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April 1, 2008

2008 APR -8 P 3 5b

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

FEDERAL ENERGY
REGULATORY COMMISSION

P-2180-028

**Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 – Exotic
Species Monitoring Report for CY2007**

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 received 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
- 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 second year monitoring report that documents the presence and locations of purple loosestrife, reed canary grass, and Eurasian water milfoil found within the project. As was the case in 2006, curly-leaf pondweed was not encountered during the meander survey nor was giant reed grass seen during the shoreline survey.

In correspondence dated 28 February 2008, PCA provided WDNR and FWS each with a copy of the 2007 annual report for review. The agencies were asked to provide written comments regarding this plan to PCA by the close of business on 31 March 2008; no comments were received.

Therefore, we are submitting to the FERC the 2007 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,

A handwritten signature in black ink that reads "John Piotrowski". The signature is written in a cursive, somewhat stylized font.

John Piotrowski
Sr. Environmental Engineer

Enclosures

cc: **Bruce Ridley (letter only)**
John Stelling (letter only)

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

WDNR Biologist
107 Sutliff Avenue
Rhineland, WI 54501

File GMD 2250
File GMD 2260



February 28, 2008

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 CY2007

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.

Accordingly, PCA is providing WDNR and FWS each with a copy of the 2007 annual report for review. We request that you submit any written comments regarding this plan to PCA by the close of business on 31 March 2008. An absence of reply will be considered an acceptance of the report contents.

Sincerely,

A handwritten signature in black ink that reads 'John Piotrowski'. The signature is written in a cursive style with a large initial 'J' and 'P'.

John Piotrowski
Sr. Environmental Engineer

Enclosure

cc: Bruce Ridley (letter only)
John Stelling (letter only)
File 10400
File 10450

GRANDMOTHER FALLS HYDROELECTRIC DAM

FERC PROJECT 2180-WISCONSIN

EXOTIC SPECIES MONITORING REPORT YEAR 2 – 2007



Prepared for

PCA Hydro, Inc.

February 2008

REGULATORY COMMISSION

2008 APR -8 P 3:56

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Prepared through the collaborative efforts of



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A Division of Robert E. Lee & Associates, Inc.

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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 must conduct the exotic plant surveys as described in the plan annually for five years beginning in 2006 and 2) an annual report must be submitted to the WDNR, USFWS and FERC for review and approval.

NES Ecological Services and Onterra, LLC implemented monitoring during the 2006 and 2007 growing seasons to document the presence and location of invasive plant species observed within the project waters (Map 3) so their occurrence can be tracked over time. Species taken into consideration for the 2007 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*). Preparation of this report documents the results of the 2007 survey and satisfies the condition regarding the submittal of an annual report.

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. We had recommended conducting the next curly-leaf pondweed survey in the summer of 2010 due to a lack of occurrence during surveys conducted in 2000 and 2006; however, a June 14, 2007 letter from FERC required the survey to be completed in 2007. Therefore, a meander survey of the project waters (Map 2) was completed, but due to the late notification, the inspection for curly-leaf pondweed (CLP) within the littoral zone was not conducted until July 5, 2007. 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 at 30 second intervals to track survey paths. The 2008 survey will be scheduled for early to mid-June.

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 (WDNR 2005) 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.

NES and Onterra performed a point-intercept survey on August 13 – 14, 2007 within the Grandmother Falls Flowage to detect the presence of Eurasian water milfoil (EWM), remaining CLP and other potential submerged, exotic plant species. At each point (plot), submerged plants were collected with a rake for identification and the plot's water depth was determined using a depth finder. When detected, the locations of exotic plant colonies were GPS located and water depth was recorded. The extents of each colony were determined through numerous rake tows. Each mapped colony was assigned a density rating of 1, 2, or 3 and depicted as a polygon depending on the density rating for each species (Map 4). 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 those groups identified within the point-intercept plots, EWM found outside the baseline survey points was also recorded as either a colony or a point, given a density rating, and mapped.

Shoreline Survey

Following the point-intercept survey, NES and Onterra ecologists scanned the entire shoreline and shallow water areas of the project waters (Map 1) for exotic emergent species. Occurrences of purple loosestrife, reed canary grass, and giant reed grass within 10 feet of the water's edge were identified, mapped using GPS, and a density rating applied as described above.

In addition to identifying and mapping purple loosestrife, the WDNR also requested that small clusters be removed during the annual surveys. Therefore, all purple loosestrife plants identified were targeted and manually/chemically removed during the 2007 survey. Treated areas for purple loosestrife are shown on Map 4.

RESULTS

Meander Survey

No colonies of curly-leaf pondweed were encountered during the meander survey conducted on July 5, 2007. 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 450 of these points were surveyed due to existing field conditions. The remaining 435 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).

Within the 450 points surveyed on August 13 – 14, 2007, Eurasian water milfoil was identified at 11 points (Map 4). None of these 11 locations contained enough plants to be mapped as a colony; therefore, they are indicated as points. The density of each was given a rating of 1 due to the small numbers present. Photo documentation of EWM is located in Attachment A.

In addition to the populations identified within the point intercept plots, 1 group of plants was found outside the plots while traveling between survey points (Map 4). The density of this group was quite low and given a rating of 1. Even though the area was found outside the established plots, it was mapped so changes could be documented over time.

Shoreline Survey

Giant reed grass, once again, was not discovered within the project area during the August survey. Reed canary grass, on the other hand, was found to be very prevalent in preferred habitat types along the shoreline of Grandmother Falls Flowage. The grass occurs so frequently within these habitats that coverage by the species is ~ 50%, which made it impossible to map; therefore, this species is not shown on the attached maps. Purple loosestrife was also encountered during the survey; however, this species is not as common as reed canary grass. Seven colonies were identified as polygons and 13 other small groups were found along the shoreline and then mapped (Map 4). The density of these 20 populations ranged from 1-2. All large colonies (density = 2) were removed by clipping off the seed heads and chemically treating the stems, while all smaller colonies (density = 1) were manually pulled (Map 4). Photo documentation of reed canary grass and purple loosestrife is located in Attachment A.

DISCUSSION/CONCLUSIONS

The 2007 surveys conducted within Grandmother Falls Flowage again indicate the presence of Eurasian water milfoil, purple loosestrife and reed canary grass, while curly-leaf pondweed 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 in 2000, 2006, & 2007 did not indicate the presence of curly-leaf pondweed within the flowage. The species continued absence has led us to believe that it is very unlikely to suddenly appear within the next couple of years, but annual meander surveys will be conducted for this species during the next three years.

In 2000, the aquatic vegetation surveys conducted by NES did not identify the occurrence of Eurasian water milfoil within project waters. However, the presence of this species in Lake Mohawksin, upstream of Grandmother Falls Flowage, made it highly probable that EWM would establish itself within project waters due to its ability to root from floating plant fragments. In 2006, 16 separate occurrences were found and mapped. The survey conducted in 2007 resulted in the identification of 12 occurrences, a decrease from 2006. There was an increased number of EWM groups (two) located at plots within the point-intercept survey, but there were fewer groups (five) located outside the baseline plots collected for the point intercept survey (Table 1).

The 2006 survey had nine groups found at plots within the point intercept survey. Six of the groups identified in 2007 were the same as those found in 2006. The remaining three plots were reviewed, but no EWM was present. Many of these locations only contained one or two plants; therefore, the fact that no evidence was found is not unusual. The plants likely did not over-winter successfully. In addition to the six similar locations, five new locations were found at established plots in 2007.

Populations located outside of the point-intercept survey in 2006 were examined again in 2007 to determine the presence of EWM. In 2006, a scattered area of EWM was observed growing in a shallow bay off the main channel of the Wisconsin River. At the time of the survey, these isolated plants were observed canopied at the surface amongst a native plant community comprised mainly of water marigold. Upon visiting this location during August 2007, no occurrences of EWM were observed. Although this area may have proven to be suitable for EWM colonization, this population was not successful in over-wintering. The other colony identified in 2006 is present, but the population found in 2007 is smaller so it is labeled as a group rather than a colony (Map 4). The remaining five populations identified in 2006 were not observed in rake tows and no new groups were found outside the baseline plots.

Table 1. Eurasian Water-Milfoil 2006-2007 Survey Comparisons (Map 4).

Location	Status Compared to 2006	Comments
Mile 1, upstream from Grandmother Falls Dam	2 new populations found in established plots	Populations located on west side of river
Mile 1, upstream from Grandmother Falls Dam	3 populations found outside baseline plots not located	Two were located on the west and one on the east side of the river
Mile 1, upstream from Grandmother Falls Dam	1 population found in established plots not located	Population was located on the west side of the island
Between Miles 1-2, upstream from Grandmother Falls Dam	1 population the same	Located on west side of river
Between Miles 1-2, upstream from Grandmother Falls Dam	1 population found outside baseline plots not located	Population was located on the east side of the river
Between Miles 1-2, upstream from Grandmother Falls Dam	1 new population found in established plots	Located on south side of river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 new population found in established plots	Located on east side of island at confluence of Pine River
Between Miles 2-3, upstream from Grandmother Falls Dam	1 population found outside baseline plots not located	Population was located on the east side of the river
Between Miles 3-4, upstream from Grandmother Falls Dam	1 population the same	Smaller population located on south side of the island
Between Miles 4-5, upstream from Grandmother Falls Dam	1 population the same	Population is located on south side of the islands
Between Miles 5-6, upstream from Grandmother Falls Dam	2 populations the same	Populations located on north and south sides of the river
Between Miles 5-6, upstream from Grandmother Falls Dam	2 populations found in established plots not located	Populations were located on the east side of the island
Between Miles 5-6, upstream from Grandmother Falls Dam	1 new population found in established plots	Located on west side of island
Between Miles 6-7, upstream from Grandmother Falls Dam	1 population the same	Located on west side of river
Between Miles 6-7, upstream from Grandmother Falls Dam	1 population found in established plots not located	Population was located in bay on the west side of the river

Even though 12 groups were identified, the probability of finding EWM within the littoral zone of the Grandmother Falls Flowage is low. Although the frequency of occurrence and density of Eurasian water milfoil within the flowage is low, it has been found in 21 areas over a seven year period. The species ability to grow quickly and out-compete native flora indicates that there should be continued monitoring of Eurasian water milfoil. In 2008, we will review all baseline plots within the point-intercept survey and those population locations found outside the established plots both in 2006 and 2007 to determine if the identified populations increase in size, vanish or re-appear. The annual survey will also help locate any new populations, if they exist. Due to its low density, management actions are not suggested at this time; however, they may be required in the future if populations of this species increase dramatically. PCA will implement further action, as stated in Article 407, if requested by FERC personnel.

Giant reed grass was not found during the 2000, 2006, or the 2007 surveys. Because PCA will continue conducting shoreline surveys for purple loosestrife, this species will be noted in the future if observed.

In 2007, small clusters of purple loosestrife (indicated as a point) occurred at 10 locations along the river, the same number as identified in 2006. However, of the 10 locations identified in 2007 only one cluster has the same size and is in the same location compared to those identified in 2006. The other nine clusters were not identified in 2006 and are new populations. Five of the nine clusters from 2006 were not observed; three of these due to the fact that they were hand-pulled last year. The remaining four clusters were observed in 2007, but their populations grew enough that they are mapped as three separate colonies. In addition to those populations, four other colonies were also mapped, two of these are similar to colonies mapped last year except one of them increased in plant density. The remaining two colonies are new populations found in 2007 (Table 2)(Map 4).

Hand pulling plants in 2006 had a positive impact on eliminating those populations as was observed during the 2007 monitoring. Allowing the other clumps and colonies to remain, however, resulted in increased plant densities (between 1 and 2) and additional populations. These observations prompted us to conduct additional maintenance activities; therefore, all clumps and colonies observed in 2007 were treated through either hand pulling plants or by cutting the seed heads and treating the remaining plant with herbicide (Rodeo). Monitoring in 2008 will indicate how effective those treatments were in eliminating purple loosestrife. If the largest populations are not reduced by the 2007 maintenance activities, the release of *Galerucella* beetles that target purple loosestrife will be recommended for the summer of 2009. Hand pulling and herbicide applications will continue on small infestation in 2008 as these activities should effectively control the exotic, invasive species within the project area.

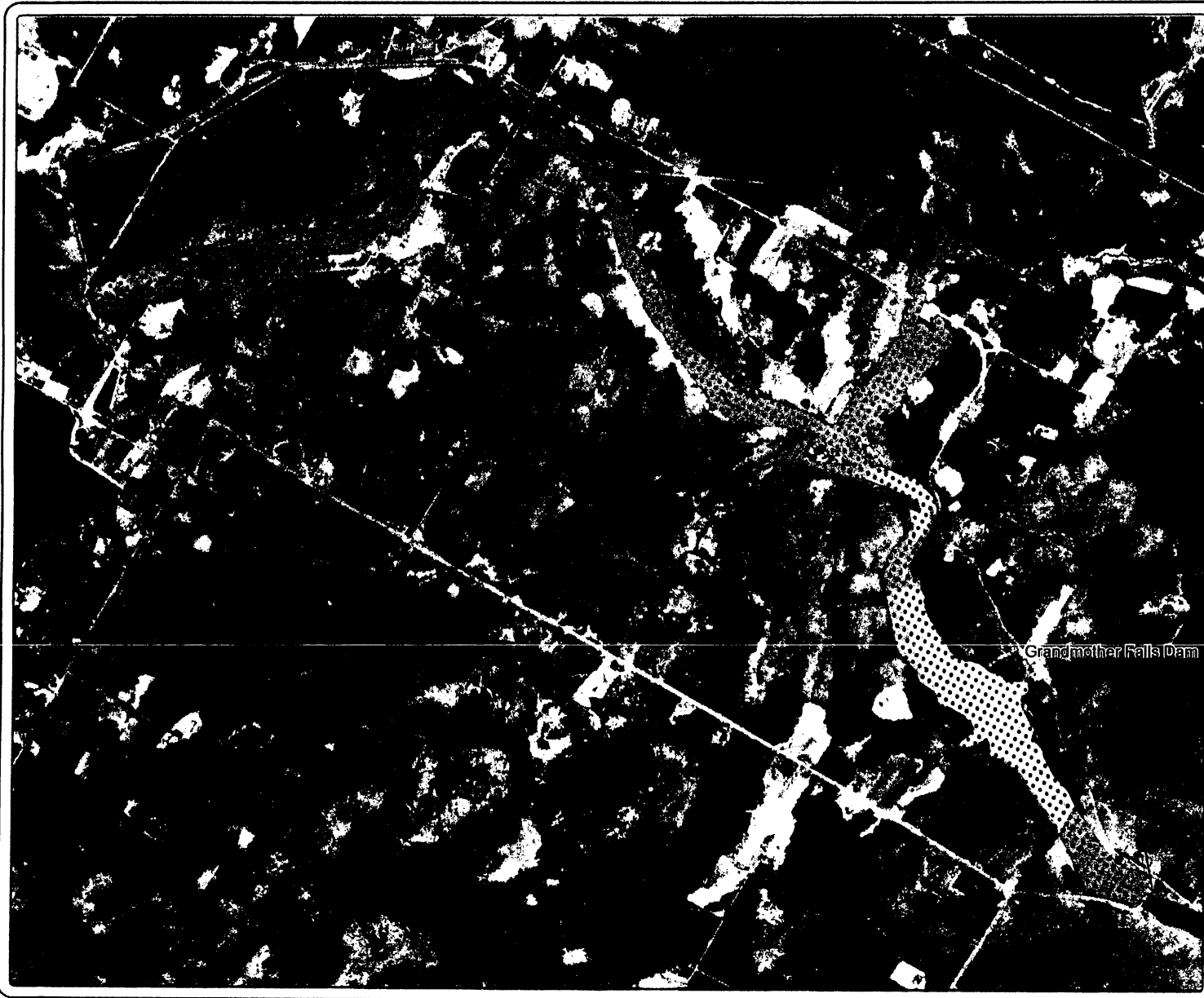
Table 2. Purple Loosestrife 2006-2007 Survey Comparisons (Map 4).

Location	Status Compared to 2006	Comments
Mile 1, upstream from Grandmother Falls Dam	No populations	
Between Miles 1-2, upstream from Grandmother Falls Dam	1 new cluster	Located on east side of river
Between Miles 1-2, upstream from Grandmother Falls Dam	3 clusters became 2 denser colonies	Populations located on the south side of the river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 cluster became 1 denser colony	Population located on west side of river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 new cluster	Located on the east side of the river
Between Miles 2-3, upstream from Grandmother Falls Dam	2 previous clusters gone	Populations were located on the east and west sides of river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 cluster the same	Located on east side of river
Between Miles 2-3, upstream from Grandmother Falls Dam	3 hand pulled cluster gone	Located on east and west side of river
Between Miles 3-4, upstream from Grandmother Falls Dam	4 clusters including one hand-pulled became 1 denser colony	Population is located on island
Between Miles 4-5, upstream from Grandmother Falls Dam	1 new cluster	Located on east side of river
Between Miles 5-6, upstream from Grandmother Falls Dam	3 new clusters	Populations located on north side of river and island
Between Miles 6-7, upstream from Grandmother Falls Dam	3 new clusters	Populations located on east side of river and island
Between Miles 6-7, upstream from Grandmother Falls Dam	1 colony the same	Located north of the island
Between Miles 6-7, upstream from Grandmother Falls Dam	2 new colonies	Located on east side of river

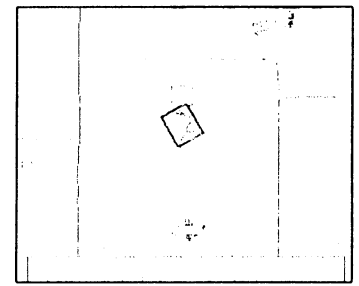
Results of the 2007 shoreline survey once again indicate that reed canary grass is prevalent (density of 2) outside the water. The Wisconsin DNR recommends a variety of methods for suppression of reed canary grass including prescribed burns, mowing, frequent cultivation or herbicide application. However, 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. Monitoring of the species will continue to ensure it does not displace all the native species along the river's shoreline.

REFERENCES

Wisconsin Department of Natural Resources. April 2005. Aquatic Plant Management in Wisconsin – Draft.



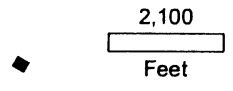
Map 1
Grandmother Flowage
 Lincoln County, Wisconsin
Project Waters & Base
Point-Intercept Locations



Extent of large map shown in

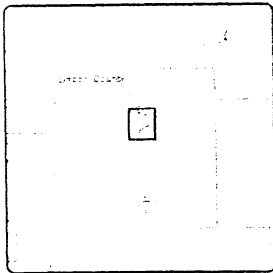
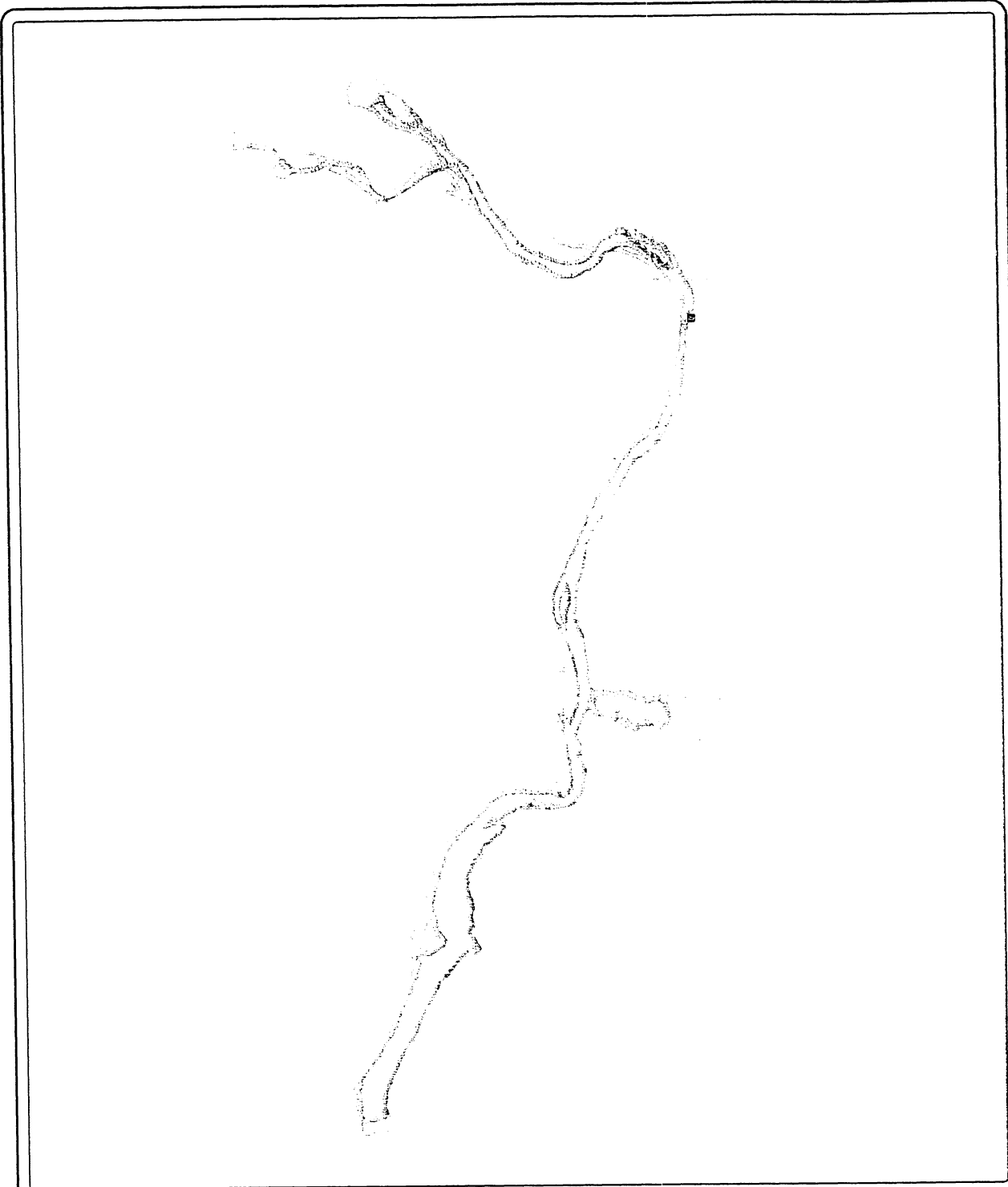
Legend

- P-I Survey Location
- ▨ Project Waters



Map Date: March 17, 2006

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 De Pere, WI 54115
 Lake Management Planning 920.338.8000
 www.onterra-acc.com



Extent of large map shown in inset

Legend

- Tracking Point
(Recorded every 30 Seconds)
- Survey Path
- Public Boatlanding

Map 2

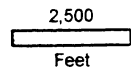
Grandmother Falls

Flowage

Lincoln County, Wisconsin

Curly-leaf Pondweed

Survey Track



Sources:
 Roads & Hydro: WDNR
 Aquatic Plant Survey: Onterra & NES, 2007
 Map date: February 22, 2008

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Lake Management Planning

LARGE-FORMAT IMAGES

One or more large-format images (over 8 1/2" x 11") go here.
These images are available in e-Library at:

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Parent Accession No.

20080414-0167

Number of page (s) in set: 2

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ATTACHMENT A

Exotic Species Photographs



Photo 1. Eurasian water milfoil



Photo 2: Purple Loosestrife



Photo 3. Purple Loosestrife island infestation



Photo 4. Purple Loosestrife island infestation.



Photo 5. Purple Loosestrife shoreline infestation



Photo 6. Purple Loosestrife and Reed Canary Grass island infestation.

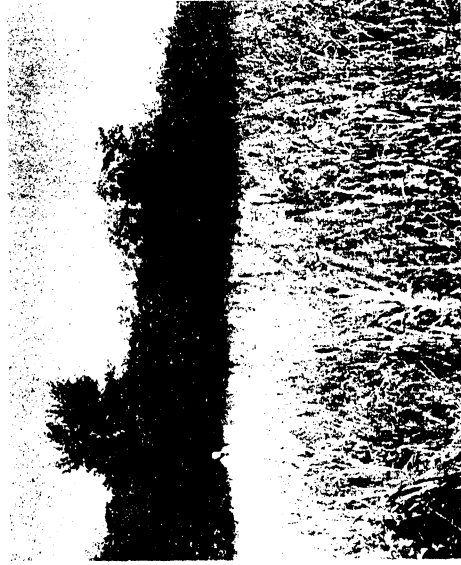


Photo 7. Chemically treated island with loosestrife infestation



Photo 8. Chemically treated island with loosestrife infestation