria of a federally-assisted water resources project on a tributary to a designated National Wild and Scenic River (WSR).

The Riverway's aquatic biological diversity and integrity constitute one of the outstandingly remarkable values (ORV) constituting its eligibility under the Act. One of the most extensive and exemplary aquatic species assemblages within the Upper Mississippi River basin occurs in the Riverway. A healthy population of 41 native freshwater mussels and 100 native fish species have been found in the river. Further study is necessary to understand the potential effects of sediment transport on existing aquatic populations including a species-rich mollusk bed at the confluence of the Kinnickinnic and St. Croix Rivers. Mollusks documented in this bed are listed on the state and federal Threatened and Endangered Species List.

Study Requests

Sedimentation Impacts of Dam Removal

A quantitative sedimentation study using numeric modeling is needed to determine impacts of Powell Dam removal on sedimentation transfer and deposition downstream. Sedimentation from dam removal could affect the floodplain near the confluence of the St. Croix River and the Kinnickinnic River delta including the "Kinnickinnic Narrows" of the St. Croix. We recommend using the numeric modeling sedimentation study developed and submitted as part of this licensing phase by the Kiap-Tu-Wish Chapter of Trout Unlimited. This study has been used effectively in the Upper Mississippi River.

Recreation

The Kinnickinnic River is a nationally recognized trout fishing destination and regional paddling destination. The river is frequented by other active and passive recreationists including bicycling, walking/hiking, bird-watching, and those seeking quietude and restoration along its banks. The PAD generally describes these resources but lacks by its general nature information necessary to determine project impacts and potential mitigation and enhancement measures.

The Pre-application Document (PAD) states a recreation study will be conducted for the Junction Falls development but does not describe how missing attributes and characteristics fully would be documented and evaluated.

Study Description and Objectives (§5.9(b)(1))

The objective of this study is to determine capacity of existing facilities to address current and future user demand; obtain subjective assessment of facility condition or measures needed but currently absent; and produce sufficient information to evaluate such impacts as well as provide the basis for making recreation recommendations.

Resource Management Goals (§5.9(b)(2)

It is within NPS authority to consult with the FERC and applicants concerning a proposed project's effects on outdoor recreation resources under the Federal Power Act (18 CFR §§ 4.38(a), 5.41(f)(4)-(6), and 16.8(a)); the Outdoor Recreation Act (PL 88-29) and the NPS Organic Act (16 USC et seq.). The WSR Act (section 11(b)) also directs the NPS to assist, advise, and cooperate with governments, landowners, or individuals to plan, protect, and manage river and river-related resources.

It is the policy of the NPS to represent the national interest regarding recreation and to assure that hydroelectric projects subject to licensing recognize the full potential for meeting present

and future public outdoor recreation demands while maintaining and enhancing a quality environmental setting for those projects. FERC guidelines and the Federal Power Act also provide direction to give equal consideration to other resources associated with the project.

Relevant Public Interest (§5.9(b)(3))

It is in the public interest to provide a full assessment of the project's impacts on recreation resources and opportunities as well as identify potential mitigation and enhancements to address those impacts. FERC requires that license applications must be consistent with comprehensive plans, one of which is the Wisconsin SCORP.

The study will identify opportunities such as a portage, aesthetic spillway flows, and adequate signage, etc., among other needs that are currently lacking. The study will also analyze how Powell Falls dam removal will affect existing recreation and provide new land and water-based recreation opportunities.

Existing Information (§5.9(b)(4))

The PAD mentions some recreation opportunities but does not provide a complete list. The following resources are recommended for use in developing and conducting the study:

- Recreation user preferences and recommendations in the Mississippi River Region (of which the Kinnickinnic River is part) identified in the Recreation Opportunities Analysis (ROA) prepared by WDNR, 2018 (https://dnr.wi.gov/topic/lands/recanalysis/documents/MississippiRiverCooridorDraft.pdf in the recently updated version of the Wisconsin) to identify recreation needs.
- The 2019-2023 Wisconsin Statewide Comprehensive Recreation Plan (release early 2019) to identify additional regional recreation statistics and user demands.
- The "Kinni River Corridor Plan", (KRCP) a community developed concept plan for access and connectivity to the river post-dam removal.
- Demographic trends of growth expansion from the Twin Cities to help estimate future use.
-

Nexus to Project (§5.9(b)(5))

A clear nexus exists between project facilities and operations that affect recreation opportunities; this study would describe these fully and inform license application preparation and decision making.

- Junction Falls

The Junction Falls impoundment, Lake George, provides water and land based recreation. A study would identify adequacy of existing facilities to meet present and future recreation

demand. Visitors to the site have identified recreation facilities or measures lacking such as a portage around the dam, various forms of signage, and aesthetic flows over the spillway and base of Junction Falls.

- Powell Falls
-

Once Powell Falls dam and Lake Louise are removed the site's recreation will dramatically change with newly revealed riverine resources, geomorphology, access availability and connections. New recreational facilities such as water access points, trails, and signage will need to be developed in concert with shoreline restoration goals.

Study Methodology (§5.9(b)(6))

(1) Recreation Demand. This analysis involves both assessing current demand for various recreation activities by counting use at peak times of day and week during the four seasons as well as assessing the quality of the visitor's experience through visitor surveys. The user contact survey would obtain user-feedback assessment on the adequacy of existing recreational facilities including access points, trails, wayfinding and interpretive signs, and capability of current facilities to meet existing recreation demand. In addition, the survey should obtain user feedback on facilities or operational measures desired but currently lacking, e.g. aesthetic flows over the spillway and base of Junction Falls. Local planners and stakeholder/user group representatives should also be interviewed to collect their assessment of the adequacy of existing and potential for future recreation opportunities.

Considerable visioning work has already been done by the community in developing the KRCP. Actual user demand and subjective user feedback for each recreation facility is lacking, warranting a user survey. The parameters and methods of the visitor survey and user group interviews should be developed in collaboration with interested stakeholders.

(2) Recreation Opportunities Inventory and Assessment. All existing developed and dispersed recreation sites should be inventoried, including formal and informal trails, formal and informal access sites, and scenic viewing locations such as at the base of Junction Falls. The inventory should identify current use, current conditions, and any impacts that the project might have on these. We recommend that stakeholders be consulted in developing the survey instruments and protocol.

(3) Future and Potential Recreation Needs Assessment and Analysis. This study element involves assessing what the potential and future recreation needs are. This includes reviewing the WI SCORP and other literature reviews of local recreation plans, demographic trends, and site-specific information collected from the study elements outlined above. This needs analysis would compile all the information including stakeholder input and make recommendations on recreation mitigation measures for the project. This assessment should also consider newly

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developed flow dependent river recreation opportunities created by dam removal and those identified in the KRCP.

(4) Recreation carrying capacity. This component would assess the suitability or capacity for various recreation opportunities at the project area to receive visitors without degrading recreational experiences or other resources. This assessment should also integrate the results of other biophysical study results. Various methods could be used including "Limits of Acceptable Change" or "Recreation Opportunity Spectrum." These estimates can then be used in development of the Recreation Plan.

(5) Aesthetics. This component would include collecting baseline information on aesthetics in the area and also assessing the impacts of the project on this resource. For the spillway flow assessment, use a focus group of key recreation user groups and planners to identify an assessment protocol and then participate in evaluating three targeted flows to provide aesthetic enhancement to the 200'-long "bypass reach" comprised of the spillway and base of Junction Falls.

(6) Final Product. The final report should include an interim, draft, and final report with sufficient time for review and comment by stakeholders. The report should be used to draft a Recreation Plan to be submitted with the license application.

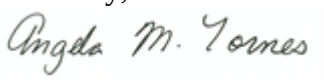
Level of Effort and Cost (§5.9(b)(7))

This study request addresses the Federal Power Act Section 10(a) direction and the methodology is consistent with generally accepted practice in the professional outdoor recreation community. It would include field work, community/stakeholder outreach, and professional assessment. Study costs would depend on consultant fees (rate unknown), volunteer or student contributions, and the amount of available information. A rough estimate depending on existing information and labor costs may range between $5,000 and $15,000.

CONCLUSION

We appreciate the opportunity to provide comments on the PAD and provide study recommendations for the project. We look forward to working with the licensee, stakeholders, and the Federal Energy Regulatory Commission on this license application. Should you have any questions regarding these comments, please contact me at 414.297.3605 or angie_tornes@nps.gov.

Sincerely,



Angela M. Tornes, Midwest Region Coordinator
Hydropower Assistance Program

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
December 26, 2018

OFFICE OF ENERGY PROJECTS

Project No. 10489-016 – Wisconsin
River Falls Hydroelectric Project
City of River Falls Municipal Utilities

Kevin Westhuis, Utility Director
City of River Fall Municipal Utilities
222 Lewis Street
River Falls, WI 54022

Reference: Comments on Preliminary Study Plans, Request for Studies, and Additional Information

Dear Mr. Westhuis:

After reviewing the River Falls Hydroelectric Project's Pre-Application Document (PAD), and participating in the November 15 and 16, 2018 scoping meetings and the November 15, 2018 environmental site review, we have determined that additional information is needed to adequately assess potential project effects on environmental resources. We provide our comments on your preliminary study plan (enclosed in Schedule A) and we also have additional information requests (enclosed in Schedule B). Please provide the requested additional information in your proposed study plan, which must be filed by February 11, 2019, unless otherwise specified in the additional information request.

Please include in your proposed study plan a master schedule that includes the estimated start and completion date of all field studies, when progress reports will be filed, who will receive the reports and in what format, and the filing date of the initial study report. All studies, including fieldwork, should be initiated and completed during the first study season, and the study reports should be filed as a complete package. If, based on the study results, you are likely to propose any plans for measures to address project effects, drafts of those plans should be filed with your Preliminary Licensing Proposal (or draft license application).

Please note that we may request additional studies or information at a later time, including upon receipt and review of scoping comments/study requests, due December 28, 2018, and your proposed study plan. As necessary, we will request additional

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

information, studies, and/or provide additional input on proposed or requested studies after you file your proposed study plan.

If you have any questions, please contact Shana Wiseman at (202) 502-8736, or via e-mail at shana.wiseman@ferc.gov.

Sincerely,

Shana M Wiseman

for Janet Hutzel, Chief
Midwest Branch
Division of Hydropower Licensing

Enclosures: Schedule A – Comments on Preliminary Study Plan
Schedule B – Additional Information

Schedule A

Comments on Preliminary Study Plan

Based on our review of your preliminary study plan outlined in your Pre-Application Document (PAD), we request the following modifications. Please address our requests in your proposed study plan.

Recreation and Land Use

Recreation Site and Use Survey

In section 6.2 of the PAD, *Preliminary Issues, Studies, and Measures by Resource,* you propose to conduct a Recreation Site and Use Survey. You state that the survey would document existing public recreation sites, facilities, access points, and amenities, and would estimate project recreation use bases on existing information and limited use counts. However, details of the methodology, analysis of the data, and schedule are not included in the study proposal. Understanding the condition of the existing project recreation sites and facilities, the amount of current and projected future use, and how these sites and facilities are managed is essential in determining the adequacy of project recreation facilities to meet current and future recreation needs; and therefore, is relevant to the Commission's public interest determination.

In the absence of recreational use data and facility conditions, we cannot determine that the existing information is adequate for us to assess the adequacy of existing recreation facilities to meet current and future demand. So that we may fully

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

understand and evaluate the effects of continued project operation and maintenance on recreation use, please include the following in your study proposal for recreation resources:

(a) identify the condition of all informal and formal recreation sites and facilities, including those sites and facilities that may be affected the proposed decommissioning, and identify if they are located within, outside, or partially within the project boundary;

(b) determine the current at each recreation site and/or facility and the projected capacity for those sites and facilities that would not be affected by the proposed decommissioning;

(c) identify who owns, operates, and maintains each recreation site and/or facility, including those sites and facilities that may be affected the proposed decommissioning; and

(d) conduct visitor surveys during the recreation season to determine the adequacy of project recreation facilities and if changes or upgrades to the sites would be needed to meet current or future recreation needs.

Recreation Use Surveys

A schedule should be developed for the distribution of the recreation use surveys. All sampling days should be randomly selected and survey routes should be completed on a rotating basis and at different times of day to account for time-of-day use patterns. These counts should last for at least two hours per site on each day and should be conducted on four (4) days per month which should include two (2) randomly selected weekdays and two (2) randomly selected weekend days. If a month contains a three-day holiday weekend, one (1) day per holiday weekend should be included in addition to the standard survey days. The recreation use survey should occur during the recreation season to capture recreational use occurring while the various project facilities are open to the public.

The recreation use survey should be administered to users to gain user opinions with regard to the existing project recreation facilities and opportunities. The survey should record the number of people in a party, their primary reason (recreational activity) for visiting the project, their perception of level of use, and their opinions with regard to the amount and types of recreation opportunities offered within the project boundary.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Spot Counts

Spot counts should also be conducted on survey days. The spot counts represent short-term counts (approximately 5 minutes per site) and should record the number of vehicles parked at a site/facility and the number of users observed. This information should be statistically analyzed to develop the recreational use figures for the project. Final recreation use for the recreation facilities and sites within the project should be summarized by season and activity type for each site.

Facility Inventory

The inventory of project recreation facilities and sites, including those that may be affected the proposed decommissioning, should include the following:

1. the location of facilities in relation to the project boundary;
2. the types and number of amenities provided at each site and facility;
3. the condition of the facility/amenities;
4. the entities responsible for the operation and maintenance of each facility;
5. hours/seasons of operation; and
6. accompanying photographs.

Report Preparation

The City of River Falls Municipal Utilities should prepare a report that includes information on the number of recreation days spent at project recreation sites, average number of persons per party, and a determination of the percent of the each facility's capacity that is currently being utilized. The above information should be entered into spreadsheets for statistical analysis. The collected information should be used to project changes to project recreation demand over the term of any new license, if issued.

The report should also include a facility inventory including the following:

1. the location of project recreation facilities in relation to the project boundary, including facilities/amenities that may straddle the project boundary, and a map that identifies each facility;
2. the types and number of amenities provided at each facility;
3. an inventory of all informal and formal project recreation facilities and sites and the condition of the facility/amenities;

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

4. identification of entities responsible for the ownership, operation, and maintenance of the formal project recreation facilities;

5. hours/seasons of operation;

6. photographs of the facilities;

7. recreation use figures for each formal recreation site, overall recreational use figures, and projected use figures; and

8. a compilation of responses to the recreation use survey.

Cultural Resources

Cultural Resources Inventory Plan

In section 6.2.10, *Cultural and Historic Resources,* of the PAD, you propose to assess the potential for the project to affect identified historic and archaeological resources through the delineation of the Foster Cemetery site (PI-0589). While some cultural resource surveys have been referenced in section 5.9.1, the PAD provides limited information on known archaeological and historic resources within the project vicinity.

Furthermore, there is no description of or map depicting the Area of Potential Effects (APE). This map information is necessary for us to determine the effects of project operation on historic properties. Therefore, to expand on the proposed Foster Cemetery site delineation, a Phase I archaeological survey of the APE should be conducted. The APE and the Phase I archaeological survey should include both developments. If a decommissioning would be granted, historic properties would no longer be afforded protection under section 106 of the National Historic Preservation Act. Therefore, decommissioning a development could be an adverse effect to properties potentially eligible for, eligible, or listed on, the National Register of Historic Places (National Register or historic properties). Also, as part of the proposed study, and prior to any surveys being conducted, you should consult with the Wisconsin State Historic Preservation Officer (Wisconsin SHPO) and federally-recognized Tribes who have an active interest in the project, and any interested parties.

Please include the following in the study proposal for cultural resources:

1. A defined APE for the project that would include all lands and waters enclosed by the project boundary and any other lands or properties outside the project boundary where project operation or proposed decommissioning may affect historic properties. Also include: (a) a detailed map showing all aspects of the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

APE in relation to the project boundary;[1] (b) a background section on previous work in and around the APE; and (c) a cultural history of the research area;

2. Survey methodology, including: (a) areas to survey for archaeological and/or historic resources relative to the defined APE;[2] and (b) an evaluation of cultural resources, including known archaeological sites within the APE and the project itself, including both the Junction Falls and Powell developments, for National Register-eligibility; and (c) site- or resource-specific descriptions of existing and potential project-related effects on historic properties;
3. Survey results and concurrence from the Wisconsin SHPO, any interested federally-recognized Tribes, and any interested parties on the results of the survey; and
4. A record of consultation with the Wisconsin SHPO, interested federally-recognized Tribes, and other interested parties regarding the proposed study, results and APE, and related concurrence letters.

[1] The APE should be developed after consultation with the Wisconsin SHPO, federally-recognized Tribes who have an active interest in the project, and any interested parties. Once you have defined your APE, please send your APE definition and APE map to the Wisconsin SHPO and seek its concurrence.

[2] Lands that are highly disturbed are less likely to contain cultural resources, and may not need to be surveyed.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Schedule B

Additional Information

Project Facilities

1. Section 4.2.1.2, *Powell Falls Development*, page 24 of the Pre-Application Document (PAD), states that an approximately 2,500-foot- long transmission line runs between the Powell Falls powerhouse to the Municipal Power Plant building, where it connects to the existing bus. Please provide: (1) the approximate width of the transmission line corridor; (2) clarification regarding ownership of the individual powerlines; and (3) a description of how the proposed decommissioning and removal of the Powell Falls development may affect the transmission line and the line's corridor.

Project Operation

2. During the environmental site review, you indicated that the hydroelectric plants are currently operated manually while the SCADA system is being repaired. In section 4.3.1, *Current Operation*, of the PAD, you state that when functional, "The outputs are monitored from the project SCADA system." So that staff can accurately understand project operation, please provide a detailed description of manual project operation and how run-of-river mode is realized and monitored. In addition, please describe in detail the operations carried out by the SCADA system (i.e., turbine control, generator control, water level control, etc.) when it is functional.
3. Section 4.3.2, *Proposed Operation*, page 28 of the PAD, states the licensee proposes to cease operation and decommission the Powell Falls development by the target date of 2026. However, the PAD provides no details of how the Powell Falls development would be decommissioned nor does it provide a schedule of activities that would occur between the expiration of the existing license in 2023 and the proposed decommissioning date. In order for staff to analyze how the Powell Falls development would be decommissioned, please provide a general overview of decommissioning activities and a schedule.

Aquatic Resources

4. Section 5.2.6 *Water Quality*, page 51 of the PAD, provides some existing water quality data for the Kinnickinnic River, including nitrogen, total phosphorus, and total chlorophyll a. So that staff can describe baseline water quality conditions and evaluate potential cumulative effects, please provide any available information regarding the permitted discharges and effect of the River Falls Wastewater Treatment Plant on water quality in or downstream of the project area. In

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

addition, please provide information on any Total Maximum Daily Load (TMDL) requirements or goals for phosphorus levels in the Kinnickinnic River.

5. Section 5.2.6 *Water Quality*, page 51 of the PAD, summarizes water temperature data collected by Trout Unlimited since 1992. So that staff can adequately review existing information, please provide the Trout Unlimited report*, Evaluating the Thermal and Hydrological Impacts of Kinnickinnic River Hydropower Impoundments in River Falls*. In addition, please clarify if the Trout Unlimited temperature study is ongoing or not, and provide any updates if they are available.

6. Section 5.3.5 *Macroinvertebrates*, page 62 of the PAD, states that the Kinnickinnic River is not known to provide appropriate habitat for mussel species and lacks fish species that host mussels, but no supporting information is provided. Further, in section 3.2.4 of the *Restoration of the Kinnickinnic River through Dam Removal Feasibility Report,* the Wisconsin Department of Natural Resources recommends relocating native mussels prior to drawdown of the reservoir. So that staff can adequately evaluate existing information on mussels in the Kinnickinnic River, please provide any correspondence and previous surveys/reports that describe mussels and their habitats, or lack thereof in the Kinnickinnic River.

7. During the scoping meeting on November 16, 2018, a meeting participant indicated there was a known population of mussels in the St. Croix River near the mouth of the Kinnickinnic River. So that staff can adequately evaluate existing information and potential effects on mussels in the St. Croix River, please provide any available information on mussels that occur in the St Croix River between the Kinnickinnic River and the Mississippi River.

8. Section 5.3.3 *Fish and Aquatic Communities*, page 56 of the PAD, describes the Kinnickinnic River as a Class I trout stream that has sufficient natural reproduction to sustain populations of wild trout at or near carrying capacity. So that staff can evaluate existing information and potential effects of dam removal on trout spawning habitat, please provide a description of river reaches in the Kinnickinnic River that contain suitable brown trout spawning habitat. In addition, please identify and describe any tributaries downstream of the Powell Falls dam that provide suitable trout spawning habitat.

9. Section 5.3.3 *Fish and Aquatic Communities*, page 61 of the PAD, describes the fish community in the impoundments. However, no information on the potential effects of impingement and entrainment was provided. So that staff can evaluate the potential effects of operation at each development on fish impingement, entrainment, and mortality, please provide: (1) clear bar spacing of the trash rack; (2) maximum intake velocity at each development; (3) turbine runner speed, diameter, and blade number; (4) a description of the fish community in each impoundment, including size classes if available; and (5) an estimate of entrainment mortality rates for juvenile and adult fish species found in the

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

impoundments based on a similar project(s) from the Electric Power Research Institute (EPRI) Entrainment and Survival Database.[3] This information should be filed with your draft license application.

Terrestrial Resources

10. Page 26 of the *Restoration of the Kinnickinnic River through Dam Removal*, as cited by section 6.2.4, *Terrestrial Wildlife Resources* of the PAD, states over 140 species of birds are commonly observed in the lower Kinnickinnic River area. However, a comprehensive list of waterbird species that use the project's waters and lands as habitat is not included. So that staff can evaluate potential project effects on birds, please provide a list of waterbird species and/or other migratory birds that have been observed within the project boundary.

[3] Electric Power Research Institute (EPRI). 1997. Turbine entrainment and survival database – field test. Report TR-108630. Prepared by Alden Research Laboratory. October 1997.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

December 20, 2018

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC 20426

NOTICE OF INTENT TO FILE LICENSE APPLICATION, FILING OF PRE-APPLICATION DOCUMENT (PAD), COMMENCEMENT OF PRE-FILING PROCESS, AND SCOPING; REQUEST FOR COMMENTS ON THE PAD AND SCOPING DOCUMENT, AND IDENTIFICATION OF ISSUES AND ASSOCIATED STUDY REQUESTS

Re: River Falls Hydroelectric Project, Kinnickinnic River, Pierce County, WI
FERC Project No. 10489-016

Dear Ms. Bose:

The River Alliance of Wisconsin (RAW) herewith submits comments on the referenced documents noticed by the FERC concerning the River Falls Hydroelectric (hydro) Project. The River Falls Hydro Project consists of two dams on the Kinnickinnic River, Junction Falls (JFs) Dam which is in the City of River Falls and the Powell Falls (PFs) Dam, located about 0.5 miles downstream. Junction Falls Dam impounds Lake George, a reservoir with a surface area of 16 acres. Powell Falls Dam impounds Lake Louise, a reservoir with a surface area of 15.4 acres.

Pursuant to Section 4(e) of the Federal Power Act, the FERC must consider the protection of environmental resources and enhancement of recreational facilities when considering hydro licensing decisions. The FERC licensing process for hydro projects is a public process and accordingly, the RAW participates in hydro relicensing proceedings as a Non-Governmental Organization. Further, through the relicensing process the RAW advocates for river restoration, protection, and enhancement of fish and wildlife habitat, and enhancement of recreational resources at the project within and contiguous to the project boundary.

COMMENTS OF SCOPING DOCUMENT

City of River Falls (Licensee) Proposed Action: Relicense the Junction Falls Project, decommission and remove the Powell Falls Dam by 2026.

3.0 Proposed Action and Alternatives. We find on page 10 that a key alternative is not and should be listed by the FERC for evaluation in their Environmental Assessment. That is: **Decommission and remove concurrently both the PFs and the JFs Hydro Projects and restore the Lower Kinnic River Corridor as a free flowing river.** We believe this evaluation should be done to comply with the spirit and intent of the NEPA of 1969; where a broad range of alternatives should be evaluated along with the proposed action. As you know, the FERC has been receiving many e-filed letters from concerned citizens of River Falls recommending that FERC staff evaluate this alternative in the EA. In our opinion, the FERC would not be responsive to the public if they fail to do so.

Rational. As currently proposed, the Licensee intends to relicense the JFs hydro project and remove the PFs hydro project. We question the Licensee's intention to spend perhaps many thousands of dollars on relicensing studies for a project that has, in our opinion, marginal economic value and provides a mediocre recreational resource and provides marginal wildlife habitat. We believe those dollars would be much better spent by *Decommissioning both dams* and removing

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them. Removal of both dams would replace the stagnant and eutrophic waters of the impoundments with a free flowing cold, clean trout stream. Removal of the dams would bring the opportunity to establish new park land and hiking trails along the riparian corriodor. Further, removing the dams would expose the historic name sake waterfalls to the city. It would create an extremely pleasing aesthetic experience which would in all likelihood bring tourist interest and revenue to the City and region.

If the decision is made to relicense the Junction Falls Project, then we recommend that the following relicensing studies be done by the Licensee and their Consultants.

RECOMMENDED RELICENSING STUDIES FOR THE PROJECT- JFs and PFs

An important component of the *Application for License* (AL), in *Exhibit E*, is a through description of the existing aquatic and terrestrial environment within the project boundary. This provides the environmental baseline by which environmental effects of any proposed changes in the hydro project can be measured. In that regard, the RAW recommends that the Licensee and/or their Consultants conduct the following environmental studies.

Fishery survey. Conduct a fisheries study in both flowages and the river in the project boundary to determine fish species and frequency of occurrence.

Rationale. There is currently no data available about fish species present in the impoundments, as no fishery surveys of the impoundments have ever been conducted. Current and well-defined fishery information is needed by the Wisconsin DNR to make informed decisions about management of the fishery and to evaluate potential affects of project operations on fishery resources. The plan of study should use standard fish assessment techniques endorsed as standard operating procedure by DNR fishery biologists. The parameters for the fish assessment study should be developed through discussions with the DNR.

Mussel survey. In consultation with the Wisconsin DNR and U.S. Fish and Wildlife Service (FWS) conduct a mussel study in both impoundments and the river within the project boundary.

Rationale: Mussels are an important component of a river system and are sensitive to changes in flow discharge in the tailwater and to water level fluctuations in reservoirs. Mussels are not very mobile and can be easily adversely affected by hydro operations. There is also good reason to identify any State or Federal threatened or endangered mussel species that may occur in the project area in order that, if found, protective measures can be developed for them through project operations. The parameters for study should be developed through discussions with mussel specialists from the Wisconsin DNR and FWS.

Water quality sampling. Monitor dissolved oxygen and temperature continuously upstream and downstream of both impoundments to document if water quality criteria are being met.

Rational. Hydro projects in Wisconsin must be operated within State water quality standards pursuant to State water quality certification requirements of Section 401 of the Clean Water Act, 1977, as amended. Good water quality, especially appropriate dissolved oxygen and temperature levels, is critical to the incubation of fish eggs, survival and growth of fish and invertebrates, and survival of other aquatic life.

Aquatic invasive species (AIS) survey. Conduct an AIS survey in both impoundments and in the river within the project boundary.

Rational: Exotic species such as purple loosestrife, Eurasian watermilfoil, and curly-leaf pondweed are invasive exotic wetland plants which out-compete many other valuable wetland plants and can dominate the species composition of a wetland or aquatic macrophyte bed in a few years. Curly-leaf pondweed has recently been identified by citizen scientists as the predominant vegetation in the upper JFs impoundment, Lake George, and its presence there has been confirmed by the Wisconsin DNR staff. Terrestrial exotics have the same pattern and can out-compete native vegetation as well. There is little food value for wildlife from purple loosestrife; accordingly, infestation of valuable wetlands by this plant is extremely undesirable and harmful. Eurasian watermilfoil and curly-leaf pondweed can rapidly cause aquatic weed problems and alter fish communities by providing too much refugia leading to overpopulation and/or growth stunting problems in the reservoirs and flowages. Likewise, zebra mussels can cause pronounced ecological changes in rivers and impoundments. The mussel's rapid reproduction, coupled with consumption of microscopic plants and animals, affects the aquatic food web and can place valuable sport fisheries at risk. In addition, zebra mussel infestation can severely reduce native mussel populations. Measures to control invasive species are limited, but progress in developing control measures such as use of beetles, weevils, and spot herbicide spraying is being made by ongoing research efforts.

Wetland and aquatic plant survey. Use current wetland mapping data from a Wisconsin DNR data base and, in the License Application, delineate wetlands within the project boundary. In addition, document terrestrial invasive species that occur as well.

Rational: Wetlands provide valuable feeding and brood habitat for numerous species of waterfowl and shorebirds and habitat for many mammal species as well (i.e., muskrat, mink). Wetlands provide nursery habitat for small fish and habitat for adults such as northern pike, muskellunge, largemouth bass, and bluegill. Wetlands provide a critical water quality function by filtering out sediment and pollutants that adhere to sediment before they enter the main river or lake. Terrestrial invasive species cause similar adverse impacts to shoreline vegetation as do AIS. An inventory of the current wetland types and aquatic plant species contained therein is necessary in order to protect and preserve them._

Recreational survey. Coordinate with the National Park Service on what studies are needed to update the recreational use data within the project boundary. In the AL, describe the condition of existing recreational facilities on Lake George and in the tailwater area of JFs dam. Explain all proposed recreational improvements within the project boundary. Develop a *Recreation Plan* for implementation during post licensing.

Rational. Maintaining recreational facilities and building new ones, as needed, is part of the Licensee's responsibility in having a federal License to operate a hydro project. The Licensee profits from hydro generation, however, the river and flowage are Public Trust Resources to which the public must have free access to enjoy.

IDENTIFICATION OF ISSUES

If the decision is made to relicense the Junction Falls Project, we recommend that the following MITIGATION, PROTECTION AND ENHANCEMENT MEASURES

Hydro operation. The RAW concurs with the Licensee's intention to operate the hydro project in a run-of-river (ROR) mode. Although the Licensee states in the PAD that they operate JFs ROR, we have heard many complaints from local residents that ROR is not always consistently maintained. For example, ROR appears to be violated when the operator sluices debris through the spillway of the dam. Therefore we recommend that the Licensee develop criteria to insure strict ROR operation at all time such that outflow from the hydro project closely approximates instantaneous inflow to the project. To protect fish and wildlife habitat, we recommend that the project operate within a narrow headwater band, that is, plus or minus three-inches above and below a prescribed headwater target elevation. We highly recommend the

installation of automated gates at the JFs Project to consistently maintain ROR discharge due to the exceptional quality of a world class trout fishery downstream that can be easily harmed by significant variations from ROR.

Operational compliance plan. The Licensee should develop a plan to measure inflow in cfs to the project and discharge from JFs in the tailrace to document they are in fact operating within the parameters that define ROR operation.

Rational: A ROR mode of operation tends to stabilize environmental conditions considerably both upstream and downstream from the dam. Under ROR operation, the reservoir, tailwater, and downstream areas undergo changes in flow similar to an unimpounded river flowing under natural hydrological conditions, which are the conditions to which fish and other aquatic life have adapted. Habitat for fish and other aquatic life is not subjected to large, unnatural daily changes in flow that occur under a peaking mode. Consequently, a ROR mode of operation provides relatively dependable habitat conditions for fish and other aquatic life on a daily basis. Reducing fluctuations of riverine and reservoir water levels also minimizes adverse impacts to wetlands and shallow water and shoreline habitats important to fisheries, waterfowl, and water birds.

Sediment management. The Licensee should dredge Lake George to increase the recreational value of the impoundment, and make it more usable for the public. The shallow impoundment is currently only 1- 3 feet at its center, which impedes recreational use and enjoyment and only provides marginal habitat for fish and water oriented wildlife.

Storm water management plan. It is stated in the PAD that there has been a history of non-point pollution in Lake George from urban runoff from the city of River Falls and from upstream in the watershed. This has degraded the water quality of Lake George. The Licensee, in consultation with the resource agencies, City Council sub-committees, local Stakeholder groups and the public, should develop and implement the *Lake George Rehabilitation Plan* (LGRP), which was initially developed by the City in 2005. The LGRP should describe measures to be implemented upon issuance of the new License to remediate non-point pollution. The City of River Falls states in resolution No. 6234 authorizing relicensing of the hydro facility, dated February 27th, 2018, that "the City shall develop and implement the *Lake George Rehabilitation Plan* including comprehensive storm water strategies within the contributing sub watersheds".

Rational. Non-point pollutant types from an urban watershed are numerous. Pollutants such as oil and grease, phosphorus, chlorides, heavy metals, organic contaminants, and heated water off streets are examples of pollutants that enter Lake George in the runoff. Pollutants in the water column and sediment cause an unhealthy environment for fish and other aquatic life, especially aquatic life that cannot move readily (e.g., macroinvertebrate larvae [fish food], mollusks). Pollution caused mortality of aquatic organisms or contaminated fish degrades this public resource and reduces the desirability for public use.

Recreation. Insure that existing recreational facilities are in good condition for boat access to project waters. Insure that there are canoe portages both dams and that they are safe for public use and are maintained in good condition.

If you have questions on our comments, please contact me at (608) 257-2424 (ext. 115). Also, please feel free to call our Hydro Consultant, James Fossum at (507) 429-9129.

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Sincerely,



Raj Shukla
Exective Director

cc: Scott Simpson, City Manager, City of River Falls, WI
Nick Utrup, U.S. Fish and Wildlife Service, Twin Cities, MN
Cheryl Latch, FERC Coordinator, Wisconsin DNR, Horicon, WI
Angie Tornes, National Park Service, Milwaukee, WI
Dr. Michael Page, Friends of the Kinni, River Falls, WI
Charlene Brooks, Executive Director, Kinnickinnic River Land Trust, River Falls, WI
James Fossum, *JDFossum Environmental Consulting*, Winona, MN

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FOTK
Putting the FALLS back in River Falls!

info@friendsofthekinni.org

VIA FERC E-FILING

December 28th, 2018

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Docket Room
Washington, D.C. 20426-001

Mr. Kevin Westhuis, Utility Director
City of River Falls, River Falls Municipal Utilities
222 Lewis Street
River Falls, WI 54022-2127

RE: RIVER FALLS HYDROELECTRIC PROJECT, FERC PROJECT NO. P-10489-016, KINNICKINNIC RIVER, PIERCE COUNTY, WISCONSIN: STUDY REQUEST: ECONOMIC ANALYSIS of the COSTS of OPERATION, MAINTENANCE, and BENEFITS

Dear Secretary Bose and Director Westhuis,

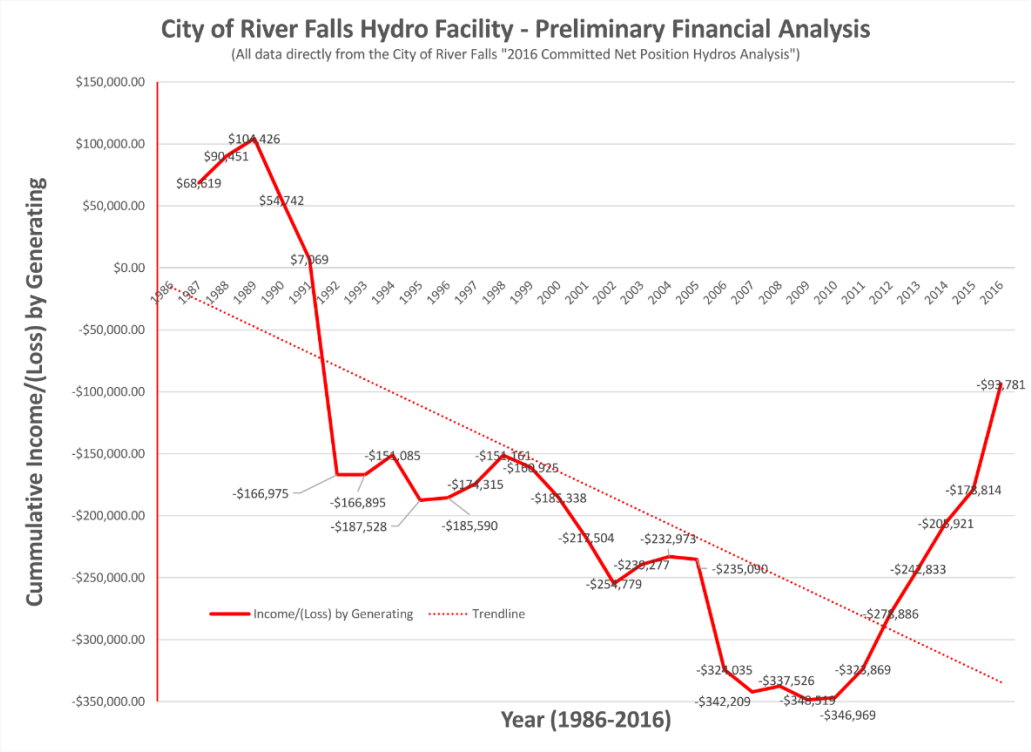
Friends of the Kinni is a 501(c)3 River Management Organization participating as a stakeholder in the Integrated Licensing Process (ILP) for the River Falls Hydroelectric Facility on the Kinnickinnic River, Pierce Councy, Wisconsin. As part of the 2013 Traditional Licensing Process for this project a public meeting was held in River Falls on March 24, 2014. The City maintains an audio recording of this event.

One of the individuals who spoke at that meeting, Tony Stifter, made the following statement: "The day you install a dam is the day you make a commitment to remove the dam." We have reached the point of that eventuality (i.e., dam removal), now the only question remaining is when this eventuality will occur, which is why it is now important that the community and the City government have a full understanding of the various economic issues affecting the dams. This three-phase study request calls for the utilization of independent third parties to examine the economic feasibility and performance of the operations and maintenance of the facilities - past, present and future.

Following on the efforts of the City staff who have already assembled some relevant data and have performed a cursory first level review (see attached), a team of qualified accountants and engineers should follow this initial data collection and then undertake a detailed economic analysis of past performance and forecasted future performance. This is necessary to assure the community that all due diligence has been conducted on their behalf.

The economic study that we propose will evaluate the capital, operational and maintenance costs of the dams and associated hydropower facilities, using standard Generally Accepted Accounting Principles (GAAP). Such an analysis, combined with other study results (including but not limited to recreation, environmental, aesthetic and community surveys regarding citizen values) will help to define a consensus of the best use of the Kinnickinnic watershed, as well as the profitability of the Junction Falls facility under the Licensee's current proposal to maintain only that facility until a target date of 2035-2040.

The PAD does not mention any specific information regarding the economic impact of the two dams, though a preliminary financial analysis has been conducted by the Licensee for the project. See the attached Committed Net Position Hydros reports from 2016 and 2017 which have been updated annually by the Licensee since 2014. According to this very preliminary analysis, the Licensee has experienced a cumulative net loss of -$95,908 to date by operating the project from 1986-2017 when compared to the alternative of purchasing the same amount of electricity rather than by generating.



A review of this analysis further shows that large fluctuations in expenses is quite commonplace for this project. There have been historic “income losses” by our hydro facility reported in the preliminary analysis of -$49,685 in 1990, -$47,673 in 1991, -$174,044 in 1992, -$36,443 in 1995, -$9,764 in 1999, -$24,413 in 2000, -$32,166 in 2001, -$37,275 in 2002, -$2,116 in 2005, -$88,946 in 2006, -$18,173 in 2007, -$10,993 in 2009, and -$2,127 in 2017.

A comprehensive financial analysis has not been conducted for the project. Differing perspectives throughout the Kinnickinnic River Corridor Planning Process have created drastic impacts on perceptions of the financial viability of the project. An unbiased & independent comprehensive financial analysis will help dramatically reduce this issue of perspective influencing perceived profitability of the project.

GOALS

1. Analyze the past profitability of the two dams, hydroelectric stations, and connections to the grid during the current license period (1988-2018). This would entail an accounting of all sources of revenue, all maintenance and operations costs, expenditure patterns, trends, cost drivers, and short and long term capital expenditures.

2. Establish baseline financial and quantitative standards for future operations of only the Junction Falls dam and associated hydropower facilities that can be used on an annual basis to assess ongoing profits or losses, as well as adjustments to minimize losses.
3. Using baseline financial analysis data, and quantitative standards, determine the profitability and feasibility of owning, operating, maintaining and upgrading the hydroelectric facilities, including any and all appurtenances, and related and required equipment. Determine said profitability via development of a comprehensive economic model, approved by all stakeholders (including taxpayers and Electric Utility customers), that provides economic projections for the proposed period of operation through 2035-2040, or through the next potential 40 years license period and identifies all sources of revenue, all costs, all necessary and anticipated capital investments, and all maintenance and operation standards and costs, including the costs associated with maintaining the FERC license and costs of relicensing and costs of subsequent license surrender. This includes the costs of ensuring compliance with all license provisions, such as the required run-of-the-river operation and Protection, Mitigation, & Enhancement (PM&E) Measures.
4. Develop an accurate financial model that provides for successfully determining the costs and benefits of operating and maintaining the hydroelectric facility with regard to environmental costs and community benefits that become identified by other re-licensing studies.
5. Establish an economic model for the costs associated with the removal of the dams, hydroelectric facilities, and related appurtenances, with the Powell Falls removal and river restoration planned for 2023-2026 and the Junction Falls removal planned for a target date of 2035-2040. This model would also include any necessary remedial environmental actions, as well as benefits that arise from removal, such as aesthetic and recreational benefits, and the benefits and lower costs that may come with alternative co-generation of an equivalent amount of power from solar, or from energy savings through conservation programs.

<u>Phase 1:</u> Historical Financial Analysis

A. Analyze past profitability for the term of the current license.

Term: Because the facilities have been operating under an existing license, an economic review of the current license period is required to effectively establish a baseline for a project that has been using, and continues to use the Kinnickinnic River to generate electricity. Conduct a detailed assessment of cash flows and net profits analysis beginning with the onset of the current and expiring license. Include the costs of planning, designing, financing (both to the General Fund and Utility Fund), bonding, as well as construction and the renovations to all generating related facilities, including substations and connections to the grid. This analysis is to be based on existing audited financial statements, 1988-present, and other accepted, historically accurate documents.

Trends and Variances: Throughout the evaluation of the net profits or losses analysis, identify the significant trends and variances that occur.

Included Costs: Balanced against annualized revenues, the following operating costs, at a minimum, must be evaluated:

- Insurance
- Maintenance and normal life-expectancy upgrade costs
- Maintenance and upgrade costs associated with connecting hydro-generated power to the grid for distribution (substations and switching)
- Dam maintenance

- Facility maintenance, including switching, penstocks, control gates, safety, and bluff stabilization
- Remedial and environmental clean-up of impoundments, sediments, fuel facilities and galleries associated with diesel and natural gas generation
- Costs of inspections
- Cost of acquiring and maintaining existing license
- Costs of 2013-2016 Traditional Licensing Process
- Costs of License Amendment Application
- Kinnickinnic River Corridor Planning Costs
- Costs associated with repairing Powell dam to normal capacity following lightening strike
- Labor costs, including management and labor, both direct and indirect
- Facility and equipment costs
- Cost of complying with license conditions (such as run-of-the-river operation)
- Capital expenditures
- Known environmental costs
- Public safety (fences, floats, etc)

Maintenance costs are viewed as a key element of the economic analysis. For that reason maintenance costs in the study should include dam and building structural maintenance, as well as routine items such as the cost of debris removal and maintenance of buildings, grounds and equipment. Additionally, long term and/or major maintenance costs need to be identified and evaluated relative to the current operating permit. (Example: an analysis of costs associated with automatic gates for controlling flow and otherwise complying with license provisions)

B. Compare:
   - Budgeted versus actual expenditures (planned and unplanned);
   - Annualized capital operations and maintenance, using terms of not less than ten years and ideally fifteen years;
   - Required expenditures versus discretionary expenditures.

C. Analyze kilowatt output per hour, week, or month (actual time unit to be determined) to establish necessary historical cash flow comparisons between income and expense. Correlate to purchase power agreements with various power providers. Relate to cost of power from alternative providers.

D. Compare cost/benefit to industry or peer groups and/or discreet facilities' historical data to determine past profitability and cost of operations against similar regional facilities.

Phase 2: Projected Cash Flow and Net Profitability Analysis

The Licensee is in the business of providing electric power to the community. Therefore, a major benefit resulting from a completion of the proposed analysis is the ability to:

- understand the impact of revenue growth assumptions on net profit and cash flow assumptions by establishing detailed low and high range revenue projections;
- understand the influence of expenses (fixed and variable) and provide expense projections in detailed low and high range for the license period;
- understand capital outlays by identifying all anticipated costs necessary to keep the facilities functioning within the permit limits;

- produce a risk-model for costs that are unanticipated but likely to occur during the license period;
- understand and document the assumptions used in creating the economic model;
- itemize and understand all the risks and assumptions associated with the model as represented by quantifiable financial factors, qualitative natural environmental factors and factors imposed by the regulatory environment; and
- develop a comprehensive model that provides necessary guidance to all involved.

A. Projected net profitability per annum and for the next 40 year license period, and/or the proposed operational period through a target date of 2035-2040 for the Junction Falls facilities.

Analyze actual financial results from Phase 1 using horizontal analysis, vertical analysis, ratio and common size analysis. The results of these analyses are necessary in order to compare profitability against industry norms. These are to be supplemented with interviews, industry research, other quantifiable and pertinent study results, approved or estimated and required community costs necessary to prepare the above.

In addition to including the known or documented costs resulting from Phase 1, the model should reflect the stipulations of the Licensee's proposed alternative (eg. loss of Powell Falls) as well as the following:

- Licensing costs, including direct and indirect costs associated with staff and consultants
- Annual compliance costs
- Capital Improvement Costs, including, but not limited to the following known concerns:
    1. Switchgear and transmission line costs to connect to the grid as the substation becomes upgraded and the existing empty power plant becomes unnecessary.
    2. Renovations to the powerhouses, penstocks and buildings necessary to house the hydroelectric generating equipment.
    3. Correction and blockage of major seepage. Prior FERC inspections have identified "seepage through a joint above the wasteway exit" on the Junction Falls dam.
    4. Purchase and installation of the automatic equipment necessary to ensure compliance with a run-of-the-river permit at both dams.
    5. Necessary costs attributable to other studies identified as part of this relicensing process. For example, these may include environmental and recreational opportunities, such as pathways along the river.
    6. Life expectancy of the reservoirs as they continue to fill with silt; cost to dredge or otherwise keep the reservoirs sufficiently clear to allow economical hydro-generation.
    7. Design, engineering, and construction costs for the Lake George Rehabilitation Project.
- Planned-for capital investments associated with aging and similar structures.
- Routine maintenance costs, as referenced above, recognizing and documenting rates and costs for in-house and contracted work tasks.
- Long term maintenance costs, detailed as above.
- Decommissioning costs for both dams and the sequestering of adequate funds within the cash reserves of the City government to pay for the removal of both dams. (See Phase 3).

Based on historical data, establish cash flow projections and planned improvements projections for the above and maintenance schedules.

B. Prepare an analysis based on the above and compare to costs associated with purchasing an equivalent amount of power.

Phase 3: Decommissioning of the Dams

A. Develop a projected profitability model of economic performance of buying or co-generating once the dams have been removed.

B. Gained losses or lost profits analysis at the utility level, at the residential level and at a commercial/industrial level. The results are needed in order to allow decision-makers and the community to understand the annual fiscal impact of the removal of the dams on the entire utility base, and the mean and median annual fiscal impacts on residential and commercial/industrial users. Especially considering that such fiscal impacts will very likely be positive.

C. Complete an analysis of the cost of decommissioning both dams.

D. Complete an analysis of the future economic value of the natural falls (without the two dams), and the completely restored Kinnickinnic River, including tourism potential.

SUMMARY

This required study will utilize existing and available information in the form of audits and other City or utility documents, DNR, and FERC records. The nexus of the proposed study is the provision of a comprehensive analysis of the economic impacts of the dams and hydro facilities on the community. Prior to entering into any future long-term commitment to pay for necessary upgrades, such as automatic flow gates necessary to maintain "run of river" operations, or replace equipment to restore or improve operations, or to rehabilitate Lake George for only a very brief period of time, the true costs and benefits of those actions need to be known. The use of Generally Accepted Accounting Principles associated with the proposed forensic evaluation and projections, along with the application of approved engineering standards and practices, will provide the community with necessary documentation to move forward.

The level of effort associated with this study will be moderate with an anticipated cost of approximately $20,000 to $25,000. Friends of the Kinni respectfully proposes that the City of River Falls should plan for this proposed economic study as part of its relicensing budget, with study consultants to begin work and be completed within the first year of project studies in the Integrated Licensing Process.

Thank you for your consideration,

Michael Page, President,

Sarah Hall, Board Member

Lauren Kaminski, Vice President

Emily Page, Board Member

Gretchen Page, Vice President

Alison Page, Board Member

David Fehringer, Board Member

David Gregg, Board Member

CC: Scot Simpson, City Administrator, City of River Falls, WI (ssimpson@rfcity.org)
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Shana Wiseman - FERC, Washington D.C. (shana.wiseman@ferc.gov)

Historical Costs vs Revenues	**1986***	**1987***	**1988***	**1989***	**1990***	**1991**	**1992**	**1993**	**1994**	**1995**
Total Hydraulic Expenses (PSC)	$ 25,820	$ 36,098	$ 33,323	$ 30,795	$ 77,210	$ 76,238	$ 205,595	$ 51,201	$ 37,026	$ 66,431
Total Hydraulic Depreciation (PSC)	$ 2,294	$ 2,358	$ 2,358	$ 2,484	$ 9,417	$ 16,223	$ 22,161	$ 22,203	$ 22,245	$ 22,245
Pilot Calculation (PSC)	$ 3,680	$ 4,158	$ 4,372	$ 4,509	$ 26,023	$ 26,096	$ 27,123	$ 24,138	$ 23,535	$ 21,184
INITIAL LICENSE (Invoices)	$ 17,000									
TOTAL EXPENSES (calculated)	$ 48,795	$ 42,614	$ 40,053	$ 37,789	$ 112,649	$ 118,557	$ 254,879	$ 97,542	$ 82,805	$ 109,860
TOTAL GENERATION (KWH)	2,412,482	2,258,726	1,648,807	1,385,752	1,815,188	1,924,898	2,147,593	2,564,938	2,561,003	1,987,050
Retail Energy Charge (PSC)	*0.0565*	*0.0565*	*0.0565*	0.0565	0.0565	0.0565	0.0565	0.0565	0.0565	0.0565
Electric Sales (calculated)	$ 136,305	$ 127,618	$ 93,158	$ 78,295	$ 102,558	$ 108,757	$ 121,339	$ 144,919	$ 144,697	$ 112,268
Total Cost of Purchased Power (WPPI in 2004)	$ 2,414,121	$ 2,472,443	$ 2,906,904	$ 2,954,010	$ 2,801,554	$ 3,180,963	$ 3,128,741	$ 3,280,796	$ 3,254,049	$ 3,478,494
Total Purchased Power (PSC)	70,537	72,096	77,448	79,081	80,765	86,381	83,895	86,430	88,217	94,146
Wholesale rate - Actual (WPPI)	0.0342	0.0343	0.0375	0.0374	0.0347	$ 0.0368	$ 0.0376	$ 0.0381	$ 0.0385	$ 0.0369
Cost per Kwh to generate (calculated)	0.0202	0.0189	0.0243	0.0273	0.0621	0.0616	0.1187	0.0380	0.0323	0.0553
Green Energy rate										
Cost per Kwh to generate										
Net Revenues from Generation	$ 87,511	$ 85,004	$ 53,104	$ 40,506	$ (10,091)	$ (9,800)	$ (133,540)	$ 47,377	$ 61,892	$ 2,409
Net Revenues from Purchasing Power	$ 53,738	$ 50,158	$ 31,272	$ 26,531	$ 39,593	$ 37,873	$ 40,504	$ 47,298	$ 46,081	$ 38,852
Income Gain/(Loss) by Generating	$ 33,772	$ 34,847	$ 21,833	$ 13,975	$ (49,685)	$ (47,673)	$ (174,044)	$ 80	$ 15,810	$ (36,443)

*Information from 1986-1990 obtained from various sources, some data is best estimate

Historical Costs vs Revenues	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Hydraulic Expenses (PSC)	$ 43,485	$ 43,052	$ 33,280	$ 48,467	$ 42,744	$ 56,227	$ 76,351	$ 38,104	$ 37,331	$ 34,778
Total Hydraulic Depreciation (PSC)	$ 22,215	$ 22,278	$ 21,812	$ 21,673	$ 21,673	$ 21,670	$ 21,669	$ 21,669	$ 21,566	$ 21,253
Pilot Calculation (PSC)	$ 15,657	$ 15,346	$ 16,563	$ 18,156	$ 20,156	$ 15,771	$ 16,530	$ 16,216	$ 16,818	$ 16,909
INITIAL LICENSE (Invoices)										
TOTAL EXPENSES (calculated)	$ 81,356	$ 80,676	$ 71,655	$ 88,296	$ 84,573	$ 93,668	$ 114,550	$ 75,989	$ 75,715	$ 72,940
TOTAL GENERATION (KWH)	2,408,494	2,574,000	2,535,000	2,101,000	1,589,000	1,548,000	1,901,000	2,203,000	1,873,000	1,356,000
Retail Energy Charge (PSC)	0.0565	0.0565	0.0586	0.0586	0.0586	0.0586	0.0670	0.0670	0.0670	0.0670
Electric Sales (calculated)	$ 136,080	$ 145,431	$ 148,551	$ 123,119	$ 93,115	$ 90,713	$ 127,367	$ 147,601	$ 125,491	$ 90,852
Total Cost of Purchased Power (WPPI in 2004)	$ 3,357,892	$ 3,526,362	$ 3,840,128	$ 3,979,427	$ 4,111,605	$ 4,360,439	$ 4,661,656	$ 4,800,270	$ 5,109,176	$ 6,221,274
Total Purchased Power (PSC)	97,096	98,713	102,677	106,464	108,613	109,866	114,553	115,351	116,677	119,120
Wholesale rate - Actual (WPPI)	$ 0.0346	$ 0.0357	$ 0.0374	$ 0.0374	$ 0.0379	$ 0.0397	$ 0.0407	$ 0.0415	$ 0.0438	$ 0.0522
Cost per Kwh to generate (calculated)	0.0338	0.0313	0.0283	0.0420	0.0532	0.0605	0.0603	0.0345	0.0404	0.0538
Green Energy rate						0.0597	0.0607	0.0615	0.06	0.0722
Cost per Kwh to generate						0.0605	0.0603	0.0345	0.0404	0.0538
Net Revenues from Generation	$ 54,724	$ 64,755	$ 76,896	$ 34,823	$ 8,543	$ (2,955)	$ 12,817	$ 71,612	$ 49,776	$ 17,912
Net Revenues from Purchasing Power	$ 52,786	$ 53,479	$ 53,742	$ 44,587	$ 32,956	$ 29,211	$ 50,091	$ 56,110	$ 43,472	$ 20,028
Income Gain/(Loss) by Generating	$ 1,938	$ 11,275	$ 23,154	$ (9,764)	$ (24,413)	$ (32,166)	$ (37,275)	$ 15,501	$ 6,304	$ (2,116)

Historical Costs vs Revenues	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Hydraulic Expenses (PSC)	$ 115,096	$ 62,478	$ 49,938	$ 57,713	$ 62,130	$ 53,930	$ 51,855	$ 39,685	$ 56,090	$ 74,748
Total Hydraulic Depreciation (PSC)	$ 21,361	$ 21,468	$ 21,467	$ 21,468	$ 21,467	$ 21,468	$ 21,467	$ 21,468	$ 21,468	$ 21,468
Pilot Calculation (PSC)	$ 13,051	$ 13,291	$ 13,071	$ 13,946	$ 14,184	$ 14,351	$ 14,309	$ 14,279	$ 13,577	$ 15,785
INITIAL LICENSE (Invoices)										
TOTAL EXPENSES (calculated)	$ 149,508	$ 97,237	$ 84,476	$ 93,127	$ 97,781	$ 89,749	$ 87,631	$ 75,432	$ 91,135	$ 112,001
TOTAL GENERATION (KWH)	1,156,000	1,346,000	1,366,000	1,184,000	1,301,000	1,431,000	1,648,000	1,392,000	1,575,000	1,717,376
Retail Energy Charge (PSC)	0.0670	0.0670	0.0977	0.0977	0.0977	0.0977	0.0977	0.0977	0.0977	0.0977
Electric Sales (calculated)	$ 77,452	$ 90,182	$ 133,458	$ 115,677	$ 127,108	$ 139,809	$ 161,010	$ 135,998	$ 153,878	$ 167,788
Total Cost of Purchased Power (WPPI in 2004)	$ 6,109,944	$ 7,123,649	$ 7,750,659	$ 7,897,853	$ 9,040,503	$ 9,302,484	$ 9,447,941	$ 9,547,464	$ 9,790,302	$ 9,696,357
Total Purchased Power (PSC)	116,620	121,276	118,743	113,855	118,476	117,963	117,404	119,220	120,450	119,691
Wholesale rate - Actual (WPPI)	$ 0.0524	$ 0.0587	$ 0.0653	$ 0.0694	$ 0.0764	$ 0.0789	$ 0.0805	$ 0.0801	$ 0.0813	$ 0.0810
Cost per Kwh to generate (calculated)	0.1293	0.0722	0.0618	0.0787	0.0752	0.0627	0.0532	0.0542	0.0579	0.0652
Green Energy rate	0.0724	0.0787	0.0853	0.0894	0.0964	0.0989	0.1005	0.1001	0.1013	0.1010
Cost per Kwh to generate	0.1293	0.0722	0.0618	0.0787	0.0752	0.0627	0.0532	0.0542	0.0579	0.0652
Net Revenues from Generation	$ (72,056)	$ (7,055)	$ 48,982	$ 22,550	$ 29,327	$ 50,059	$ 73,378	$ 60,567	$ 62,742	$ 55,786
Net Revenues from Purchasing Power	$ 16,889	$ 11,118	$ 44,299	$ 33,543	$ 27,776	$ 26,960	$ 28,395	$ 24,513	$ 25,830	$ 28,680
Income Gain/(Loss) by Generating	$ (88,946)	$ (18,173)	$ 4,683	$ (10,993)	$ 1,550	$ 23,099	$ 44,983	$ 36,054	$ 36,912	$ 27,106

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Historical Costs vs Revenues	2012	2013	2014	2015	2016	2017
Total Hydraulic Expenses (PSC)	$ 51,855	$ 39,685	$ 56,090	$ 74,748	$ 43,498	$ 112,874
Total Hydraulic Depreciation (PSC)	$ 21,467	$ 21,468	$ 21,468	$ 21,468	$ 21,468	$ 24,464
Pilot Calculation (PSC)	$ 14,309	$ 14,279	$ 13,577	$ 15,785	$ 15,234	$ 15,700
INITIAL LICENSE (Invoices)						
TOTAL EXPENSES (calculated)	$ 87,631	$ 75,432	$ 91,135	$ 112,001	$ 80,200	$ 153,038
TOTAL GENERATION (KWH)	1,648,000	1,392,000	1,575,000	1,717,376	2,108,905	1,898,129
Retail Energy Charge (PSC)	0.0977	0.0977	0.0977	0.0977	0.0977	0.0977
Electric Sales (calculated)	$ 161,010	$ 135,998	$ 153,878	$ 167,788	$ 206,040	$ 185,447
Total Cost of Purchased Power (WPPI in 2004)	$ 9,447,941	$ 9,547,464	$ 9,790,302	$ 9,696,357	$ 9,631,080	$ 9,682,706
Total Purchased Power (PSC)	117,404	119,220	120,450	119,691	122,361	121,788
Wholesale rate - Actual (WPPI)	$ 0.0805	$ 0.0801	$ 0.0813	$ 0.0810	$ 0.0784	$ 0.0795
Cost per Kwh to generate (calculated)	0.0532	0.0542	0.0579	0.0652	0.0380	0.0806
Green Energy rate	0.1005	0.1001	0.1013	0.1010	0.0984	0.0995
Cost per Kwh to generate	0.0532	0.0542	0.0579	0.0652	0.0380	0.0806
Net Revenues from Generation	$ 73,378	$ 60,567	$ 62,742	$ 55,786	$ 125,840	$ 32,409
Net Revenues from Purchasing Power	$ 28,395	$ 24,513	$ 25,830	$ 28,680	$ 40,807	$ 34,536
Income Gain/(Loss) by Generating	$ 44,983	$ 36,054	$ 36,912	$ 27,106	$ 85,033	$ (2,127)

* Notes

Beginning 1/1/2015, the City has identified the net revenues from hydro operations as a committed portion of unrestricted net position in the electric fund. The unaudited balance as of 12/31/2017 is $214,036.

In 2015, repairs of approximately $15,000 were authorized and completed on the lower hydro (Powell Falls). The capacity of Powell Falls is 150kW. Before the repairs, the hydro was running at about 40% of capacity. Since the repairs, it is running between 60% and 70% of capacity. This investment in the repairs and adjustments did enhance the total KWH output in 2016.

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Kinnickinnic River Land Trust

We work with the community to conserve and protect the beauty and health of the Kinnickinnic River and its watershed.

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December 28, 2018

Federal Energy Regulatory Commission
Kimberly D. Bose, Secretary
888 First Street, N.E.
Washington, DC 20426

City of River Falls
Kevin Westhuis, Utility Director
222 Lewis Street
River Falls, WI 54022

Electronic Filing

Re: Kinnickinnic River Land Trust Comments on Preliminary Application Document (PAD) and Scoping Document 1 (SD1) and Study Requests for dams licensed by FERC under Project P-10489.

Dear Ms. Bose and Mr. Westhuis,

The Kinnickinnic River Land Trust (KRLT) appreciates the opportunity to comment on the Preliminary Application Document (PAD) and the Scoping Document 1 (SD1) for the hydro facilities license by FERC under Project P-10489.

The Project is licensed as a two-development project located on the Kinnickinnic River: Junction Falls Dam that impounds a reservoir with a surface area of 16 acres and Powell Falls Dam that impounds a reservoir with a surface area of 15.4 acres. These hydro facilities sit adjacent to and bracket the public utility operated at the River Falls Sewer Treatment Plant (north side of lower impoundment) and Glen Park (south side of the lower impoundment. A Mix of residential, business and public spaces are adjacent on both sides of the upper impoundment presenting a partially or fully-developed urban environment in the entire project area. Details on the project facilities are documented in the **SD1, 3.0 Proposed Action and Alternatives, 3.1.1 Existing Project Facilities**.

The Kinnickinnic River is a unique recreational resource and highly rated trout fishery in northwest Wisconsin. Due to the unique resources and public interest, we recognize an extensive public process has been used to develop the basis for the City's PAD proposal to relicense Junction Falls dam and decommission and remove the Powell Falls dam. With the information in the PAD, the KRLT know FERC will incorporate our feedback as they work with the licensee (CRF) to require appropriate studies as part of the removal and restoration process. We are requesting the following studies to improve decision making as aligned with KRLT's mission of watershed protection and conservation outlined in **Appendix B**:

1. Recreation and Public Water Access Survey
2. Aesthetic Value of the Kinnickinnic River Study
3. Aquatic and Terrestrial Invasive Species Survey

20190228-5023 FERC PDF (Unofficial) 2/28/2019 11:43:01 AM

KRLT's comments on the PAD and SD1 are outlined in **Appendix A**. To save time and costs, the KRLT recommends that the City meet with the stakeholders who have requested studies more than the one time required by the Integrated Licensing Process (ILP) to explore options to minimize costs, and still achieve desired data collection and information for the Environmental Assessment (EA). We also recommend exploring collaboration with the University of Wisconsin-River Falls, stakeholders and community volunteers for study execution.

Sincerely,

Charlene Brooks
Executive Director

Cc:
Scot Simpson, City Manager – City of River Falls, WI (ssimpson@rfcity.org)
Angela M. Tornes, National Park Service, Milwaukee, WI (angie_tornes@nps.gov)
Raj Shukla, River Alliance of Wisconsin, Madison, WI (rshukla@wisconsinrivers.org)
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Gary Horvath, Kiap-TU-Wish Chapter, Trout Unlimited, River Falls, WI (magshorvath@comcast.net)
Michael Page, Friends of the Kinni, River Falls, WI (mspdds@gmail.com)
Duke Welter, TU DARE, Viroqua, WI (duke.welter@tu.org)
Shana Wiseman - Federal Energy Regulatory Commission, Washington D.C. (shana.wiseman@ferc.gov)

Appendix A
Comments on the Pre-Application Document (PAD)

KRLT recommends that the licensee and FERC develop and share more detailed information than what was provided in the PAD and SD1. This additional information should inform the development of study design as well as the Application for License (AL).

1. Junction Falls Hydro ROR Operations – projections for the expected license period 30 – 50 years

KRLT recommends that the hydro project continue to be operated in a run-of-river (ROR) mode such that instantaneous outflows from the hydro project closely approximate instantaneous inflow to the project. This ROR operation will ensure that adequate flow is discharged from the dam and that water level fluctuations in the flowage will be minimal.

To better evaluate the effectiveness of current ROR operations, the Licensee should install instream flow and sediment monitoring stations immediately above and below the project area. This will enable the Licensee to establish baseline information during the remaining period of the current license. This data will inform the Environmental Assessment (EA) by FERC that will be included as part of the Integrated License Process (ILP). Evaluation of this data will also inform environmental protection, mitigation or enhancement (PM&E) measures relevant to the AL.

To build efficiencies, the Licensee can collaborate with the United States Geologic Survey (USGS) to identify appropriate monitoring locations and process. These new stations will supplement the current USGS monitoring station at the Country Road F bridge approximately 15 miles downstream from the project area just above the confluence with the St Croix River. This sensible step will provide specific, proximate information about the flow rate and turbidity conditions in the project area and in the downstream outflow feeding into the existing monitoring station.

KRLT also requests that the AL list the operating headwater band elevations the Licensee proposes to operate within. To protect fish and wildlife habitat, KRLT recommends that the project continue to be operated within a narrow headwater band, that is, a few inches above and below the normal headwater target elevation at most.

Lastly, KRLT strongly believes the Licensee should also provide current and historical data on how well they are adhering to the ROR conditions of the current license as part of the publicly available information. This should include records of the required consultations with the Fisheries Manager at the USF&WLS, per the current conditions of license. Any demonstration of improper management with existing ROR PM&E measures should prompt FERC to enforce new strategies, such as automated cleaning gates.

2. Junction Falls Single Hydro Facility Project Economics – Temporal Scope 30 to 50 years

In preparation for the proposed AL, projections on the economic value of the project inclusive of the costs of relicensing, overall profitability and expected public benefit of continued operations should be prepared by the Licensee. Estimates for the project operation should include reasonable, anticipated maintenance and identified source of funding for contingent or extra-ordinary events or expenses, such as 100-Year flood event, or damage to the turbine and power generation equipment that would result in less than full-operation. The Junction Falls dams have been damaged by significant flooding at least twice in the past so evaluation of risk and associated cost is a reasonable scenario to evaluate. The impaired equipment condition exists at the Powell Falls facility today, so an evaluation can be based on a comparison to the existing hydro facility as one possible risk projection.

KRLT recommends this as prudent risk management of the proposed hydro project operations for the expected license period, a minimum of 30 years per FERC statutory requirements. Utility Advisory

Commission Memorandum from January 15, 2018 include consideration of a 40-year license period. We understand that assumptions will need to be made to create this economic impact projection. The value of the exercise comes not only from the final scenarios and associated range of profitability estimates, but the inventory of risk assumptions that can be reviewed periodically based on actual operations. This information will also serve to inform the public regarding the life-time value of the hydro facility if it is licensed for a final time by FERC as the Licensee proposed in the PAD. The Licensee has started to gather the necessary information they need to evolve that into appropriate scenarios and related net profitability estimates. This information should be developed and provided as a supplement to the PAD.

In the January 2018 Utility Advisory Board Resolution regarding relicensing of the Hydroelectric project P-10489 the findings included that the Junction Falls Facility:

- Is currently capable of generating $40,000 in net revenues per year from power generation; and
- Was reconstructed in 1990 at of a cost of $950,000 and will be fully depreciated in 2030; and
- Is currently in good operating condition with no significant capital expenditures anticipated for more than 20 years.

The resolution did not include an estimate of the cost of relicensing as an expense or clarify how that expense would impact the overall profitability of the operation over the remaining life of the facility. Financial Considerations in the January 15, 2018 memo to the Utility Advisory Board regarding **Scenario 3: Relicense and maintain the Junction Falls facility** included projected base project costs of $1,931,184 translating to projected annual increase in residential property taxes of $28.39 and projected annual increase in residential utility bill of $3.37. Assumed in Scenario 3 is the timely removal of the Powell Fall facility and restoring the adjacent reclaimed impoundment by pursuing non-city funding sources estimated at $946,115 of the Base Project Costs and included 30% construction Contingency and 30% Engineering, Administrative, Legal and Fiscal Expenses totaling $670,070.

Looking beyond the financial responsibilities associated with the relicensing process and current facility operating costs for Junction Falls Dam, the licensee needs to consider other expenditures. The final license from FERC may require additional PM&E scenarios that increase the project's operating costs. Lastly, the current economic models fail to recognize staff time association with on-going compliance measures and report preparation associated with FERC license.

The February 13, 2018 River Falls City Council Agenda and package included a Feasibility Report for Hydro Facility Relicensing dated February 8, 2018 prepared by Short Elliot Hendrickson Inc. (SHE) project consultants for the City. Table 3 on Page 17 of that study indicated Option 2: FERC License Application (Relicensing) costs in the range of $218,000 to $444,00. This would be in addition to the investment in the community planning process costs the City pursued following license extension in 2014. This cost scenario did not break out just relicensing Junction Falls and the operating costs roughly estimated in the memo to the Utility Advisory Board.

This wide range and estimating approach are useful to guide the decision makers in deciding to pursue relicensing but is less than adequate to inform the operating profitability once a new license is granted by FERC. It also has no assessment of risk to fully operating the facility. KRLT request that the licensee create a more comprehensive operating model data as part of the ILP and in preparation for the EA.

3. Detailed Decommission Cost Estimates and River Restoration Plan

KRLT participated in the Kinnickinnic River Corridor Planning Committee and acknowledges that the City of River Falls, and licensee, engaged in a broad-based public involvement process over the last four years. The Kinnickinnic River Corridor Plan (KRCP) will be presented for City Council vote in early 2019. This plan provides a high-level set of priorities to implement the vision outline in adopted Resolution No. 6234. That community "**vision is of a free flowing Kinnickinnic River, including associated ecological**

restoration, to maintain the current classification as a Class I trout stream, an Outstanding Resource Water above State Trunk Highway (STH) 35 and an Exceptional Resource Water below STH 35 as defined by the WDNR".

The KRCP represents a significant and award-winning community planning effort by the City and its citizens, resource agencies, businesses and non-governmental organization stakeholders. The KRCP does not provide the detailed evaluation into the specific decommission and restoration planning for lower impoundment and hydro facility at Powell Falls. This gap in information and detailed planning is significant and critical to fill during the next few years of the remaining license period. In the PAD, the City is requesting FERCs approval to surrender and decommission the Powell Falls hydroelectric facility with the current license expiration as of August 31, 2023 with full restoration of the river to be completed by 2026.

At the FERC facilitated Scoping Meetings on November 15 and 16, 2018, Shana Wiseman, FERC representative, described the PAD and proposal by the Licensee as unusual and unique in their experiences within licensing or enforcement. FERC had never before had a combined request to license 1 facility and decommission another PAD presented to them. As outlined in the **SD1: 3.2 Applicant's Proposal, 3.2.1 Proposed Project Facilities and Operations:** "The City of River Falls proposes to submit a decommissioning plan with the final license application." The proposed suspension of operation of Powell Falls is a short four years away. Preparation for restoration efforts will need to be well planned and funding stream secured prior to August 31, 2023 in order to meet the 2026 target timeframe proposed by the licensee.

KRLT requests that FERC update the **SD1: Appendix B: River Falls Project Process Plan and Schedule** to incorporate critical dates and relevant FERC regulation references specifically for the decommissioning planning for Powell Falls hydro facilities so that the licensee and the public are fully informed about FERC's requirements and expectations. As well, this incorporation will create accountability between itself and the community that is actively invested in the trajectory of this Project.

Alternatively, KRLT requests that FERC Division of Hydropower Administration and Compliance (DHAC) provide a separate scoping document and appendix with the relevant dates and information for Decommissioning Planning and approval process by FERC that will be effectively running in parallel with the Junction Falls hydro relicensing preparation. FERC has provided an inventory of Resource Issues in **SD1:4.2** for Powell Falls under **4.2.8-4.2.14** but the detailed timeframe and due dates between the PAD and the AL, and FERC requirements are not clear.

4. Increased Information About Impacts to Shoreland Management

In 2003, the City of River Falls adopted a shoreline ordinance that increased the setback for development to a minimum of 75 feet from the Kinnickinnic River's ordinary high-water mark (WI DNR, 2008). Additional setbacks and land use limitations apply dependent on the condition of the property (City of River Falls, 2003). Although the city has steadily acquired property within the project area, some private ownership still exists along the corridor.

KRLT requests that the licensee to clarify how potential changes in water levels and restoration efforts will impact current and future development/land management opportunities and provide the public an update on the application of the shoreline ordinance post restoration of the Kinnickinnic River below Junction Falls and continued operation above Junction Falls. Clarification should include clearer documentation of existing setbacks/district overlays and contingency planning for man-made/natural events that dramatically change the character of the established buildings and development within the Project area.

Appendix B – Study Requests

A. Aquatic and Terrestrial Invasive Species Survey Request

1. Goals and Objectives:
   Dams that alter natural hydrology may create and maintain river conditions favorable for non-native species in stream and along the shoreline. The goal of this request is for the licensee to monitor, document and report the location and type of invasive plant species and submerged exotic aquatic plants.

2. Relevant Public Interest
   Terrestrial and submergent invasive plants pose a serious risk by altering and degrading the recreation potential, ecosystem diversity, and quality of the environment. Supporting enhanced riparian habitat management is important to a healthy environment. KRLT believes an updated evaluation will provide improvement understanding of current conditions.

3. Existing and Needed Information
   No aquatic invasive species (AIS) are formally identified according to the WI DNR in the Kinnickinnic River and/or watershed tributaries. WI DNR staff last evaluated the watershed's submergent vegetation in 2014 when concerns about faucet snails emerged (WI DNR, 2018). Official cases of AIS have been documented and both Pierce County (Pierce County, 2011) and Saint Croix County (Saint Croix County, 2018) identify this issue as a priority concern in their respective land and conservation management plans. With the lack of up-to-date invasive plant, animal, and macroinvertebrate surveys, efforts to collect additional information are critical to watershed protection.

   Terrestrial invasive species (TIS), both plant and animal, have a growing hold on the watershed. Pierce County identified buckthorn, honeysuckle, garlic mustard, gypsy moth, and emerald ash borer as intensifying concerns (Pierce County, 2011). Even with the long-standing local and statewide management work, very limited information also exists about the distribution of many TIS, include emerging threats such as Japanese knotweed (WI DNR, 2018).

   The study areas should include data to develop models for the impact on invasive species in the context of decommissioning and removal of the Powell Falls hydro facilities and Protection, Mitigation, and Enhancement measures (PM&E) to manage invasive species within the project area in total, along with the terrestrial and aquatic areas around the tailwaters of the dams, the lower Kinnickinnic River and the confluence with the South Fork (named tributary) and any unnamed tributaries providing pathways for travel or spread of invasive species. **A baseline and plan are critical for the Project area and surrounding community to prevent and mitigate AIS and TIS taking hold and spreading**.

4. Operation Nexus to Resource and How Informs License Requirements:
   The project influences invasive species that have the potential to directly or indirectly cause economic or environmental harm to: human health; native species biodiversity; natural scenic beauty; and natural ecosystem structure, function or sustainability; the long-term genetic integrity of native species; recreation, commercial, industrial and other uses of natural resources in the project area and downstream resources; and the safety or well-being of humans, including vulnerable or sensitive individuals, per Wisconsin Invasive Species Rule NR40. The impoundment formed behind the Junction Falls dam and Powell Falls dam provides lentic (slow moving, lake-like) habitat which is more conducive for submerged exotic aquatic plant growth than if the dam was not present and the system was more riverine (Baxter, 1977).

   As stated in a technical memo provided to the licensee by Short Elliot Hendrickson, Inc (SHE) on June 19, 2017, "the two impoundments both isolate and perpetuate the risk of invasive species establishment (SEH, 2017.)" Understanding the current invasive populations are key to develop mitigation efforts that

will protect the Kinnickinnic River, adjacent land and downstream confluences with the St. Croix River, and the public from potential dispersal that may occur during Project activities. This information will assist FERC in completing the EA and developing relevant PM&E conditions for a future license.

5. Methodology:
   This study request can be completed with riverine plant survey methodology proposed by River Alliance of Wisconsin in their study recommendation. Alternatively, Project RED: Riverine Early Detectors Manual is supported by the WI DNR and outlines best management practices for site selection, incident reporting, data collection, and specimen verification (River Alliance of Wisconsin, 2018). Collected data can be stored within the WI DNR's Surface Water Integrated Monitoring System (SWIMS) (WI DNR, 2018).

6. Level of Effort and Costs:
   Working with the WI DNR, the River Alliance of Wisconsin, and trained community volunteers, including students from the University of Wisconsin-River Falls will reduce the level of effort needed. The River Alliance of Wisconsin provides training to potential volunteers and the WI DNR will provide professional support and guidance. This study can be conducted during the summer months in a relatively short amount of time with adequate assistance. With thoughtful partnership this study will cost about $500.

B. Recreation and Public Water Access Survey Request

1. Goals and Objectives:
   KRLT is requesting that the City of River Falls (CRF) conduct a study to provide information on existing public access to the land and surface waters along the Kinnickinnic River in its entirety. Additionally, we ask that the licensee inventory and survey of various user groups. These groups include fishers, kayakers, swimmers, hikers, walkers, bikers, rock climbers, campers, snowmobilers, picnickers, bird watchers, and more. To understand the impact of continuation and/or decommissioning it is necessary to understand current and potential usage of the river to the local community and visitors. Assessment will also help plan for any interactivity conflicts that may occur as access to the river changes with the proposed decommissioning of Powell Falls hydro facility.

2. Relevant Public Interest:
   The Kinnickinnic River Land Trust (KRLT) owns several preserves and manages 34 conservation easements in the watershed, including 1 urban easement at the head of the project area on North Main Street. The lands are held for public benefit in perpetuity providing current and future recreational opportunities. It is core to our mission to support and promote public access to the river, while managing usage on and alongside it wisely. We recognize that the river and its watershed support a unique, diverse ecosystem, provides scenic recreation for the local community and the region, including the nearby Twin City communities. The Kinn's aesthetic value is a retreat for individuals of all ages. The most urgent matter impacting the long-term health of the river is its careful restoration. Availability and quality of recreational opportunities within the Project is a significant public interest.

3. Existing and Needed Information
   The City of River Falls has created a website database including all publicly available resources pertaining to the FERC relicensing of the River Falls Hydroelectric Project (City of River Falls, 2014). There does not appear to be at this time any credible studies present focusing on recreation, tourism or aesthetic opportunities. The 2013 PAD for the Project states, "there is abundant opportunities for recreation within the project area" and then goes on to reference recreation opportunities on the rest of the Kinnickinnic River outside of the area of the impoundments and the two dams (Inter-Fluve, 2017).

Specific information needed includes a specific identification and assessment of formal and informal recreation sites within and adjacent to the project area. Details to include: Description of the site or access area, inventory of any facilities, amenities or improvements at the site, photographs and maps (including latitude and longitude) of the site, estimates of parking capacity available at or adjacent to the site, overall condition of the site using a standardized condition rating scale and general observations on site use, condition and accessibility. Conditions of amenities should identify any major repairs to existing amenities, existence of safety or health concerns and categorize the significance of those findings. Recreation site use should be estimated by seasons with a series of calendar year observations segmented to align with the seasonal patterns of use and include both weekday and weekend use.

4. Operation Nexus to Resource and How Informs License:
The Project itself creates a physical barrier between the Lower Kinnickinnic River and the immediate areas of the two impoundments in the center of the City of River Falls. The shallow impoundments support excess eutrophication and reduces connectivity of the river. Impaired recreation impacts the community and does not align with Wisconsin's goal to provide high quality recreation experiences (WI DNR). An improved understanding of the current impacts and future opportunities will support mitigation and improvement in light of the continuation of Junction Falls Dam and the decommissioning of the Powell Falls Dam.

5. Methodology:
Water-resource based recreation occurs within a social context and management is integral to preserving the Kinnickinnic River for current and future use. Water is often rated by individuals as the most important attribute when choosing where to recreate. The amount of land/water edge and surface water directly correlates to increased scenic value (Zube et. Al, 1975). The literature provides many examples of intense and thoughtful study that may support this effort. (Kakoyannis and Stankey, 2002)

By developing a thorough baseline inventory, and a survey of current recreational opportunities and utilization, the licensee can evaluate opportunities along the entire length of the Kinnickinnic River with the dams in place (upper river, impoundments, lower river, confluence with the South Fork tributary).

Regarding the sample size of the recreation use and needs survey, typically, for studies related to outdoor recreation, a target sample size of approximately 400 responses is sufficient (Vaske, 2008). The licensee should, therefore, ensure that they design their sampling schedule to achieve this generally accepted target sample size of approximately 400 responses. If the licensee does not gather a sufficient number of responses, then the study should be continued in a second or third season to ensure a sufficient sample size.

Winter recreation use is known to occur at the project, but the amount of detailed existing information on recreation use at the projects is limited. Therefore, the licensee should include winter sampling days for both the spot counts and recreation user surveys. It is expected that these additional sampling days will not result in a substantial increase in the level of effort or cost for the study.

Specific documented information in the study should include:

a. A compilation of a list of all recreational opportunities the Kinnickinnic River and the two impoundments offer.
    a. Including specific and current fishing opportunities available both in the river and the impoundments.
    b. Focus on aquatic recreation opportunities.
b. A baseline inventory and survey of people pursuing activities such as fishing, kayaking, canoeing, swimming, hiking, walking, biking, rock climbing, picnicking, and wildlife viewing and other relevant categories of activity.

c. Compilation of data to gain an understanding of exactly where recreational opportunities are underutilized and/or where improvements in recreational opportunities could be made for our community.
    a. With potential restoration, exploring increased access to trout fishing with the dams removed.
    b. Potential with the dams removed for extension and expansion of walking trails, canoe/kayak portages, picnic and viewing areas.
    c. Potential with the dams removed to create approximately 30 acres of new and expanded urban parks and community green spaces on the land now submerged below the impoundments.
    d. A survey of local residents' perceptions of available outdoor recreational opportunities and their perceptions of the project's effects of those opportunities.
    e. A comprehensive economic valuation of those potential improvements and/or expansion of recreational opportunities.

6. Level of Effort and Costs:
KRLT believes the proposed level of effort is adequate to accurately document public recreational access in the investigational area. The estimated cost for this study is approximately $10,000 - $20,000. These figures were crafted by TRC, an engineering and environmental consulting firm, that assisted with the 2017 Restoration of the Kinnickinnic River through Dam Removal Feasibility Report and Dam Removal Concept Plan (Interfluve, 2017).

C. Aesthetic Value of River/Aesthetic Resources Survey Request

1. Goals and Objectives
They city's PAD indicates that the structures, buildings, generation facilities, and reservoirs associated with the hydroelectric project have been part of the River Falls landscape for many years. This is true; however, these man-made structures and reservoirs should not be considered as "improvements" over the natural free-flowing river and historic waterfalls which are currently sub merged under concrete and impoundments. Thoughtfully considering an aesthetic within the ILP study process that values the natural and visual integrity of the project area would be more in keeping with the City of River Falls' Comprehensive Plan and soon to be adopted Kinnickinnic River Corridor Plan (City of River Falls, 2018).

2. Relevant Public Interest
The Kinnickinnic River Land Trust (KRLT) works towards protecting the natural character of the watershed through land acquisition, conservation easements, and involvement in decision making that impacts land use for the public benefit. We believe that it is important to support the Kinnickinnic River's inherent value, which is shaped by its unique and diverse ecosystem, provides scenic recreation for the local community and the nearby Twin City communities. The Kinnickinnic River is a retreat for individuals of all ages and can serve as an economic boost for the region as modeled in neighboring watersheds in the Driftless area (Anderson, 2016). We have served the river and all who enjoy it for over 25 years and feel that a better understanding of its aesthetic value will provide public benefit as a part of this project.

3. Existing and Needed Information
Very limited information exists on the valuation of the Kinnickinnic River's aesthetics. The KRLT, the River Falls Chamber of Commerce, and the city of River Falls contracted with Kelly Enterprises, LLC in 2018/2019. to conduct a usage and valuation assessment of the river from a select number or perspectives. These viewpoints include how the river attracts customers, impacts business owners, and draws in anglers, kayakers, and other types of recreations. Currently, the study is underway and is not comprehensive.

The PAD proposes relicense of Junction Falls hydro-electric project. The minimum period of license would be 30 years, with typical period being 40 years. Valuation of the aesthetics and impacts from future operational period need to be considered to inform the EA and PM&E for license.

4. Operation Nexus to Resource and How Informs License

Both the decommissioning of Powell Falls Dam and the relicensing of Junction Falls Dam have short-term and long-term impacts on habitat, environmental health, biodiversity, natural scenic beauty, and other use of natural resources in the project area and lower watershed. The Kinnickinnic River is the heart of the River Falls, WI, "River Falls-the City on the Kinni". This messaging is found all over the city as part of the 2018 River Falls Community Foundation beautification campaign. The aesthetic value of the river is a draw for many and is immediately impacted by the presence of the dams.

The proposed study informs the ILP regarding the decommission plan for Powell Falls Dam environmental impact for slope stability and erosion, re-introduction and management of vegetative cover; value of woody debris management and inputs to downstream reaches creation and use of roads, multi-modal paths, non-designated trails and altered quality of the aquatic and shoreline habitat impacting aesthetics of the project post-removal. Establishing base-line information will enable the licensee to mitigate potentially negative impacts and support enhancements within the project and surrounding area.

The proposed study informs the license regarding the operating plan for the Junction Falls hydro facility including bank and slope stability and erosion, turbine and bypass value operations – noise, alternative facility use – traffic flow and human impacts, flow regimes and inputs to downstream reaches. Establishing base-line information will enable the licensee to measure the aesthetic value of continue operations and help identify criteria for license conditions.

5. Methodology

An estimation of the aesthetic value of the current hydro facility existence and decommissioning affects our "sense of place" in our community. The travel cost method can be employed, with the use of a contractor or using internal resources through the licensee. This is also known as the recreation demand model method, which collects information on sites visited, quantity of visits, total distance traveled, and total time in transit (Corrigan et al, 2007). Aesthetic valuation can be incredibly subjective; however, using this type of methodology provides some consistency and economic structure around the valuation.

Regarding the sample size of the recreation use and needs survey, typically, for studies related to outdoor recreation, a target sample size of approximately 400 responses is enough (Vaske, 2008). The licensee should, therefore, ensure that they design their sampling schedule to achieve this generally accepted target sample size of approximately 400 responses. If the licensee does not achieve an enough response, then the study should be continued in a second or third season to ensure a sufficient sample size.

6. Level of Effort and Costs

The costs associated with this study can be limited to the cost of analysis. The cost of gathering the information can be included in the questionnaire for the recreation usage survey. The use of pivot table, statistical software, and regression techniques can keep costs low. Estimated costs are $3,000 - $6,000 to accommodate staff time for question development, analysis, and reporting. Estimated time is 50-60 hours to complete work.

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KIAP-TU-WISH CHAPTER TROUT UNLIMITED
Conserving, protecting, and restoring cold water fisheries and their watersheds in Polk, Pierce, and St. Croix Counties, Wisconsin.

28 December 2018

RE: River Falls Hydroelectric Project, FERC Project No. P-10489

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Dear Ms. Bose:

The Kiap-TU-Wish Chapter of Trout Unlimited (Kiap-TU-Wish Chapter) would like to take this opportunity to comment on the relicensing of the River Falls Hydroelectric Project in Pierce County, Wisconsin (FERC Project P-10489). Via this letter and the attached document, I am providing our Chapter's recommendations for the studies we feel are necessary for the City of River Falls (City) to make informed decisions about project relicensing, as described in the Preliminary Application Document (PAD) and the Scoping Document 1 (SD1).

The Kiap-TU-Wish Chapter's mission is to conserve, protect and restore cold-water ecosystems and fisheries in Western Wisconsin. The Kinnickinnic River is one of the finest trout streams in Wisconsin and is nationally renowned. The Kiap-TU-Wish Chapter has a goal of maintaining a healthy cold-water ecosystem that supports naturally reproducing brown and brook trout populations in the Kinnickinnic River.

Our objective in proposing these studies is to provide quantitative information that will inform the community about the effects of the hydropower project on the river and on alternatives for its future condition. This will be invaluable to the community for making knowledgeable decisions about relicensing the hydropower facility and creating a desired future condition of the river, as noted in the City's recently-completed Kinni Corridor Plan. These studies will also help to identify the protection, mitigation, and enhancement (PM&E) measures needed to sustain the environmental resources affected by this project. The Kiap-TU-Wish Chapter has relied on our members with many decades of experience as water resources professionals to recommend five studies that address:

- Temperature Impacts
- Hydrologic Impacts
- Water Quality Impacts
- Sediment Impacts
- Biological Impacts

c/o Scott Wagner, President | P.O. Box 483 | Hudson, Wisconsin 54016-0483 | 651-398-8418

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Our recommended studies address these five key elements of a healthy cold-water ecosystem, with attention to the impacts of the River Falls Hydroelectric Project, available information, and the most effective means for gaining needed information for informed decision-making. The recommended studies include specific methodologies and standard practices used to evaluate impacts on high-value water resources.

The community treasures the Kinnickinnic River, and we feel these studies will help ensure its future health and vitality for City residents and river users. Thank you for your consideration of this important issue.

Sincerely,

Gareth Horvath, Vice President
Kiap TU Wish Chapter of Trout Unlimited

Cc: Kevin Westhuis, Utility Director, City of River Falls
Scott Wagner, President, Kiap TU Wish Chapter

c/o Scott Wagner, President | P.O. Box 483 | Hudson, Wisconsin 54016-0483 | 651-398-8418

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KIAP-TU-WISH CHAPTER TROUT UNLIMITED
Conserving, protecting, and restoring cold water fisheries and their watersheds in Polk, Pierce, and St. Croix Counties, Wisconsin.

Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River

Kiap-TU-Wish Chapter of Trout Unlimited

December 28, 2018

Studies determined by the Kiap-TU-Wish Chapter of Trout Unlimited as necessary to be performed by the City of River Falls for the River Falls Hydroelectric Project in Pierce County, Wisconsin (FERC Project P-10489), consistent with 18 CFR 4.38(b)(5).

Kiap-TU-Wish Chapter of Trout Unlimited | P.O. Box 483 | Hudson, Wisconsin 54016-0483

Recommended Studies to Assess the Water Resource Impacts of City of River Falls (WI) Hydropower Facilities on the Kinnickinnic River

Study I. Temperature Impacts

Background Information:

The Kiap-TU-Wish Chapter of Trout Unlimited (Kiap-TU-Wish) has a goal of maintaining a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. However, the Kinnickinnic River is threatened by increased temperatures caused by the River Falls hydropower impoundments (Johnson 2018), a warming climate (Mitro et al. 2011; Johnson 2018), urban stormwater runoff (Johnson 1995), and reduced river flow due to groundwater withdrawals in the watershed (Juckem 2009). To better understand these threats to the coldwater ecosystem, Kiap-TU-Wish has been conducting temperature monitoring of the Kinnickinnic River since 1992. One of the primary objectives of this monitoring work is to evaluate the thermal impacts of the City of River Falls hydropower facilities on the Kinnickinnic River.

Kiap-TU-Wish temperature monitoring is conducted at five Kinnickinnic River sites (two upstream and three downstream of the City of River Falls hydropower facilities), and at three sites on Kinnickinnic River tributaries (Sumner Creek, South Fork of the Kinnickinnic River, and Rocky Branch Creek) (Figure 1). Monitoring is generally conducted during the mid-April to mid-October period each year; although monitoring has also been conducted during four winters (1995, 1998, 2003, 2006). Monitoring is conducted via the use of electronic instrumentation that continuously measures river temperatures at 10-minute intervals, generating approximately 22,000 temperature measurements/monitoring site/year.

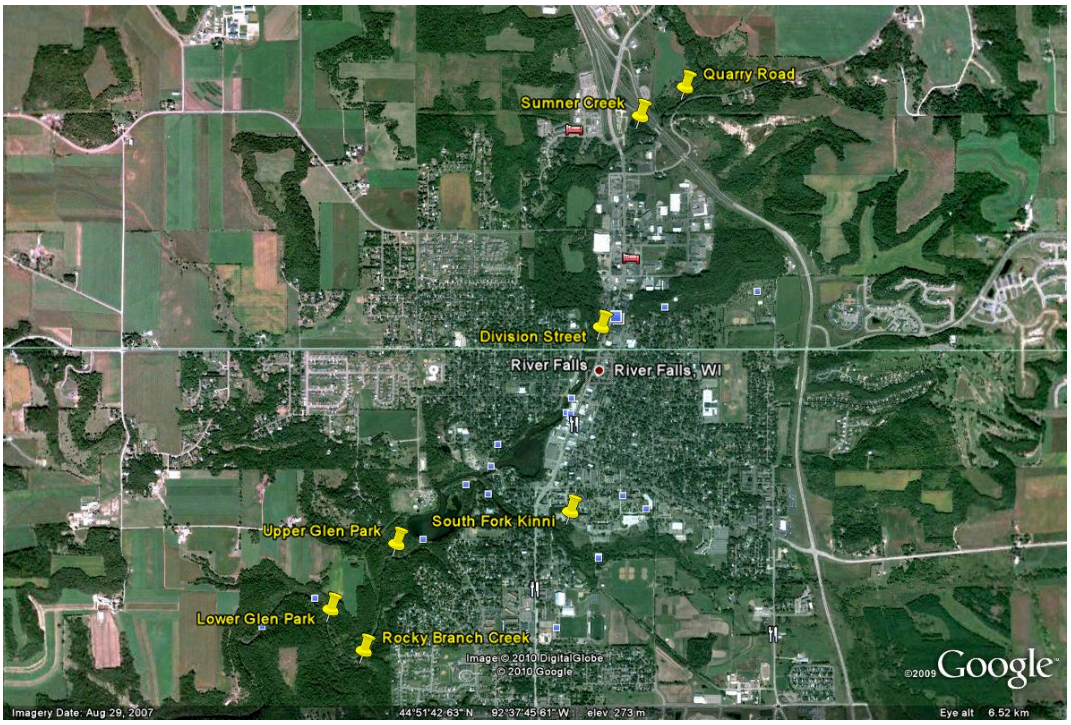

Figure 1. Kiap-TU-Wish temperature monitoring sites on the Kinnickinnic River and tributaries in River Falls, WI.

Evidence of Temperature Impacts:

- The two City of River Falls hydropower dams and impoundments (Lakes George and Louise) have transformed a 0.7-mile reach of the Kinnickinnic River from a coldwater to a warm water ecosystem. Lakes George and Louise are classified by the Wisconsin Department of Natural Resources (WDNR) as a warm water sport fishery (WWSF), while the remainder of the Kinnickinnic River is classified as a cold Class I trout fishery (WDNR, et al., 1999).
- The two City of River Falls hydropower impoundments (Lakes George and Louise) have a significant warming influence on the downstream Kinnickinnic River in the summer, and a cooling influence in the winter.
- The Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project (Kinni NPS Plan) (WDNR et al., 1999) notes (p. 94): "The downstream reach (below Lake Louise and Powell Dam)….has elevated water temperatures…caused by the two upstream impoundments and stormwater runoff". "The impoundments have an overall constant warming effect of about 3° C (5° F) on downstream water temperatures during base flow (Schreiber, 1998)."
- The Kinni NPS Plan (WDNR et al., 1999) notes about Lake George (p. 94): "Warming in the shallow areas tends to cause a general increase in downstream water temperatures".
- On average (1993-2013), the downstream Kinnickinnic River summer (June-August) temperature is 4.2° F higher than the upstream temperature (59.7° F upstream vs. 63.9° F downstream) (Johnson 2018; Kiap-TU-Wish, unpublished data).
- On average (1993-2013), the downstream Kinnickinnic River July temperature is 4.7° F higher than the upstream temperature (61.0° F upstream vs. 65.7° F downstream) (Johnson 2018; Kiap-TU-Wish, unpublished data).
- A climate vulnerability analysis of Kiap-TU-Wish data (1992-2009) by WDNR (Mitro, et al., 2011; Johnson 2018) noted that a warming trend is occurring at both upstream and downstream Kinnickinnic River sites. However, the warming trend is greater at downstream sites and begins at a much higher baseline temperature, indicating that the downstream Kinnickinnic River may be much more sensitive to future climate change impacts.
- Future climate change impacts (Mitro, et al., 2011) must be a critical consideration for evaluating future hydropower-related temperature impacts on the currently-impounded and downstream reaches of the Kinnickinnic River. With higher system-wide temperatures due to climate change, thermal impacts due to the hydropower impoundments will further exacerbate downstream warming, possibly creating future temperature regimes that are unsuitable for a coldwater ecosystem.

Recommended Study Elements to Evaluate Temperature Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration by 2026 may reduce summer heating and winter cooling caused by Lake Louise, thereby improving the temperature regime of the lower Kinnickinnic River. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to impose temperature impacts on the downstream river. To assess future temperature regimes created by these two scenarios, the following study of temperature impacts is recommended:

Ia. Conduct year-round temperature monitoring of Lakes George and Louise (1-2 years), to better understand in-lake temperature dynamics. In addition to lateral and longitudinal characterization of

temperature, vertical profiling work should be conducted to determine the extent of seasonal thermal stratification in the two hydropower impoundments.

Conduct additional winter temperature monitoring at upstream and downstream Kinnickinnic River sites, to better understand the winter temperature impacts of Lakes George and Louise.

Ib. Conduct thermal modeling of the Kinnickinnic River, to determine the extent to which dam removal would improve the temperature regime (lower the baseline temperature) in the currently-impounded and downstream river reaches, how far down river this temperature improvement would extend, and the amount of "thermal buffering capacity" created for protection against future climate change. With a lower downstream baseline temperature, the Kinnickinnic River could better utilize the significant groundwater inputs to the lower five miles of the river (river flow approximately doubles from Main Street in River Falls to County Road F near the river mouth). The thermal model could also be used to evaluate the temperature impacts of the hydropower impoundments (or absence thereof) under several future climate change scenarios, as outlined by WDNR (Mitro, et al., 2011). With enhancements and additional monitoring data (**Ia**), the existing U.S. Army Corps of Engineers (USACE) thermal model created for the Lake George Stormwater Treatment Concept Plan (City of River Falls 2005) could be used for this effort.

Goals and Objectives of the Temperature Impacts Study (Criterion #1)

The goal of this study is to quantitatively assess the current and future temperature impacts of the River Falls hydropower project on the Kinnickinnic River. Monitoring the temperature regime would provide further direct evidence of the thermal impacts of the two hydropower impoundments (Lakes George and Louise) on the Kinnickinnic River. The study objective is to obtain monitoring data from Lakes George and Louise and the Kinnickinnic River upstream and downstream of the hydropower project (**Ia**). The temperature monitoring data could then be used to adapt and apply the previously-developed thermal model CE-QUAL W2 (Noren 2003), to quantify future Kinnickinnic River temperature improvements associated with Powell Falls Dam removal and future temperature impacts caused by the continuing presence of the Junction Falls Dam and Lake George (**Ib**). With a warming trend already occurring in the Kinnickinnic River (Mitro, et al., 2011; Johnson 2018), the thermal model could also be used to determine whether climate change will further compound temperature impacts caused by the continuing presence of the Junction Falls Dam and Lake George.

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. The resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. A suitable temperature regime is critical for achieving this goal.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts.

Existing Information and the Need for More Information (Criterion #4)

Since 1992, the Kiap-TU-Wish Chapter of Trout Unlimited has been conducting temperature monitoring of the Kinnickinnic River and three tributaries in the vicinity of River Falls, Wisconsin (see **Background Information**, above).

Using the Kiap-TU-Wish temperature monitoring data, Johnson (2018) evaluated the thermal impacts of the hydropower project on the Kinnickinnic River and summarized monitoring results. Mitro et al. (2011) also used the Kiap-TU-Wish data to assess the additional impact of climate change on the Kinnickinnic River. Noren (2003) applied Kinnickinnic River and River Falls stormwater temperature data to develop a CE-QUAL W2 numerical hydraulic model that simulates the effects of the hydropower impoundments and stormwater runoff on the Kinnickinnic River thermal regime.

Existing temperature data and the new monitoring data and thermal modeling generated by this study should be applied to quantitatively predict the future impacts of the River Falls hydropower project on the thermal regime of the Kinnickinnic River with Powell Falls Dam removal and the continuing presence of the Junction Falls Dam and Lake George.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The proposed Powell Falls Dam removal and re-licensing for the continuing operation of the Junction Falls Dam and presence of Lake George would change the thermal regime of the Kinnickinnic River. The recommended temperature monitoring and thermal modeling would inform re-licensing requirements by providing quantitative information on the current and future thermal impacts of the hydropower project. There are a number of potential protection, mitigation, and enhancement measures (PM&E measures) that could reduce the adverse thermal effects of the project on the coldwater ecosystem of the Kinnickinnic River. These PM&E measures could become part of the re-licensing requirements.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Methods for conducting the recommended temperature monitoring of Lakes George and Louise and the Kinnickinnic River are standard limnological practices described by WDNR (2004), Hastings et al. (2011), Toohey et al. (2014), Dauwalter et al. (2017), and others. CE-QUAL W2 (Version 3.1) is a two-dimensional hydrodynamic and water quality model suitable for relatively long and narrow water bodies that exhibit vertical and longitudinal gradients. The original model, known as LARM (Laterally Averaged Reservoir Model), was developed by Edinger and Buchak (1975). Since then, the model was renamed CE-QUAL W2, and it has been continually updated by the U.S. Army Corps of Engineers Research and Development Center. In its present version 3.1, the model has been applied to successfully model lakes, reservoirs, estuaries, and rivers (Cole and Wells 2002).

Level of Effort and Cost of the Study, and Why the Study Is Needed (Criterion #7)

We estimate that the two-year water temperature monitoring component of this study (**Ia**) would cost $20,000. The monitoring would be conducted using commercially-available data-logging thermometers. Data would be downloaded and analyzed, with monitoring results presented in a brief report.

We estimate that application of the CE-QUAL W2 thermal model (**Ib**) to quantify current and future temperature impacts of the hydropower project would cost $75,000. Some fieldwork and perhaps some additional monitoring would be needed to quantify river flows and channel dimensions. Existing and new temperature data (via this study) would be used to adapt the previously-used CE-QUAL W2 model to allow simulation of the future thermal regime of the Kinnickinnic River, with Powell Dam removal and the continuing operation of the Junction Falls Dam.

The study is needed to provide a quantitative prediction of the effects of the hydropower project on the thermal regime of the Kinnickinnic River. The study would also be very beneficial for setting quantitative trigger points to initiate earlier removal of the Junction Falls Dam, to protect the coldwater ecosystem of the Kinnickinnic River, as described in the City of River Falls Resolution No. 6234, Paragraph v (Resolution Recommending Re-Licensing of Hydropower Project P-10489) (February 27, 2018).

Study II. Hydrologic Impacts

Background Information:

The Federal Energy Regulatory Commission (FERC) license for the City of River Falls hydropower project requires that a downstream "run-of-river" condition be maintained at all times. Maintaining a "run-of-river" condition is critical for protecting the Kinnickinnic River habitats that support healthy coldwater macroinvertebrate and trout communities. Sudden decreases in water flow can de-water macroinvertebrate habitats and trout redds, while sudden increases in water flow can de-stabilize the river channel, thereby increasing bank erosion, decreasing water clarity, and damaging in-stream habitat.

The United States Geological Survey (USGS) operates a Kinnickinnic River monitoring station (number 05342000) at County Highway F, near Kinnickinnic State Park, approximately five miles west (downstream) of River Falls. The station continuously measures river stage (water height) and flow at 15-minute intervals year-round, generating approximately 35,000 stage and flow measurements per year. A one-year record of flow data exists for the 1999 water year (October 1998-September 1999), while a continuous record of flow data exists from July 2002 to present. The City of River Falls, Kinnickinnic River Land Trust, and the Kiap-TU-Wish Chapter of Trout Unlimited provide annual cost-share funding to help support the ongoing operation of this station.

The City of River Falls measures and records the daily water levels of Lakes George and Louise.

During periods of stable river flow (baseflow), when precipitation and runoff are not occurring, the Kinnickinnic River hydrograph can be examined to determine whether the City of River Falls hydropower facilities are operating in a "run-of-river" mode, as required by the FERC license.

Evidence of Hydrologic Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 93-94): "The condition of the Kinnickinnic River downstream from the City of River Falls is worse than the condition upstream. Increased temperatures from the two lakes and flow fluctuations caused by dam management procedures contribute to adverse impacts on the Kinnickinnic River ecosystem".

- The Kinni NPS Plan notes (WDNR et al., 1999) (p. 94): "The downstream reach (below Lake Louise and Powell Dam)….is impacted….by flashy stream flows caused by urban runoff and hydropower manipulations".
- The Kinni NPS Plan notes (WDNR et al., 1999) (p. 8): "The impoundments were also shown to have significant impacts on stream flow during trash rack cleaning operations".
- On a number of occasions, recreational users along the lower Kinnickinnic River (downstream from River Falls) have noted sudden flow fluctuations that are likely attributed to irregular operation of the City of River Falls hydropower facilities. In one instance, a Kiap-TU-Wish Chapter member observed a dramatic decrease in Kinnickinnic River flow (from 126 cfs to 53 cfs) on July 11, 2008, during the 15:00-18:45 CDT time period, as measured at the USGS monitoring station (Figure 2). The WDNR (Marty Engel, personal communication) subsequently linked this flow irregularity to a gate malfunction at the lower hydropower facility (Powell Falls Dam).

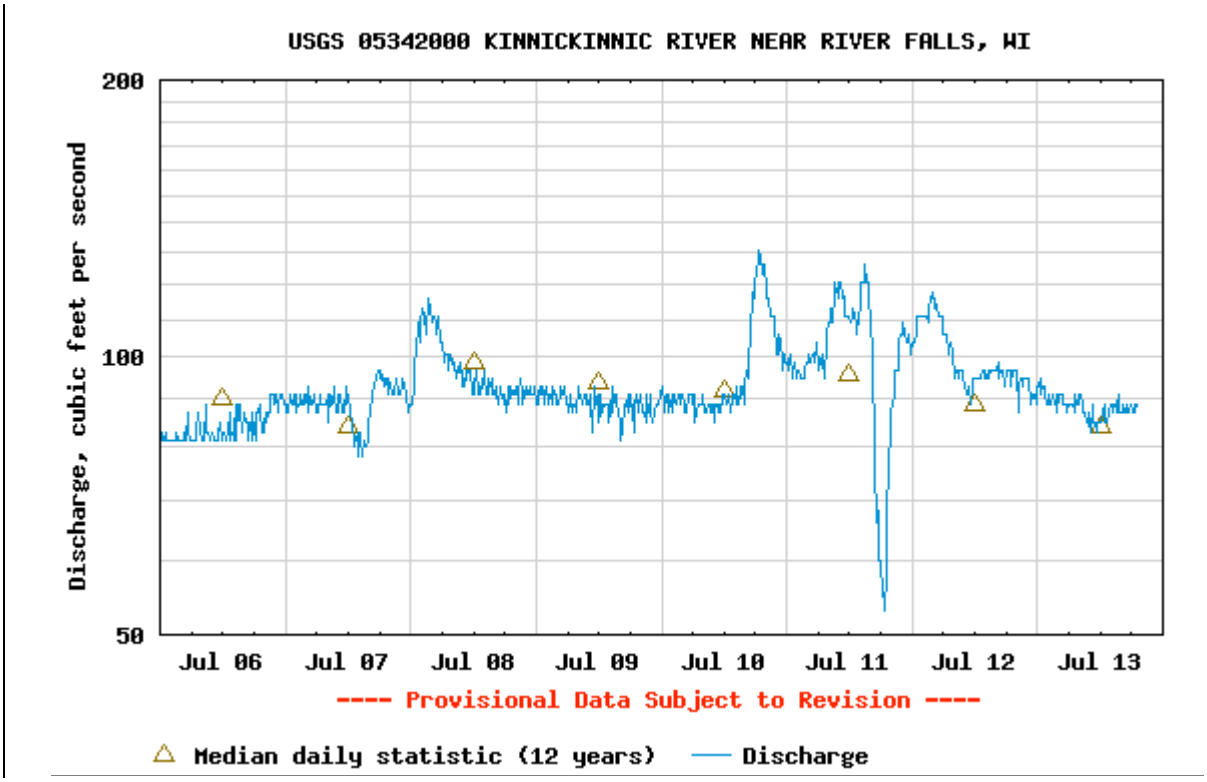

Figure 2. Hydropower-related Kinnickinnic River flow irregularity on July 11, 2008.

<u>Recommended Study Elements to Evaluate Hydrologic Impacts:</u>

Given these past observations of irregular Kinnickinnic River flows, the following study of hydrologic impacts is recommended, to determine whether the City of River Falls hydropower facilities have been maintaining a "run-of-river" condition, as required by the FERC license:

IIa. Using the 15-minute USGS Kinnickinnic River flow data, conduct a thorough assessment of the extent to which the City of River Falls hydropower facilities have maintained a "run-of-river" condition

during the 1999 and 2002-2018 periods. Examine the Kinnickinnic River hydrograph during periods of stable river flow (baseflow), when precipitation and runoff are not occurring, to determine the frequency, magnitude, and duration of flow and stage irregularities.

IIb. Assemble and review observational reports of flow irregularities by recreational users, the public, and other sources. These reports may have been received by the City of River Falls, WDNR, and/or FERC.

IIc. Correlate Kinnickinnic River flow irregularities with concurrent dam operation and maintenance practices. Obtain and review any pertinent records kept by the City of River Falls hydropower utility, to determine if the operation and/or maintenance of the hydropower facilities has resulted in abnormal (non "run-of river") flow conditions.

IId. Identify PM&E measures that would eliminate flow irregularities related to dam operation and maintenance.

Goals and Objectives of the Hydrologic Impacts Study (Criterion #1)

The goal of the hydrologic impacts study is to evaluate the extent to which operation of the River Falls hydropower project has maintained run-of-river flow conditions, as mandated by the FERC license. The study objectives are to analyze existing Kinnickinnic River flow data, in conjunction with dam operations and maintenance data **(IIa-IIb)**, to identify dam operation-induced flow irregularities (**IIc**), and to identify the PM&E measures needed to eliminate them **(IId**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. The resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. A normal hydrologic regime is critical for achieving this goal.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts.

Existing Information and the Need for More Information (Criterion #4)

Via the USGS monitoring station, Kinnickinnic River flow and stage data are available at 15-minute intervals in 1999 and during the 2002-2018 period. Although River Falls Municipal Utilities has indicated that it maintains dam operation and maintenance records and impoundment stage data, this information does not appear to be publicly available. In spite of these two existing sources of information, there has not been an analysis of compliance with the FERC license requirement for the hydropower project to maintain a run-of-river condition.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

Past evidence suggests that operation of the River Falls hydropower project adversely affects river flow (see **Evidence of Hydrologic Impacts**, above). An analysis of existing information is needed to determine compliance with the FERC license requirement to maintain a run-of-river condition, and to identify the PM&E measures necessary to ensure that the River Falls hydropower project meets this license requirement.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

The proposed study methodology is a desktop analysis, including an evaluation report, of USGS Kinnickinnic River flow data and concurrent River Falls Municipal Utilities dam operation and maintenance information, to identify the frequency, duration, and magnitude of dam operation-induced flow irregularities. Methodology for this study would be consistent with any past analyses by FERC or hydropower licensees to demonstrate compliance with the requirement to maintain a run-of-river flow condition.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the cost of the hydrologic impacts study (**IIa-IId**) would be $10,000. Given past observations of irregular Kinnickinnic River flows due to the River Falls hydropower project, this study is needed to evaluate the extent to which project operation has maintained run-of-river flow conditions, as mandated by the FERC license. However, this study would not be needed if: 1) The Powell Falls Dam is removed as scheduled by 2026; **and** 2) The Junction Falls Dam is upgraded with an automated penstock gate and trash rack cleaning system.

Study III. Water Quality Impacts

Background Information:

Very little water quality monitoring of the Kinnickinnic River and Lakes George and Louise has been conducted. WDNR (Schreiber, 1998) evaluated baseline water resource conditions in the Kinnickinnic River Watershed in 1996-1997, to inform the development of the Kinni NPS Plan (WDNR et al., 1999). However, the extent of water quality monitoring was minimal, and no recent assessment of water quality has been conducted by WDNR or other agencies.

Evidence of Water Quality Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake George is a shallow, eutrophic 18-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake Louise is a shallow, eutrophic 15-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity".

The two hydropower impoundments (Lakes George and Louise) have extended water residence times, creating in-lake water and sediment quality problems. In the presence of ample sunlight, favorably warm water temperatures, and adequate nutrient sources, summer algae blooms occur, creating unsightly (green) conditions, reduced water clarity, odors, possible human health impacts, and reduced oxygen concentrations (Figure 3).





Figure 3: Surface algae and shallow water conditions in Lake George (above) and Lake Louise (below)

The highly eutrophic conditions in both lakes severely limit their recreational use, in spite of their close proximity to the heart of River Falls. The extended water residence time also allows suspended sediment (silt) from upstream sources (both urban and agricultural) to accumulate in the lakes. Besides in-filling the lakes, the suspended sediment carries contaminants (phosphorus, trace metals, and organic compounds (PAHs and pesticides)) that are deposited in the lake bottom, with possible impacts on benthic invertebrates and fish. Large numbers of Canada geese and ducks congregate on Lakes George and Louise in the fall and winter, resulting in phosphorus, nitrogen, and bacterial loading to the lakes. Biological, chemical, and physical processes can transfer sediment contaminants to the overlying water column in the lakes, thereby causing in-lake and downstream water quality problems. For instance, increased water flows through the impoundments during storm runoff events can re-suspend the fine silt and contaminants from the lake bottom, with impacts on in-lake and downstream water quality. Water and sediment contaminants can also be transferred to biota through bioaccumulation and biomagnification processes, with implications for aquatic and human health (typically via fish consumption). Experience has shown that remediation of sediment contamination is often difficult, costly, time consuming, and disruptive to the local environment and community (Parkerton and Maruya, 2013).

Recommended Study Elements to Evaluate Water Quality Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration by 2026 will substantially eliminate the current water quality impacts caused by Lake Louise, thereby improving water quality in the lower Kinnickinnic River. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to create in-lake and downstream water quality impacts. To better assess the degraded water quality conditions in Lake George and evaluate downstream effects, the following study of water quality impacts is recommended:

III. Conduct seasonal (April-October) water quality monitoring of Lake George and at upstream and downstream Kinnickinnic River locations for two years, to better assess in-lake water quality problems and possible downstream water quality impacts. Water quality monitoring should be conducted during both baseflow and storm runoff conditions, to fully characterize in-lake and downstream impacts. Monitoring will also help determine whether applicable state water quality standards are being met (example: phosphorus standard of 75 ug/l, per WI Chapter NR 102). Monitoring of multiple water quality variables is recommended: dissolved oxygen, turbidity, suspended solids, nutrients (various forms of phosphorus and nitrogen), trace metals, bacteria, and chlorophyll (estimate of algal presence). Document the seasonal timing and spatial extent of floating algal mats on Lake George (such as those in Figure 3), using weekly photography. In addition to longitudinal water quality characterization at upstream, in-lake, and downstream locations, in-lake vertical profiling work and/or continuous monitoring of dissolved oxygen, temperature, pH, and conductivity should be conducted, to determine the extent of stratification and dynamic changes (daily, weekly, monthly) that occur in Lake George. With possible decreased in-lake dissolved oxygen concentrations due to eutrophication and increased sediment oxygen demand, an upstream-downstream comparison of diel oxygen fluctuations should also be conducted via continuous monitoring.

Goals and Objectives of the Water Quality Impacts Study (Criterion #1)

The goal of the water quality impacts study is to evaluate the effects of the River Falls hydropower project on water quality in Lake George and downstream in the Kinnickinnic River. The study objective is to obtain

water quality monitoring data from Lake George, and from upstream and downstream locations in the Kinnickinnic River. The monitoring data will be analyzed to evaluate the water quality condition of Lake George and assess any downstream impacts on the Kinnickinnic River (**III**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. An additional resource management goal is to provide an aesthetic and recreational river in the heart of River Falls, for ready access and enjoyment by residents and visitors. Good water quality is critical for achieving both of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The City of River Falls is currently engaging the community in a Kinnickinnic River corridor planning process (Kinni Corridor Project), to develop a long-term vision, plan, and implementation strategy for river corridor improvements that benefit hydrologic conditions, ecological values and best practices, floodplain restoration and flood control, economic development opportunities, and recreational opportunities. Although Lakes George and Louise are prominent features along the river corridor, both lakes have water quality problems that limit their future usefulness.

Existing Information and the Need for More Information (Criterion #4)

As noted above (**Background Information)**, very little water quality monitoring of the Kinnickinnic River and Lakes George and Louise has been conducted. As such, more information is needed to determine the water quality impacts of the River Falls hydropower project on Lake George and the Kinnickinnic River.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

Past evidence suggests that operation of the River Falls hydropower project adversely affects water quality in Lakes George and Louise (see **Evidence of Water Quality Impacts**, above); but little water quality information is available to determine the extent of the problem and compliance with state water quality standards. However, FERC re-licensing requires state water quality certification by the WDNR. The recommended study will provide information on the water quality impacts of the River Falls hydropower project and suggest PM&E measures that may be needed to improve Lake George water quality.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Standard physical and chemical limnological practices (Green et al. 2015; MPCA 2014) would be used to conduct the recommended water quality monitoring of Lake George and the Kinnickinnic River. A combination of discrete sampling and continuous monitoring would be conducted during baseflow and storm runoff conditions, to temporally and spatially characterize multiple water quality variables: dissolved oxygen, temperature, pH, conductivity, turbidity, suspended solids, nutrients (various forms of phosphorus

and nitrogen), trace metals, bacteria, and chlorophyll (estimate of algal presence). WDNR has developed guidelines for the deployment of continuous dissolved oxygen meters, including data evaluation and storage.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the cost of a two-year water quality impacts study (**III**) would be $70,000. The study is needed to determine how the continuing operation of the Junction Falls Dam affects water quality in Lake George and the Kinnickinnic River. The study could also suggest PM&E measures that may be needed to improve Lake George water quality.

Study IV. Sediment Impacts

Background Information:

The extended water residence times in Lakes George and Louise allow suspended sediment (silt) from upstream sources (both urban and agricultural) to accumulate in both lakes. Besides in-filling the lakes, the suspended sediment carries contaminants (phosphorus, trace metals, and organic compounds (PAHs and pesticides)) that are deposited in the lake bottom, with possible impacts on water quality, benthic invertebrates, and fish.

In 1989-1990, the City of River Falls collected a limited number of sediment core samples from Lake George, with analysis of trace metals, organic compounds, and total Kjeldahl and ammonia nitrogen (City of River Falls, unpublished data).

More recently, Inter-Fluve (2016) conducted a sediment study of Lakes George and Louise for the City of River Falls. The study estimated the volumes and types of sediment that have accumulated in both lakes, and bathymetric lake maps were created. The study also assessed the magnitude and distribution of sediment contamination in Lakes George and Louise, with sediment core samples analyzed for inorganic (trace metals) and organic (PCBs and PAHs) pollutants. Finally, the study estimated the volumes of sediment that would be mobilized from the river channels of Lakes George and Louise with passive dam removals.

Evidence of Sediment Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake George is a shallow, eutrophic 18-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake Louise is a shallow, eutrophic 15-acre impoundment that….is nearly filled with sediment and experiences summer algae blooms and turbidity".
- During their historical presence in River Falls, Lakes George and Louise have substantially filled with sediment. The estimated volume of impounded sediment in Lake George is 166,800 cubic yards, consisting of 80% sands and 20% silts and clays. The estimated volume of impounded sediment in Lake Louise is 163,800 cubic yards, consisting of 65% sands and 35% silts and clays (Inter-Fluve 2016).
- Concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life, and Environmental Protection

Agency (EPA) regional screening levels (RSLs) established to protect human health (Inter-Fluve 2016). In Lake George, several trace metals (lead and mercury) and organic compounds (3 PAH congeners and total PCBs) exceed SQGs, while several trace metals (arsenic and hexavalent chromium) and an organic compound (2 PAH congeners) exceed RSLs. The extent of sediment contamination is greater in Lake Louise, where several trace metals (arsenic, cadmium, mercury, and nickel) and organic compounds (4-4' DDD, lindane, and 11 PAH congeners) exceed SQGs, while several trace metals (arsenic and hexavalent chromium) and an organic compound (4 PAH congeners) exceed RSLs.

Removal of the Powell Falls Dam (by 2026) and eventual removal of the Junction Falls Dam (by 2035-2040) have the potential to mobilize sediment from Lake Louise and Lake George, respectively. With passive sediment management after dam removal, an estimated 45,100 cubic yards of Lake Louise sediment could be transported downstream, while an estimated 73,900 cubic yards of Lake George sediment could be transported downstream (Inter-Fluve 2016).

The transport of sediment after dam removal has the potential to impact the downstream Kinnickinnic River and its riparian areas. Sediment impacts could include episodic high concentrations of suspended solids, affecting macroinvertebrates and fish, and siltation of critical aquatic habitats for periphyton, macrophytes, macroinvertebrates, and fish (including spawning habitat). Depending on sediment transport distance, high concentrations of suspended solids and siltation could also impact freshwater mussels in the St. Croix River, including the federally-endangered species Higgin's Eye Pearly Mussel (*Lampsilis higginsi*), Snuffbox (*Epioblasma triquetra*), and Spectaclecase (*Cumberlandia monodonta*).

The downstream movement of sediment from Lakes George and Louise would be accompanied by adsorbed phosphorus, adding to the phosphorus load that the Kinnickinnic River contributes to the St. Croix River at Lake St. Croix. In August 2012, the EPA approved the final Total Maximum Daily Load (TMDL) for phosphorus in Lake St. Croix (eastern Minnesota and western Wisconsin). The Lake St. Croix TMDL report (MPCA and WDNR 2012) calls for a significant reduction in phosphorus loading from St. Croix River tributaries, including the Kinnickinnic River.

As noted above (see **Evidence of Sediment Impacts**), concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life. These contaminants may be toxic to aquatic life in Lakes George and Louise, and when transported downstream, they may also have adverse impacts on aquatic life in the lower Kinnickinnic River and the St. Croix River.

Inter-Fluve (2017) examined the feasibility of removing the two River Falls hydropower dams and recommended potential sediment management practices to limit the downstream impacts of sediment transport.

Re-licensing of the River Falls hydropower project and the continuing operation of the Junction Falls Dam would retain Lake George for an extended time period before dam removal in 2035-2040. As noted above (see **Evidence of Sediment Impacts**), Lake George is a shallow, eutrophic impoundment that is nearly filled with sediment and experiences summer algae blooms and turbidity. High nutrient loading from the agricultural watershed, River Falls stormwater runoff, and waterfowl make Lake George highly eutrophic, with unsightly mats of algae present during much of the open-water season (Figure 3). In addition, the

unconsolidated, fine sediment in Lake George is readily re-suspended by wind, carp, and river currents, creating turbid water conditions. Due to excessive algal levels and turbid water conditions, very little submersed or emergent aquatic vegetation grows in Lake George. The shallow water and poor water quality constrain public use, such that minimal water-based recreation occurs on Lake George, despite its close proximity to downtown River Falls. Project re-licensing with the continuing operation of the Junction Falls Dam demands an examination of ways to improve water quality conditions in Lake George for the duration of its existence. One option for doing so involves temporary water drawdown in the lake, to consolidate sediment and stimulate the germination of perennial aquatic plants (Kenow et al. 2016).

Recommended Study Elements to Evaluate Sediment Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration (by 2026) will potentially create downstream impacts caused by the mobilization of Lake Louise sediment and its associated contaminants (phosphorus, trace metals, and organic compounds). In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality impacts. To assess sediment problems related to removal of the Powell Falls Dam and evaluate options for improving the degraded water quality conditions in Lake George, the following study of sediment impacts is recommended:

IVa. Using the results of the Inter-Fluve sediment study (2016) and feasibility report on dam removal (2017) as guidance, conduct additional sediment core sampling and analysis in Lake Louise, to better quantify the locations and volume of sediment with contaminants of concern (those exceeding Wisconsin SQGs and EPA RSLs). Sediment contaminants to be analyzed should include phosphorus, trace metals, and organic compounds (PCBs and PAHs). More detailed information on locations of contaminants of concern, contaminant levels, and the volume of contaminated sediment is necessary to inform the development of a sediment management plan that will minimize the impacts of Powell Falls Dam removal. The impacts of contamination may occur when Lake Louise sediment is transported downstream, moved offsite for disposal or re-use, and/or re-distributed in floodplain areas during Kinnickinnic River restoration work. Inter-Fluve (2017) notes that permit regulations for dam removal will likely require re-sampling and testing of lake areas where sediment contaminant concentrations exceed thresholds of concern. At that point, WDNR can also provide guidance on the extent of additional sediment sampling and analysis in Lake Louise.

IVb. Develop a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam, including Kinnickinnic River restoration work. Such impacts may be associated with downstream mobilization of sediment and its associated contaminants, as well as surficial exposure of sediment contaminants after lake drawdown. The management plan should also identify the best practices needed to minimize contamination impacts if Lake Louse sediment is moved offsite and/or re-distributed in floodplain areas during Kinnickinnic River restoration work. The Inter-Fluve feasibility report (2017) notes the importance of sediment management in conjunction with dam removal and river restoration projects.

IVc. Use a numerical hydraulic model (RMA-2 with Sed 2D) (Nairn, et al. 2006) to simulate and quantify the downstream mobilization of sediment that may occur during and after removal of the Powell Falls Dam. The sediment management plan (**IVb**) will help inform the assumptions needed for model development and application. Apply the model to: 1) Estimate the extent of sediment deposition in the

Kinnickinnic River channel, the riparian areas, and the St. Croix River at Lake St. Croix; 2) Simulate the concentrations and duration of elevated suspended solids levels in the lower Kinnickinnic River and Lake St. Croix; and 3) Estimate the quantity of contaminants delivered to the lower Kinnickinnic River and Lake St. Croix.

IVd. Determine the feasibility of improving water quality conditions in Lake George via a short-term drawdown of the water level, which will consolidate the sediment and stimulate the growth of perennial aquatic plants. In addition to improving water quality, establishment of perennial aquatic plants would also provide critical in-lake habitat for fish and wildlife.

Goals and Objectives of the Sediment Impacts Study (Criterion #1)

The goals of the sediment impacts study are: 1) Assess the sediment problems associated with removal of the Powell Falls Dam and restoration of the Kinnickinnic River; and 2) Evaluate options for improving the degraded water quality conditions in Lake George. Study objectives are: 1) Conduct additional sediment core sampling and analysis in Lake Louise, to better quantify the locations and volume of sediment with contaminants of concern **(IVa**); 2) Develop a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam, including Kinnickinnic River restoration (**IVb**); 3) Use a hydraulic model to simulate and quantify the downstream mobilization of sediment that may occur during and after removal of the Powell Falls Dam (**IVc**); and 4) Determine the feasibility of improving water quality conditions in Lake George via a short-term drawdown of the water level, which will consolidate the sediment and stimulate the growth of perennial aquatic plants (**IVd**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. Resource management goals for the St. Croix River include reducing phosphorus loading to improve water quality, and protecting the diverse fish and mussel populations, including several federally-endangered mussel species. Managing the sediment impacts associated with dam removal projects is critical for achieving all of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The St. Croix River is a National Wild and Scenic River that is extensively used for recreational purposes.

Existing Information and the Need for More Information (Criterion #4)

As described above (**Background Information**), past studies of the sediment characteristics in Lakes George and Louise have been conducted by the City of River Falls (1989-1990) and Inter-Fluve (2016). The Inter-Fluve study determined that concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) established to protect aquatic life, and Environmental Protection Agency (EPA) regional screening levels (RSLs) established to protect human

health. However, more detailed information on locations of contaminants of concern, contaminant levels, and the volume of contaminated sediment in Lake Louise is necessary to inform the development of a sediment management plan that will minimize the impacts of Powell Falls Dam removal. Inter-Fluve (2016, 2017) estimated the volume of sediment that could be mobilized with passive management during Powell Falls Dam removal. However, application of a hydraulic flow and sediment transport model is needed to quantify the extent of sediment mobilization and its downstream impacts. Finally, with re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040), options need to be evaluated for improving the degraded water quality conditions in Lake George.

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The proposed removal of the Powell Falls Dam (by 2026) and the eventual removal of the Junction Falls Dam (by 2035-2040) will potentially create downstream impacts caused by the mobilization of sediment and its associated contaminants. In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality impacts that need to be addressed. The recommended studies would inform PM&E measures that are needed to remediate sediment impacts related to dam removal and improve water quality conditions in Lake George.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Methods for conducting additional core sampling and contaminant analysis of Lake Louise sediment are those used and described by Inter-Fluve (2016).

Development of a sediment management plan that identifies the best practices needed to minimize sediment impacts during and after removal of the Powell Falls Dam will likely be a permit requirement, to be completed with WDNR oversight, input, and approval. Furthermore, the allowance for sediment to be released downstream will require a WDNR waters permit and WDNR fisheries input (Inter-Fluve 2016).

The numerical hydraulic flow and sediment transport model is a standard tool that was developed by the U.S. Army Corps of Engineers and has been widely used to simulate river flow and sediment transport. This approach has been applied to assess sediment mobilization associated with dam removal projects on many rivers worldwide (Nairn et al. 2006).

Numerous studies have evaluated the effectiveness of lake drawdown as a method to consolidate sediment and establish perennial aquatic plants. This has become a standard practice to improve water quality and aquatic habitat in regulated rivers worldwide, with demonstrated success in the Upper Mississippi River and impoundments in Wisconsin and Minnesota (Kenow et al. 2016).

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

Additional core sampling and contaminant analysis of Lake Louise sediment (**IVa**) is estimated to cost $25,000. Development of a sediment management plan to minimize the sediment impacts associated with Powell Falls Dam removal (**IVb**) is estimated to cost $25,000. Application of the hydraulic flow and sediment transport model to evaluate the downstream impacts of sediment mobilization (**IVc**) is estimated to

cost $75,000. Evaluation of lake drawdown as a method to improve water quality and aquatic habitat in Lake George (**IVd**) is estimated to cost $5,000. The sediment impacts study is needed to fully evaluate and minimize sediment problems related to removal of the Powell Falls Dam, and to evaluate options for improving the degraded water quality conditions in Lake George.

Study V. Biological Impacts

Background Information:

Regular WDNR fisheries surveys (1996, 2004-2018) have been conducted at Kinnickinnic River locations upstream and downstream from the two City of River Falls hydropower impoundments. However, no WDNR fisheries surveys have been conducted in Lakes George and Louise (Marty Engel, WDNR, personal communication).

Occasional macroinvertebrate surveys have been conducted by the WDNR (1995-1998), University of Wisconsin-River Falls (1997, 1999, 2001), and the City of River Falls (2004-2012), at Kinnickinnic River locations upstream and downstream from the two City of River Falls hydropower impoundments (Garry, 2006). However, no known macroinvertebrate surveys have been conducted in Lakes George and Louise.

Evidence of Biological Impacts:

- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 36): "The entire main stem of the Kinnickinnic River is classified by WDNR as a cold Class I trout fishery. The two impoundments in the City of River Falls, Lake Louise and Lake George, support a warm water sport fishery (WWSF)".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake George….has a limited warmwater and coldwater sport fishery consisting of largemouth bass, panfish, and brown trout".
- The Kinni NPS Plan (WDNR et al., 1999) notes (p. 94): "Lake Louise…. has a limited warmwater and coldwater sport fishery consisting of largemouth bass, panfish, and brown trout. The lake also supports a significant carp population".
- The temperature, hydrologic, and water quality conditions created by the two City of River Falls hydropower impoundments have significantly impacted a 0.7-mile reach of a coldwater resource, as evidenced by the classification of Lakes George and Louise by WDNR as warmwater sport fisheries.
- Concentrations of some contaminants in the sediments of Lakes George and Louise exceed Wisconsin sediment quality guidelines (SQGs) (Inter-Fluve 2016), suggesting that these areas of contamination may be directly toxic to aquatic life, especially benthic macroinvertebrates. If mobilized as a result of dam removal, these sediment contaminants may also have adverse impacts on aquatic life in the lower Kinnickinnic River and the St. Croix River.

The primary impact of the River Falls hydropower project on Kinnickinnic River ecology is the dramatic conversion of a coldwater river system to warmwater impoundments (Lakes George and Louise) upstream of the dams. Due to changes in temperature and hydrologic regimes, water quality, and sedimentation, the impacts of these two impoundments have profoundly affected the river's biological communities, including fish, macroinvertebrates, aquatic plants, and river-related wildlife.

Recommended Study Elements to Evaluate Biological Impacts:

The proposed removal of the Powell Falls Dam and associated Kinnickinnic River restoration (by 2026) will substantially eliminate the current biological impacts caused by Lake Louise and greatly improve the health of biological communities in the restored river reach. However, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040 will continue to create in-lake and downstream biological impacts. To better assess the degraded biological conditions in Lakes George and Louise and evaluate downstream effects, the following study of biological impacts is recommended:

Va. Conduct a comparative assessment of available Kinnickinnic River fisheries and macroinvertebrate survey results from locations upstream and downstream of Lakes George and Louise, to determine if downstream biological impacts are evident, especially via alterations in aquatic community composition and abundance. Multiple biotic metrics and indices can be used to make this comparison. If existing data are insufficient and/or do not reflect current conditions, conduct additional biological surveys of fish and macroinvertebrates communities at Kinnickinnic River locations upstream and downstream from the two lakes.

Vb. Conduct fisheries and macroinvertebrate surveys of Lakes George and Louise, to characterize current biological conditions and assess the in-lake biological impacts of these two hydropower impoundments, especially via alterations in aquatic community composition and abundance. Compare the in-lake fish and macroinvertebrate communities with those at upstream and downstream Kinnickinnic River locations (**Va**).

Vc. Conduct Kinnickinnic River surveys of aquatic vegetation (periphyton and macrophytes) at locations upstream and downstream of the two City of River Falls hydropower impoundments, to evaluate the extent to which increased downstream temperatures, nutrient availability, and primary productivity have enhanced nuisance growths of aquatic vegetation, potentially impacting habitat quality for trout and macroinvertebrates (BC Ministry of Environment, Lands, and Parks, 2001; DeNicola, 1996).

Vd. Conduct aquatic macrophyte surveys of Lakes George and Louise, to determine the species composition, abundance, and spatial distribution of submersed and emergent aquatic plants.

Ve. Through survey work, determine the extent to which Lakes George and Louise may be harboring aquatic and terrestrial invasive species, as defined by Wisconsin's invasive species rule (NR 40). This information is needed to evaluate any risks posed for other portions of the Kinnickinnic River and to develop appropriate management strategies.

Vf. Coordinate with the WDNR, Minnesota Department of Natural Resources, the U.S. Army Corps of Engineers St. Paul District, the U.S. Fish and Wildlife Service, the National Park Service, and the U.S. Geological Survey Upper Midwest Environmental Science Center to obtain the most recent information about the species composition and the spatial extent of freshwater mussels in the lower Kinnickinnic River, and in the St. Croix River (Lake St. Croix) at locations downstream of the Kinnickinnic River confluence. Determine the presence of federally-listed and state-listed threatened and endangered mussel species. If existing data are insufficient and/or do not reflect current conditions, conduct additional biological surveys of mussel presence in the lower Kinnickinnic River and the St. Croix River. Information on mussel presence can be used in conjunction with model

simulations of sediment mobilization associated with dam removal (**IVc**), to assess the impacts of dam removal on the Kinnickinnic and St. Croix River mussel communities.

Vg. To evaluate improvements in physical and chemical conditions and biological communities in the Kinnickinnic River as a result of dam removal and river restoration, conduct pre- and post-restoration monitoring of the 0.7-mile Kinnickinnic River reach currently impacted by Lakes George and Louise. Establish monitoring goals and objectives and develop a monitoring plan that can identify key changes in temperature regime, habitat, water quality, sediment characteristics, and biological communities. Study elements **Ia**, **III**, **IVa**, and **Va-Ve** may serve in part as documentation of pre-restoration temperature, water quality, sediment, and biological conditions. However, additional pre-restoration monitoring may be needed, depending on the recommendations in the monitoring plan.

Goals and Objectives of Biological Impacts Study (Criterion #1)

The goal of the biological impacts study is to evaluate the effects of the River Falls hydropower project on biological communities in Lakes George and Louise, and in the Kinnickinnic and St. Croix Rivers. Study objectives are: 1) Conduct biological surveys of fish, macroinvertebrates, and aquatic vegetation in Lakes George and Louise, and at Kinnickinnic River locations upstream and downstream from the two lakes (**Va-Vd**); 2) Determine whether aquatic invasive species are present in Lakes George and Louise and pose risks for other portions of the Kinnickinnic River (**Ve**); 3) Determine whether freshwater mussels (including federally-listed and state-listed threatened and endangered species) are present in the lower Kinnickinnic River and at downstream St. Croix River locations, thereby posing a risk for impacts on mussels due to sediment mobilization associated with dam removal (**Vf**); and 4) Evaluate future improvements in physical and chemical conditions and biological communities in the Kinnickinnic River, as a result of dam removal and river restoration (**Vg**).

Relevant Resource Management Goals (Criterion #2)

The Kinnickinnic River is designated by WDNR as a Class I trout stream. A key resource management goal is to maintain a healthy coldwater ecosystem that supports naturally-reproducing brown and brook trout populations in the Kinnickinnic River. An important resource management goal for the St. Croix River is to protect the diverse fish and mussel populations, including several federally-endangered mussel species. Managing the biological impacts associated with the River Falls hydropower project and future dam removal is critical for achieving both of these resource management goals.

Relevant Public Interest Considerations (Criterion #3)

The Kinnickinnic River is a nationally-renowned trout stream, a scenic river that supports considerable recreation by anglers, boaters, hikers, and other outdoor enthusiasts. The St. Croix River is a National Wild and Scenic River that is extensively used for recreational purposes. Recreational opportunities in both river corridors depend heavily on healthy and diverse biological communities.

Existing Information and the Need for More Information (Criterion #4)

As described above (**Background Information**), very limited information exists about the biota of the Kinnickinnic River, with nearly a complete lack of information about biological communities in Lakes

George and Louise. The information on biological impacts of the River Falls hydropower project is needed to inform the re-licensing process. With re-licensing and the ongoing presence of the Junction Falls Dam and Lake George until 2035-2040, options need to be evaluated for improving the degraded water quality and biological conditions in Lake George and managing the presence of any invasive species. In addition, information about biological communities is needed to assess the impacts and benefits of removing the Powell Dam (by 2026) and the Junction Falls Dam (by 2035-2040).

Nexus to Project Operations and Effects and How Study Results Would Inform License Requirements (Criterion #5)

The near-term removal of the Powell Falls Dam (by 2026) and the eventual removal of the Junction Falls Dam (by 2035-2040) will affect aquatic life in the Kinnickinnic and St. Croix Rivers. The proposed biological studies would inform PM&E measures that are needed to protect aquatic life in the Lower Kinnickinnic and St. Croix Rivers during dam removal. In addition, re-licensing and the ongoing presence of the Junction Falls Dam and Lake George (until 2035-2040) will continue to create in-lake and downstream water quality and biological impacts. Surveys of aquatic life in Lake George would inform PM&E measures that are needed to remediate these impacts and improve in-lake conditions.

Study Methodology and How It Is Consistent with Accepted Practice (Criterion #6)

Numerous standardized protocols are available for surveying biological communities in lakes, rivers, and riparian corridors. Protocols for surveying fish populations can be found in Plafkin, et al. (1989), Lyons, et al. (1996), and WDNR (2001 and 2007). Protocols for monitoring macroinvertebrates include those provided by Hilsenhoff (1987 and 1988), Plafkin, et al. (1989), WDNR (2000), MPCA (2017), and Garry (2017). Scott, et al. (2002), Hauxwell, et al. (2010), and Bowden, et al. (2017) document protocols for monitoring macrophytes. Additional protocols for monitoring a wide variety of riparian area elements can be found in MPCA (2002) and MDNR (2007). WDNR protocols should be used for surveys of aquatic invasive species (WDNR 2012) and freshwater mussels (WDNR 2015). Methodologies for conducting this study of biological impacts should be consistent with the protocols described above and others using acceptable, standardized practices.

Level of Effort and Cost of Study, and Why the Study is Needed (Criterion #7)

We estimate that the biological surveys of the Kinnickinnic River and Lakes George and Louise, including surveys of fish, macroinvertebrates, macrophytes, and invasive species (**Va-Ve**), will cost $70,000. The cost for compilation and evaluation of available information on freshwater mussel presence in the St. Croix River (**Vf**) is estimated to be $10,000. Pre- and post-restoration monitoring of the Kinnickinnic River reach currently impacted by Lakes George and Louise (**Vg**) is estimated to be $50,000.

The study of biological impacts is needed to assess the effects of re-licensing and the continuing operation of the Junction Falls Dam (until 2035-2040), and to evaluate the impacts and benefits of removing the Powell Dam (by 2026) and the Junction Falls Dam (by 2035-2040). Study information can also be used to develop any PM&E measures and license requirements that are needed to comply with federal and state endangered species laws, control any aquatic and/or terrestrial invasive species found in the project area, and improve the degraded water quality conditions in Lake George.

Study Design and Implementation

All of the study elements recommended above (in Studies I-V) should be designed and conducted by qualified water resource professionals, including those in consulting firms, water resource agencies, and non-governmental organizations with expertise and knowledge of the subject matter. This is especially critical for those study elements needed to gain federal and/or state regulatory approval for project re-licensing. Faculty and students at the University of Wisconsin River Falls also have the expertise to help design and implement some of the recommended study elements.

The study protocols used for monitoring, data collection, and/or analysis should be consistent with those used by water resource agencies (Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, Metropolitan Council Environmental Services, Wisconsin Department of Natural Resources, National Park Service, U.S. Geological Survey, U.S. Environmental Protection Agency) and/or as documented in peer-reviewed literature and reports (see **References**, below).

The study costs noted are best estimates of the resources needed to complete them; however these costs can be better quantified after detailed study designs have been completed. Some cost efficiencies can likely be achieved by bundling study elements that are similar in design and logistics. If study costs are a concern for the City of River Falls, City staff should meet with all stakeholders who submit study requests, to assess options that would minimize costs yet achieve the desired study outcomes.

Kiap-TU-Wish would greatly appreciate the opportunity to work with the City of River Falls and their water resource consultants on study design, selection of appropriate protocols and methodologies, and data analysis.

From the Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project:

"This plan does not take a position relative to the future of the dams in River Falls. However, it is important to recognize that the dams do create both positive and negative impacts for the ecosystem and human users of the watershed that should be analyzed prior to major reinvestment in the future."

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December 28, 2018

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Putting the FALLS back in River Falls!

VIA FERC E-FILING

December 28th, 2018

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Docket Room
Washington, D.C. 20426-001

Mr. Kevin Westhuis, Utility Director
City of River Falls, River Falls Municipal Utilities
222 Lewis Street
River Falls, WI 54022-2127

RE: RIVER FALLS HYDROELECTRIC PROJECT, FERC PROJECT NO. P-10489-016, KINNICKINNIC RIVER, PIERCE COUNTY, WISCONSIN: COMMENTS ON NOTICE OF INTENT AND PRE-APPLICATION DOCUMENT, ASSOCIATED STUDY REQUESTS, AND COMMENTS ON THE SCOPING DOCUMENT 1

Dear Secretary Bose and Director Westhuis,

Thank you for the opportunity to engage in this Integrated Licensing Process (ILP), your consideration of our input is greatly appreciated. Friends of the Kinni participates in these proceedings as a Local Stakeholder and River Management Organization, we offer the following comments and study requests for the River Falls Hydroelectric Project (FERC No. P-10489-016) having reviewed the Notice of Intent (NOI) and Pre-Application Document (PAD) and the Scoping Document 1 (SD1), and participated in the local scoping meeting on November 15th, 2018. These comments and study requests are unique, and in addition to others that will come to you from Friends of the Kinni.

BACKGROUND

The license period for the River Falls Hydroelectric Project due to expire August 31st of 2023 is the result of a five year extension of the first 30 year term of licensure this hydroelectric project has experienced. Prior to this period the hydroelectric project was operated as an unlicensed facility since its inception in 1900. Contained in the original application from 1988 to the Federal Energy Regulatory Commission was a brief section highlighting the recreational, land use and aesthetic impacts of the hydroelectric project. The overwhelming theme throughout this section was that the existing dam structures have been in place for a long time, the facilities would remain unchanged, and that this would result in no further impact on recreational or aesthetic resources.

This underlying assumption in the original application, in the 2013 PAD, and in the current PAD, that this project has had an as of yet unquantified but assumedly negligible yet negative impact on recreational opportunities and aesthetic resources does not constitute sufficient consideration of these issues. To state that there were no major changes previously or currently planned for the Junction Falls facility and its operation does not entail that the status-quo recreational and aesthetic impacts of the project are desirable or acceptable. In fact, the City of River Falls' resolution No. 6234 dated February 27th, 2018 based its

decision on these very issues in calling for the eventual removal of both dams from the Kinnickinnic River as the Community's long-term vision. As a community we now place an immense value on the preservation and expansion of recreational opportunities and aesthetic resources, a value which must play an important role in the licensing process of this as with any FERC project.

Today, the current Preliminary Application Document (PAD) for the River Falls Hydroelectric Project reads much along the same lines as the original application and the 2013 PAD. There are no forward looking considerations regarding the opportunity for increased or improved recreational opportunities or improvement in aesthetic resources upon dam removal associated with the project. Nor is there any consideration for the impact of the project on the visual integrity of the riverway, the impact on tourism to our community or the project's effect on the vitality of our Main Street community which sits immediately adjacent to the upper impoundment of the Junction Falls Dam.

The FERC Form 80 - *Licensed Hydropower Development Recreation Report* is used to "identify recreational facilities located at licensed projects, determine whether public recreational needs are being accommodated by the facilities, and determine whether additional efforts could be made to meet future needs" (FERC, 2014). Without performing any analysis, the Licensee has already provided a cursory answer to two of these questions, and that answer is no, the public's recreational needs are not currently being met by the facilities available at the project, and additional efforts could absolutely be made to meet current and future needs.

On March 19, 1997 the Licensee requested exemption from the Form 80 filing requirement, stating "there is no existing or potential recreational use of these facilities because the ponds are too small and the water is too shallow to support any meaningful recreational activity" (Marma, 1997).

On April 15, 1997 the Federal Energy Regulatory Commission denied the exemption request and reminded the Licensee that it would be required to file a Form 80 every 6 years throughout its license period with the next submission due April 1st, 2003 (FERC, 1997). Following this communication, the River Falls Municipal Utility did not submit a Form 80 in 2003 and has not made any further Form 80 submissions since 1996, even though their exemption request was denied.

The City of River Falls has produced two copies of the previously submitted Form 80, from the years 1991 and 1996. To our knowledge, there is no record of any other Form 80 submissions. These two Form 80 submissions from 1991 and 1996 contain essentially the same data in each. This similarity brings into question whether independent analysis of recreation was conducted for the second submission, and it is not known if any independent analysis was conducted for the first submission either. (Attachments #1 & 2)

Recreational opportunities on the Kinni have been adversely affected within the impoundment area since the installation of the dams. Longtime staff of the River Falls Municipal Utility recall that in the past there were canoe portages around both the upper and lower dams, and that those portages are no longer maintained. The original license application in 1988 included the requirement for canoe portages, but was then amended on August 16, 1990 to delete the requirement for the installation of canoe portages, citing "no traditional canoeing use of the Kinnickinnic River" (FERC, 1990). This amendment included the stipulation that "if, however, based on additional information provided to the Commission, or changes in recreational use of the project, the need for such a facility (portages around the dams) becomes apparent, the Commission should reserve the right to require installation of the facilities" (FERC, 1990).

Another utility staff member has recalled that in the last twelve years he has not seen anyone recreating out on the water of the lower impoundment between the two dams. In the last decade, however, kayaking has become a growing recreational use of the Kinnickinnic River both upstream and downstream from the

project area. Recreational kayaking now supports three distinct businesses in town; however, their utilization of the river is limited to areas outside of the project due to the lack of portages around the dams and the limited appeal of kayaking or fishing on the two impoundments.

Fishing and kayaking are not the only recreational uses that have been negatively affected by the dams. Recollections of lifelong River Falls residents include swimming, canoeing, waterskiing, and catching warm water fish species from the two impoundments, and also catching trout from the spring ponds just to the west of the upper dam near the power plant building. Sadly, today the two impoundments no longer support any fishery or desirable recreational opportunities. The former recreational trails within the project area around and below the Upper Junction Falls Dam are in disrepair having received negligible maintenance over the years. A part of this trail was the former portage around the upper dam, and a sign still stands at the site (Figure 1 & 2).

It is clear in reviewing the collective documentation related to the impact of the River Falls Hydroelectric Project on recreational opportunities, tourism and aesthetic values, that no real comprehensive assessment has been done to date. Thus, it is vitally important that an appropriate level of attention and detail is included within the necessary studies conducted as a part of the current ILP.



Figure 1: Sign for "Lowland Trail" on the property of power plant building, within the project boundary and immediately adjacent to the Upper "Junction Falls" Dam.



Figure 2: "Lowland Trail" sign in disrepair showing trails around the Upper "Junction Falls" Dam which are no longer maintained, including the former canoe portage. The Upper Dam is located to the west of the bridge pictured crossing the water on the map.

COMMENTS ON THE SD1

3.4 ALTERNATIVES TO THE PROPOSED ACTION and 3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

On page 10 of SD1 the alternative 3.5.3 Project Decommissioning has been eliminated from detailed study. In keeping with the spirit and intent of the NEPA, which states that a broad range of alternatives should be evaluated along with the proposed action, we feel strongly that consideration of this alternative of Project Decommissioning must be included in detailed study in the Environmental Assessment. Multiple parties have recommended project decommissioning of both the Junction Falls and the Powell Falls developments concurrently, and in a timely fashion as an appropriate alternative in this case and as the alternative that is truly in the best interest of the general public.

Project Decommissioning and removal of both dams must be considered in the Environmental Assessment if the FERC is to give equal consideration to power and developmental purposes as well as to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality.

5.0 PROPOSED STUDIES

The extremely limited scope of studies proposed by the licensee in the PAD as outlined in the SD1 fails to embody the significant amount of studies requested by stakeholders in 2014 as a part of the initial FERC Traditional Licensing Process initiated in 2013 for this project. There was ample information provided and studies requested as a part of that process that should have informed an initial proposal for studies from the Licensee of greater sophistication in this PAD. It is disappointing to see the Licensee attempt to pass off a severely limited list of proposed studies as adequate when they have full knowledge of these

previous study requests. The Licensee has compiled all previously submitted study requests on their website here: http://www.rfcity.org/DocumentCenter/View/1054

COMMENTS ON THE PAD

Section 4.4.2 Project Compliance History (18 CFR § 5.6 (d)(2)(v)(D))

The licensee is currently in violation of their license for failure to fulfill license obligations associated with Form 80 submission.

It is our understanding that FERC is moving away from the Form 80 as it is argued by some to be a redundant or superfluous requirement. In this case, however, it cannot be considered to be redundant as such recreational analysis and reporting has not been conducted for this project in over 22 years since the last Form 80 was submitted in 1996.

Regardless of whether FERC may or may not require Form 80 submission in the future, it does not change the fact that it is currently a license requirement that Form 80 be filed once every 6 years by the licensee, with the most recent due date for the licensee of April 1, 2015.

The FERC Office of Energy Projects sent the River Falls Municipal Utility a letter dated January 29, 2014 reminding them that they were in a state of non-compliance, and that it was a "license obligation to gather recreation use data at your hydropower projects, for a 12-month period beginning no later than March 15, 2014, to be filed on the Licensed Hydropower Development Recreation Report, FERC Form No. 80 (Form 80) by April 1, 2015". The licensee was further informed in this letter that "Failure to file a completed Form 80 or documentation of exempted status will be considered a violation of your license".

In reviewing the FERC e-Library for this project it is clear that this January 2014 letter has received no response from the licensee and neither a FERC Form 80 nor an exemption application has been submitted by the licensee. And contrary to the license requirement stated in that letter, no study gathering 12 months of recreation use data has been conducted by the City of River Falls to date.

Section 5.3.6 Aquatic Invasive Species

Curly-leaf pondweed has recently been identified by citizen scientists within the project boundaries as the predominant form of vegetation in the Upper Junction Falls Impoundment and its presence there has been confirmed by Wisconsin DNR staff.

Section 5.7 Recreation and Land Use (18 CFR § 5.6 (d)(3)(viii))

The PAD states that a brief Recreation Use Survey was conducted by the City of River Falls in 2015 and that "data were collected May through September of 2015". However, according to the published data this recreation survey was conducted by the hydroelectric facility operator during the second half of August and into September 2015 reporting a TOTAL of 74 hours of observation, conducted over only 23 unique days including observations during just 4 weekend days.

No data is presented in their report from May, June, July, or the first half of August which constitutes the primary recreation season in the area of this project. Friends of the Kinni requested this apparently missing data from the Licensee but received no response to our request. This recreation survey as it stands does not satisfy the license requirement of gathering recreation use data at the hydropower project for a

12-month period, and it was conducted 18 months later than required by FERC according to their letter to the Licensee dated January 29, 2014.

The current PAD primarily addresses recreational consideration for the areas in the general vicinity of the project area (i.e. the South Fork as it runs through the University of Wisconsin River Falls campus and the Lower Kinni from below the Powell Dam outflow to the St. Croix River). It does not discuss the aquatic based recreational opportunities (or lack thereof) within the actual boundaries of the project, especially the immediate impacts of the impoundments and the dam structures themselves to aquatic based recreation.

The "fishing pier" listed and labeled on the northern shore of Junction Falls impoundment (Lake George) is not a "fishing pier", it is a duck feeding platform. Fishing is currently a recreational opportunity that is not supported by the project area. There is no evidence of any form of fishery in either impoundment, no survey of such has been conducted at any time in the recent past, nor does anyone have any foundation to contend that either impoundment supports a fishery. The impoundments are currently silted in to a point that the water depth in the majority of both lakes is only 1 - 3 feet deep (Downing, 2006), with the only signs of life in the two waters being primarily algae bloom and/or Curly Leaf Pond Weed. Consideration must be paid to the immediate area of the impoundments and how those areas are currently utilized for recreation and also how they could be better utilized should the project facility cease operation and both dams be removed.

The Wisconsin DNR created a blueprint for State and local outdoor recreation planning in *The 2011-2016 Wisconsin Statewide Comprehensive Outdoor Recreation Plan* (WI SCORP). This document focuses on the needs of our population centers for accessible urban recreational opportunities as requested through the US Department of the Interior America's Great Outdoors (AGO) initiative. This document's vision takes a baseline perspective that increasing outdoor recreational opportunities is an expected outcome for planning exercises such as the PAD. The WI SCORP further identifies the major public health benefits of expanding urban outdoor recreation opportunities and discusses the presence of barriers to urban recreation and how those barriers affect a community. In keeping with these guidelines, future planning efforts by the City of River Falls should include this philosophy, create new outdoor recreational opportunities, look beyond the 30 years of status quo and explore alternative futures for the waterway. (WI DNR, 2011)

In 2013 the City of River Falls partnered with the National Research Center to conduct its first ever comprehensive survey of local citizens. The result of this citizen survey includes an "action chart" identifying three key drivers to citizen satisfaction: public schools, economic development, and the preservation of natural areas. These key drivers should guide our community leaders as they establish the path our city will follow over the years to come. The immediate hydroelectric project area presents a rare opportunity to restore a significant and historic natural area while also creating new opportunities for ecotourism and economic revitalization of our main street community. These outcomes fall directly in line with the citizen's priorities as presented in the report. (City of River Falls, 2013)

6.2.9 Aesthetic Resources

The PAD states that "No specific issues related to continued operation of the development have been identified relative to aesthetic resources." If the Licensee actually believes this statement to be true, then they haven't been paying any attention to the general public. Contrary to this statement in the PAD very specific issues have been identified and raised repeatedly during the initial Traditional Licensing Process for this hydroelectric facility initiated in 2013, and throughout the Kinni Corridor Planning process, and will be continued to be raised until the Kinnickinnic River is fully restored through dam removal.

The PAD further states that with continued "operation of the Junction Falls development in the same manner, no change in aesthetic resources will result from continued hydroelectric generation". While this is true, the current man-made structures, complete dewatering of the river, and stagnant reservoirs cannot be considered to be improvements over the natural free-flowing river and historic waterfalls which are currently submerged under concrete and impoundments (Figures 3, 4, & 5).

Thoughtfully considering an aesthetic within the PAD and the SD1 that values the natural and visual integrity of the project area would be more in keeping with the City of River Falls' Comprehensive Plan. Further, the licensee is expected to ratify their final designs and concept renderings for the Kinnickinnic River Corridor Plan next month, the final result of which will be a free-flowing Kinnickinnic River with both dams removed as envisioned in the Restoration of the Kinnickinnic River through Dam Removal: Feasibility Report (Figures 6 & 7) which is available online.

http://friendsofthekinni.org/FOTK_REPORT.pdf



Figure 3: Historic Junction Falls photographed before the construction of any dam on the Kinnickinnic River. The ledges of these falls currently sit dry today below the foundation of the Upper "Junction Falls" Dam which sits immediately upstream from the middle shelf of the falls.



Figure 4: The Upper “Junction Falls” Dam today. The lower and middle shelves of the historic Junction Falls exist today as the dry rock ledges below the dam due to the diversion of the majority of the flow of the Kinnickinnic River through the 200 foot long penstock to the hydroelectric generator.

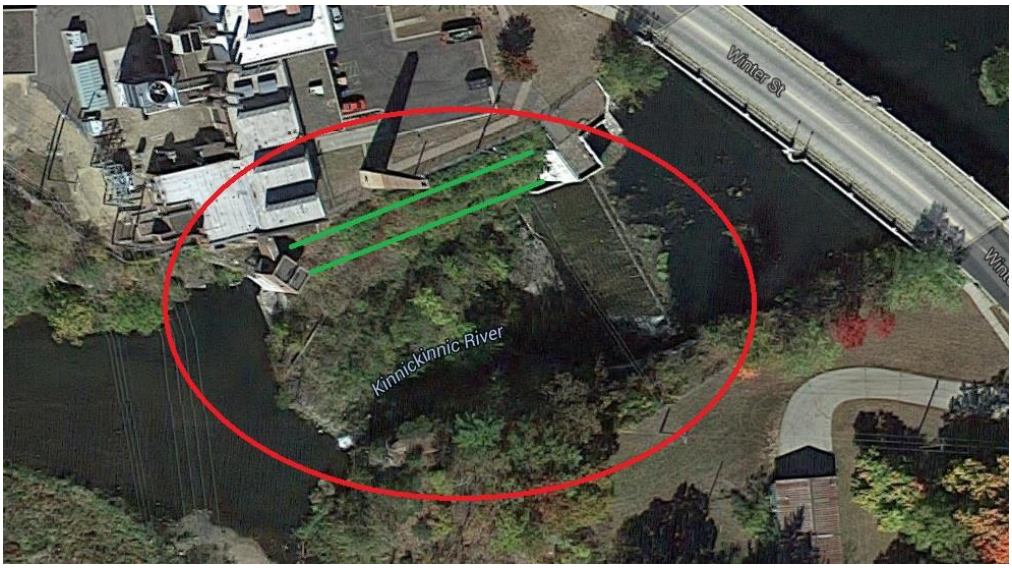

Figure 5: The Upper "Junction Falls" Dam, aerial view showing the dry land (circled in red) between the dam and the discharge from the power house below the Winter St Bridge. This stretch of the Kinni sits dry today, completely dewatered, because the water which would otherwise cascade over our Junction Falls waterfall is instead diverted through a 200' long, 6’ x 6’ tube called a penstock (outlined in green).



Figure 6: Kinnickinnic River Dam Removal Restoration: Junction Falls Enlargement Plan

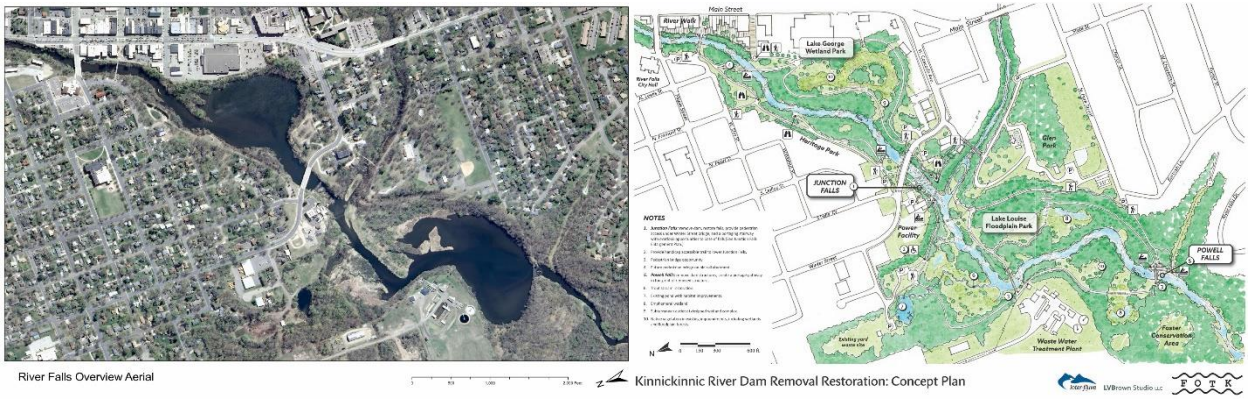

Figure 7: Kinnickinnic River Dam Removal Restoration: Concept Plan

The City of River Falls Comprehensive Plan highlights the establishment of a "sense of place" while building the city's unique character. The Plan states that "In order that the City's downtown sense of place is cared for, sensitive management of identified resources must take place... the River acts as the spine of a system of parks, paths, and green space that extends into downtown". Notably, the city's comprehensive plan makes no mention of the two impoundments whatsoever, and especially not as being of any value to the community's "sense of place".

The City's Comprehensive Plan further states that "The Kinnickinnic River is perhaps the finest coldwater resource in the Upper Midwest, if not in the entire United States... This natural gem is truly unique and the centerpiece of our community which is located on the falls of the Kinnickinnic River." What is left unstated is that these significant, historic falls are no longer a centerpiece of our community because they have been removed as a result of the Junction Falls hydroelectric facilities and their operation. (City of River Falls, 2005)

Still, as the Comprehensive Plan states, "The Kinnickinnic River contributes a unique character and quality of life to the City of River Falls and surrounding area. It provides a pleasant natural environment close at hand, and contributes to the economic and social prosperity by enhancing the attractiveness of the community to businesses and residents. These benefits can only derive from a healthy and vital river. The Kinni is a major natural community amenity that deserves our very best efforts to protect it as growth occurs." (City of River Falls, 2005)

6.2.11 Socioeconomic Resources

The Licensee needs to formally study the degradation the current hydroelectric operations pose to the cultural, visual and aesthetic integrity of the river as it flows through the center of our community. The economic cost of the lost opportunity to link the river and recreational activities on it to the heart of our downtown businesses should be included in these studies. It is not sufficient to look only at the economic impacts of electricity generation and dam maintenance. We must also factor in the ecological, psychological, recreational, aesthetic and spiritual benefits from a free-flowing river compared to the existing conditions. This includes exploring the externalities of having the dams in place.

STUDY RECOMMENDATION

A Comprehensive Study of Recreation, Tourism, and Aesthetic Resources of the River Falls Hydroelectric Project quantifying their Economic Values in Comparison to Alternative Futures for the Same Area quantifying each Alternative's Social and Economic Impact for the General Public

Goals and Objectives:

To ascertain a baseline inventory of the current recreational, tourism and aesthetic resources available in the River Falls Hydroelectric Project's current form, and to establish an economic value of said resources.

To establish an opportunity cost economic valuation for recreational, tourism, and aesthetic resources currently unavailable due to the presence of the dams and impoundments that would otherwise be available to the community in alternative futures for the area.

To directly compare the value of the current opportunities with the value of potential opportunities of alternative futures, to be included with the consideration of the revenues and expenses associated with either maintenance or removal of the hydroelectric project.

Alternative Futures to be Considered:

1. No Action Alternative – Maintain both dams & impoundments
2. Licensee's Proposed Action – Maintain Upper Junction Falls Dam, Remove Lower Powell Falls Dam
3. Project Decommissioning – Restoration of the entire Kinnickinnic River through removal of both the Junction Falls and Powell Falls dams

Resource Management Goals:

Per the Wisconsin Statewide Comprehensive Outdoor Recreation Plan (WI SCORP), in alignment with the Land and Water Conservation Fund (LWCF) and America's Great Outdoors (AGO) Initiative, communities should be looking to expand their outdoor recreation opportunities as they plan for the future. The WI SCORP lists a number of goals in this comprehensive guide (WI DNR, 2011) which are directly relevant to this study:

- Assess, Understand, and Adapt to Growing Recreation Tourism Demands and Preferences
- Improve Integration of Outdoor Recreation Interests and Needs in Land Use and Other Relevant Planning Efforts
- Continue to Provide and Enhance Public Access to Wisconsin Recreational Lands and Waters

- Promote Outdoor Recreation as a Means of Improving Public Health Among Wisconsinites
- Establish Great Urban Parks and Community Green Spaces

Public Interest Considerations:

The comprehensive Citizen Survey conducted in 2013 by the City of River Falls highlights an "action chart" identifying three key drivers to citizen satisfaction: public schools, economic development, and the preservation of natural areas. The immediate hydroelectric project area presents a rare opportunity to restore a significant and historic natural area while also creating new opportunities for ecotourism and economic revitalization of our main street community. These outcomes fall directly in line with the citizen's priorities as presented in the report derived directly from a survey of those living in our community. (City of River Falls, 2013)

Johnson and Graber (2002) have found that communities are often reluctant to consider the removal of old and obsolete dams, even when removal costs much less than dam repair or long term maintenance. They describe some of the social and psychological barriers that prevent individuals and communities from considering dam removal as an option and propose creative methods (e.g., community-based social marketing, diffusion of innovations) for encouraging the adoption of management practices that can restore river ecosystems.

Existing Information:

The City of River Falls has created a website database including all publicly available resources pertaining to the FERC relicensing of the River Falls Hydroelectric Project (City of River Falls, 2014). There does not appear to be at this time any comprehensive nor credible studies present focusing on recreation, tourism, or aesthetic opportunities. The PAD states "there are abundant opportunities for recreation within the project area" and then goes on to reference recreation opportunities on the rest of the Kinnickinnic River outside of the area of the impoundments and the two dams. This is possibly the greatest area of further study necessary when considering the impacts of the Project on our community.

Projects Operations and Effects on Resources:

The nexus between the Project operations and effects on the resources to be studied is immediately apparent. The Project itself creates a physical barrier between the Lower Kinnickinnic River and the immediate areas of the two impoundments in the center of the City of River Falls. The dams create two impoundments which have completely silted in to a depth of only 1 - 3 feet over the majority of each lake. The impoundments lack the necessary qualities to support any type of warm water or cold water fishery, negating opportunities for enjoyable outdoor recreation or ecotourism. The extensive eutrophication of the impoundments also limits aesthetic and olfactory appeal of the surrounding area.

These two impoundments block the flow of an entire mile of the length of the Kinnickinnic River as it courses through the City of River Falls where the restored river will have a 70 vertical foot drop gradient in that mile span. Outside the Project boundary the Kinnickinnic River is officially designated a Class I Trout Stream, but within the project boundary, the waterway does not support a trout fishery. The restoration of this mile of trout stream within our community would draw fishermen into our city, fishermen who would otherwise remain on the outskirts of our town, and who would then be more likely to frequent our local businesses.

Furthermore, the falls of the Kinnickinnic River for which the City of River Falls is named, sit completely dewatered and partially submerged below the flat waters of the Junction Falls impoundment unavailable

as a resource to the community for recreation, ecotourism, and the development of an aesthetic restorative landscape. The opportunity cost of the existing hydroelectric project must be measured in terms of what otherwise could be done with the area now submerged below the two impoundments. Perhaps most notably would be the opportunity to restore the Junction Falls, a waterfall in the center of our city which would draw tourism to our community including new visitors who would shop in our stores, eat in our restaurants and sleep in our hotels.

The Willow River State Park just twelve miles north of River Falls currently claims Willow Falls as its main attraction. Willow Falls was formerly obscured by a hydroelectric dam until the removal of that dam in 1992 (Figure 8). Willow River State Park attracted over 479,000 visitors in 2010, visitors who had a total annual expenditure of $29,730,753 (WI DNR, 2013). Approximately 38 miles west of River Falls is Minnehaha Park, which "features" Minnehaha Falls, and is one of the most popular parks in Minneapolis drawing over 850,000 visitors per year (Mpls PRB, 2014). The City of River Falls could potentially see these types of tourism levels with a restored Junction Falls in the heart of our community with the removal of the dams.

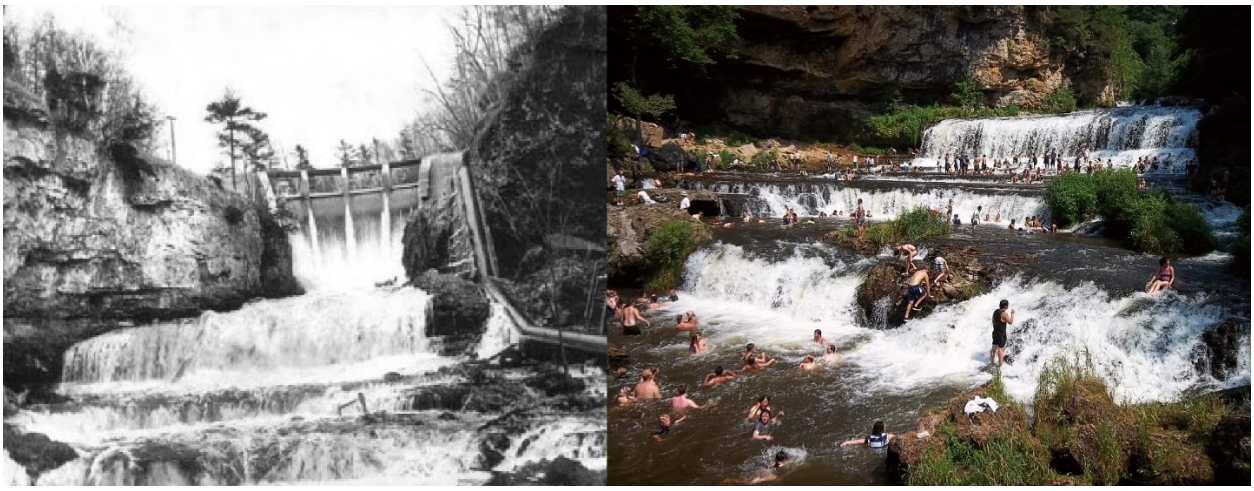

Figure 8: Willow Falls Dam (left) prior to dam removal in 1992 these falls in the State Park were a hazardous area off limits to the general public. Today, the Willow Falls are the biggest attraction in the park drawing hundreds of thousands of visitors annually to view the falls, swim, and rock climb.

<u>Study Methodology:</u>

This study should include:

1.) RECREATIONAL USE - Thorough evaluation, baseline inventory, and a survey of current recreational opportunities and utilization of those opportunities along the entire length of the Kinnickinnic River with the dams in place, evaluated along separate zones (upper river, impoundments, lower river, etc)

a. A compilation of a list of all recreational opportunities the Kinnickinnic River and the two impoundments offer

i. Including specific and current fishing opportunities available both in the river and the impoundments

ii. Aquatic recreation opportunities

b. To include a baseline inventory and survey of people pursuing activities such as fishing, kayaking, canoeing, swimming, hiking, walking, biking, rock climbing, picnicking, and wildlife viewing

c. Compilation of data to gain an understanding of exactly where recreational opportunities are underutilized and/or where improvements in recreational opportunities could be made for our community

i. Potential with the dams removed for whitewater kayaking/canoeing and rock climbing opportunities

ii. Potential restoration of a trout fishery and increased access to trout fishing with the dams removed

iii. Potential with the dams removed for extension and expansion of walking trails, canoe/kayak portages, picnic and viewing areas

iv. Potential with the dams removed to create approximately 30 acres of new and expanded urban parks and community green spaces on the land now submerged below the impoundments

d. A Survey of local residents' perceptions of available outdoor recreational opportunities and their perceptions of the project's effects on those opportunities

e. A Comprehensive economic valuation of those potential improvements and/or expansion of recreational opportunities

2.) TOURISM LEVELS - Tourism baseline and impact analysis and survey

a. To include a survey of current levels of tourism drawn to our community as a result of the project or to the area of the project

i. Why do people come to the project area?

ii. How many tourists visit the project area?

b. A survey of communities who have experienced dam removal and revitalization of their recreational resources and their experiences with post dam removal tourism

i. Baraboo, WI

ii. Merrill, WI

iii. Willow River State Park – Willow Falls Dam, Mounds Dam

iv. Colfax, WI

v. West Bend, WI

c. A survey of regional waterfalls and their tourism levels

i. Willow Falls

ii. Minnehaha Falls

iii. Amnicon Falls

iv. Vermillion Falls

v. Copper Falls

d. Consultation with the Great Rivers Confluence and the Great River Road to assess the potential tourism impact of dam removal and restoration of the falls

i. Regional tourism traffic baseline and directions of flow along the Great River Road and into the Great Rivers Confluence

ii. Comparison to other tourist attractions along the National Scenic Riverway – especially other waterfalls

e. Consideration of potential for increased tourism due to new recreational opportunities not currently available due to the project

i. Whitewater Kayaking/Canoeing

ii. Waterfall Viewing

iii. Rock Climbing

3.) AESTHETIC VALUE - An estimation of the aesthetic value of the current project and how it affects our "sense of place" in our community, and valuation of possible alternative futures for the area with restoration of the falls in place of the current dams and impoundments

a. The upper impoundment above the Junction Falls Dam experiences high eutrophication during the warm summer months creating diminished visual appeal and stench
b. Both impoundments are heavily silted with water depths in the majority of both lakes ranging from only 1 – 3 feet deep
c. In comparison to the value of the potential "restorative landscape" that could be created with the removal of the dams, the restoration of the falls, and the creation of a continuous and accessible parkland extending from downtown River Falls through to the lower Kinnickinnic
d. Essentially 30 acres of dry land could be created as parkland and turned into great urban park and community green space

4.) ECONOMIC IMPACT - Comparative analysis should be conducted between the value of the hydroelectric project and its projected revenue/expense in direct comparison to all of the above mentioned values of opportunity cost due to its maintenance. Potential opportunity cost recoverable with the removal of the dams:

a. Increased recreational opportunity
b. Increased tourism
c. Increased aesthetic value
d. Revitalization of our main street community

Financial and social considerations associated with alternative futures to dam relicensing must be investigated. These include potential economic stimulus as a result of recreational tourism influx when the dams are removed and the resulting river restored with a revitalized recreational area and parkland in the heart of our community. A comparative model developed based on similar dam removals in similar communities would be an appropriate model to use for study of potential economic benefits. We must also consider expenses of such a development, expenses of developing a plan for such a development, expenses of dam removal, the expenses of stream bank restoration through this stretch of river, and the potential sources of revenue to cover such expenses associated with dam removal.

Whitelaw and MacMullan provide a conceptual framework for a comprehensive cost-benefit analysis of dam removal. They suggest a sound framework must account for both subsidies and externalities and place costs and benefits, over both the short and the long run, in a realistic economic context. (Whitelow and MacMullan, 2002)

<u>Level of Effort and Cost:</u>

Once the study parameters are firmly delineated, we recommend a consulting firm be contracted to help establish formal and scientifically valid research methods, estimate levels of effort and cost associated with this vital research, and possibly to conduct the research as well for an estimated cost of $20,000 - $35,000. Community stakeholders such as Friends of the Kinni have a reasonable expectation that as part of the relicensing process we shall be a partner with the City in setting such parameters, reviewing study methods, and analyzing results.

CONCLUSION

The Friends of the Kinni truly wishes to see the best possible outcome for our river and for our community of River Falls. We feel that if the formal studies that come from the FERC Integrated Licensing Process are truly objective and independent, and if they cover these important economic, environmental, recreational, and aesthetic issues thoroughly and fairly, then we can reliably use the results to make the important decisions that face us as a community.

We also believe that the return of our Falls to the City of River Falls will bring new benefits to our community, benefits of; urban recreation, beautification, new business opportunities, improved water quality, a rallying point for Communityy pride, increased tourism, better fishing, a healthier river, and much more.

Thank you,

Michael Page, President,

Sarah Hall, Board Member

Lauren Kaminski, Vice President

Emily Page, Board Member

Gretchen Page, Vice President

Alison Page, Board Member

David Fehringer, Board Member

David Gregg, Board Member

CC: Scot Simpson, City Administrator, City of River Falls, WI (ssimpson@rfcity.org)
Angie Tornes, National Park Service, Milwaukee, WI (angie_tornes@nps.gov)
Judie Foster-Babcock, Founding Family Stakeholder, River Falls, WI (judie4krlt@gmail.com)
Raj Shukla, River Alliance of Wisconsin, Madison, WI (rshukla@wisconsinrivers.org)
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Charlene Brooks, Executive Director, KRLT, River Falls, WI (charlene@kinniriver.org)
Gary Horvath, Kiap-TU-Wish Chapter of TU, River Falls, WI (magshorvath@comcast.net)
Duke Welter, TU DARE, Viroqua, WI (duke.welter@tu.org)
Shana Wiseman - FERC, Washington D.C. (shana.wiseman@ferc.gov)

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ATTACHMENTS

Attachment #1: Form 80 - River Falls Municipal Utility 1991 Submission.

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Form Approved
OMB No. 1902-0001
Expires: 12/31/92
Burden: 3.0 hours

This form collects data on recreational facilities at projects licensed by the Federal Energy Regulatory Commission (Commission) under the Federal Power Act (16 USC 792-828c), and is therefore mandatory. Failure to report may result in criminal fines, civil penalties and other sanctions as provided by law. This form must be submitted by licensees of all projects except those exempted under 18 CFR 8.11. (See Glossary Definition Number 2, Exemption). Submit this form on or before April 1, 1991. Submit subsequent filings of this form on or before April 1, every 4th year thereafter (for example, submit in 1995, 1999, 2003, etc.). Submit to the Commission's Regional Office (specified in the cover letter to this form) an original, and 3 copies of this form and any attachments *for each development within each project.* For further information, or an explanation of the instructions in this form, or for additional copies of the form, contact the Commission's Regional Office specified in the cover letter to this form. *The public burden for this form is estimated to average 3 hours per response, including the time of reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please send your comments about this burden estimate, or any other aspect of this collection of information, including suggestions for reducing this burden to: the Energy Information Administration, Office of Statistical Standards, EI-73, Mail Station 1M-023, Forrestal, 1000 Independence Avenue SW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.*

Schedule 1. Public Use Information: Please read the instructions and glossary before completing this form.

1. Instructions:
1.1 All data reported on this form must represent recreational facilities and services located within the development boundary.
1.2 To insure a common understanding of terms, please refer to the Glossary on page 3.
1.3 Report actual data for each item. If actual data are unavailable, then please estimate.

2.1 Licensee Name: CITY OF RIVER FALLS, WI
2.11 Licensee No (FERC Use Only): _ _ _ _ _ _
2.12 Type of Project License: (Enter "1" for major projects and "2" for minor projects licensed by the Commission): 2.
2.13 Type of Project Operation: (Enter a "1" for projects operating in run-of-river mode, and a "2" for those projects operating in peaking mode): 1

2.2 Project Name: RIVER FALLS
2.21 Project Number: 1 0 4 8 9

2.3 Development Name: JUNCTION FALLS AND POWELL FALLS
2.31 Dev No (FERC Use Only): _ _ _ _ _ _ _

3.1 States Project Traverses (abbreviated):
3.11 State #1: W I (List State(s) with largest
3.12 State #2: _ _ to smallest area within
3.13 State #3: _ _ the Development boundary)

3.2 Name of Stream: KINNICKINNIC RIVER AND SOUTH FORK OF KINNICKINNIC RIVER
3.21 Name of Drainage Basin: ST. CROIX RIVER
3.3 Reservoir Surface Acres: JUNCTION FALLS-14.5A POWER FALLS 18A TOTAL=32.5A
3.4 Shoreline Miles at Normal Pool Elevation: 1 1/2MI

3.5 Name of Nearest City with a Population of 40,000 or More: ST. PAUL, MN
3.51 Distance: From Nearest City to the Dam: 35M
3.52 Population of this Nearest City: 400,000

3.6 Estimated Population within 100 mile Radius from the Dam: 1,500,000

3.7 Pct. of Shoreline Safely Accessible to the General Public by Land Travel without Trespassing: 75 0 %

3.8 Length of Recreation Season:
3.81 Summer: From (MM/DD): 5 / 1 To: 9 / 30
3.82 Winter: From (MM/DD): 11 / 1 To: 3 / 1

Enter the number of visits to all recreational areas (in Recreation Days) as specified in 4.1/4.2 below (in 1000's).

Period (a)	Number of Recreation Days: Annual Total (1000's) (b)	Number of Recreation Days: Peak Weekend Average (1000's) (c)
4.1 Daytime	1,500	.0100
4.2 Nighttime	NA	NA

For the previous calendar year, enter only the licensee's annual recreational operation and maintenance costs for the development (project). Also enter the corresponding annual revenues in whole dollars.

Item (a)	Licensee's Annual Recreation Costs and Revenues (In Whole Dollars): Operation and Maintenance Costs (b)	Licensee's Annual Recreation Costs and Revenues (In Whole Dollars): Revenues For Calendar Year (c)
5. Dollar Values:	NA	NA

6. Respondent Certification: The undersigned certifies that he/she has examined the accompanying data; and that to the best of his/her knowledge, information and belief, all historical & estimated data provided herein and appended hereto are true, complete, and accurate.

DUANE R. HANSON	UTILITY DIRECTOR	(715) 425-0900
6.1 Legal Name	6.2 Title	6.3 Area Code/Phone No.
[signature]	3-20-91	1990
6.4 Signature	6.5 Date Signed	6.6 Reporting Year Ending

Title 18 U.S.C. 1001 makes it a crime for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious or fraudulent statement or misrepresentation as to any matter within its jurisdiction.

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Schedule 2. Inventory of Recreational Resources

7. Enter data for each Recreational Resource Type (a). For Facility Capacity (e), compare the amount of weekend use for this season reported on Schedule 1, Item 3.8, with the facility's capacity to handle such use and enter a percentage that indicates overuse, underuse, or ideal use. Do not consider peak weekend use (see Glossary). For example, if Boat Ramps (Code = 11) are used to half capacity during a non-peak weekend day, enter 50%. For Boat Ramps that are used beyond their capacity, enter the appropriate percentage above 100.

Code = Recreational Resource Type (a)	No. Rec. Resources: User Free (b)	No. Rec. Resources: User Fee (c)	Total Miles/Acres (d)	Facility Capacity (Percent) (e)
10 = Access Areas. (No Facilities). Unimproved but well-known/popular sites which can be used to reach development waters (including waters below a dam) without trespassing on other property. Such waters are used for launching boats, fishing, swimming, or other water recreational purposes.	X		N/A	25%
11 = Boat Ramps. Improved areas having one or more boat launching lanes, and which (a) are usually marked with signs, (b) have compacted gravel or concrete surfaces, and (c) usually have adjacent parking lots.	NA	NA	N/A	NA
12 = Boat Launching Lanes. The area at the boat ramp from which boats may be launched into the development water. The number of lanes at a boat ramp are determined by the number of boats that can be launched safely at the boat ramp at one time.	NA	NA	N/A	NA
13 = Fishing Piers. Structures abutting or extending into development waters which are constructed and maintained specifically for fishing. (This code excludes Code 17 = Tailwater Fishing).	NA	NA	N/A	NA
14 = Swimming Areas. Sites providing access to development waters where swimming facilities (bath houses, designated swimming areas, parking, and sanitation facilities) are located.	NA	NA	Acres	NA
15 = Marinas. Facilities provided on or adjacent to development waters for the docking, fueling repair, and storage of boats, and which may rent boats and equipment, or sell bait or food.	NA	NA	Acres	NA
16 = Canoe Portages. Sites located above or below a dam, diversion or other obstruction where persons can launch canoes, and the improved, designated, and maintained trails connecting such sites.	NA	NA	Miles	NA
17 = Tailwater Fishing Facilities. Ramps, walkways, or similar structures to facilitate below-dam fishing.	X	NA	N/A	
18 = White Water Boating. Access areas below a dam that can be used for rafting/kayaking.	NA	NA	N/A	NA
20 = Trails. Improved pathways used for non-automobile recreational travel which: (a) can be located on a reference map; and (b) are designated according to type of use (hiking, bridle, trailbikes, snowmobiles, cross-country skiing). This category excludes Code 16 = Canoe Portages.	X		.75 Miles	25%
21 = Playground Areas. Have playground equipment, game courts/fields, jogging tracks, etc.	NA	NA	Acres	NA
40 = Picnic Areas. Areas designated and maintained for picnicing and which contain one or more picnic sites, each of which includes a picnic table and in some cases a cooking grill, trash receptacles, and a parking area.	X		.5 Acres	50%
50 = Camping Areas. (Campgrounds). Areas containing two or more camp-sites, tent sites, or trailer/recreational vehicle (RV) sites which accommodate overnight camping equipment.	NA	NA	Acres	NA
51 = Tent/Trailer/RV Sites. The total number of sites within Camping Areas (Code = 50) that have been specifically developed for tent,trailer, or RV use. Such sites do not include Group Camps (Code = 57).	NA	NA	Acres	NA
56 = Organizational Camps. Camping areas that are maintained and operated by a specific entity but which may be used by other persons or groups (scout camps, military base recreation camps, church camps, handicapped children's camps).	NA	NA	Acres	NA
57 = Group Camps. Camping areas which are equipped with facilities to accommodate use by the general public. Such areas usually require registration or advance reservation.	NA	NA	Acres	NA
60 = Visitor Centers. Facilities located in a kiosk, pavilion or similar structure from which persons may obtain information about the development, its operation, recreational facilities, and related items of interest.	NA	NA	Acres	NA
61 = Parks. Designated areas which usually contain multiple use facilities (picnic sites, playgrounds, swimming beaches, and boat ramps). Individual facilities within each park shall be reported using the appropriate code numbers (e.g., Code 21 = Playground Areas).	NA	NA	Acres	NA
62 = Wildlife Areas. Natural areas and reserves specifically created and managed for the protection and propagation of wildlife and the viewing of wildlife in their habitat.	NA	NA	NA Acres	NA
64 = Food Services. Restaurants, grocery, and other facilities supplying food & related services.	NA	NA	– Acres	NA
65 = Golf Courses. All types of golf areas, except miniature golf.	NA	NA	– Acres	NA
66 = Hunting Areas. Public or private areas open to the general public for hunting purposes.	NA	NA	– Acres	NA
67 = Interpretive Displays. Historic or prehistoric objects, structures, sites and areas, including associated facilities (exhibits and museums) which describe or preserve archeological, historic or prehistoric activities, artifacts and materials.	NA	NA	– Acres	NA
80 = Cottage/Cabin Sites. Recreational dwellings which are seasonally rented by the public for recreational purposes.	NA	NA	N/A	NA
82 = Overlooks. Public areas to see natural areas/project features (e.g., overlooks, vistas, etc).	NA	NA	NA Acres	NA
84 = Winter Sports. Any facility providing sports like skiing, sledding, ice skating or ice fishing.	NA	NA	N/A	NA
99 = Other (Specify):			A/A	

Licensed Hydropower Development Recreation Report

Glossary of FERC Form 80 Terms

1. **Development.** The portion of a project which includes: (a) a reservoir, or (b) a generating station and its specifically related waterways.

2. **Exemption.** Exemption from the filing of this form granted upon Commission approval of an application by a licensee pursuant to the provisions of 18 CFR 8.11(c).

3. **General Public.** Those persons who *do not have special privileges* to use the shoreline for recreational purposes, such as waterfront property ownership, water-privileged community rights, or renters with such privileges.

4. **Land Travel.** Travel on land by conventional means, such as by automobile or other non-off-road vehicle, or within easy walking distance from an automobile.

5. **Licensee.** Any person, state, or municipality licensed under the provisions of Section 4 of the Federal Power Act, and any assignee or successor in interest. For the purposes of this form, the terms licensee, owner, and respondent are interchangeable *except where:* (a) the owner or licensee is a subsidiary of a parent company which has been or is required to file this form; or (b) there is more than one owner or licensee, of whom only one is responsible for filing this form. Enter the name of the entity that is responsible for filing this report in Schedule 1, Item 2.1.

6. **Peak Use Weekend.** Weekends when recreational use is at its peak for the season (July 4th weekend and other holiday weekends). On these weekends, recreational use may exceed the capacity of the area to handle such use.

7. **Major License.** A license for a project of more than 2,000 horsepower (1.5 megawatts) installed capacity.

8. **Minor License.** A license for a project of 2,000 horsepower (1.5 megawatts) or less installed capacity.

9. **No. Rec. Resources.** Quantify the supply of natural or man-made property or facilities that are available for a given recreational resource type.

10. **Recreation Day.** Each visit by a person to a development for recreational purposes during any portion of a 24-hour period.

Attachment #2: Form 80 - River Falls Municipal Utility 1996 Submission.

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Form Approved
OMB No. 1902-0106
Expires: 09/30/98
Burden: 3.0 hours

This form collects data on recreational facilities at projects licensed by the Federal Energy Regulatory Commission under the Federal Power Act (16 USC 791a-825r). This form must be submitted by licensees of all projects except those specifically exempted under 18 CFR 8.11 (c). Submit this form on or before April 1, 1997. Submit subsequent filings of this form on or before April 1, every 6th year thereafter (for example, 2003, 2009, etc.). Submit an original and three copies of the form to the Commission's Regional Office (specified in the cover letter to this form). The public burden estimated for this form is three hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the collection of information. Please send your comments about this burden estimate, or any other aspect of this collection of information, including suggestions to reduce the burden, to: Director, Division of Project Compliance and Administration, Federal Energy Regulatory Commission, 888 First Street NE, Washington, D.C. 20426 and the Office of Information and Regulatory Affairs, Desk Officer-FERC, Office of Management and Budget, Washington, D.C. 20503.

Failure to comply with this collection of information will not result in a penalty, if you were unaware that a valid control number assigned by the Office of Management and Budget must be displayed on this collection of information.

Schedule 1. Public Use Information: Please read the instructions and glossary before completing this form

1. Instructions:
   - 1.1 All data reported on this form must represent recreational facilities and services located within the development boundary.
   - 1.2 To insure a common understanding of terms, please refer to the Glossary on page 3.
   - 1.3 Report actual data for each item. If actual data are unavailable, then please estimate.

2.1 Licensee Name: CITY OF RIVER FALLS, WI

2.2 Project Name: RIVER FALLS

2.21 Project Number: 10489

2.3 Development Name: JUNCTION FALLS AND POWELL FALLS

2.4 States Project Traverses (abbreviated):

2.41 State #1: WI (List State(s) with largest to smallest area within the Development boundary)

2.42 State #2: _____

2.5 Type of Project License: (Check One) Major _____ Minor X

3.1 Name of Stream: KINNICKINNIC RIVER AND SOUTH FORK OF KINNICKINNIC RIVER

3.2 Reservoir Surface Acres: JUNCTION FALLS = 14.5 A; POWELL FALLS = 18.0 A; TOTAL = 32.5 A

3.3 Shoreline Miles at Normal Pool Elevation: 1 1/2 MI

3.4 Name of Nearest City with a Population of 40,000 or More: ST PAUL, MN

3.41 Distance: From This City to the Dam: 35 M

3.42 Population of This City: 400,000

3.5 Estimated Population Within 100 mile Radius from the Dam 1,500,000

3.6 Percent of Shoreline Safely Accessible to the General Public by Land Travel Without Trespassing: 75 . 0%

For the previous calendar year, enter only the licensee's annual recreational construction, operation, and maintenance costs for the development (project). Also enter the corresponding annual recreation revenues in whole dollars.

Item	Licensee's Annual Recreation Costs and Revenues (In Whole Dollars)	
	Construction, Operation and Maintenance Costs	Recreation Revenues for Calendar Year
4. Dollar Values:	NA	NA

5. Length of Recreation Season

Summer: From (MM/DD): 05 / 01 To: 09 / 30 Winter: From (MM/DD): 11 / 01 To: 03 / 01

Enter the number of visits to all recreational areas at development (in Recreation Days)

Period	Number of Recreation days	
	Annual Total 150 1000	Peak Weekend Average 24 30
6.1 Daytime	1,500	.0100
6.2 Nighttime	NA	NA

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Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Schedule 2. Inventory of Recreational Resources

7. Enter data for each Recreational Resource Type (a). For Facility Capacity (e), compare the amount of weekend use for this season reported on Schedule 1, Item (5) with the facility's capacity to handle such use and enter a percentage that indicates overuse, underuse, or ideal use. Do not consider peak weekend use (see Glossary). For example, if Boat Ramps are used to half capacity during a non-peak weekend day, enter 50%. For Boat Ramps that are used beyond their capacity, enter the appropriate percentage above 100.

	Recreational Resource Type (a)	No. Rec. Resources: User Free (b)	No. Rec. Resources: User Fee (c)	Total Miles/Acres (d)	Facility Capacity (Percent) (e)
BOATING	**Access Areas.** (No Facilities). Unimproved but well-known/popular sites which can be used to reach development waters (including waters below a dam) without trespassing on other property. Such waters are used for launching boats, fishing, swimming, or other water recreational purposes.	X		N/A	25%
BOATING	**Boat Ramps.** Improved areas having one or more boat launching lanes, and which (a) are usually marked with signs, (b) have compacted gravel or concrete surfaces, and (c) usually have adjacent parking lots.	NA	NA	N/A	NA
BOATING	**Boat Launching Lanes.** The area at the boat ramp from which boats may be launched into the development water. The number of lanes at a boat ramp are determined by the number of boats that can be launched safely at the boat ramp at one time.	NA	NA	N/A	NA
BOATING	**Marinas.** Public or private facilities provided on or adjacent to development waters for the docking, fueling, repair, and storage of boats, and which may rent boats and equipment, or sell bait or food. Facilities may be private or public.	NA	NA	Acres	NA
BOATING	**White Water Boating.** Access areas below a dam that can be used for rafting/kayaking.	NA	NA	N/A	NA
BOATING	**Canoe Portages.** Sites located above or below a dam, diversion or other obstruction where persons can launch canoes, and the improved, designated, and maintained trails connecting such sites.	NA	NA	Miles	NA
FISHING	**Tailwater Fishing Facilities.** Ramps, walkways, or similar structures to facilitate below-dam fishing.	X	NA	N/A	NA
FISHING	**Fishing Piers.** Structures abutting or extending into development waters which are constructed and maintained specifically for fishing. (This code excludes Tailwater Fishing).	X	NA	N/A	25%
PARKS	**Parks.** Designated areas which usually contain multiple use facilities (picnic sites, playgrounds, swimming beaches, and boat ramps). Individual facilities within each park shall be reported using the appropriate resource type (e.g., playground areas, swimming areas, picnic areas, etc.).	X	NA	Acres	10%
PARKS	**Playground Areas.** Have playground equipment, game courts/fields, jogging tracks, etc.	NA	NA	Acres	NA
PARKS	**Trails.** Improved pathways used for non-automobile recreational travel which (a) can be located on a reference map, and (b) are designated according to type of use (hiking, bridle, trailbikes, snowmobiles, cross-country skiing). This category excludes Canoe Portages.	X	NA	.75 Miles	25%
PARKS	**Swimming Areas.** Sites providing access to development waters where swimming facilities (bath houses, designated swimming areas, parking, and sanitation facilities) are located.	NA	NA	Acres	NA
PARKS	**Picnic Areas.** Areas designated and maintained for picnicing and which contain one or more picnic sites, each of which includes a picnic table and in some cases a cooking grill, trash receptacles, and a parking area.	X	NA	.5 Acres	50%
PARKS	**Wildlife Areas.** Natural areas and reserves specifically created and managed for the protection and propagation of wildlife and the viewing of wildlife in their habitat.	NA	NA	Acres	NA
PARKS	**Visitor Centers.** Facilities located in a kiosk, pavilion or similar structure from which persons may obtain information about the development, its operation, recreational facilities, and related items of interest.	NA	NA	N/A	NA
PARKS	**Interpretive Displays.** Historic or prehistoric objects, structures, sites and areas, including associated facilities (exhibits and museums) which describe or preserve archeological, historic or prehistoric activities, artifacts and materials.	NA	NA	N/A	NA
PARKS	**Overlooks.** Public areas to see natural areas/project features (e.g., pull-offs, vistas)	NA	NA	Acres	NA
PARKS	**Hunting Areas.** Public or private areas open to the general public for hunting purposes.	NA	NA	Acres	NA
PARKS	**Golf Courses.** All types of golf areas, except miniature golf.	NA	NA	Acres	NA
CAMPS	**Cottage/Cabin Sites.** Recreational dwellings which are seasonally rented by the public for recreational purposes.	NA	NA	N/A	NA
CAMPS	**Camping Areas.** (Campgrounds). Areas containing two or more campsites, tent sites, or trailer/recreational vehicle (RV) sites which accommodate overnight camping equipment.	NA	NA	Acres	NA
CAMPS	**Tent/Trailer/RV Sites.** The total number of sites within Camping Areas that have been specifically developed for tent, trailer, or RV use. Such sites do not include Group Camps.	NA	NA	Acres	NA
CAMPS	**Organizational Camps.** Camping areas that are maintained and operated by a specific entity but which may be used by other persons or groups (scout camps, military base recreation camps, church camps, handicapped children's camps).	NA	NA	Acres	NA
CAMPS	**Group Camps.** Camping areas which are equipped with facilities to accommodate use by the general public. Such areas usually require registration or advance reservation.	NA	NA	Acres	NA
	Winter Sports. Any facility providing sports like skiing, sledding, ice skating or ice fishing.	NA	NA	N/A	NA
	Other (Specify):			N/A	

Respondent Certification: The undersigned certifies that he/she has examined the accompanying data; and that to the best of his/her knowledge, information and belief, all historical and estimated data provided herein and appended hereto are true, complete, and accurate.

Legal Name	Title	Area Code/Phone No.
VICTOR C MARMA	UTILITY ADMINISTRATOR	(715) 425 - 0906
Signature	**Date Signed**	**Reporting Year Ending**
Victor C Marma	3-19-97	1996

Title 18 U.S.C. 1001 makes it a crime for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious or fraudulent statement or misrepresentation as to any matter within its jurisdiction.

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Glossary of FERC Form 80 Terms

1. **Development.** The portion of a project which includes:
   (a) a reservoir, or
   (b) a generating station and its specifically-related waterways.

2. **Exemption.** Exemption from the filing of this form granted upon Commission approval of an application by a licensee pursuant to the provisions of 18 CFR 8.11(c).

3. **General Public.** Those persons who do not have special privileges to use the shoreline for recreational purposes, such as waterfront property ownership, water-privileged community rights, or renters with such privileges.

4. **Licensee.** Any person, state, or municipality licensed under the provisions of Section 4 of the Federal Power Act, and any assignee or successor in interest. For the purposes of this form, the terms licensee, owner, and respondent are interchangeable *except where:*
   (a) the owner or licensee is a subsidiary of a parent company which has been or is required to file this form; or
   (b) there is more than one owner or licensee, of whom only one is responsible for filing this form. Enter the name of the entity that is responsible for filing this report in Schedule 1, Item 2.1.

5. **Peak Use Weekend.** Weekends when recreational use is at its peak for the season (July 4th weekend and other holiday weekends). On these weekends, recreational use may exceed the capacity of the area to handle such use.

6. **Major License.** A license for a project of more than 2,000 horsepower (1.5 megawatts) installed capacity.

7. **Minor License.** A license for a project of 2,000 horsepower (1.5 megawatts) or less installed capacity.

8. **No. Rec. Resources.** Quantify the supply of natural or man-made property or facilities that are available for given recreational resource type.

9. **Recreation Day.** Each visit by a person to a development for recreational purposes during any portion of a 24-hour period.

10. **Revenues:** Income generated from recreation facilities at project development. Includes fees for access or use of area.

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APPENDIX D
STUDY PLAN MEETING AND STUDY CONSULTATION

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CITY OF RIVER FALLS WISCONSIN
RIVER FALLS HYDROELECTRIC PROJECT (FERC NO. 10489)
PROPOSED STUDY PLAN MEETING
CITY HALL – TRAINING ROOM
March 13, 2019

Present:
TRC Senior Consultant Lesley Brotkowski;
TRC Consultant Elizabeth Krchnavek;
River Falls Municipal Utility Director Kevin Westhuis;
River Falls Municipal Utility Administrative Assistant Lanae Nelson;
River Falls City Administrator Scot Simpson;
River Falls Hydroelectric Facility Operator & Electric Meter Technician Brian Hatch;
River Falls Alderperson District 2 Christopher Gagne;
Ayres Associates Senior Project Manager Ellen Faulkner;
Wisconsin Department of Natural Resources FERC Coordinator Cheryl Laatsch;
Wisconsin Department of Natural Resources Joelle Mushel;
Wisconsin Department of Natural Resources Water Management Engineer Michael Rogney;
U.S. National Park Service Midwest Hydropower Coordinator Angie Tornes;
Trout Unlimited Kiap TU Wish Chapter Vice President Gary Horvath;
Trout Unlimited Kiap TU Wish Chapter Member Kent Johnson;
Kinnickinnic River Land Trust President Judie Foster Babcock;
River Falls Community Member Ben Fochs;
Kinni Corridor Member William Hanson;
FERC Coordinator Shana Wiseman;
FERC Archaeologist Michael Davis;
River Alliance of Wisconsin Consultant Jim Fossum

Present via Phone Conference Call:
FERC Branch Chief Midwest Janet Hutzel;
FERC Wildlife Biologist Jay Summers;
FERC Fish Biologist Nick Ettema;
FERC Engineer Paul Makowski

Purpose of the meeting:
- Review the intent and contents of the Licensee's Proposed Study Plan (PSP)
- Share any additional information or responses
- Discuss outstanding issues with respect to the PSP

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River Falls Hydroelectric Project, FERC Project No. 10489

Proposed Study Plan Meeting Agenda

Date and Time: March 13, 2019, 9 – 11 AM

Meeting Location: River Falls City Hall, Training Room, located at 222 Lewis Street, River Falls, WI

Purpose of the meeting:

- Review the intent and contents of the Licensee's Proposed Study Plan (PSP)
- Share any additional information or responses
- Discuss outstanding issues with respect to the PSP

Agenda:

1) Meeting kickoff and introductions
2) FERC schedule review
3) Purpose of PSP meeting
4) Proposed Studies
5) Requested Studies Not Adopted
6) FERC Additional Information Requests
7) Overview of Next Steps
8) Questions and Discussion

River Falls Hydroelectric Project (P-10489)

PRELIMINARY STUDY PLAN MEETING

MARCH 13, 2019

RIVER FALLS MUNICIPAL UTILITIES

TRC
Results you can rely on

Proposed Study Plan Meeting

Housekeeping Items

- Sign-in sheet
- Speakers: please state name and affiliation, speak clearly and one at a time
- Meeting format overview
- Meeting notes: written summary and large post-its

Introductions

Agenda

1) Meeting kickoff and introductions
2) FERC schedule review
3) Purpose of Proposed Study Plan meeting
4) Proposed Study Plans
5) Requested Studies Not Adopted
6) FERC Additional Information Requests
7) Overview of Next Steps
8) Questions and Discussion

FERC Schedule

Responsible Entity	Pre-Filing Milestone	Date
Licensee	File NOI/PAD with the FERC	8/30/2018
FERC	Scoping Document 1 (SD1)	10/25/2018
FERC	Scoping Meeting held at City Hall, Site Visit	11/15/2018 & 11/16/2018
All stakeholders	NOI/PAD/SD1 comments and study requests due	12/28/2018
FERC	Issue Scoping Document 2 (SD2)	2/7/2019
Licensee	File Proposed Study Plan	2/11/2019
All stakeholders	Study Plan Meeting	3/13/2019
All stakeholders	Study Plan comments due	5/12/2019
Licensee	File Revised Study Plan	6/11/2019
All stakeholders	Revised Study Plan comments due	6/26/2019
FERC	Director's Study Plan Determination	7/11/2019
Licensee	First Study Season	Summer 2019 – Summer 2020

Proposed Study Plan Meeting

Purpose of PSP

- Gather information for FERC's Environment Assessment (EA) of Licensee's proposed action

Purpose of Meeting

- Review the intent and contents of the Licensee's Proposed Study Plan (PSP)
- Share any additional information or responses
- Discuss outstanding issues with respect to the PSP

FERC's Study Plan Criteria

1) Describe goals and objectives of the proposed study
2) Explain relevant resource management goals
3) Explain relevant public interest considerations
4) Describe existing information and need for more info
5) Explain nexus to project operations and effects and how study results would inform license requirements
6) Describe study methodology and how it's consistent with accepted practice
7) Describe consideration of level of effort and cost of study and why alternative study is needed

Study Requests

Study Requests Received From:

- FERC
- Friends of the Kinni (FOTK)
- Kiap-TU-Wish chapter of Trout Unlimited
- Kinnickinnic River Land Trust (KRLT)
- National Park Service (NPS)
- River Alliance of Wisconsin
- Wisconsin DNR

Proposed Study Plan

Content

- Schedule
- Proposed Studies
- Discussion of Requested Studies Not Adopted
- Responses to Additional Information Requests

Proposed Studies

1) Hydrologic & Hydraulic Evaluation
2) Water Quality Study
3) Shoreline and Aquatic Invasive Species Survey
4) Wetland, Riparian, and Terrestrial Resources Survey
5) Recreation Facility Inventory and Recreation Use Assessment
6) Cultural Resources Study

Hydrologic and Hydraulic Evaluation

Requestors:

- Wisconsin DNR

Proposed Study:

Hydraulics:

- Review and refine the HEC-RAS water surface profile model developed in 2017
- Calculate water surface elevations, velocities, depths, and flows for typical summer low flow, the two-year flood, the 10-year flood, and the 100-year flood

Hydrology:

- Review of existing flood frequency estimates and recommendations for updating the discharge values used for floodplain analysis and dam safety assessment

- Study period: July – October 2019

Water Quality Study

Requestors:

- Wisconsin DNR
- Trout Unlimited
- River Alliance

Proposed Study:

Dissolved Oxygen and Temperature

- Hourly recordings with data sondes
- 4 Locations
  - Kinnickinnic River above Lake George
  - Lake George
  - Below Junction Falls
  - Below Powell Falls

- Study period: July– September 2019

Shoreline and Aquatic Invasive Species Survey

Requestors:

- Wisconsin DNR
- KRLT
- River Alliance
- Trout Unlimited

Proposed Study:

Lake George Shoreline and AIS:

- Wisconsin DNR's Lake Shoreline & Shallows Habitat Monitoring Field Protocol
  - % cover: impervious surface, mowed lawn, or plants in 35' buffer zone
  - Erosion concerns
  - Length of modified banks
  - Density of human structures
  - Floating and emergent aquatic plants
  - Identification of AIS
  - Density of coarse woody debris

- Study period: July – August 2019

Wetland, Riparian, and Terrestrial Resources Survey

Requestors:

- KRLT
- Wisconsin DNR

Proposed Study:

Wetland, Riparian, and Terrestrial Resources

- Aerial photo interpretation, field assessment, summary report
  - Common wildlife species
  - Major vegetation cover types
  - Invasive botanical species
  - Presence of RTE botanical species or associated habitats

- Study period: July – September 2019

Recreation

Requestors:

- FERC
- NPS
- KRLT
- River Alliance
- FOTK

Proposed Study:

Recreation Facility Inventory

- Inventory of the existing recreation sites and facilities

Recreation Use Assessment

- Spot counts
- Recreation user survey

- Study period: July – September 2019 & May – June 2020

Cultural Resources

Requestor:

- FERC

Proposed Study:

Archaeological Resources Survey

- Shoreline monitoring survey: Lake George, Lake Louise, and shoreline below Powell Falls
- Phase I archaeology survey: existing trails proposed for site access during Powell Falls decommissioning
- Foster Cemetery delineation

Historic Structures Survey

- Historic structures field survey

- Study period: July – October 2019

Requested Studies Not Adopted

1) Project Operations
2) Geology and Soils
3) Aquatic Resources
   - Lake George Fisheries Assessment
   - Fisheries/Riverine Habitat Evaluation
   - Mussel Survey
   - Macroinvertebrate Survey
   - Biological Impacts
4) Aesthetic Resources
5) Socioeconomic Resources
   - Costs of operation, maintenance, and benefits
   - Economic study of recreation, tourism, and aesthetic resources

FERC Additional Information Requests

- Project Facilities and Operations
- Water Resources
- Fish and Aquatic Resources
- Wildlife Resources

Next Steps

- Stakeholders file comments on PSP by May 12, 2019
- Licensee files Revised Study Plan (RSP) by June 11, 2019
- Stakeholders file comments on RSP by June 26, 2019
- FERC issues Study Plan Determination by July 11, 2019
- Begin studies in July 2019

Questions?

Contact Information:

Lesley Brotkowski
Senior Consultant
TRC Environmental
P: 402.238.7789| E: lbrotkowski@trcsolutions.com
www.trcsolutions.com

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River Falls Hydroelectric Project (FERC No. P-10489)

4/10/2019 Meeting Notes

Call to Discuss Proposed Cultural Resources Study

Meeting Date and Time:

Date: April 10, 2019
Time: 1:30PM – 2:30PM
Meeting via conference call

Purpose of the meeting:

- Call to discuss the proposed cultural resources study methodology for the River Falls Hydroelectric Project in River Falls, WI.

Participants:

- Chip Brown, SHPO
- Michael Davis, FERC
- Janet Hutzel, FERC
- Shana Wiseman, FERC
- Kevin Westhuis, River Falls Municipal Utilities
- Lesley Brotkowski, TRC
- Al Van Dyke, TRC
- Elizabeth Krchnavek, TRC

Notes:

1) Archaeological Resources Survey
    a. Al Van Dyke (TRC) and Lesley Brotkowski (TRC) described the methods and reasoning for what is currently outlined in the Proposed Study Plan.
    b. Chip Brown (SHPO) suggested that due to the proposed removal of Powell Falls dam, a Phase I with shovel testing around the shoreline (not just visual assessment) is more appropriate for the downstream areas impacted by removal.
    c. Janet Hutzel (FERC) agreed with Chip Brown and added that the reasoning is because of the proposed decommissioning. After the Powell Falls development is decommissioned and dam removed, the area would be removed from the FERC Project Boundary and no longer be under federal jurisdiction (Section 106) protection.
    d. Lesley Brotkowski asked: To clarify, do all areas below the Junction Falls Development need to be surveyed via Phase I shovel test? Lesley also mentioned that many of the lands are City owned parklands and will likely not to be disturbed by proposed decommissioning and removal.
        i. Janet Hutzel responded by stating that any area of "higher potential" for archaeological sites should be included in the survey. Al Van Dyke asked who would determine the areas of higher potential. Janet Hutzel responded by

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

saying that the Licensee and SHPO should work together to determine those locations.

ii. Shana Wiseman (FERC) commented that because there currently isn't a decommissioning plan currently before FERC, areas proposed to be disturbed by proposed decommissioning activities are not known, and therefore, for the study to be adequate it should be conservative, as impact can't be ruled out at this time. Janet Hutzel agreed, and added that if something was found during the archaeological survey, the removal of those lands from the Project Boundary may constitute an adverse effect (since it would no longer be under Federal purview).

iii. Chip Brown agreed with Janet Hutzel and stated that due to the potential removal of the lands from the Project Boundary, areas of higher potential should be surveyed. Chip Brown added the Licensee should work to determine the appropriate survey locations, and that the Licensee should check for areas that may have already been surveyed.

2) Foster Cemetery
   a. Michael Davis (FERC) explained that insufficient information is currently provided on this cemetery (location, eligibility status, etc.).
   b. Chip Brown mentioned that SHPO has a record of the cemetery boundary.
      i. Lesley Brotkowski asked if this boundary is available in digital format, so that the City can overlay to see whether or not the cemetery is within the Project Boundary. Chip Brown said yes, it is available in digital format. Chip Brown to send to Lesley Brotkowski.
   c. Chip Brown mentioned that Wisconsin has strict burial protection laws which would protect the cemetery. So regardless of the cemetery's location in relation to the FERC Project Boundary, the cemetery is protected under current state law.
   d. Michael Davis added that if the cemetery boundary is outside of the Project Boundary, then FERC will likely not need additional information. Michael Davis added that if the City finds that based on SHPO's records that the cemetery is outside the Project Boundary, and the City does not believe that delineation is necessary, this can be documented, and the City can remove or change their proposal in the Revised Study Plan. Michael Davis stated that if the cemetery is within the Project Boundary, additional information may be warranted.
3) Other
   a. Michael Davis asked for clarification about Wisconsin SHPO consultation and the Wisconsin SHPO consultation form. Lesley Brotkowski and Chip Brown clarified how the form is used. Lesley further explained that the form dated 9/12/2018 is in response to the Pre-Application Document and the form dated 2/12/2019 is in response to the Proposed Study Plan, and a record of consultation will be provided in the License Application. FERC had no further comments or questions.
4) Next steps
   a. SHPO will send the Foster cemetery boundary in digital format to the Licensee.
   b. The Licensee will schedule a follow up call with SHPO to discuss the Project Area of Potential Effect (APE) and survey protocols.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

c. The Licensee will put together a revised study plan with methods and locations based on today's discussion and follow up discussions with SHPO.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

River Falls Hydroelectric Project, FERC Project No. 10489

4/23/2019 Meeting Notes

Follow-up Discussion on Proposed Studies

Date and Time: April 23, 2019, 3:00 PM – 4:30 PM

Meeting Location: Conference Call

Purpose of the meeting:

- Discuss outstanding concerns and to look for common ground where study protocols or proposed studies differ.

Participants:

- Kent Johnson, Trout Unlimited (TU)
- Gary Horvath, TU
- Daniel Helsel, Wisconsin Department of Natural Resources (Wisconsin DNR)
- Cheryl Laatsch, Wisconsin DNR
- Shana Wiseman, Federal Energy Regulatory Commission (FERC)
- Nick Ettema, FERC
- Kevin Westhuis, City of River Falls Municipal Utility (RFMU)
- Lesley Brotkowski, TRC
- Elizabeth Krchnavek, TRC

Agenda:

1) Introduction:
    a. Lesley Brotkowski (TRC) provided a brief overview of where we are in the FERC process. The purpose of the meeting is to continue discussions from the Proposed Study Plan (PSP) Meeting on proposed studies.
2) Water Quality/temperature
    a. Lesley provided a brief overview of what the Licensee has proposed (including data collection locations, season, methodology). Lesley also summarized what TU and Wisconsin DNR requested.
    b. Kent Johnson (TU):
        i. Stated that there is little to no data on dissolved oxygen (DO)/Temperature and water chemistry information in the Lake George impoundment. What's driving TU's request is a better understanding of water chemistry of Lake George to understand the current/baseline conditions. Also mentioned that water quality in the lake could impact water quality downstream.
        ii. Discussion about timing: Suggested that May 1 through September 30 is appropriate for a summer field season. Also expressed that winter dynamics are not fully understood and there are likely effects in the winter as well (the impoundment gets colder than the stream, which may have an effect on trout).

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

iii. Kevin Westhuis asked how water quality (WQ) information will be used to inform a future license. Kent said that the issue is that there is no data.
iv. Lesley asked if, in consideration of balancing costs associated with continuous WQ data monitoring, there may be other methods to achieve the requested information. Lesley asked if grab samples may be appropriate, especially if the study season is extended.
    1. Kent replied that the best way to evaluate DO/temperature is a continuous monitor data sonde. Kent added that grab sampling may be appropriate to collect water chemistry data for other parameters.
v. Shana Wisemen (FERC) stated that FERC is looking at understanding the effects of the Project, and they are also looking at how this would inform the future FERC license.
    1. Kent questioned if FERC considers the effects of continued operation and maintenance on the environment.
        a. Shana said that they do. Shana asked how information gained on Lake George would inform the license (and potential license requirements), especially since it is operated as a run-of-river (ROR) project.
vi. Nick Ettema (FERC) stated that, in general, certain parameters (such as chlorophyll-A) are not typically studied during relicensing because these parameters are most affected by outside impacts (upstream runoff, for example) and that change in Project operations would not affect this.
vii. Shana clarified that 'baseline conditions' does not refer to pre-Project conditions, but rather, what the condition is today.
viii. Nick stated that he agrees that DO/temperature may likely be needed and added that he likely does not need to know types of algae, etc. as this won't inform the Project license.
    1. Kent mentioned that some things, such as odor of the lake, effects to recreation, etc. are affected by algae blooms.
        a. Lesley suggested to Kent that perhaps this topic is an example of something that could be looked at outside of the FERC process, due to upper watershed runoff contributing to this issue, rather than the Project.
ix. Lesley asked the group for input on WQ data sonde locations.
    1. Kent mentioned that Lake Louise is not included and stated that he would like some WQ information for Lake Louise so that they can understand the pre-restoration characteristics.
x. Shana mentioned that FERC may need a decommissioning plan sooner rather than later.
    1. Lesley stated that currently the decommissioning plan is proposed to be provided in the Draft License Application (DLA). Lesley asked Shana if FERC is now requesting to see this earlier?
        a. Shana said yes, FERC would like to see this Decommissioning Plan with the Initial Study Report.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

xi. Nick stated that the purpose of this phone call is work to find common ground, but ultimately the FERC will issue a Study Plan Determination. Shana added that no decisions are being made today.

xii. Cheryl Laatsch (Wisconsin DNR) reminded all that the State will be issuing a 401 Water Quality Certificate (WQC). She added that a lot of what Wisconsin DNR has requested will be required for the WQC because this is information that the State will need.

3) Aquatic invasive species
   a. Lesley stated that the current PSP includes an aquatic invasive species (AIS) assessment for Lake George only. She asked for clarification regarding AIS study requests for Lake Louise.
      i. Kent stated that there is a case to be made that it would be a good thing to better understand AIS in Lake Louise, because it will be there for another seven years or so.
      ii. Lesley asked Wisconsin DNR to clarify their AIS and terrestrial invasive species requests – and specifically requested clarification regarding the location for the requested studies.
         1. Wisconsin DNR stated that this request is for the entire Project Area.
4) Lake George fishery & potential biological impacts
   a. Lesley stated that fish species data are available for Lake George; surveys were last conducted approximately 20 years ago. The Project continues to be operated as a ROR project and approach velocities are low (reducing risk of impingement or entrainment). Are studies needed to evaluate the fishery, or is existing data sufficient to inform the FERC process and potential future management?
      i. Kent said his issue is that the data currently available is not recent data. Kent stated that collection of fishery data would be baseline information to determine what potential effects would be.
      ii. Gary stated that this information would help inform better management of the fisheries.
   b. Lesley asked Cheryl what type of fisheries management Wisconsin DNR would suggest.
      i. Cheryl stated that current fisheries data is needed to help inform the development of any plan related to fisheries management.
   c. Gary mentioned that during the Kinni Corridor Committee planning process, Lake George management was discussed, and it was a priority for those on the committee.
      i. Lesley stated that she will follow up with Kevin to ask about the Lake George management discussions from the Kinni Corridor process.
   d. Kent added that he believes that macroinvertebrates also need to be studied and referred to their study request for details.
5) Hydrologic Impacts
   a. Kent explained that he has concerns related to the ROR operation. He is aware of non-compliance in the 1990s. Mentioned that there was a 1998 letter from DNR requesting a change in protocol related to trash rack operations, and stated that he believes that the protocol was likely implemented in 1999. Kent is not sure if compliance with ROR requirements was studied after this change of operations protocol. Kent would like a

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

review of operating history to see if ROR is currently being achieved and if the current protocol is appropriate to maintain ROR.

b. Kent asked Wisconsin DNR and FERC what data is currently being submitted (in particular, since 1999).
    i. Cheryl stated that Brian (RFMU, Project operator) has been good about providing notices of non-compliance (due to unexpected maintenance, etc.). Cheryl stated that they have not required data.

6) Questions
    a. Kent asked Shana what additional information he should provide for comments on the PSP. Shana said that in general, some comments on the PSP can say "We continue to recommend XYZ, due to XYZ (or refer back to the request)." She also said that sometimes conversations result in modified study requests.
    b. Shana added that FERC recommended RFMU host this discussion because it helps FERC and all parties better understand needs, requests, justification, etc.
    c. Shana reiterated to RFMU that FERC would like to see a decommissioning plan sooner than later.
    d. Lesley asked Shana about the proposed revised study schedule (with the Initial Study Report submitted during the winter of 2020 opposed to July 2020) – and if she thinks FERC will allow it.
        i. Shana can't speak as for FERC, but this revised schedule might be a good and reasonable. Shana added that RFMU's proposed submittal date of the Initial Study Report might be a good time to see a decommissioning plan.
            1. Dan Helsel (Wisconsin DNR) asked if there is a way Wisconsin DNR could offer support for the proposed (accelerated) schedule and seeing the decommissioning plan early. Shana said that she can't speak on behalf of FERC, but Wisconsin DNR has now expressed this support on this phone call, and also could express support in their comments.
    e. PSP comment deadline 5/12 (Sunday). Due to the date falling on the weekend, comments will be due the end of the next business day (COB Monday 5/13).
    f. Lesley thanked everyone for their time and participation. The meeting concluded at 4:30 PM CST.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Subject: FW: River Falls follow up

From: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Sent: Tuesday, May 21, 2019 10:13 AM
To: Brotkowski, Lesley <LBrotkowski@trccompanies.com>; Christopher Chaney <Christopher.Chaney@ferc.gov>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>; Kevin Westhuis <kwesthuis@RFCITY.ORG>
Subject: RE: River Falls follow up

Correct. Study boundaries are not limited to project boundaries; they can expand beyond the existing project boundary if that's what is needed for the study. You will not need to nail down a new, proposed project boundary for Junction Falls until the DLA and/or final license application.

From: Brotkowski, Lesley [mailto:LBrotkowski@trccompanies.com]
Sent: Tuesday, May 21, 2019 11:08 AM
To: Shana Wiseman <Shana.Wiseman@FERC.GOV>; Christopher Chaney <Christopher.Chaney@ferc.gov>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>; Kevin Westhuis <kwesthuis@RFCITY.ORG>
Subject: RE: River Falls follow up

Thanks Shana. Yes, that makes sense.

For the purpose of studies then, we can go by a paper version of the approx. project boundary (what it should be based on regs, since one doesn't formally exist now), study areas within that area (for cultural resources for example), but formally propose a new project boundary (with survey data) in the license application of the northern (Junction Falls) area only.

Lesley

From: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Sent: Tuesday, May 21, 2019 10:00 AM
To: Brotkowski, Lesley <LBrotkowski@trccompanies.com>; Christopher Chaney <Christopher.Chaney@ferc.gov>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>; Kevin Westhuis <kwesthuis@RFCITY.ORG>
Subject: RE: River Falls follow up

Lesley,

You would need to provide us with what is existing (e.g. current Exhibit G and what you believe is in the project boundary) and propose what the new project boundary would be for the upper, Junction Falls dam and facilities in your final license application. You would also would need to tell us all the facilities planned for decommissioning and/or removal (i.e. the lower Powell Falls dam and associated facilities), but you do not have to give us a proposed project boundary for the "project" you are removing.

Instead of proposing to remove facilities from the boundary, rather, you are proposing a new project boundary that only includes those facilities necessary for the operation and maintenance of the Junction Falls dam and associated facilities. Does this all make sense?

Shana

From: Brotkowski, Lesley [mailto:LBrotkowski@trccompanies.com]
Sent: Tuesday, May 21, 2019 10:47 AM
To: Christopher Chaney <Christopher.Chaney@ferc.gov>; Shana Wiseman <Shana.Wiseman@FERC.GOV>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>; Kevin Westhuis <kwesthuis@RFCITY.ORG>
Subject: RE: River Falls follow up

Thanks Chris. This Project is a bit unique. We're going through relicensing for one of the two dams under the same FERC Project number. The second dam is proposed to be decommissioned and removed. To sum up, we need to define an existing Project Boundary for the entire area as it should be based on regs and survey it, then propose to remove the southern ½ upon decommissioning/removal of the lower dam. Correct?

Thanks,
Lesley

From: Christopher Chaney <Christopher.Chaney@ferc.gov>
Sent: Thursday, May 16, 2019 1:23 PM
To: Brotkowski, Lesley <LBrotkowski@trccompanies.com>; Shana Wiseman <Shana.Wiseman@FERC.GOV>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>
Subject: RE: River Falls follow up

Lesley,

Unfortunately, when this project was licensed, FERC's regulations did not require a definitive boundary to be depicted on the Exhibit Gs for minor licenses. Based on the drawing, it appears to me the licensee decided not to show the boundary. Many other projects of this vintage have Exhibit Gs without project boundaries.

I'm guessing you're asking as part of a relicensing effort, so you'll have to go by what the current regulations say the boundary should enclose to determine where it should fall.

Please let me know if I can be of any further help.

Regards,

Chris
202-502-6778

From: Brotkowski, Lesley [mailto:LBrotkowski@trccompanies.com]
Sent: Thursday, May 16, 2019 1:49 PM
To: Shana Wiseman <Shana.Wiseman@FERC.GOV>; Christopher Chaney <Christopher.Chaney@ferc.gov>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>
Subject: RE: River Falls follow up

Thanks Shana.

Christopher, we have a question regarding the River Falls Hydro (P-10489) Project Boundary and Shana referred me to you. Please review the attached map of the current Project Boundary and our email dialogue below. We'd like to request your interpretation of the riverine section below the Powell Falls dam.

Thank you,
Lesley

From: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Sent: Thursday, May 16, 2019 11:53 AM
To: Brotkowski, Lesley <LBrotkowski@trccompanies.com>
Cc: Krchnavek, Elizabeth <EKrchnavek@trcccompanies.com>
Subject: RE: River Falls follow up

From the looks of this very old Exhibit G (our exhibit G's do not look like this anymore for a reason) I would agree that it appears the land immediately adjacent to the Junction Falls Powerhouse does not appear to be included. As far as the riverine section below the Powell Falls dam I can't honestly tell so I think the next step is to check with compliance and see what their interpretation is of the map. Christopher Chaney would be the contact person. That said, generally we include the tailwater area in project boundaries based on the new licenses we've issued in recent years.

From: Brotkowski, Lesley [mailto:LBrotkowski@trccompanies.com]
Sent: Thursday, May 16, 2019 11:53 AM
To: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>
Subject: RE: River Falls follow up

Thank you Shana! Based on the attached map from the FERC files, it looks like the current Project Boundary (which isn't actually labeled) would start around Cedar Street to the north, include the waterway (riverine section and impoundments) and immediately adjacent shoreline from that point south ending at the Powell Falls dam and powerhouse (with no tailwater area specifically included). Or is the riverine section below the Powell Falls dam also included up to the edge of the page? It's hard to tell if the riverine section below Powell Falls is simply showing the river within the corporate limits (similar to South Fork) or if it's meant to be a part of the boundary. It's not clearly labeled, so up for interpretation. The Junction Falls Powerhouse would also be included, but it doesn't appear the land immediately adjacent is in the current boundary; would you agree?

Let me know your thoughts on the areas up for interpretation.

Thank you!
Lesley

From: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Sent: Thursday, May 16, 2019 10:10 AM
To: Brotkowski, Lesley <LBrotkowski@trccompanies.com>
Subject: RE: River Falls follow up

Hey Lesley,

Luckily my sources work fast. ☺ Attached is the current Exhibit G for the P-10489 River Falls Project and then a list of when each exhibit was last updated. It looks like the exhibit G was last updated in 1988.

Shana

From: Brotkowski, Lesley [mailto:LBrotkowski@trccompanies.com]
Sent: Thursday, May 16, 2019 10:04 AM
To: Shana Wiseman <Shana.Wiseman@FERC.GOV>
Cc: Krchnavek, Elizabeth <EKrchnavek@trccompanies.com>
Subject: RE: River Falls follow up

Good Morning Shana,

Did you have any luck tracking down the Project Boundary in the FERC files for the River Falls Project?

Thanks!
Lesley

Lesley Brotkowski
Senior Consultant



150 North Patrick Blvd, Suite 180, Brookfield, WI 53045
C 402.238.7789 | **F** 207.621.8826
E lbrotkowski@trccompanies.com
LinkedIn | Twitter | Blog | TRCcompanies.com

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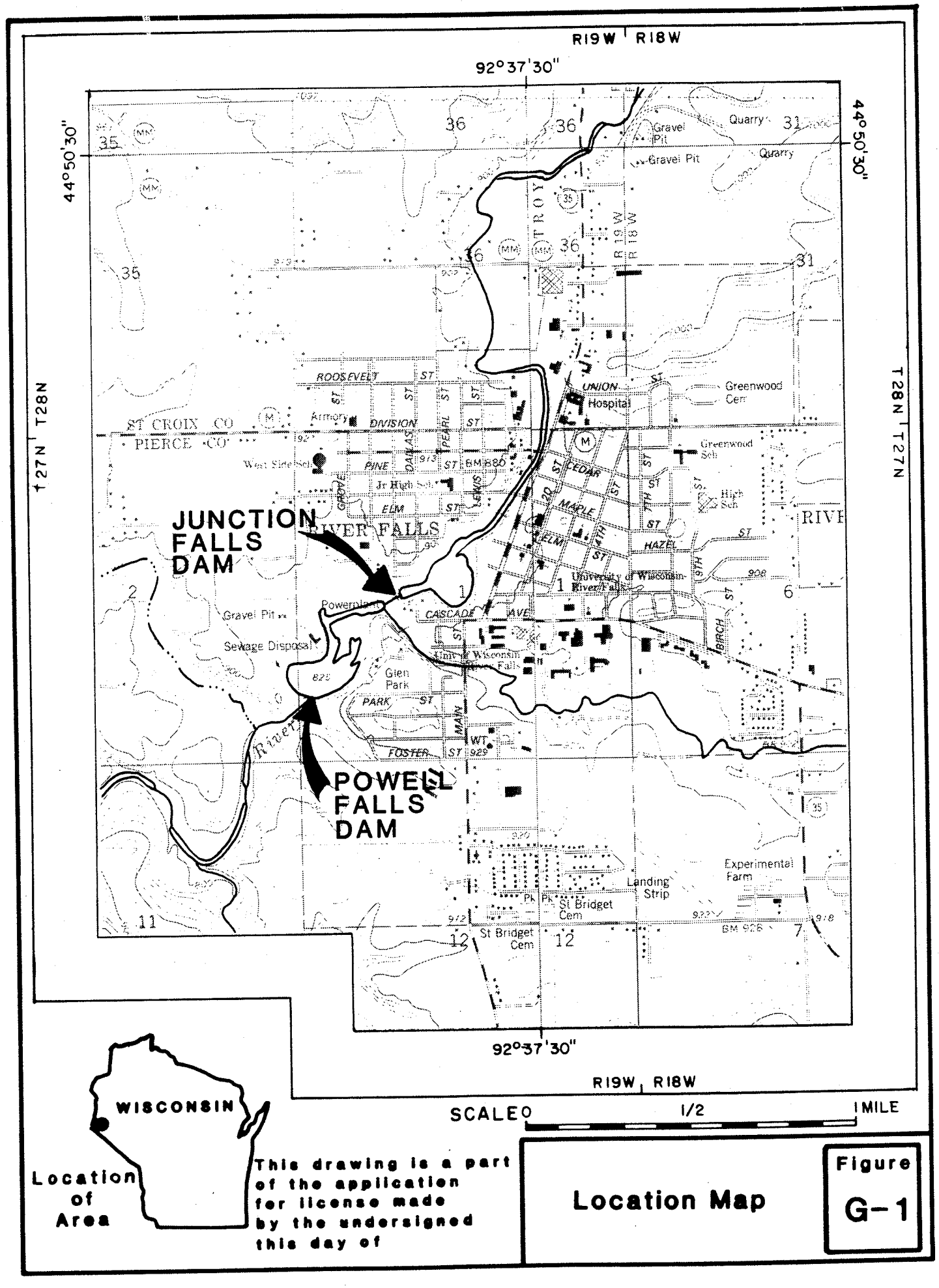

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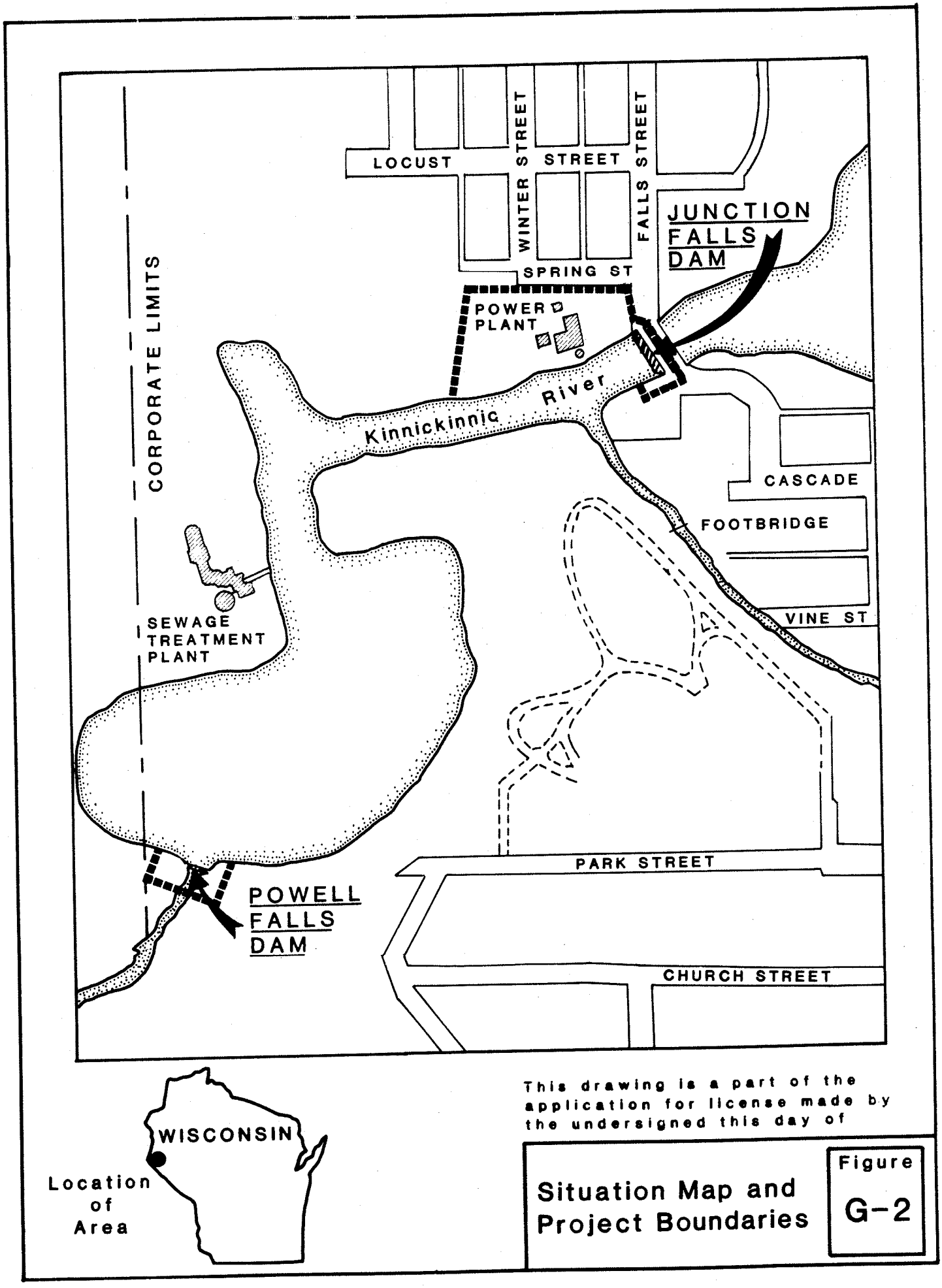
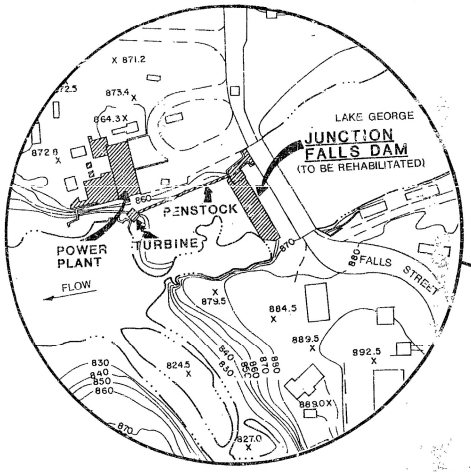
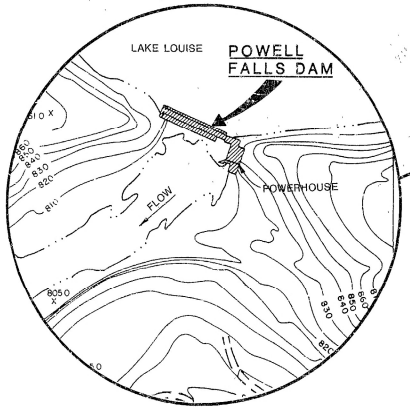




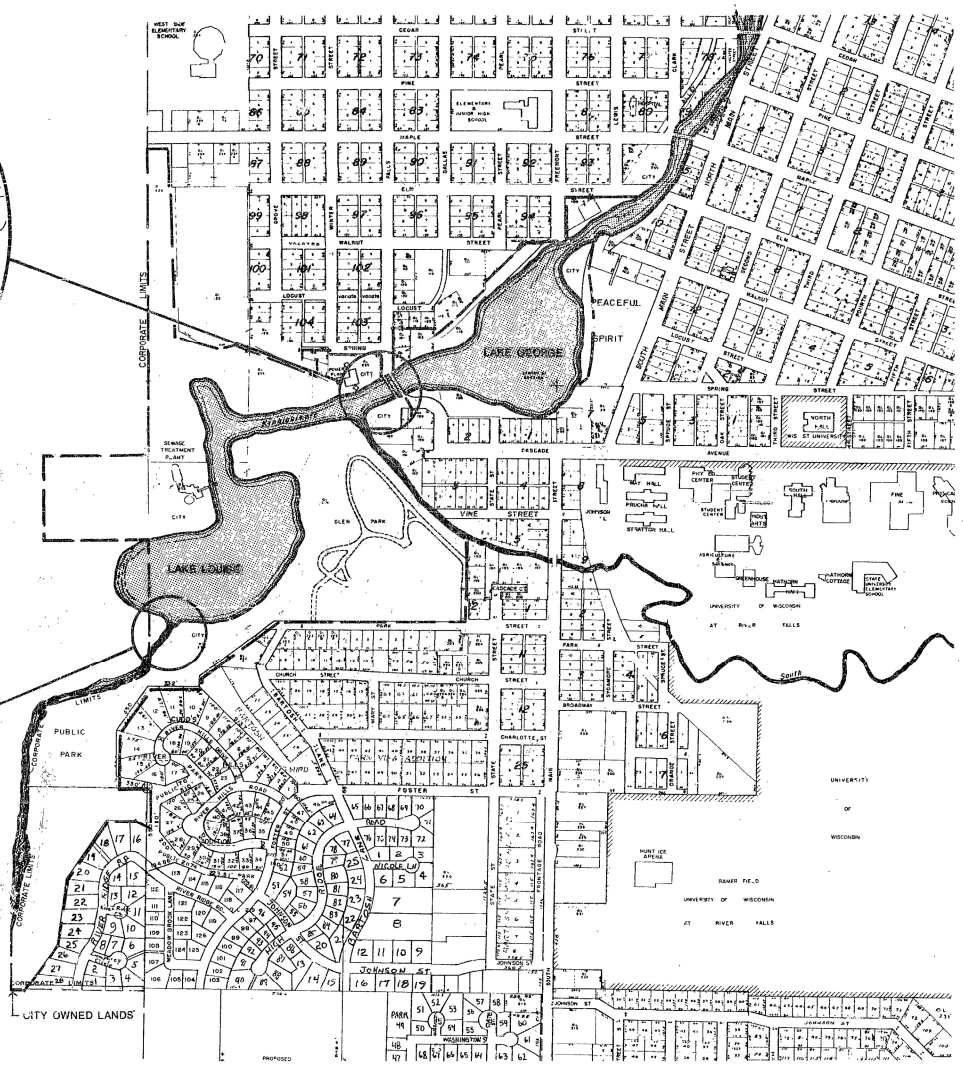
SITE PLAN

100' 0 100' 200'
SCALE: 1"=100'



SITE PLAN

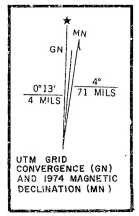
100' 0 100' 200'
SCALE: 1"=100'



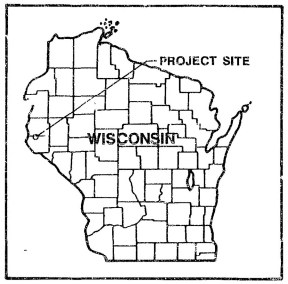
GENERAL PLAN

400' 0 400' 800'
SCALE: 1"=400'

DECLINATION DIAGRAM

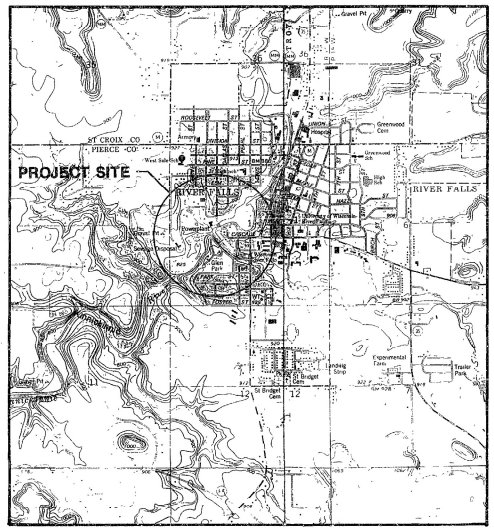


UTM GRID CONVERGENCE (GN) AND 1974 MAGNETIC DECLINATION (MN)



VICINITY MAP

NO SCALE



LOCATION MAP

2000' 0 2000' 4000'
SCALE: 1"=2000'

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM, 1929 ADJUSTMENT

This drawing is a part of the application for license made by the undersigned

this 12 day of April, 1988.

By: Jerry E. Wilkens

Jerry E. Wilkens, Mayor
City of River Falls, Wisconsin

EXHIBIT G-1 SHEET 1 OF 1

RIVER FALLS MUNICIPAL HYDROELECTRIC FACILITIES
CITY OF RIVER FALLS, WISCONSIN

PROJECT LOCATION & IMPOUNDMENT MAP

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City of River Falls Municipal Utilities
River Falls, Wisconsin

River Falls Hydroelectric Project (FERC Project No. 10489)

Consultation Documentation

Date	May 24, 2019
Person documenting conversation	Lesley Brotkowski, TRC
Discussion participants	Nick Utrup, USFWS and Lesley Brotkowski, TRC
Subject of conversation	Mussel Study

Summary of Conversation

Lesley provided an update of the River Falls Hydroelectric Project (Project) and informed Nick we are working on the Revised Study Plan (RSP). Lesley asked Nick if he had any concern regarding mussels with the proposed dam removal and if he thought a mussel survey was necessary in the Kinnickinnic River. Nick said he typically defers to Lisie Kitchel's (Wisconsin DNR malacologist) expertise and if Lisie does not think a survey is necessary, the USFWS was unlikely to request a mussel survey. Nick agreed that we are unlikely to find rare mussels in the Kinnickinnic River based on the river type [cold water trout fishery].

Mussels are known to occur in the St. Croix River. Nick is not aware of any USFWS mussel surveys in the St. Croix River. Lesley asked if we can assume presence of rare mussels in the St. Croix and, if needed, get an incidental take permit for dam removal activities. Nick stated that the Licensee would need to go through formal Endangered Species Act (ESA) consultation to get a determination from the USFWS. USFWS would want to evaluate the Project Decommissioning Plan to make this determination.

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FEDERAL ENERGY REGULATORY COMMISSION
COMMUNICATION MEMORANDUM

DATE: June 5, 2019

FROM: Nicholas Ettema, Fish Biologist
Division of Hydropower Licensing
Office of Energy Projects

TO: Public Files for the River Falls Hydroelectric Project
(FERC Project No. 10489-016)

SUBJECT: Phone and email communication with City of River Falls, Wisconsin, regarding clarification of staff comments on the Proposed Study Plan for the River Falls Project.

On May 23, 2018, I received a telephone call from Lesley Brotkowski, an authorized agent for the River Falls Project No. 10489, regarding clarification of staff comments on the Proposed Study Plan for the project issued on May 8, 2019.

Ms. Brotkowski asked if I could clarify staff's expectations for "periodic" monitoring of temperature and dissolved oxygen at various depths in Lake George. I indicated that monthly samples could be appropriate to describe stratification patterns in reservoirs like Lake George and also noted that stratification monitoring could be performed during maintenance and downloading of the continuous water quality loggers proposed by City of River Falls.

Secondly, Ms. Brotkowski asked whether or not staff were still interested in a Mussel Survey downstream of the project after the Wisconsin DNR filed comments on May 10, 2019, indicating that mussel surveys were not needed at this time. In addition, Ms. Brotkowski asked what methods and what level of effort staff was considering for a mussel survey. I informed Ms. Brotkowski that while the Wisconsin DNR may not need this information, it is still possible that staff may recommend a mussel survey to obtain information for its analysis of project-related effects and satisfy information needs for consultation requirements under section 7 of the Endangered Species Act. As for methods and level of effort, I indicated that there would be several acceptable methodologies for a mussel survey including visual surveys, viewing buckets, and snorkel surveys in representative reaches in the Kinnickinnic River while snorkel and/or scuba may be necessary to survey deeper areas near the mouth of the Kinnickinnic River in the St. Croix River. Ms. Brotkowski noted that she would contact the U.S. Fish and

Wildlife Service regarding its information needs to conduct consultation for any listed mussels that may be present in the Kinnickinnic River or near the mouth of the Kinnickinnic River, in the St. Croix River.

In addition, Ms. Brotkowski asked if I could clarify staff's recommendation for a riverine habitat evaluation including additional stream habitat data collection. In response to this question, I sent a follow up email to Ms. Brotkowski on May 31, 2019. The email communication is attached to this memo.

Enclosures: Email sent from Nicholas Ettema to Lesley Brotkowski

Clarification of Staff Comments on PSP (P-10489-019)

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From: Nicholas Ettema
To: Brotkowski, Lesley
Subject: Clarification of Staff Comments on PSP (P-10489)
Date: Friday, May 31, 2019 2:49:00 PM

Good afternoon Lesley,

In response to your phone call regarding clarification of staff's comments on the PSP for the River Falls Project (P-10489), I have drafted some additional guidance regarding staff's recommendations for the River Habitat Evaluation. See my comments below.

Between Powell Falls dam and the St. Croix River, the City of River Falls should use existing information (longitudinal profiles, confluence of large tributaries, aerial imagery, etc.) to identify distinct reaches.
Based on this information, City of River Falls should identify representative reaches such as potential depositional reaches (i.e., areas with low slope and/or wide floodplains and backwatered reaches), transport reaches, and other distinct reaches (e.g., reaches with floodplain infrastructure) for potential assessment. At selected representative reaches, the City of River Falls should map mesohabitats (riffle, run, pool, etc.) and collect additional quantitative habitat data in each mesohabitat type. Quantitative data collection should include but not necessarily limited to the following: cross-sectional profiles that measure bankfull width, bankfull depth, flood-prone width or valley width, wetted width and depth, substrate size, embeddedness, depth of fine sediment, and longitudinal slope. In addition a pebble count of at least 100 measurements should be collected in each study reach. If active point bars or lateral bars are present (any depositional bar may be sufficient), the median diameter of the 10 to 30 largest freshly mobilized clasts should be recorded from at least one depositional bar. Other parameters such as large woody debris, number of pools, and pool depth should be quantified for a given study reach. Photos and general descriptions of the river channel and streambanks such as a visual estimate of substrate cover within habitat types, approximate size of immobile substrate within riffles, streambank stability observations, and a general description of floodplain deposits consistent with information provided from the reconnaissance level assessment should also be included.

Let me know if you have any additional questions,

Best,
Nick

Nicholas Ettema
Fish Biologist
FERC – Division of Hydropower Licensing
Chicago Regional Office
(312)-596-4447

20190605-4003 FERC PDF (Unofficial) 06/05/2019 01:24:50 PM

Telephone Memo

To: Public Files
From: Michael Davis
Date: June 5, 2019
Dockets: P-10489-000
Project: River Falls Hydroelectric Project

Subject: Telephone call with Lesley Brotkowski concerning Project No. 10489-000

On June 5, 2019, Michael Davis and Shana Wiseman had a telephone call with Lesley Brotkowski, the licensee for the River Falls Hydroelectric Project. Michael and Shana called Ms. Brotkowski to explain to her that an email sent by the Wisconsin State Historic Preservation Office concerning a meeting with the Commission and the licensee would likely occur after the Revised Study Plan was submitted to FERC. Michael and Shana further explained that the Commission could not participate in this meeting if it occurred after the Revised Study Plan submission date, which is on June 11, 2019.

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Telephone Memo

To: Public Files
From: Michael Davis
Date: June 6, 2019
Dockets: P-10489-000
Project: River Falls Hydroelectric Project

Subject: **Telephone call with Lesley Brotkowski and Wisconsin SHPO concerning Project No. 10489-000**

On June 6, 2019, Michael Davis, Janet Hutzel, and Shana Wiseman had a telephone call with Lesley Brotkowski, the licensee for the River Falls Hydroelectric Project, and Kimberly Cook from the Wisconsin State Historic Preservation Office (SHPO) concerning the River Falls Hydroelectric Project's proposed area of potential effect (APE).

FERC staff stated that separating the proposed APE into two APE's would likely make aspects of the cultural review and reporting easier. Ms. Brotkowski stated that new information provided by the SHPO regarding the boundary of the Foster Cemetery led the licensee to believe that a previously proposed cemetery delineation study would now no longer be needed. FERC staff advised Ms. Brotkowski that making a justification for such a change would be necessary.

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River Falls Hydroelectric Project (FERC No. P-10489)

6/6/2019 Meeting Notes

Call to Discuss Proposed Cultural Resources Study

Meeting Date and Time:

Date: June 6, 2019
Time: 1:30PM – 2:00PM
Meeting via conference call

Purpose of the meeting:

- Call to discuss the proposed cultural resources study methodology for the River Falls Hydroelectric Project in River Falls, WI.

Participants:

- Kimberly Cook, Wisconsin SHPO
- Janet Hutzel, FERC
- Michael Davis, FERC
- Shana Wiseman, FERC
- Lesley Brotkowski, TRC
- Elizabeth Krchnavek, TRC

Notes:

1) Lesley Brotkowski (TRC) gave a brief update and overview of the Project and where we are in the FERC process. The purpose of the meeting is to continue discussions on the proposed cultural resources study methodology.
2) Michael Davis (FERC) asked about the Project Area of Potential Effects (APE) that is currently proposed as one contiguous APE.
    a. Janet Hutzel (FERC) explained that instead of one contiguous APE for the Project, she would like to see it separated by facility (Junction Falls Development and Powell Falls Development). She explained that this would likely make aspects of the cultural review and reporting easier, as one facility is being proposed to be relicensed, and the other decommissioned with dam removed.
    b. Shana Wiseman (FERC) agreed with Ms. Hutzel.
    c. Kimberly Cook (Wisconsin SHPO) agreed with Ms. Hutzel and stated that having the divided APE would help with clarity during the process.
3) Ms. Brotkowski asked if separate cultural resources reports would be needed for each APE.
    a. Mr. Davis stated that it can be done either way, but that separate reports are not required.
    b. Ms. Cook stated that she would prefer separate reports but added that it is not necessary. Ms. Cook stated that separate reports by the APE would make aspects of the review process easier, particularly since once the Section 106 process has been

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completed at the facility proposed for decommissioning, it would be eligible for purging in the future from the Wisconsin Historical Society's files.

4) Ms. Brotkowski asked Ms. Cook if the proposed depiction of the APE (as shown on a figure provided for discussion) is appropriate.
    a. Ms. Cook stated that the APE as depicted is likely appropriate but would need to review further. Ms. Cook added that the only change she could foresee would be if the architectural historian identified additional historic architectural sites associated with the hydro facilities that should be included in the APE.
5) Ms. Brotkowski explained that in the Proposed Study Plan (PSP), the Licensee proposed to delineate Foster Cemetery. Ms. Brotkowski explained that in the Revised Study Plan (RSP) this is no longer proposed, as it was discovered the Wisconsin SHPO has previously delineated the cemetery and has provided to the Licensee the shapefile of this previous delineation and it is outside of the Project Boundary and proposed APE. Ms. Brotkowski added that the cemetery will not be disturbed in any way. She stated that no ground disturbance would be proposed that would affect the cemetery. Ms. Brotkowski asked the group if anyone had any concerns with the removal of this aspect of the cultural resource study.
    a. Ms. Hutzel stated that she did not have concern with removing Foster Cemetery delineation from the cultural resources study. Ms. Hutzel added that because it is being removed from the PSP, an explanation of why it is being removed should be provided in the RSP.
    b. Ms. Cook did not express concern with the removal of the delineation of Foster Cemetery from the RSP. Ms. Cook added that what SHPO will look for in a management plan is a statement that acknowledges that the Licensee is aware of the cemetery, that it is outside of the Project Boundary, and that it will not be affected.
6) Ms. Cook asked if the surveyors to conduct the work have been chosen.
    a. Ms. Brotkowski stated that they have not yet been chosen and added that it may be the USACE.
    b. Ms. Cook asked that the surveyors have the correct experience and credentials and are familiar with the state of Wisconsin. She offered to hold a conference call with the surveyors to make sure they understand the Wisconsin SHPO expectations.
7) Ms. Brotkowski asked if anyone had any other comments or questions. With no further comments or questions, Ms. Brotkowski thanked everyone for their time and concluded the meeting.

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APPENDIX E
HISTORIC FISHERIES SURVEYS

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Wisconsin Department of Natural Resources (Wisconsin DNR). 1962a, September 28. Lake Survey Report: Kinnickinnic Pond.

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Agriculture

Lake Survey Report

Waters Kinnickinnic Pond T. 27N R. 19W S. 1 County Pierce

Quadrangle River Falls (Topog) Date of Survey 9-28-62 Surface Area 15 A. - Wis. L.

Management Classification Trout lake

Max. Depth 15' Average Depth 5' Drainage Area Kinnickinnic Watershed

Purpose of Survey Biological Survey

Previous Investigations Reconnaissance survey 1951

Morphometry This pond is an artificial body of water formed by a dam at its west end. The lake is larger than it is wide with one bay located midway on the south shore. Its main axis lies in an east west direction.

Inlet Name	Location	Flow C.F.S.	Outlet Name	Location	Flow C.F.S.
Kinnickinnic River	Pierce County	20	Kinnickinnic River	Pierce County	20

Dam Concrete owned by City of River Falls; 45' head, water level is controlled by steel gates.

Bottom types %: bedrock ____ boulder ____ rubble ____ gravel ____ sand 30

clay ____ marl ____ hardpan ____ silt 70 detritus ____

Watershed cover and use Pond is located in the City of River Falls. Private homes and small industry developments surround the pond.

Immediate shoreline Sharp drop-off in vicinity of dam - rest of shoreline has gradual drop-off.

Topography of watershed The Kinnickinnic Watershed is gently rolling farm land.

Vegetation	Abundance	Species	Abundance	Species	Abundance
Lemna	S				
Sagetteria	S				
Potomogetan Sp.	S				
Cattail	S				

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Accessibility Only access was at a private landing. Entire shoreline in private or city ownership.

No. cottages Private homes all around lake No. boats 3

No. resorts and location 0

Bench mark Base of drain tile located on west side dam abutment immediately below the dam.

Water level: Normal x Below normal ____ Above normal ____

Weather conditions Clear - sunny

Secchi Disk 4' Water color White

Air Temp. 74°

Depth	0	5	10	15	17							
Resistivity	3400											
H_2O Temp.	66	66	65	63	62							
pH	8.0											
M.O.A.	145											
D.O. ppm	10.5	10.5	9.4	8.0								

Gear used: Fyke net ____ Boom shocker: AC x DC ___ Seine ____

No. net sets (overnight) ___; No. fish captured ___; Ave. No. of fish per set ____

No. shocking stations 1. Total distance shocked Entire perimeter of lake (See map)

No. fish captured 114. Ave. No. of fish/station ____

Area seined ____. No. fish captured ____ Ave. No. fish/haul ____

Species captured ____

Depth and bottom type at netting and/or shocking location:

	Gear	Depth	Bottom type		Gear	Depth	Bottom type
1.				6.			
2.				7.			
3.				8.			
4.				9.			
5.				10.			

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Past Management Activities Reconnaissance survey in 1951. Stocked with rainbow and brook trout until 1958.

Fish removal dates None

General statement on winterkill data None recorded.

Spawning conditions by species Fair for bass and crappie; marginal for carp; marginal for trout.

History Panfish and trout have been caught in the past. Bass have also been supposedly caught. The pond was stocked with trout from 1951 to 1958.

Pollution Some oil pollution from filling station runoff.

Habitat development potential and remarks: excellent ___ good x fair ___ poor ___ Eliminate pollution. Brush shelter installation in bay.

Ecological classification Trout, panfish lake

Special problems Carp are present.

Management recommendations Eliminate fish population by using toxicants from Hwy. 35 to dam and restock with brown trout.

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Remarks Thirty-one brown trout were captured along with 17 black crappies. There is a fair population of large carp present which will average about 20" in length. In my opinion, an eradication program to eliminate all of the present species of fish in the pond and then reintroducing trout would produce quality fishing.

The following data will be attached:

1. An outline map with the following information:
   a. Depths if a contour map is not available
   b. Netting, shocking, seining locations
   c. Public access points
   d. Location of extensive aquatic vegetation beds
   e. Bench mark location
2. Stocking records
3. Length frequency sheets on the principle species of fish captured

Date 12-18-67 Signature Fred Franklin

3-16-61
es

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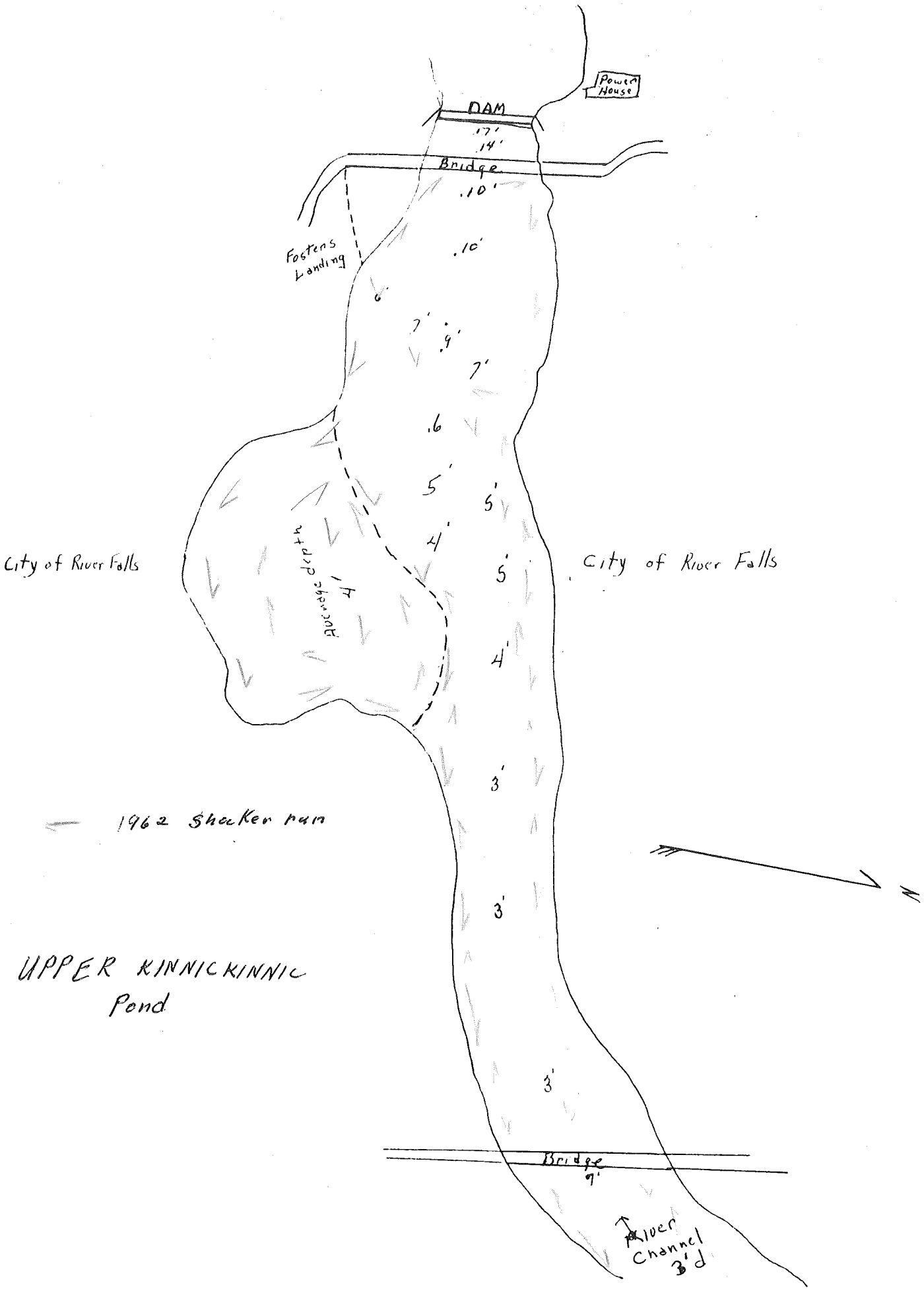

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LENGTH FREQUENCY SHEET

Waters Upper Kinnickinnic Pond Location Pierce County Date 9-28-62

Gear Used 230 AC Night survey ____ Daylight survey x

R - 5000

Secchi Disk ____ H_2O Temp. 55° Weather conditions Clear

Total Length in inches	Brown Trout	Black Crappie	White Sucker	Green Sunfish	Carp 26½"	Black Bullhead		
1.0- 1.4								
1.5- 1.9							Bluntnose Minnow - C	
2.0- 2.4							Creek Chub - C	
2.5- 2.9							Bigmouth Shiner - C	
3.0- 3.4			1	2				
3.5- 3.9						4		
4.0- 4.4						13		
4.5- 4.9						7		
5.0- 5.4			1					
5.5- 5.9			1			1		
6.0- 6.4			3					
6.5- 6.9			1	1				
7.0- 7.4			1			1		
7.5- 7.9		1	1			1		
8.0- 8.4	2							
8.5- 8.9	4	3				2		
9.0- 9.4	2	1	2					
9.5- 9.9	4	4	2					
10.0-10.4	3	2	1					
10.5-10.9	3	3	4					
11.0-11.4	2	1	3					
11.5-11.9		1						
12.0-12.4	1	1						
12.5-12.9								
13.0-13.4	2							
13.5-13.9								
14.0-14.4	2							
14.5-14.9	1							
15.0-15.4	3							
15.5-15.9	1							
16.0-16.9								
17.0-17.9	1							
18.0-18.9					1			
19.0-19.9					5			
20.0-20.9					5			
21.0-21.9					1			
22.0-22.9					1			
23.0-23.9								
24.0-24.9								
25.0-25.9								
Total Captured	31	17	21	3	13	29		
No. Counted	3		45		37			
Grand Total	34		66		50			
Relative Abundance	C	S	C	S	C			

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Wisconsin Department of Natural Resources (Wisconsin DNR). 1962b, September 28. Lake Survey Report: Lower Kinnickinnic Pond.

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Waters File

Boom Shocker Survey Report

Waters Lower Kinnickinnic Pond County Pierce Date of Survey September 28, 1962

Resistivity 4000 Secchi Disk 8" pH _____

Weather conditions clear Air temp. 68° Water temp. 55°

Gear used 230 AC Distance between electrodes 12'

Purpose of survey: Fish collection

Daylight Shocking:
Time started 2:00 p.m.
Time quit 3:00 p.m.
Actual shocking hours ½

Night Shocking:
Time started _____
Time quit _____
Actual shocking hours _____

Direction of Shocker:
clockwise

Bottom Types Shocked %: bedrock ___ sand 20 gravel ___ silt 80 marl ___
detritus ___ hardpan ___ boulder ___ rubble ___

Cover Types Shocked %: open shoal 20 open weed bed _____
dense weed beds 80 stump area _____

Dropoff %: sharp _____ gradual 100% flat _____

Distance covered approximately ½ mile

Type of habitat and location in which most fish were shocked Fish were found all over the basin; no concentrations were noted; carp were observed surfacing all over the pond, especially towards the dam.

1. Local public interest College students observed the operation.

2. Publicity given Contacted Dr. Martin Laakso at River Falls College.

3. Gear efficiency Very effective.

4. No. dip netters 2

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5. Limiting factors or positive factors experienced in the survey:

None.

6. **Remarks:** This pond receives the sewage discharge from the city of River Falls disposal plant. It is quite shallow and has dense beds of aquatic vegetation and filamentous algae covering at least 80% of the surface area as shown on the rough sketch. The average depth is about 2.5 feet. It is my opinion that this pond winterkills annually. However, some fish survive by migrating upstream above the sewage plant outlet. I can foresee no possible future management of this pond.

Carp, suckers and minnows were the only species of fish shocked in the pond. Carp and minnows were very abundant with several year classes of carp being found in the survey.

Cooperators: Dr. Martin Laakso and students.

Date Jan 3-63 Signature Fred Frankenberger

Attach: Outline map showing shocking run locations.

Length frequency sheets on species of fish captured.

es
3-10-61

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LENGTH FREQUENCY SHEET

Waters Lower Kinnickinnic Pond Location Pierce County Date September 28, 1962

Gear Used 230 A.C. Night survey _____ Daylight survey x

Secchi Disk _____ H_2O Temp. 55° Weather conditions clear

Total Length in inches	Carp	Common Sucker	Name of Species	Resistance 4000
1.0- 1.4				
1.5- 1.9				
2.0- 2.4			Bigmouth shiner	A
2.5- 2.9			Creek chub	A
3.0- 3.4			Bluntnose minnow	A
3.5- 3.9				
4.0- 4.4				
4.5- 4.9				
5.0- 5.4				
5.5- 5.9				
6.0- 6.4				
6.5- 6.9		1		
7.0- 7.4		3		
7.5- 7.9		6		
8.0- 8.4		1		
8.5- 8.9	1			
9.0- 9.4				
9.5- 9.9				
10.0-10.4	2			
10.5-10.9	1			
11.0-11.4	4			
11.5-11.9	2			
12.0-12.4	5			
12.5-12.9	9			
13.0-13.4	5			
13.5-13.9	4			
14.0-14.4	2			
14.5-14.9	4			
15.0-15.4				
15.5-15.9				
16.0-16.9				
17.0-17.9	1			
18.0-18.9	1			
19.0-19.9				
20.0-20.9				
21.0-21.9				
22.0-22.9				
23.0-23.9	1			
24.0-24.9				
25.0-25.9	1			
Total Captured				
No. Counted				
Grand Total				
Relative Abundance				

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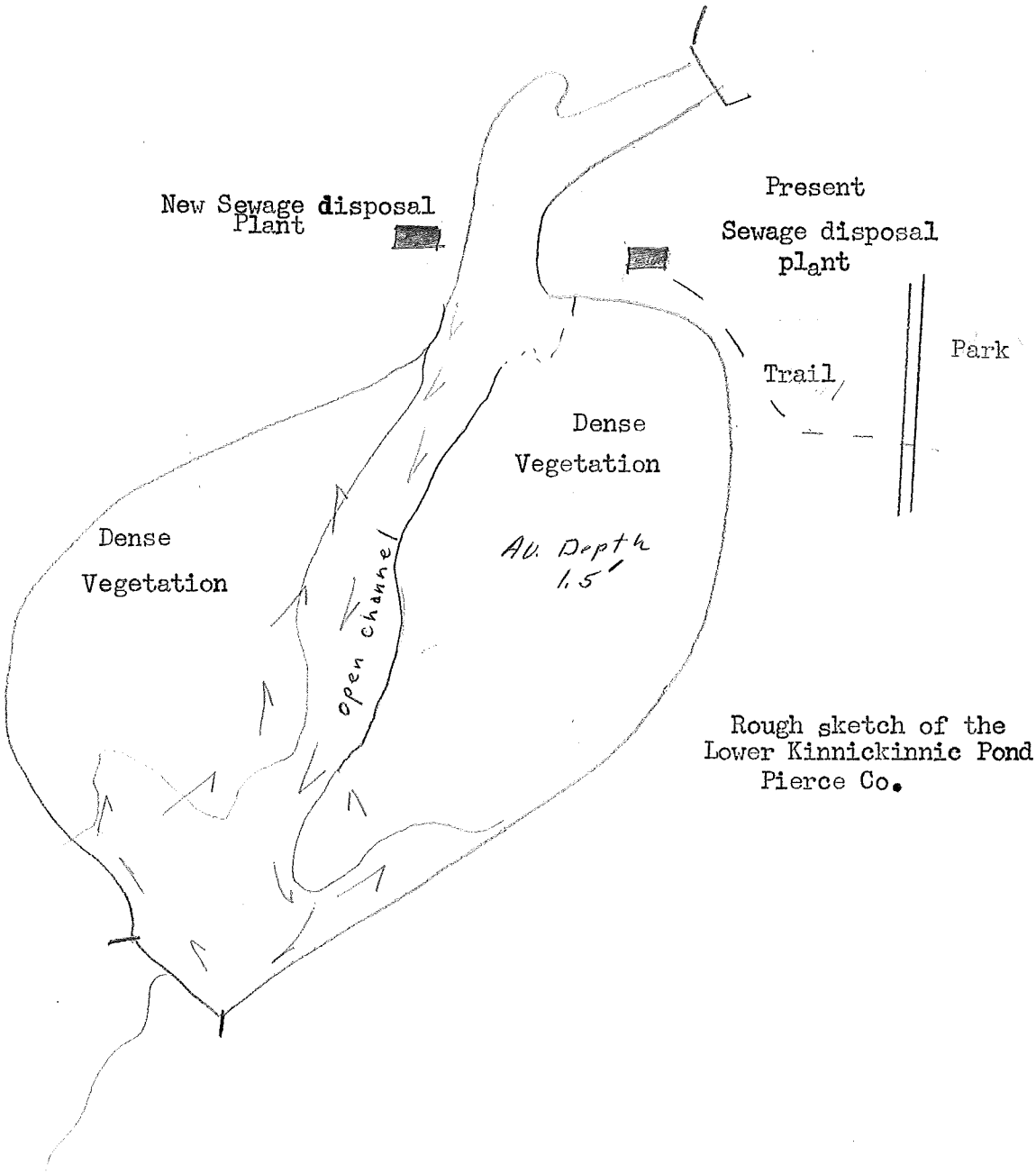

Rough sketch of the
Lower Kinnickinnic Pond
Pierce Co.

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APPENDIX F
DRAFT RECREATION FACILITY/SITE INVENTORY FORM

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RIVER FALLS HYDROELECTRIC PROJECT
RECREATION SITE / FACILITY INVENTORY FORM

Inspector: _____ Date: _____ Time: _____

Facility Name: _____ Weather: _____

GPS Coordinates: _____

Recreation Facility (circle one):

Facility	Location	Associated Area
Paved trail	Along the shores of Lake George and the river upstream of Lake George	Junction Falls
Paved and dirt trails	On the southern shore of Lake Louise	Powell Falls
Dirt trails	Provide access through woodland habitat to the Kinnickinnic River below the Powell Falls Development	Powell Falls
Picnic area - northern shore of Lake George	On the northern shore of Lake George	Junction Falls
Fishing Pier	On the northern shore of Lake George	Junction Falls
Informal fishing area	Just below the Powell Falls Development	Powell Falls
Informal fishing area	Just below the Junction Falls Development	Powell Falls
Lake George boat launch area	On the northern shore of Lake George	Junction Falls
Kinnickinnic River boat launch area	On the Kinnickinnic River at the northern end of the Project Boundary	Junction Falls
Boat launch area below Lake Louise	Just below the Powell Falls Development	Powell Falls
Kinnickinnic River pedestrian bridge	Across the Kinnickinnic River connecting Heritage Park to Veterans' Park	Junction Falls
Glen Park extends beyond the Project Boundary; certain amenities are located inside the Project Boundary	West of the confluence of the South Fork of the Kinnickinnic River with the mainstem, on the southern shores of Lake Louise	Powell Falls
Public parking		
Other:		

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Amenities at the Site/Facility:

#	Type	GPS Coordinates	Condition (Good, Adequate, Poor)	Notes
	Trails (specify use and length)			
	Sanitation Facility			
	Picnic Table			
	Shelter			
	Grill			
	Boat Launch			
	Playground			
	Bench			
	Trash Receptacle			
	Interpretive Display			
	FERC Part 8 Sign			
	Other:			

Sanitation Facilities: (Yes/No)

Type	Unisex	# of Units Women	# of Units Men	Notes
Flush				
Portable				

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General Area:
Is the area associated with other facilities or activities? _____
General Topography: _____ Erosion/Soils: _____
Compaction: _____ Approximate Shoreline Footage: _____
Bank Fishing (Yes/No): _____

Access to the Facility:

_____ Water access	
_____ Paved access	_____ # of lanes
_____ Unpaved access (conventional motor vehicle)	_____ # of lanes
_____ Unpaved access (4WD vehicle)	_____ # of lanes
_____ Foot access (composition: _____)	_____ approx. width

Parking Areas:	Number	Surface
ADA spaces	_____	_____
Regular spaces	_____	_____
Vehicle and Trailer spaces	_____	_____

Boat Launch Facilities:
Hard surface _____ Gravel _____ Unimproved _____ Carry In _____
Associated Pier? _____

Fishing Piers:
Number: _____ Length: _____
Surface: _____ ADA accommodations: _____

Site Aesthetics:
Viewshed from facility/site: _____ Viewshed from shoreline: _____
1 – No noticeable development
2 – Very limited primitive development
3 – Five (5) or less buildings in view
4 – Six (6) to ten (10) buildings in view
5 – Ten (10) or more buildings in view
6 – Highly developed

Nature of abutting development/land use: _____

Evidence of use at facility/site: _____

*(C) Compaction, (E) Erosion, (G) Garbage, (GD) Ground disturbance, (HW) Human waste, (UI) Unauthorized improvements, (V) Vandalism, (VR) Vegetation removal, (O) Other (Specify)

Evidence of overcrowding: _____
*(A) Anecdotal information, (FA) facility/amenity at capacity, (I) Improper parking, (S) Signage, (SD) site degradation, (U) Unauthorized sites, (W) Waiting lines, (O) Other (Specify)

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Sketch:

List of Photos:

Number	Description

Notes:

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APPENDIX G
DRAFT RECREATION USER SURVEY FORM

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RIVER FALLS HYDROELECTRIC PROJECT
RECREATION USER SURVEY

Interviewer: _____ Date/Time: _____ Location: _____

Weather: _____ Air Temp: _____ Declined Survey: _____

Good Afternoon. My name is _____ and I am conducting a recreation use survey of visitors to the River Falls Hydroelectric Project (which includes Lake George and Lake Louise) for the City of River Falls. This information is being collected in connection with the FERC relicensing of the Project and will assist the City in understanding more about land and water based recreation in this area. Responses from the survey will remain anonymous. Would you mind answering a few questions?

1. Have you participated in this survey effort before?

   Yes_____ Thank you for your time. We are only interviewing each person once with this survey.

   No_____ Continue with Survey
2. Over age 18? _____ Gender: _____ Zip Code: _____
3. How many in your group, including yourself? _____
4. How many vehicles did your group use to come here? _____
5. How many people were in each vehicle? _____
6. When did you arrive and plan to depart?

   Arrived: Date: _____ Time: _____ AM PM

   Estimated Depart: Date: _____ Time: _____ AM PM
7. Are you a resident of the River Falls area? Yes ____ No ____
8. Have you ever visited the Project Area before? Yes____ No____

   a. If yes, typically, how many times a year do you visit the area within the Project Boundary for recreation? (Please see map for reference) _____

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9. Please indicate which of the following activities you participate or have participated in at the Project by season in the past five years. (Mark all that apply)

Activity	**Lake George, Lake Louise or the River?**	**This Trip**	**Spring (Mar. 20 – June 20)**	**Summer (June 21 – Sept. 22)**	**Fall (Sept. 23 – Dec. 21)**	**Winter (Dec. 22 – Mar. 19)**
Biking						
Birding/Nature Observing						
Canoeing/Kayaking						
Dog Walking						
Fishing from a Boat						
Fishing from Shore						
Fly fishing						
Ice/Winter Fishing						
Paddle Board/Tubing						
Photography						
Picnicking						
Walking/Running						
Sightseeing						
Cross country skiing						
Sunbathing						
Swimming						
Other:						

10. Of the activities listed above, which is your PRIMARY activity on this trip? _____

_____

11. Overall, how satisfied were you with the available number of recreation facilities? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why? _____

_____

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12. Please rate the condition of following amenities at this location:

	Poor		Fair		Excellent	N/A
Parking	1	2	3	4	5	
Facility Condition	1	2	3	4	5	
Variety of Amenities	1	2	3	4	5	
Toilets/Restrooms	1	2	3	4	5	
River Access	1	2	3	4	5	
Impoundment Access	1	2	3	4	5	
Overall Quality	1	2	3	4	5	

Please explain any poor ratings. _____

---

13. How would you rate this recreation site as a public recreation opportunity on a scale of 1 to 5?

1	2	3	4	5
No Value At All		Some Value		High Value

Notes: _____

_____

14. During your visit today what is your perception of the amount of use occurring at this site?

1	2	3	4	5
Not Crowded		Somewhat Crowded		Extremely Crowded

15. Would you return to this recreation site over the course of the next year? Yes____ No_____

16. What did you like most about your recreational experience today? _____

_____

17. What did you like least about your recreational experience today? _____

_____

18. Does this recreation site/facility serve your interests? Yes____ No_____

If not, why? _____

_____

19. Are you aware of any scenic views that are important or of value to the Project Area?

Yes_____ No_____

If yes, describe and identify the specific location of the scenic view. _____

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

20. The next questions relate to scenic views or aesthetics at the Project. Please respond with your perception of aesthetics to locations/areas that you are familiar with, only.

a) How satisfied are you with the scenic views/aesthetics at Lake George? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?: _____

b) How satisfied are you with the scenic views/aesthetics at Lake Louise? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?: _____

c) How satisfied are you with the scenic views/aesthetics at Junction Falls Dam? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?: _____

d) How satisfied are you with the scenic views/aesthetics at Powell Falls Dam? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?: _____

e) Overall, how satisfied are you with the scenic views/aesthetics at the Project? (circle number)

1	2	3	4	5
Not Satisfied at all	Slightly Satisfied	Satisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why?: _____

21. Do you have any additional comments regarding recreation opportunities or scenic views in connection with the Project?

_____
_____
_____

Thank you for your time and input.

20190611-5044 FERC PDF (Unofficial) 6/11/2019 1:24:50 PM

Document Content(s)

P-10489_River Falls RSP_Final.PDF.....1-446