

ORIGINAL



February 22, 2021

The Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, N.E.
Washington, D.C. 20426

Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 – Exotic Species Monitoring Report for CY2020

Dear Secretary:

Article 407 of FERC License No. 2180 required PCA Hydro (PCA) to submit an Invasive Species Management Plan for approval contingent upon review and approval by both the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish and Wildlife Service (FWS). On September 26, 2005, PCA submitted a plan, approved by both WDNR and FWS, to the FERC. The FERC approved the plan, with conditions, on January 19, 2006.

The principal conditions imposed by FERC require that PCA;

- a) Conduct the exotic plant surveys described in the plan annually for five years beginning in 2006, and every five years starting in 2010, and
- b) Solicit comments on the draft annual report from the WDNR and FWS and,
- c) Submit the final annual report to the FERC including any changes recommended by WDNR and FWS.

Enclosed is a copy of the 2020 monitoring report that documents the presence and locations of purple loosestrife, reed canary grass, and Eurasian water milfoil found within the project. Curly-leaf pondweed, giant reed grass and Eurasian water milfoil were not found within the flowage during the 2020 survey.

In correspondence dated 20 January 2021, PCA provided WDNR and FWS each with a copy of the 2020 annual report for review. The agencies were asked to provide written comments regarding this plan to PCA by the close of business on 19 February 2021; no comments were received.

Therefore, we are submitting to the FERC the 2020 annual report as final per Article 407 requirements. Copies of relevant correspondence are also enclosed.

If you have any questions, please do not hesitate to contact me.

Sincerely,



Kristy L. Neumann
Environmental Manager

Enclosures

cc: Don Gennrich (letter only)
Alex Hartford (letter only)

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File GMD 2250
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GRANDMOTHER FALLS HYDROELECTRIC DAM

FERC PROJECT 2180-WISCONSIN

EXOTIC SPECIES MONITORING REPORT 2020



Prepared for

PCA Hydro, Inc.

January 2021

Prepared through the collaborative efforts of

NES

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INTRODUCTION

Article 407 within the Federal Energy Regulatory Commission (FERC) license issued to Packaging Corporation of America (PCA) for the Grandmother Falls Flowage Hydroelectric Project (FERC No. 2180), located in the Town of Bradley, Lincoln County, Wisconsin (Map 1), required PCA to submit an Invasive Species Management Plan for approval. On September 26, 2005, a plan, reviewed by the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish & Wildlife Service (USFWS), was submitted to and then accepted, with conditions, by FERC on January 19, 2006. The two main conditions associated with the acceptance of the plan were 1) PCA was responsible for conducting initial exotic plant surveys along with follow-up surveys every five years during the licensing period to document invasive species populations within the project area; and 2) a report must be submitted to the WDNR, USFWS and FERC for review and approval.

Initial surveys and reports were completed from 2006-2010 by NES Ecological Services – A Division of Robert E. Lee & Associates, Inc. (NES) and Onterra, LLC. A follow-up survey was conducted during the 2015 growing season and again during the 2020 growing season to document the presence and location of invasive plant species observed within the project waters (Maps 2- 6) so their occurrence could be compared to previous surveys and tracked over time. Species taken into consideration for the 2020 investigation, as outlined in the Invasive Species Management Plan, include purple loosestrife (*Lythrum salicaria*), giant reed grass (*Phragmites australis*), curly-leaf pondweed (*Potamogeton crispus*), reed canary grass (*Phalaris arundinacea*), and Eurasian water milfoil (*Myriophyllum spicatum*). Yellow iris (*Iris pseudacorus*), a Eurasian exotic of growing concern in Wisconsin was also included in the 2015 and 2020 surveys due to its invasive nature and noted presence along the flowage. Preparation of this report documents the results of the 2020 survey.

METHODS

Meander Survey

Curly-leaf pondweed (CLP) begins growing immediately following ice out, reaches maturity by early to mid-June, and then dies off in early to mid-July, the time when most aquatic plants are just reaching peak biomass. Since it is at peak biomass in June, the extent of curly-leaf pondweed is most accurately documented if surveys are conducted during this time period. Therefore, a meander survey of the project water's littoral zone (Map 2) was completed on July 1, 2020, by Onterra. The survey was accomplished by navigating a boat throughout the project area and scanning the water for colonies of curly-leaf pondweed. GPS points were automatically collected to track survey paths (Map 2). Onterra staff also scanned the shoreline and shallow water areas for yellow iris while conducting the survey.

Point-intercept Survey

Point-intercept surveys allow the systematic sampling of submerged plants within project waters and ensure all areas of the littoral zone are visited. Based upon calculation techniques supplied by the WDNR that employ water surface area (624 acres) and shoreland development factor (7.29), a plot resolution of 55-meters was applied to the project waters displayed in Map 3. Using this information, a total of 885 points were selected to be surveyed within the Grandmother Falls Flowage. The point-intercept method as described in the Wisconsin Department of Natural Resource document, Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: Sampling Design, Field and Laboratory Procedures, Data Entry, and Analysis, and Applications (WDNR PUB-SS-1068 2010) was used to complete this study.

Onterra performed a point-intercept survey on July 27 and 28, 2020 within the Grandmother Falls Flowage to detect the presence of Eurasian water milfoil (EWM), remaining CLP and other potential submerged, exotic plant species. The point-intercept survey also allows for a quantitative assessment of the native aquatic plant community in Grandmother Falls.

EWM Mapping Survey

Onterra completed a meander survey during July 27-28 to visually search for and map any occurrences of EWM. Accurately mapping submerged plant colonies is a difficult task because under normal conditions the entire colony, much like an iceberg, is not visible from the surface. To complete this task accurately, additional time is required to determine the extents of each colony through numerous rake tows and/or underwater video. As the colony extent is determined, it is marked with virtual buoys so it can be accurately mapped from the surface. Each colony was mapped with sub-meter GPS technology using points or polygons (Maps 4-6). AIS colonies < 40' in diameter were mapped using points and classified as either: *Single or Few Plants*, *Clump of Plants*, or *Small Colony*. Areas >40' in diameter were mapped using a polygon and classified based upon density as: *Highly Scattered*, *Scattered*, *Dominant*, *Highly Dominant* or *Surface Matting*.

Shoreline Survey

Onterra staff scanned the shoreline and shallow water areas for yellow iris while performing the meander survey for CLP on July 1, 2020 and recorded those occurrences with a GPS unit. NES ecologists conducted a follow-up survey of the entire shoreline and shallow water areas of the project waters (Map 1) for exotic emergent species on August 19, 2020. Occurrences of purple loosestrife along with reed canary grass and giant reed grass populations within 10 feet of the water's edge were identified, mapped using a GPS unit, and a density rating applied. A colony was determined to be those areas containing large groups (≥ 10 individuals) of plants. A rating of 1 indicates a sparse colony, likely containing a mix of exotics and natives; while a rating of 3 indicates a colony dominated by exotics. However, some exotic occurrences were too scattered to be mapped as colonies. In these cases, individual plants or small groups (≤ 9 individuals) of plants were mapped using points.

In addition to identifying and mapping purple loosestrife, clumps of 1-3 plants identified during the emergent exotic mapping were manually removed.

Photographs from the 2020 survey are located in Appendix A.

RESULTS

Meander Survey

No colonies of curly-leaf pondweed were encountered during the meander survey conducted on July 1, 2020 or the point-intercept survey on July 27 and 28, 2020. To document the early July survey, GPS tracking logs were automatically recorded and are displayed on Map 2.

Point-intercept Survey

A total of 885 points were selected within the project waters based on WDNR guidelines; however, only 472 of these points were surveyed due to existing field conditions. The remaining 413 points were either inaccessible by boat ("not visited") or they were at depths of ≥ 10 feet ("too deep"), beyond the depth of plant growth (Map 3).

No Eurasian water milfoil populations were encountered during the point-intercept survey on July 27 and 28, 2020 (Maps 4-6).

Shoreline Survey

Giant reed grass, once again, was not discovered within the project area during the survey. Reed canary grass, on the other hand, was again found to be very prevalent in preferred habitat types along the shoreline of Grandmother Falls Flowage, with 128 occurrences captured as points and one occurrence captured as a colony with a medium density (2) throughout the flowage. Prior to 2015, populations of the grass were not mapped due to its prevalence and coverage. NES staff documented reed canary grass locations throughout the flowage so the grasses' presence could be tracked. Each reed canary grass point depicted on Maps 4-6 indicates a colony with a rating of either 2 or 3 as discussed above. In some cases the points are close enough together that large, nearly monotypic stands of reed canary grass are present. Only one colony of purple loosestrife with a medium density (2) was identified in 2020 while 45 small clusters were found along the shoreline and mapped (Maps 4-6). No individuals or clumps ≤ 3 plants were identified while conducting the survey; therefore, no purple loosestrife plants were treated or seed heads removed from within the project area in 2020. Yellow iris occurrences were recorded in 3 locations and each was composed of either single or small plant clusters.

DISCUSSION

The 2020 surveys conducted within Grandmother Falls Flowage indicated the presence of purple loosestrife, reed canary grass, and yellow iris. Curly-leaf pondweed, Eurasian water milfoil and giant reed grass were not encountered. Based on the results, NES and Onterra came to the following conclusions and management alternatives for each species.

The comprehensive aquatic vegetation surveys conducted initially and again in 2015 and 2020 did not indicate the presence of curly-leaf pondweed or giant reed grass within or adjacent to the flowage. The species continued absence has led us to believe that it is very unlikely they will suddenly appear in the future. If they do, management recommendations will be proposed at that time.

In 2010, the aquatic vegetation surveys conducted by Onterra identified the occurrence of one Eurasian water milfoil within the project waters near the Tomahawk Dam. No plants were found in this location during the 2015 survey, but four other very small populations were observed within the flowage. When conducting these surveys between 2006 and 2010 the identified populations ranged from as many as 16 in 2006 to no plants found in 2009. The fluctuating observations and changing locations seem to indicate that this species may always be present in the project waters; however, no Eurasian water milfoil was found during the 2020 surveys (Table 1). If good conditions were present for the species, we would expect to find larger and more scattered plant colonies to be present within the flowage. NES and Onterra recommend continued monitoring to ensure large populations do not become established. A five year monitoring cycle appears to be adequate.

Like in 2015, the 2020 surveys revealed one small colony and many small clusters of purple loosestrife throughout the project area (Table 2). Many (31 of 64) locations identified in 2015 continue to harbor populations of the invasive species with some increasing and others decreasing in size. Besides the previously mapped locations, 14 additional populations were identified in 2020 that were not identified in previously. Although the density of plants within each population is not high, the species has managed to infest new areas within the flowage during the past five years. To prevent further spread, a combination of seed head removal, herbicide applications and release of *Galerucella* beetles are recommended. The release of *Galerucella* beetles is a cost effective option to help control the spread of the species in the long-term. However, to successfully rear a healthy population of beetles, there can be little or no herbicide application

within the host colonies; therefore, we recommend introducing beetles into the densest colonies of purple loosestrife and periodically chemically treating the single stems and clumps of the species that occur along the banks.

Results of the 2020 shoreline survey once again indicate that reed canary grass is prevalent. The Wisconsin DNR recommends a variety of methods for suppression of reed canary grass including prescribed burns, mowing, frequent cultivation or herbicide application. However, the frequency and extent at which reed canary grass was found within the project site suggests that the infestation is beyond feasible control by these methods.

Yellow iris was not included in the exotic species survey prior to 2015, but its' aggressive nature warrants inclusion. This particular species can form dense, monotypic stands that displace native vegetation and wildlife. Early detection of this species, as was completed with this survey (Table 3), allows for a quick response to prevent further establishment. The species should either be physically removed by digging out the plants, ensuring all parts are removed, or through spot herbicide treatments using aquatic approved herbicides. A permit will be required from the WDNR to conduct the applications.

Table 1. Eurasian Water-Milfoil 2015 to 2020 Survey Comparisons (Maps 4-6).

<i>Location</i>	<i>Status Compared to 2015</i>	<i>Comments</i>
Mile 1, upstream from Grandmother Falls Dam	No populations	
Between miles 1-2, upstream from Grandmother Falls Dam	No populations	
Between miles 2-3, upstream from Grandmother Falls Dam	No populations	
Between miles 3-4, upstream from Grandmother Falls Dam	No populations	
Between miles 4-5, upstream from Grandmother Falls Dam	No populations	
Between miles 5-6, upstream from Grandmother Falls Dam	No populations	
Between miles 6-7, upstream from Grandmother Falls Dam	No populations	

Table 2. Purple Loosestrife 2015 to 2020 Survey Comparisons (Maps 4-6).

<i>Location</i>	<i>Status Compared to 2015</i>	<i>Comments</i>
Mile 1, upstream from Grandmother Falls Dam	1 new cluster	Cluster located on the east side of the river adjacent to Grandmother Falls Dam.
Between miles 1-2, upstream from Grandmother Falls Dam	1 new cluster	New cluster located at the beginning of segment 1-2 on the east side of the river.
Between miles 1-2, upstream from Grandmother Falls Dam	9 clusters identified in 2020 compared to 14 in 2015	Clusters are located on the east side of the river at the end of segment 1-2. Likely not a reduction in presence but rather a lack of flowering plants making it more difficult to identify from the water. Two clusters also located just to the north of the colony.

PCA Hydro, Inc.

Grandmother Falls Flowage
Aquatic Invasive Species Surveys - 2020

Table 2. Continued.

<i>Location</i>	<i>Status Compared to 2015</i>	<i>Comments</i>
Between miles 2-3, upstream from Grandmother Falls Dam	4 new clusters	1 cluster is located on the south side of the river at the beginning of segment 2-3, while 3 clusters are located on the east bank just north of where the river juts to the east and one cluster is at the end of segment 2-3 on the west side of the river.
Between miles 2-3, upstream from Grandmother Falls Dam	1 cluster not located	Previously mapped cluster at the end of segment 2-3 on the east side of the river.
Between miles 2-3, upstream from Grandmother Falls Dam	1 colony and two clusters mapped among 8 previously mapped clusters	Located at the beginning of segment 2-3 on the west side of the river. This area has a significantly expanded presence of the species.
Between miles 2-3, upstream from Grandmother Falls Dam	2 clusters closely located to 3 previously mapped clusters	Clusters are located on the east side of the river at the beginning of segment 2-3.
Between miles 3-4, upstream from Grandmother Falls Dam	Significant reduction in colony located on river island. 13 previously mapped clusters compared to 1 in 2020	Clusters located on small island at the beginning of segment 3-4.
Between miles 3-4, upstream from Grandmother Falls Dam	1 new cluster	Located on east river bank to the east of the small island.
Between miles 3-4, upstream from Grandmother Falls Dam	1 cluster not located	Previously mapped cluster on the east bank of river at the end of segment 3-4.
Between miles 4-5, upstream from Grandmother Falls Dam	Relatively unchanged	All mapped clusters on the east bank.
Between miles 5-6, upstream from Grandmother Falls Dam	6 clusters not located	Clusters throughout the central portion of segment 5-6.
Between miles 5-6, upstream from Grandmother Falls Dam	1 new cluster	Located on the south side of the river at the end of segment 5-6.
Between miles 6-7, upstream from Grandmother Falls Dam	1 new cluster	Located on the island at the beginning of segment 6-7.
Between miles 6-7, upstream from Grandmother Falls Dam	Relatively unchanged	Far northern portion on the north side of the river with a scattering of clusters.

Table 3. Yellow Iris 2015 to 2020 Survey Comparisons (Maps 4-6).

<i>Location</i>	<i>Status Compared to 2015</i>	<i>Comments</i>
Mile 1, upstream from Grandmother Falls Dam	No populations	
Between miles 1-2, upstream from Grandmother Falls Dam	1 new population	Located at the end of segment 1-2 on the west side of the river.
Between miles 2-3, upstream from Grandmother Falls Dam	2 clusters not located, while 2 remained the same	Cluster on west side of river at the beginning of segment 2-3 remains. 2 clusters not identified where the river juts off to the east on the northern bank, while the furthest west one remained.
Between miles 3-4, upstream from Grandmother Falls Dam	No populations	
Between miles 4-5, upstream from Grandmother Falls Dam	No populations	
Between miles 5-6, upstream from Grandmother Falls Dam	No populations	
Between miles 6-7, upstream from Grandmother Falls Dam	No populations	

CONCLUSION

Due to increased occurrences of exotic species it is important to consider continued, periodic surveys (5 year intervals) to track their presence, population growth and spread. Management of these species is also critical to prevent their establishment and spread. Aggressive, non-native species can quickly invade and spread as observed by the sudden appearance of yellow iris five years ago and increased observations of purple loosestrife within the Grandmother Falls Flowage in the past five years.

A

APPENDIX A

Site Photographs

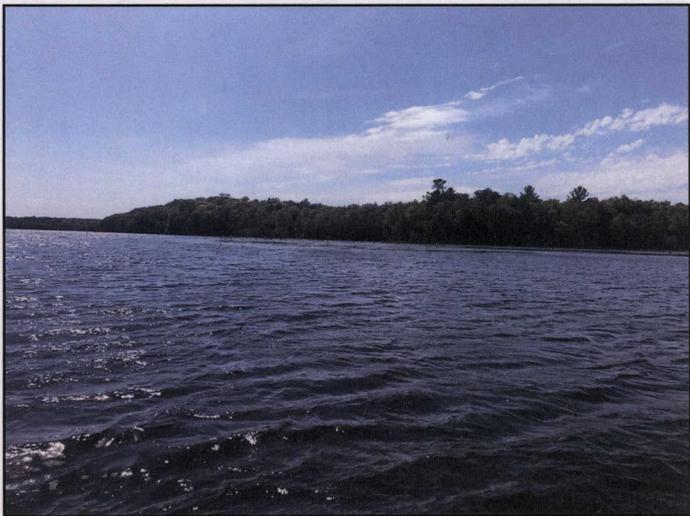


Photo 1. GMF Flowage at the end of mile 1 – looking West\Southwest



Photo 2. GMF Flowage between miles 2 & 3 – looking South\Southwest



Photo 3. GMF Flowage at the beginning of mile 4 – Looking West

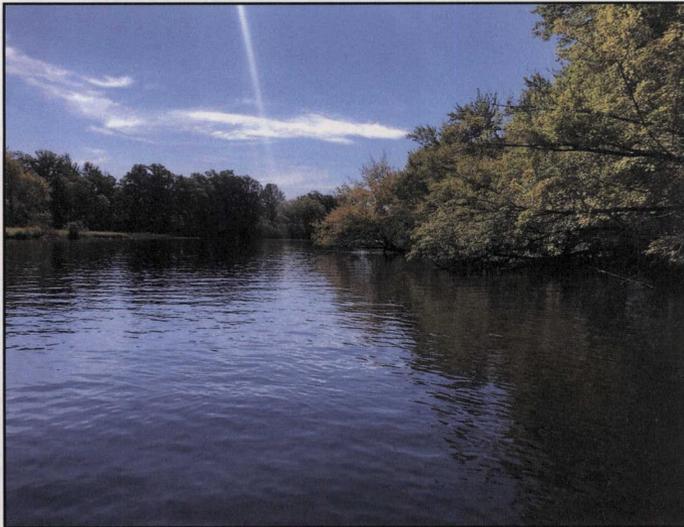


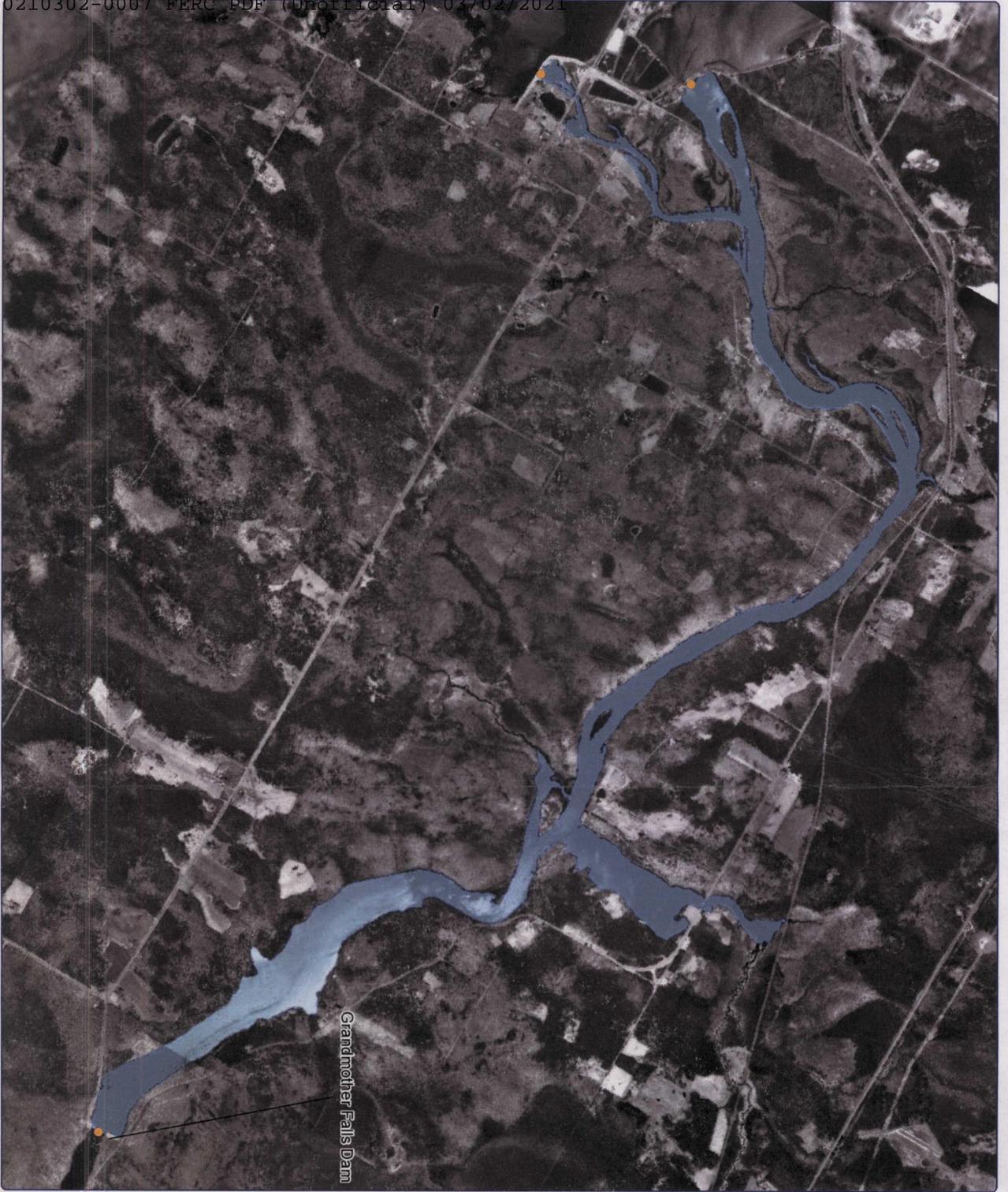
Photo 4. GMF Flowage at the beginning of mile 5 – Looking Southeast



Photo 5. GMF Flowage between miles 5 & 6 – looking West\Northwest



Photo 6. GMF Flowage between miles 6 & 7 – Looking Southwest



Grandmother Falls Dam

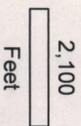
Map 1
Grandmother Flowage
 Lincoln County, Wisconsin



Extent of large map shown in red.

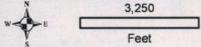
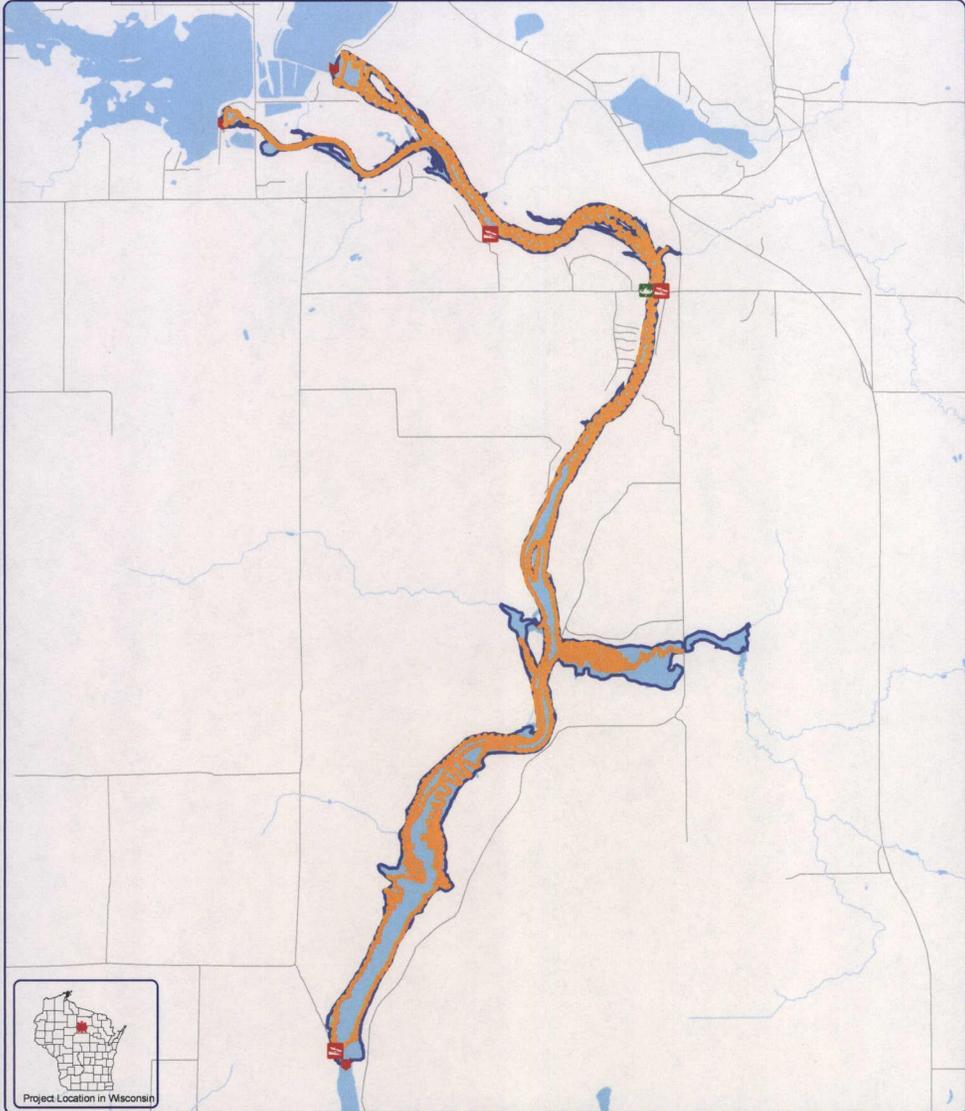
Legend

 Project Waters



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 920.321.8813
 www.onterra-llc.com

Map Date: December 16, 2020



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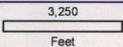
Sources
 Roads and Hydro: WDNR
 Map Date: December 3, 2020 AMS

Legend

 Survey Path

-  Carry-In Public Access
-  Public Access
-  Dam

Map 2
 Grandmother Falls
 Lincoln County, Wisconsin
Early Season AIS
Survey Track - 2020



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Sources:
 Roads and Hydro: WDNR
 Map Date: December 3, 2020 AMS

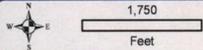
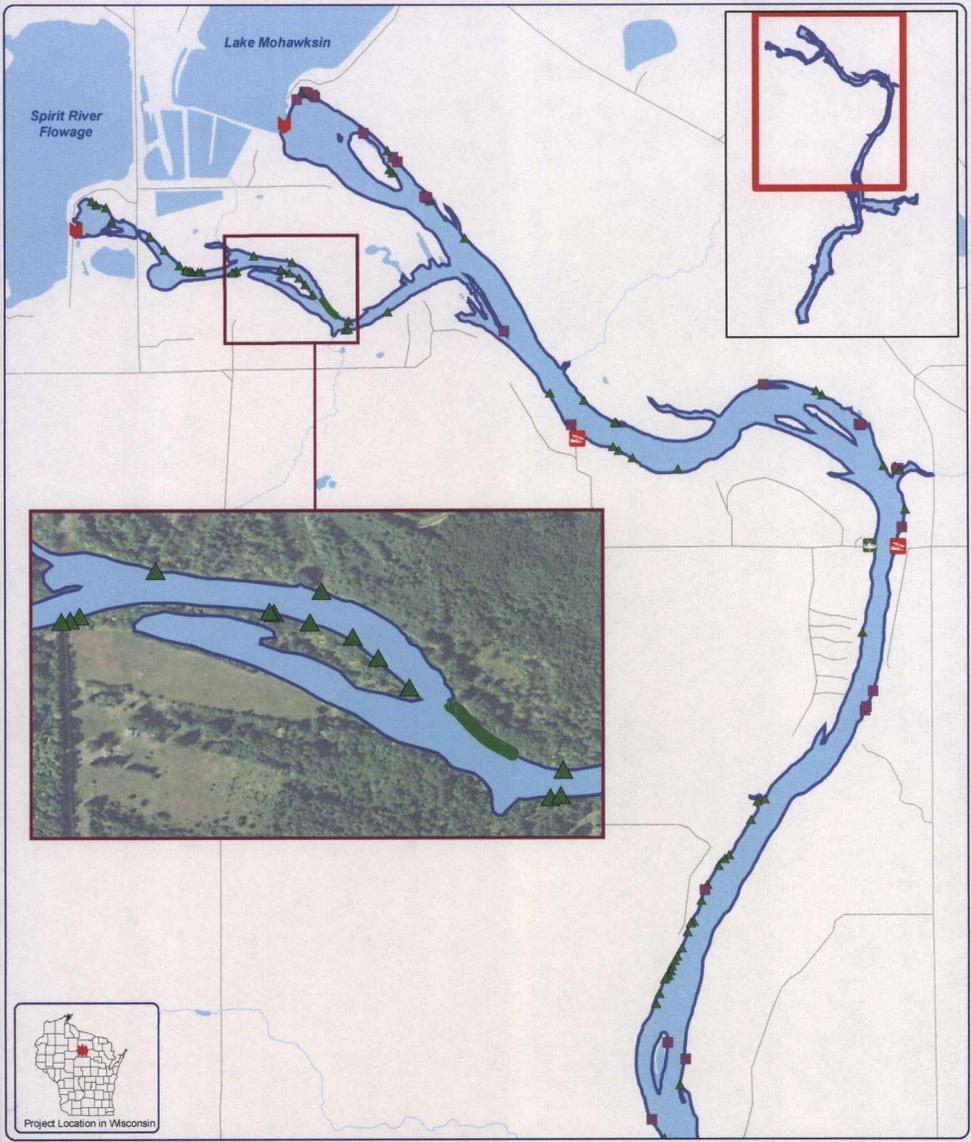


Project Location in Wisconsin

Legend

- Sampled
- Too Deep
- Non-navigable/Terrestrial

Map 3
Grandmother Falls
 Lincoln County, Wisconsin
2020 Point-Intercept
Survey Locations



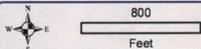
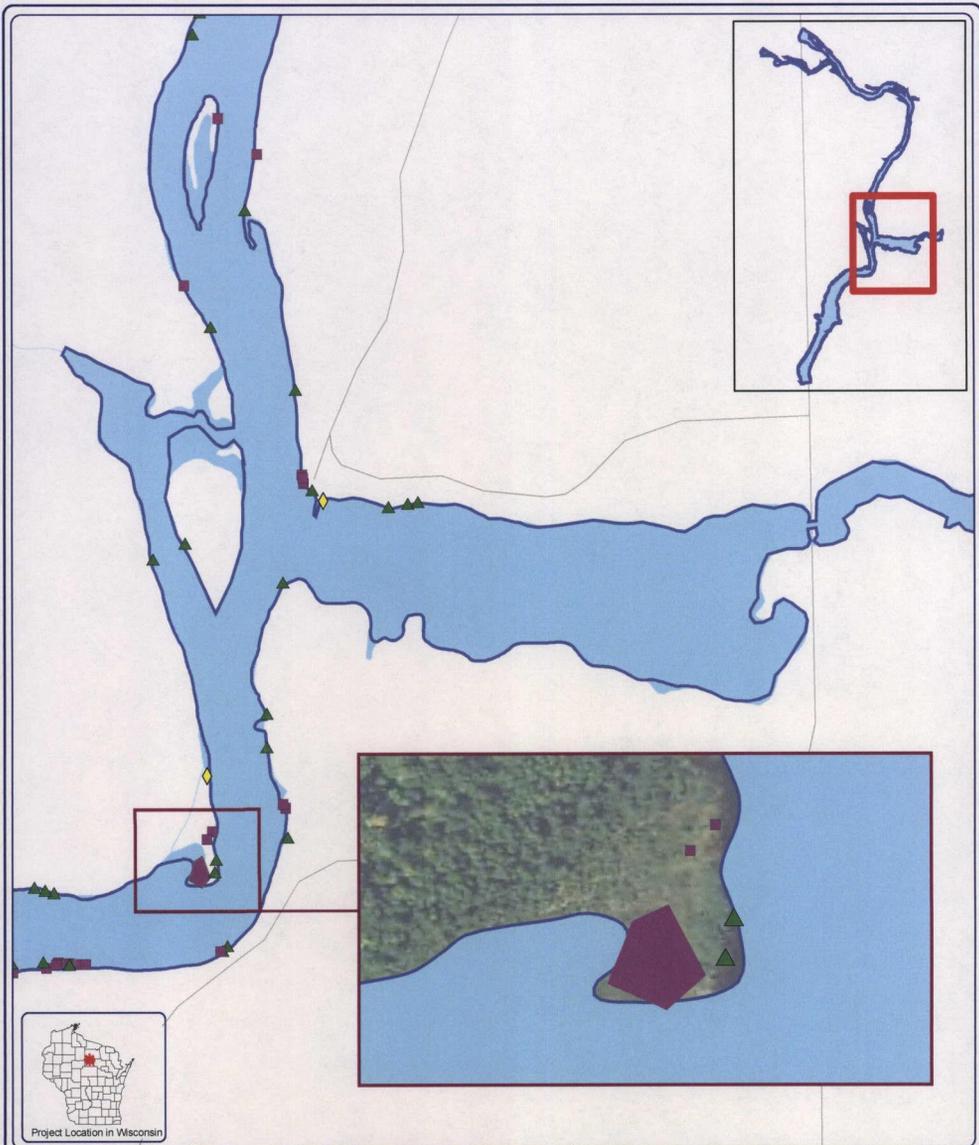
Legend

- EWM Occurrence (None)
- ◆ Pale Yellow Iris (Onterra, 6/20)
- ▲ Reed Canary Grass (NES, 8/20)
- Purple Loosestrife (NES, 8/20)
- Reed Canary Grass Colony (NES, 8/20)

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Sources
 Roads and Hydro: WDNR
 Map Date: December 3, 2020 AMS

Map 4-North
Grandmother Falls
 Lincoln County, Wisconsin
2020 AIS
Survey Results



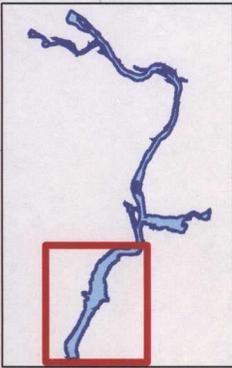
Onterra LLC
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 920.338.8860
 www.onterra-llc.com

Sources
 Roads and Hydro: WDNR
 Map Date: December 3, 2020 AMS

Legend

- EWM Occurrence (None)
- ◆ Pale Yellow Iris (Onterra, 6/20)
- ▲ Reed Canary Grass (NES, 8/20)
- Purple Loosestrife (NES, 8/20)
- Purple Loosestrife Colony (NES, 8/20)

Map 5-Central
Grandmother Falls
 Lincoln County, Wisconsin
2020 AIS
Survey Results



Project Location in Wisconsin



1,000
Feet

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www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Map Date: December 3, 2020 AMS

Legend

- EWM Occurrence (None)
- ◆ Pale Yellow Iris (Onterra, 6/20)
- ▲ Reed Canary Grass (NES, 8/20)
- Purple Loosestrife (NES, 8/20)
- Purple Loosestrife Colony (NES, 8/20)

Map 6-South
Grandmother Falls
Lincoln County, Wisconsin
2020 AIS
Survey Results



January 20, 2021

Biologist
U.S. Fish & Wildlife Service
2661 Scott Tower Drive
New Franken, WI 54229

Aquatic Biologist
WDNR
107 Sutliff Avenue
Rhineland, WI 54501

**Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 –
Exotic Species Monitoring Report for CY2020**

Dear Agency Representative:

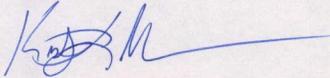
Article 407 of the Federal Energy Regulatory Commission's (FERC) License No. 2180 mandates that PCA Hydro (PCA) prepare an Invasive Species Management plan that must be reviewed and approved by the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish and Wildlife Service (FWS). Said plan was submitted to the agencies, reviewed and ultimately approved by FERC on January 19, 2006. The plan requires that PCA conduct invasive plant surveys annually for five years (beginning in 2006) and submit an annual report to the FERC subsequent to review and approval by both WDNR and FWS. After the 2010 annual report PCA is required to conduct follow-up invasive plant surveys every five years during the remainder of the licensing period. Accordingly, PCA is providing WDNR and FWS each with a copy of the 2020 annual report for review.

The 2020 survey findings can be briefly summarized as follows:

- Curly-leaf pondweed, giant reed grass and eurasian water milfoil were not found within the flowage.
- One colony of purple loosestrife was identified along with 45 small clusters.
- Yellow iris was recorded in three locations consisting of either single or small plant clusters.
- The extent of reed canary grass infestation precludes the use of traditional suppression actions such as prescribed burns, mowing, cultivation or herbicide application.

We request that you submit any written comments regarding this plan to PCA by the close of business on 19 February 2021. An absence of reply will be considered an acceptance of the report contents.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kristy L. Neumann', with a long horizontal flourish extending to the right.

Kristy L. Neumann
Environmental Manager

Enclosure

cc: Don Gennrich (letter only)
Alex Hartford (letter only)
GMD 2260

Document Content(s)

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