

River Falls Hydroelectric Project (FERC P-10489)

Joint Workshop with the Common Council
and Utility Advisory Board

January 19, 2021



Agenda

- 1) FERC Schedule Review
- 2) USACE Planning Assistance for States (PAS) Program
- 3) Study Overview
- 4) Study Updates
- 5) Overview of Next Steps
- 6) Questions and Discussion

FERC Schedule

| Responsible Entity | Pre-Filing Milestone | Date |
|------------------------------|--|------------------|
| Licensee | File NOI/PAD with the FERC | 8/30/2018 |
| FERC, Stakeholders, Licensee | Scoping, study requests, proposed study plans, FERC study plan determination | 10/2018 – 7/2019 |
| Licensee | First study season | 7/2019 – 10/2019 |
| Licensee, Stakeholders, FERC | Initial study report, meeting, stakeholder comments, FERC study modification request | 1/2020 – 5/2020 |
| Licensee | Second study season | 5/2020 – 10/2020 |
| Licensee, stakeholders | Updated study report, meeting, stakeholder comments | 1/2021 – 5/2021 |
| Licensee | File draft license application | 4/2021 |
| Stakeholders | Draft license comments due | 7/2021 |
| Licensee | File final license application | 8/2021 |



USACE Planning Assistance to States (PAS) Program

- USACE cost-share program to assist with preparation of comprehensive plans for water and related land resources
- 50/50 cost share, with \$210,000 provided by USACE
- PAS Program used to support 2020 studies

Study Overview

| Study | 2019 | 2020 |
|---|------|------|
| Hydrologic & Hydraulic Evaluation | | ✓ |
| Water Quality | ✓ | ✓ |
| Lake George Shoreline Habitat Assessment | | ✓ |
| Aquatic Invasive Species Survey | | ✓ |
| Mussel Survey | | ✓ |
| Wetland, Riparian, and Terrestrial Resources Survey | ✓ | |
| Riverine Habitat Evaluation below Powell Falls | | ✓ |
| Recreation | | |
| - Recreation Facility Inventory | ✓ | |
| - Recreation Use Assessment | | ✓ |
| Cultural Resources | | |
| - Architectural Resources Survey | ✓ | |
| - Archaeology Resources Survey | | ✓ |
| Sediment Study | | ✓ |
| Decommissioning Plan | ✓ | ✓ |

Hydrologic & Hydraulic Evaluation

- **Study conducted:** 2020 by USACE

 - **Purpose:**
 1. Analyze the potential effects of the continued operation of Junction Falls dam and the proposed decommissioning and removal of Powell Falls dam

 2. Inform stakeholders interested in balancing floodplain risk management with the beneficial use of the Kinnickinnic's riparian resources

 3. Help River Falls meet Wisconsin's floodplain management regulations

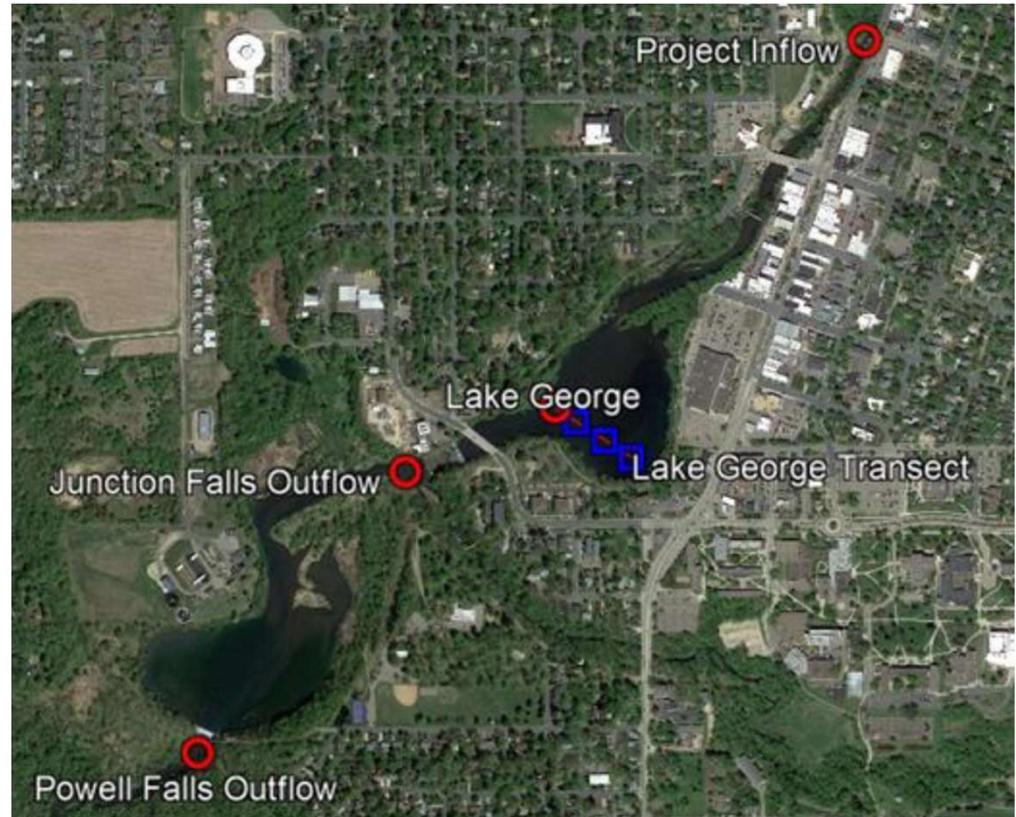
 4. Provide technical analysis supporting a Letter of Map Revision (LOMR) when Powell Falls dam is removed
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Hydrologic & Hydraulic Evaluation

- **H&H Analysis:**
 - Used HEC-RAS model
 - 30-year flood data were assessed
 - Calculated discharge estimates and exceedance probabilities
- **Climate assessment of hydrologic conditions:**
 - Average temperatures and precipitation have increased over time and trend is projected to continue

Water Quality

- **Study conducted:** 2019 & 2020 by Ayres
- Dissolve oxygen (DO) and water temperature recorded at 15-minute intervals:
 1. Project Inflow
 2. Lake George
 3. Junction Falls Outflow
 4. Powell Falls Outflow
- 2020 study added a grab sample transect across Lake George



Water Quality Study Results

- Average daily flows throughout 2020 season were higher than normal and similar to those in 2019
- From the upstream to the downstream, dissolved oxygen concentrations generally decreased and water temperatures typically increased by 2 to 4 degrees F on a given sampling day
- In Lake George, the dissolved oxygen concentration dropped below 5 mg/L in 2019 & 2020 prior to the flood
- 2020 observations from Lake George and Powell Falls outflow suggest that the June 29, 2020 flood may have led to the drop in oxygen demand in the impoundments

Summary of Recorded Dissolved Oxygen Concentrations for 2019 and 2020 seasons

| Location | Measured Dissolved Oxygen Range (mg/L) for Season | Percent of readings < 6.0 mg/L (trout stream standard) | Percent of readings < 5.0 mg/L (other water body standard) |
|------------------------|---|--|--|
| Inflow | 7.0 – 13.0 (2019) | 0 % | 0 % |
| | 1.4 – 14.5 (2020) | 1.6% | 1.5% |
| Lake George | 0.0 – 13.0 (2019) | 37 % | 28 % |
| | 2.0 – 15.5 (2020) | 12% | 8% |
| Junction Falls Outflow | 2.9 – 13.5 (2019) | 4 % | 3 % |
| | 2.4 – 12.4 (2020) | 3% | 2% |
| Powell Falls Outflow | 0.7 – 12.2 (2019) | 29 % | 18 % |
| | 0.0 – 15.0 (2020) | 15% | 13% |

Wisconsin DO standards based on Wisconsin's Administrative Code NR 102.04

Lake George Shoreline Habitat Assessment



- **Study conducted:** July 2020
Gulf South Research Corporation
- **Three locations assessed:**
 - South of Junction Falls
 - Lake George
 - North of Lake George
- **Zones evaluated:**
 - Littoral (50' into lake)
 - Bank (top of bank to toe)
 - Riparian (35' buffer)

Lake George Shoreline Habitat Assessment

- Mapped percent vegetative cover, structures, disturbed conditions, runoff concerns, and aquatic plants

South of Junction Falls:

- Shoreline changes rapidly from exposed bedrock waterfalls to short “river reach” that leads to Lake Louise to the south

Lake George:

- Riparian zone naturally vegetated with maintained lawns and paths. Emergent aquatic plants were observed in the littoral zone.

North of Lake George:

- Riverine in nature, but wider and shallower than further upstream due to sediment disposition

Aquatic Invasive Species Survey

- **Study conducted:** July 2020 by Inter- Fluve



Rake Fullness 1, typically



Rake Fullness 2, typically



Rake Fullness 3, typically

Aquatic Invasive Species Survey Results

- 291 sites sampled
- 7 aquatic plant species identified, 1 of which (curly-leaf pondweed) is considered invasive
- Junction Falls:
 - Curly-leaf pondweed was the most abundant aquatic vegetation and observed at 50% of the sampled sites
- Powell Falls:
 - Sago pondweed was the most abundant aquatic vegetation species and observed at 77% of sampled sites, followed by curly-leaf pondweed at 49% of sampled sites

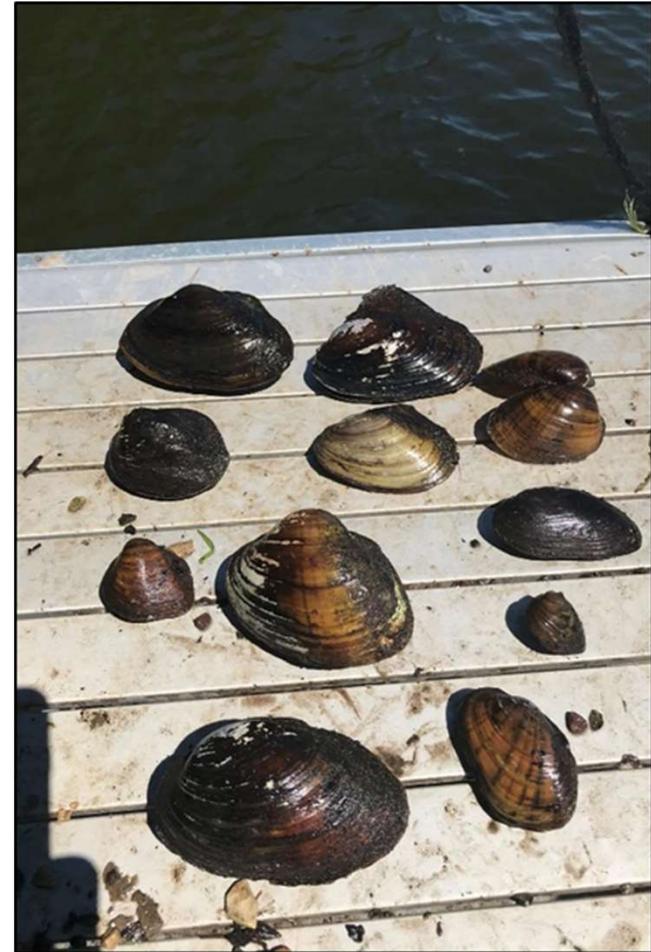
Mussel Survey

- **Study conducted:** July-August 2020 by National Park Service St. Croix National Scenic Riverway and USACE dive crew



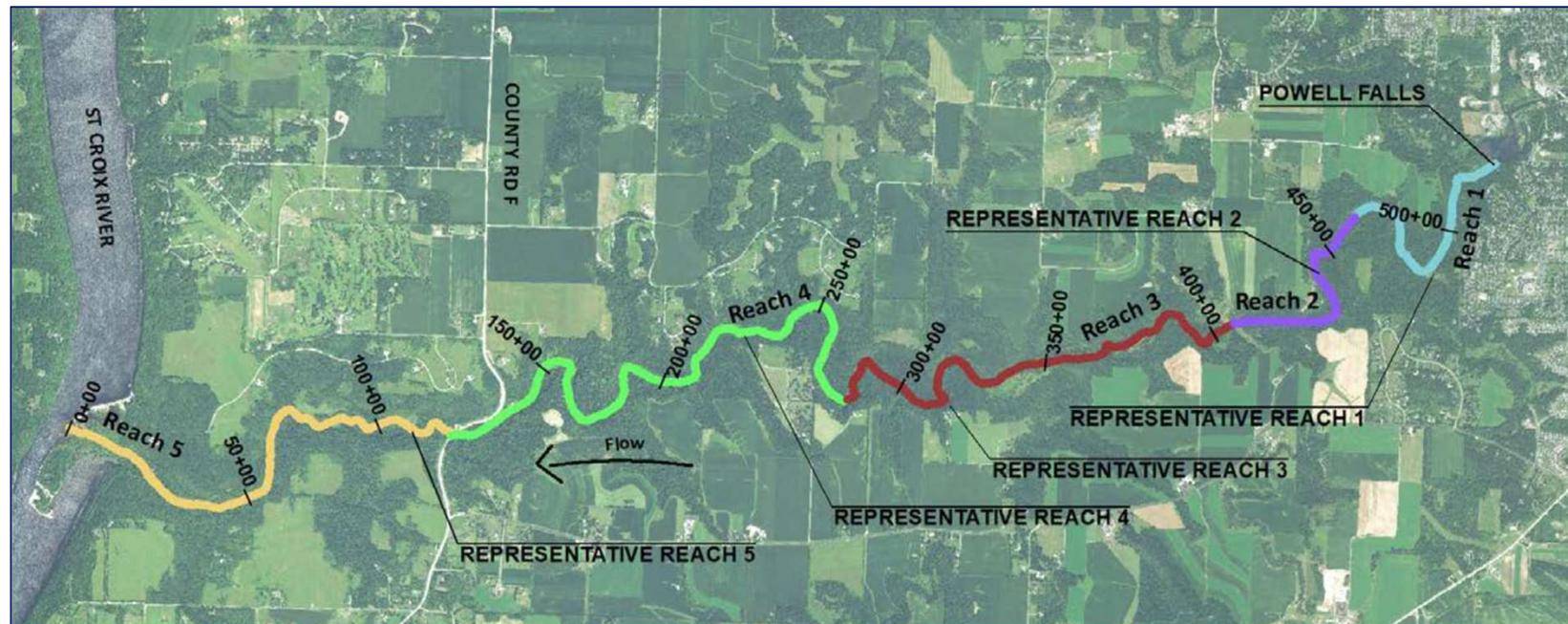
Mussel Survey Study Results

- Kinnickinnic River: 2 sites sampled
 - No live mussels or empty shells were observed in lower one-mile of Kinnickinnic River
- St. Croix River: 10 sites sampled
 - Species rich mussel community
 - 1,868 live mussels of 19 live species were collected
 - Study results indicate dam removal would not result in adverse impacts to mussels in the short term
 - Longer term monitoring (1x, 10 – 20 years post removal) recommended



Riverine Habitat Evaluation Below Powell Falls

- **Study conducted:** Desktop completed in 2019 by TRC, fieldwork completed November 2020 by Inter-Fluve and Gulf South Research Corporation
- **Evaluated:** pools, riffles, and runs; cross-sections; bed materials; woody debris



Riverine Habitat Evaluation Assessment

- Channel bed form is relatively stable with lack of complexity
- June 2020 flooding may have impacted complexity
- Embedment and local deposition of fine sediment in the channel occurred following flood and appear to be temporary



Riverine Habitat Evaluation Assessment

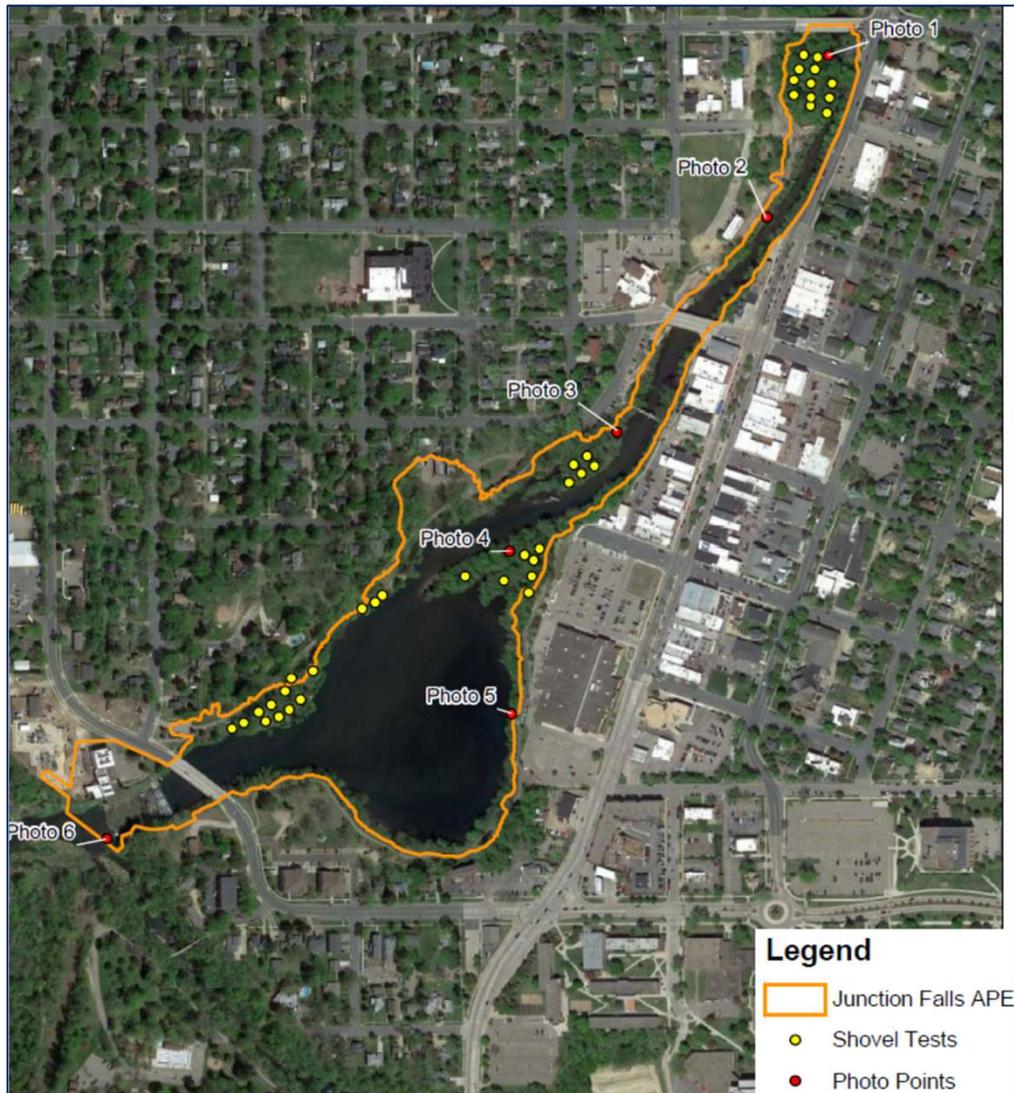
- Limited pool depth (~ 2 feet) was also noted in 2017, so not the result of the 2020 flood alone
 - Sand accumulation, embedment of gravel substrate, and reed canary grass resulted in increased channel erosion in select locations
 - Flood caused overbank sedimentation on floodplains
 - Brown trout abundance likely due to water quality, stream size, abundance of gravel substrate, and food abundance compared to regional streams
 - The most significant factor limiting habitat for birds, reptiles, amphibians, and mammals was the predominance of invasive reed canary grass in the riparian area
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Recreation Use Assessment

- **Study conducted:** 2020 by Gulf South Research Corporation
- **Survey areas and observations:**
 - Glen Park Trails: 9.77 users/hr
 - Powell Falls Kayak Launch: 24.2 users/hr
 - White Kinnickinnic Pathway = 21.6 users/hr
- Primary recreation activities included walking, dog walking, biking, canoeing/kayaking, fishing from shore and fishing
- 57% of survey respondents were River Falls residents



Archaeological Survey



Archaeological Survey

- **Study conducted:** 2020 by TRC
- **Study methodology:** Shovel testing and visual inspections along the shorelines and throughout the FERC Project Boundaries
- **Study results:** Archaeological sites or artifacts were not found; no additional archaeological work is recommended

Sediment Study

- **Study completed:** 2020 by Ayres & TRC

- **Study objectives:**
 - 1) Compare amount of sediment that could be released during dam removal to average annual sediment yield in Kinni and St. Croix Rivers
 - 2) Assess potential effects of dam removal on geomorphology and aquatic resources

Sediment Study Results

- Kinnickinnic River has an abundant sediment supply (~5,000 CY/year) and storage
- Impact of increase of sediment load after dam removal is likely to be on the scale of 2020 flood
- Need to understand and manage short-term risks for long-term ecological benefits
- Riverine monitoring requirements following dam removal are expected



Sediment Study Results

| Impact | Risk | | Benefit | |
|-------------------------|------------|-----------|------------|-----------|
| | Short-term | Long-term | Short-term | Long-term |
| Water quality | M | L | L | H |
| Sedimentation | | | | |
| Trout habitat | H | L | L | H |
| Freshwater mussels | L | L | L | L |
| Floodplain vegetation | M | L | L | H |
| Fish movement | L | L | L | H |
| Impoundment | | | | |
| Riverine conditions | L | L | M | H |
| Instream Habitat | | | | |
| Substrate complexity | H | L | M | M |
| Invertebrate taxa | M | L | M | M |
| Ice Jams | L | L | L | M |
| Recreation | H | L | L | H |

Short-term ≤ 1 year; Long-term ≥ 1 year

L = low, M = medium, H = high

Decommissioning Plan

- **Decommissioning Plan:** Draft in 2020 Initial Study Report, planning ongoing into 2021
- **Progress update:**
 - 2020 flood caused re-evaluation of decommissioning plan options
 - Dam safety inspection and potential action options outlined in FERC December 22, 2020 filing
 - Decommissioning Plan update will be included in the January 2021 Updated Study Report, with final plan to follow

Next Steps

| Responsible Entity | Pre-Filing Milestone | Date |
|------------------------|--|-----------------------|
| Licensee | Updated Study Report Due | 1/30/2021 |
| Licensee, stakeholders | Updated Study Report Meeting (Virtual Meeting) | 2/9/2021 (9am-4pm) |
| Licensee | Updated Study Report Meeting Summary | 3/1/2021 |
| Licensee | Draft License Application Due | 4/3/2021 |
| Stakeholders | Draft License Comments Due | 7/02/2021 |
| Licensee | Final License Application Filed | 8/31/2021 |
| Licensee | Issue Public Notice of License Application | 9/14/2021 |

Questions & Discussion

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