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November 7, 2006

Office of the Secretary,
Federal Energy Regulatory Commission
888 1st Street, N.E.
Washington, D.C. 20426

Little Quinnesec Falls Hydroelectric Project, FERC No. 2536 – Article 409, 2007 Exotic Species Report

In accordance with the Commission order approving the monitoring plan for Purple Loosestrife and Eurasian Milfoil within the Project boundary, we are submitting the enclosed report for 2007. No evidence of Purple Loosestrife was found within the Project however, one site downstream of the Project contained a small colony. A number of small sites contained Eurasian Milfoil and are detailed in the report.

Appropriate signage informing area users of the river are located at the boat access sites. Additionally, this information is being forwarded to the City of Niagara concurrent with this filing recommending that they treat the Purple Loosestrife in accordance with our consultant's comments.

Enclosed in the report is detail describing the herbicide treatment undertaken to control Eurasian Milfoil within the Project Boundary. While initial treatment did not produce the desired effect, in accordance with the recommendations in the report we are proposing to conduct treatment again in 2008. The results of that effort will be filed with the 2008 report.

Sincerely,

STORA ENSO NORTH AMERICA CORPORATION

Mark E. Anderson
Resources Manager

Enclosure: White Water Associates, Inc. Report

CC: File (Little Quinnesec Falls, LG-90-30 – Article 409)
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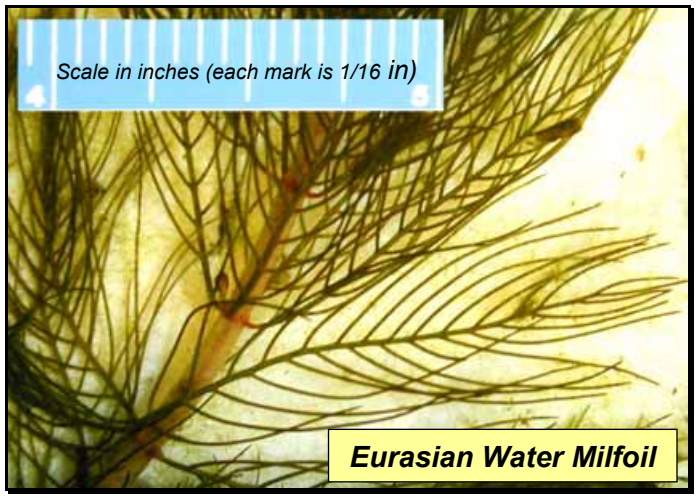
PROJECT REPORT

Monitoring The Little Quinnesec Falls Hydroelectric Project for Eurasian Water Milfoil and Purple Loosestrife

FERC Hydro Project No. 2536, Little Quinnesec Falls



Prepared for:

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Date: October 2007

PROJECT REPORT

Monitoring The Little Quinnesec Falls Hydroelectric Project for Eurasian Water Milfoil and Purple Loosestrife

FERC Hydro Project No. 2536, Little Quinnesec Falls

Fieldwork:	David Tiller, B.S., Field Biologist Tom Plummer, Field Technician
Data Analysis And Report	Dean Premo, Senior Ecologist Kent Premo, Technical Support Scientist David Tiller, B.S. Field Biologist

Cite as: Premo, Dean, David Tiller, and Kent Premo. 2007. Monitoring The Little Quinnesec Falls Hydroelectric Project for Eurasian Water Milfoil and Purple Loosestrife (FERC Hydro Project No. 2536, Little Quinnesec Falls). Report to Stora Enso North American Corporation by White Water Associates, Inc.

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SUMMARY

Monitoring for Eurasian water milfoil (*Myriophyllum spicatum*) and purple loosestrife (*Lythrum salicaria*) was conducted on the Little Quinnesec Falls Project (FERC Hydro Project No. 2536) in 2007 as required by Article 409 of the FERC order issuing a project license. Annual monitoring for these species has occurred at this project since 1998. Both plants have been reported in the Menominee River basin since 1990 although none in the project area before 2002.

Scientists from White Water Associates (an independent consulting firm) conducted fieldwork from a boat and on foot on July 30 and 31. Tom Witt (Stora Enso) accompanied the White Water team.

The project area continues to have a robust diversity of native aquatic plants including native water milfoils. In 2007, thirteen sites were documented with rooted Eurasian water milfoil (this was an increase of four sites since 2006). Eurasian water milfoil had not previously been recorded at four of the thirteen sites. Eight of the thirteen sites had between one and six rooted plants. Site D (constructed canals outside of the project area) had showed a large increase in plant numbers between 2005 and 2006, but no change in the number of Eurasian water milfoil plants in 2007. Site K (downstream of the Big Quinnesec Falls Dam) showed the largest increase of plants since 2006 (from three to one-hundred).

In 2007 there was an increase in areas of occurrence and numbers of Eurasian water milfoil plants. Nevertheless, the actual surface area coverage of Eurasian water milfoil relative to the size of the project area remains very small. Sites where Eurasian water milfoil has been found are shallow backwaters and areas with little current. In all cases, the species is part of a diverse community of native plants that seemingly keeps it in check. Eurasian water milfoil should continue to be monitored in the project area and options for control should be reviewed for possible application. An attempt at herbicide control of Eurasian water milfoil at three of the project area sites in 2007 showed little if any influence on Eurasian water milfoil number.

In 2007 six purple loosestrife plants were observed downstream of the Wisconsin rafting launch within the one-quarter mile project survey area. All of these plants were removed, bagged, and disposed of by Stora Enso staff.

INTRODUCTION AND BACKGROUND

Monitoring for Eurasian water milfoil (*Myriophyllum spicatum*) and purple loosestrife (*Lythrum salicaria*) was conducted on the Little Quinnesec Falls Project (FERC Hydro Project No. 2536) in 2007 as required by Article 409 of the FERC order issuing a project license. Annual monitoring for these non-native plant species has occurred at this project since 1998. There have been reports of both Eurasian water milfoil and purple loosestrife within the Menominee River basin since 1990 although none from the project area prior to 2002. Eurasian water milfoil has been reported since 1995 from the Twin Falls Flowage immediately upstream of the project area.

Neither Eurasian water milfoil nor purple loosestrife were reported from the Little Quinnesec Falls project during surveys conducted for the license application process (1990) and neither species was confirmed within the project area during monitoring in 1998, 1999, 2000, or 2001. Eurasian water milfoil was first documented in 2002 by observation of a few plants at two locations. All locations where Eurasian water milfoil has been found since 2002 have been small areas containing small numbers of individual plants mixed within a diverse community of native aquatic plants. "Beds" or "colonies" where Eurasian water milfoil is the dominant plant have not been observed. In 2002, several specimens of Eurasian water milfoil and both native water milfoil species (*M. sibiricum* and *M. heterophyllum*) were collected from the Little Quinnesec Falls project area and sent to experts Drs. Donald Les and Michael Moody of the University of Connecticut for further identification by genetic analysis. Their analysis of these specimens indicated that no hybrids were present, only the pure forms of each of the three species.

Purple loosestrife has been found since1998 growing along the Wisconsin shoreline of the river below the Little Quinnesec Dam (about 100 feet below the public access site). This area is within the one-quarter mile project survey area. Each year White Water Associates staff removed these plants by hand pulling, but they persisted until 2005 when they were absent. In 2005 a single non-flowering plant and two flowering plants were found near the first private property residence about 30 feet downstream of the original patch. White Water staff pulled these plants in 2005 and they were absent in 2006. In 2007, six flowering purple loosestrife plants were observed along the Wisconsin shoreline downstream of the rafter's boat launch. These were removed, bagged and disposed of by Stora Enso staff. Downstream from this area, and outside the project survey area, there were numerous flowering purple loosestrife plants. The City of Niagara was contacted by Stora Enso staff and agreed to dispose of these plants.

This document reports on 2007 survey results and presents information in five sections: (1) Summary, (2) Introduction and Background, (3) Methods, (4) Findings, and (5) Conclusions. Three appendices are included: Appendix A with a figure and tables; Appendix B with photos; and Appendix C with a report describing an herbicide treatment of Eurasian water milfoil conducted by Stora Enso and a contractor in 2007.

METHODS

The fieldwork for the survey was completed on July 30 and 31, 2007. Tom Witt (Stora Enso) accompanied David Tiller and Tom Plummer of White Water Associates during the two days of survey work on the reservoir and the river downstream of the dam. We used a 14-foot boat and 9.9 HP engine to survey the shoreline and other likely areas between the Little Quinnesec Falls Dam and the more upstream Big Quinnesec Falls Dam, including the numerous backwater wetlands. Most of the backwater wetlands are shallow and densely vegetated with a diversity of aquatic plants making motor use difficult. Oars were used to row the boat into these areas allowing more comprehensive coverage. Relatively shallow backwater areas encountered during the 2007 survey made it difficult to access a number of remote backwaters.

We visually surveyed for Eurasian water milfoil in aquatic plant beds and took samples by hand and metal garden rake. We closely examined the leaves of suspect plants, counting leaflets (average number of leaflets is the main morphological trait used to separate the native northern water milfoil (*Myriophyllum sibiricum*) from Eurasian water milfoil, although there is considerable variability within each species. Generally, the average number of leaflets for northern water milfoil is 5-11 with a reported maximum of 13. The average number for Eurasian water milfoil is 14-17 with a maximum of 20. Also useful later in the season is the presence of winter buds (turions) on northern water milfoil, structures not found on Eurasian water milfoil. Where Eurasian water milfoil was observed, we also examined for evidence of weevil herbivory.

When flowering, purple loosestrife is showy and easily identifiable. Peak blossoming extends from late July through August in northern Michigan. All wetlands and backwaters connected to the project area reservoir were visually inspected. Binoculars were used to scan the shore and less accessible backwaters. The project area downstream of the Little Quinnesec Falls dam was surveyed on foot and from a 17-foot canoe on July 31, 2007. As a single loosestrife plant can produce prodigious quantities of seeds, physical on-site surveys are necessary to ensure thorough survey.

In June 2007, Stora Enso (with assistance from a contractor) treated three areas of the impoundment that harbored Eurasian water milfoil. A description of the treatments and outcomes was prepared by Tom Witt of Stora Enso and is included as Appendix C.

FINDINGS

This report section presents the findings from the 2007 survey and integrates information from past surveys to provide insight into population dynamics of Eurasian water milfoil and purple loosestrife in the Little Quinnesec Falls project area.

Eurasian Water Milfoil

The project area continues to have a robust diversity of native aquatic plants. Native water milfoils in the flowage include *Myriophyllum heterophyllum* and *M. sibiricum*. *Vallisneria americana* and *Potamogeton richardsonii* continue to be some of the most abundant species throughout the flowage. Other species comprising the aquatic plant community include *Elodea canadensis, Elodea nuttallii, Potamogeton spirillus, P. epihydrus, P. diversifolius, P. zosterformis, P. robbinsii, Zosterella dubia, Ceratophyllum demersum, Ranunculus longirostris*, *Utricularia vulgaris,* and *Megalodonta beckii*.

The aerial photo shown in Figure 1 summarizes shows all sites where Eurasian water milfoil has been detected in the Little Quinnesec Falls project area since 2002. Table 1 presents additional information about these areas, including the latitude/longitude, selected backwater surface area, number of plants observed, and plant surface area involved. Table 2 summarizes the data over all years to provide historical context.

As in past years of monitoring at the Little Quinnesec Falls project area, the plants identified as Eurasian water milfoil exhibit considerable morphological variation. The numbers of leaflets are sometimes intermediate between the northern water milfoil and the Eurasian water milfoil. Appendix B presents photos that illustrate some of the variability (these photos were taken during the 2006 survey).

In the 2007 survey, we detected thirteen sites in the project area with rooted Eurasian water milfoil. Four of these thirteen sites had not had Eurasian water milfoil in the past. These included Sites P, Q, R, and S (see Figure 1). Eight of these thirteen sites (Sites A, E, F, J, N, O, R, and S) had between one and six individual plants. Sites P and Q (new sites in 2007) had an estimated fifteen plants each. Sites R and S (also new in 2007) had only 2 and 6 plants, respectively. Site D has had Eurasian water milfoil since 2004, but showed an estimated ten-fold increase in number of rooted plants between 2005 and 2006 (from ten plants to one hundred plants). The number of

Eurasian water milfoil plants observed in 2007 was the same as in 2006. Site D and Site R are part of a human-created canal system that extends from the river (see Figure 1). Site Q appears to be a natural riverine side channel that is adjacent this canal system.

Site I (see Figure 1) is the original location for Eurasian water milfoil on the Little Quinnesec Falls project area. It has consistently had a few rooted plants in 2002, 2003, 2004, and 2005. Despite very thorough searching in this area, we could not detect any plants in 2006. The shallow backwater level encountered during the 2007 survey prevented us from thoroughly searching the vicinity of Site I.

We observed approximately one-hundred rooted Eurasian water milfoil plants in 2007 at Site K (not far downstream of the Big Quinnesec Falls Dam). This was a large increase in number since 2006 when only three plants were observed. Eurasian water milfoil were observed at Site P (immediately downstream of the Big Quinnesec Falls Dam powerhouse) for the first time in 2007.

Both the number of sites with rooted plants and the absolute number of rooted plants increased in 2007. Site K accounts for a large proportion of the increase in plant numbers. All four new sites discovered in 2007 (P, Q, R, and S) had relatively small numbers of plants. Sites D and K harbor the largest populations of Eurasian water milfoil in the project area (each with an estimated one-hundred plants).

Site D and Site R are human-excavated extensions from the river (a canal that was constructed more than twenty years ago as part of a development). The existing wetland and open water habitat that was present was “disturbed” from this excavation process. Because this is a relatively new (or newly disturbed) open water habitat, there seems to be less organic material in the substrate. Generally the native plants in this area don’t form a dense coverage of the substrate, but instead are distributed more sparsely. In fact, there are some areas where sand substrate is visible. The water in this area is apparently more alkaline than in other parts of the project area. Evidence from this is in two forms. First, there is a fairly healthy growth of the calcium-loving alga called *Chara sp*. Second, there is a flocculent precipitate that encrusts and covers much of the aquatic vegetation in this area. Presumably this is a precipitate of calcium carbonate that results when calcium concentration (and therefore alkalinity) is high. These factors (disturbed site, sparser native vegetation, less organic material, alkaline water chemistry) may combine to make this a particularly suitable place for Eurasian water milfoil to grow. Site D was treated with herbicide in June of 2007 (this activity and its outcomes are described by a Stora Enso report in Appendix C).

The number of Eurasian water milfoil at Site L remained the same as in 2006, but shallow backwater levels encountered in the 2007 survey prevented a through examination of this bay. Like Site D, Site L was treated with herbicide in 2007 and more detail can be gleaned in Appendix C.

Three Eurasian water milfoil plants were observed at Site E during the 2007 survey. Four new sites were documented in the 2007 survey that had not harbored Eurasian water milfoil in the past. These sites (P, Q, R, and S) contained relatively few numbers of plants. One site (M) documented as containing Eurasian water milfoil in the 2006 survey, had none in 2007.

Despite the increase of sites and numbers of plants in 2007, the actual surface area coverage of Eurasian water milfoil relative to the size of the impoundment is very small (see Table 2 for summary). We used 349 acres as the size of the project area when calculating percentages. Clearly not all of the impoundment is suitable to Eurasian water milfoil because of depth or water current. Using aerial photo interpretation and in-the-field ground-truthing, we roughly estimate that between 100 and 150 acres of the project area might be suitable Eurasian water milfoil habitat (primarily consisting of shoreline areas and quiet backwaters). Even if this more conservative estimate of habitat is used the relative amount of coverage of existing Eurasian water milfoil is miniscule. The sites where Eurasian water milfoil has been found in the Little Quinnesec Fall project have been fairly shallow backwaters and areas with little current. In all cases, the species is part of a diverse and healthy community of native aquatic plants including *Potamogeton foliosus, Ranunculus longgirostris, Utricularia vulgaris, Ceratophyllum demersum* and the native milfoil, *Myriophyllum sibiricum*. In most of the sites where it is found as a rooted plant, the number of plants is very low. Eurasian water milfoil does not appear to be "taking over" the locations in which it is found, although the population size at Site K has increased, a similar increase at Site D from 2005 to 2006 has leveled off in 2007.

Purple Loosestrife

As in past years of the survey, no purple loosestrife was found within the portion of the project area, lying between the Little Quinnesec Dam and the Big Quinnesec Dam.

Purple loosestrife has been found each year starting in 1998 until present growing along the Wisconsin shoreline of the river downstream of the Little Quinnesec Dam about 100 feet downstream of the public access site. This area is within the one-quarter mile project survey area.

Each year, White Water Associates staff removed these plants by hand pulling, but the plants persisted until 2005 when they were absent. In 2005, a single non-flowering plant and two flowering plants were found near the first private property residence about 30 feet downstream of the original patch. White Water Associates staff pulled these three plants in 2005 and this site was absent of plants in 2006 and 2007. In 2007, we observed no purple loosestrife on the Michigan side of the river below the Little Quinnesec Falls Dam. In 2007, six purple loosestrife plants were located on the Wisconsin side of the river, downstream of the rafter's boat launch. Stora Enso staff removed, bagged, and disposed of these plants. Additional purple loosestrife plants were observed on the Wisconsin shoreline outside of the project survey area along the Highway 141 park. The City of Niagara was contacted by Stora Enso staff and agreed to dispose of these plants.

A single pulling of Purple loosestrife plants is not sufficient to eliminate the species as it can sprout from fragments of roots left in the soil, or seeds still present in the seed bank. Removal of the flowering stalks each year limits the number of seeds produced and the species' ability to propagate via seeds. More effective control would require application of herbicide to freshly cut stems. Repeated pulling of the existing stems of loosestrife has prevented it from blooming and spreading and may finally effect its to complete eradication at this site.

CONCLUSIONS

Eurasian water milfoil is known for spreading rapidly, usurping space, and dominating the aquatic plant community. Over the years at the Little Quinnesec Falls Project area, the Eurasian water milfoil has been quite limited in occurrence and numbers. It may be that the robust populations of native plants help keep this invasive species in check. In 2007 there were increases in areas of occurrence and numbers of plants, but the actual area of coverage remains very small. Eurasian water milfoil should continue to be monitored in the project area for changes in extent and population size.

During our field surveys in 2006, we attempted to hand-pull some of the individual Eurasian water milfoil plants, but found this to be an impractical means of control in this setting. First of all there is uncertainty about getting the underground portion of the plant and a danger of fragmenting the upper portions and setting some adrift to possibly colonize other areas. The process of wading or swimming and pulling the plants muddies the water making for difficult visibility. We also tried using a rake to pull the plants but the same difficulties exist as with the hand pulling. An attempt at herbicide control of Eurasian water milfoil at three project area sites showed little or no effect (see Appendix C).

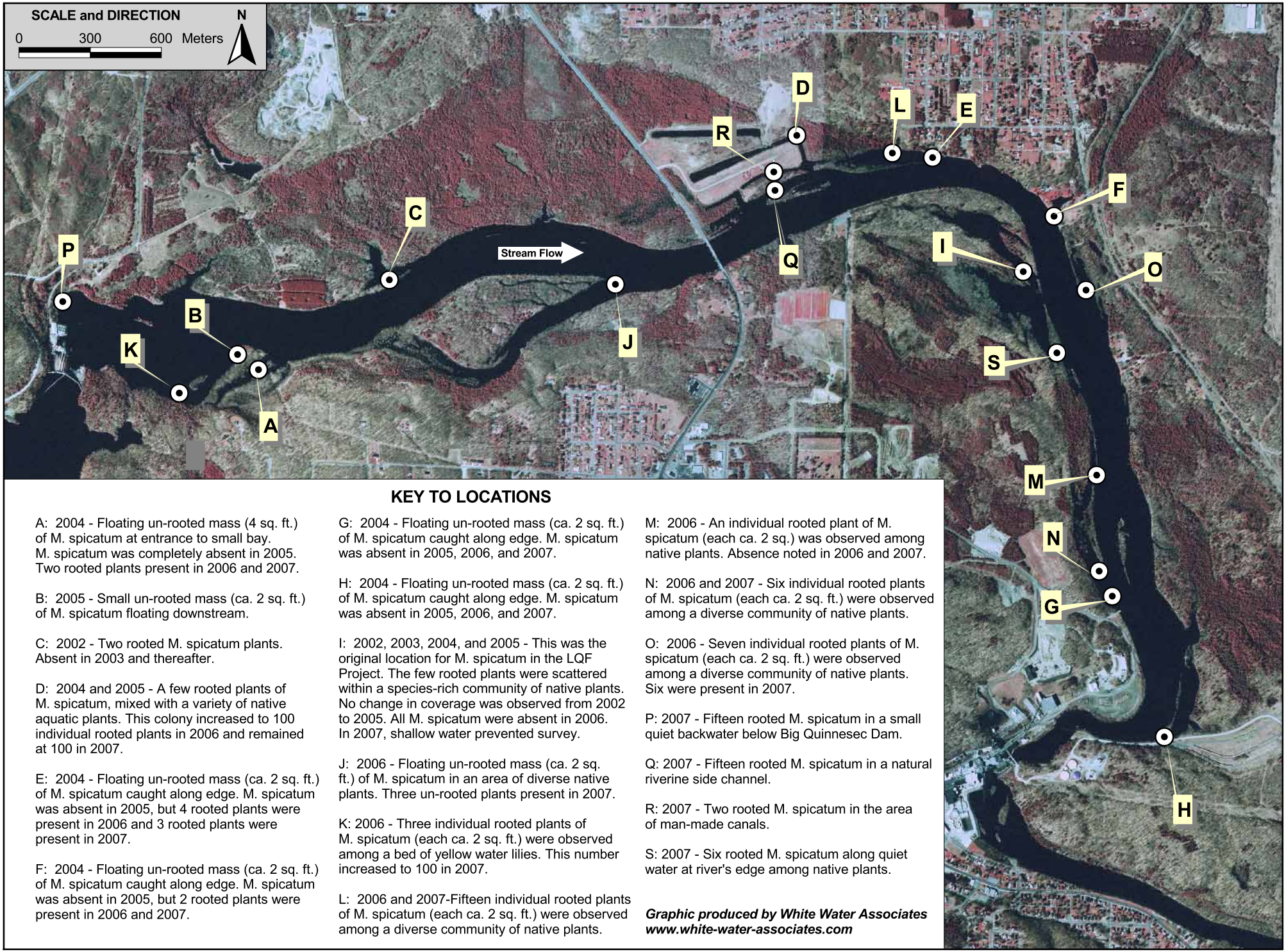
Six purple loosestrife plants were observed in the project area in 2007. Hand pulling and disposal appears to be successful at controlling the spread of purple loosestrife downstream of the Wisconsin rafter's boat launch.

In 1999, brochures on loosestrife control were made available to the public. Warning signs from the Wisconsin DNR, advocating that boaters clean their boats and motors of any plant material from other bodies of water, were posted at boat landings in 2001 and are still present.

APPENDIX A
Location and History of Eurasian Water Milfoil

(FIGURE 1, TABLES 1 AND 2)

Figure 1. Locations of Eurasian Water Milfoil (Myriophyllum spicatum L.) in the Little Quinnesec Falls Project (FERC #2536), 2002-2007.



KEY TO LOCATIONS

A: 2004 - Floating un-rooted mass (4 sq. ft.) of M. spicatum at entrance to small bay. M. spicatum was completely absent in 2005. Two rooted plants present in 2006 and 2007.

B: 2005 - Small un-rooted mass (ca. 2 sq. ft.) of M. spicatum floating downstream.

C: 2002 - Two rooted M. spicatum plants. Absent in 2003 and thereafter.

D: 2004 and 2005 - A few rooted plants of M. spicatum, mixed with a variety of native aquatic plants. This colony increased to 100 individual rooted plants in 2006 and remained at 100 in 2007.

E: 2004 - Floating un-rooted mass (ca. 2 sq. ft.) of M. spicatum caught along edge. M. spicatum was absent in 2005, but 4 rooted plants were present in 2006 and 3 rooted plants were present in 2007.

F: 2004 - Floating un-rooted mass (ca. 2 sq. ft.) of M. spicatum caught along edge. M. spicatum was absent in 2005, but 2 rooted plants were present in 2006 and 2007.

G: 2004 - Floating un-rooted mass (ca. 2 sq. ft.) of M. spicatum caught along edge. M. spicatum was absent in 2005, 2006, and 2007.

H: 2004 - Floating un-rooted mass (ca. 2 sq. ft.) of M. spicatum caught along edge. M. spicatum was absent in 2005, 2006, and 2007.

I: 2002, 2003, 2004, and 2005 - This was the original location for M. spicatum in the LQF Project. The few rooted plants were scattered within a species-rich community of native plants. No change in coverage was observed from 2002 to 2005. All M. spicatum were absent in 2006. In 2007, shallow water prevented survey.

J: 2006 - Floating un-rooted mass (ca. 2 sq. ft.) of M. spicatum in an area of diverse native plants. Three un-rooted plants present in 2007.

K: 2006 - Three individual rooted plants of M. spicatum (each ca. 2 sq. ft.) were observed among a bed of yellow water lilies. This number increased to 100 in 2007.

L: 2006 and 2007-Fifteen individual rooted plants of M. spicatum (each ca. 2 sq. ft.) were observed among a diverse community of native plants.

M: 2006 - An individual rooted plant of M. spicatum (each ca. 2 sq.) was observed among native plants. Absence noted in 2006 and 2007.

N: 2006 and 2007 - Six individual rooted plants of M. spicatum (each ca. 2 sq. ft.) were observed among a diverse community of native plants.

O: 2006 - Seven individual rooted plants of M. spicatum (each ca. 2 sq. ft.) were observed among a diverse community of native plants. Six were present in 2007.

P: 2007 - Fifteen rooted M. spicatum in a small quiet backwater below Big Quinnesec Dam.

Q: 2007 - Fifteen rooted M. spicatum in a natural riverine side channel.

R: 2007 - Two rooted M. spicatum in the area of man-made canals.

S: 2007 - Six rooted M. spicatum along quiet water at river's edge among native plants.

Graphic produced by White Water Associates
www.white-water-associates.com

Table 1. History of Eurasian Water Milfoil (*Myriophyllum spicatum* L.) in the Little Quinnesec Falls Project (FERC #2536)

Site Code	Year	Latitude & Longitude Coordinates	Backwater Area (acres)	Present (Y/N)	Rooted (Y/N)	Number of Plants	Plant Surface Area (sq. ft).	Plant Surface Area (acres)	% Project boundary acres (349 total acres)	Weevil evidence (Y/N)[1]	Comments
A	2004	45.78759 -88.03029	2.3	Y	N	1	2	0.00005	0.000000		Floating un-rooted mass (ca. 4 square feet) of *M. spicatum* at entrance to small bay.
A	2006			Y	Y	2	4	0.00009	0.000000	N	After absence in 2005, two rooted *M. spicatum* in 2006.
A	2007			Y	Y	2	4	0.00009	0.000000	N	Two rooted *M. spicatum* plants among abundant native milfoil and bladderwort.
B	2005	45.78848 -88.03040		Y	N	1	2	0.00005	0.000000		Small un-rooted mass (ca. 2 square feet) of *M. spicatum* floating downstream.
C	2002	45.79125 -88.02352	3.4	Y	Y	2	4	0.00009	0.000000		Two rooted plants present in 2002, but absent in subsequent years.
D	2004	45.79701 -88.00139	1.6	Y	Y	6	12	0.00028	0.000001		A few rooted plants of *M. spicatum* , mixed with a variety of native aquatic plants.
D	2005			Y	Y	10	20	0.00046	0.000001		A few rooted plants of *M. spicatum* , mixed with a variety of native aquatic plants.
D	2006			Y	Y	100	200	0.00459	0.000013	N	Rooted plants have increased in number to ca. 100 rooted plants approximately 150 feet in either direction from the GPS point.
D	2007			Y	Y	100	200	0.00459	0.000013	N	Rooted plants at about the same number and dispersion as in 2006.
E	2004	45.7963 -87.99399		Y	N	1	2	0.00005	0.000000		Floating un-rooted mass (ca. 2 square feet) of *M. spicatum* found along river's edge.

Table 1. History of Eurasian Water Milfoil (*Myriophyllum spicatum* L.) in the Little Quinnesec Falls Project (FERC #2536)

Site Code	Year	Latitude & Longitude Coordinates	Backwater Area (acres)	Present (Y/N)	Rooted (Y/N)	Number of Plants	Plant Surface Area (sq. ft).	Plant Surface Area (acres)	% Project boundary acres (349 total acres)	Weevil evidence (Y/N)[1]	Comments
E	2006			Y	Y	4	8	0.00018	0.000001	N	After an absence in 2005, 4 rooted plants were present in 2006. These are downslope from several houses on the bank and docks that accommodate boats and pontoon boats.
E	2007			Y	Y	3	6	0.00014	0.000000		Three rooted plants observed. Similar in condition as in 2006.
F	2004	45.7921 -87.98744	1.0	Y	N	1	2	0.00005	0.000000		Floating un-rooted mass (ca. 2 square feet) of *M. spicatum* found along river's edge right at the mouth of Fumee Creek.
F	2006			Y	Y	2	4	0.00009	0.000000	N	Two rooted *M. spicatum* found along river's edge right at the mouth of Fumee Creek.
F	2007			Y	Y	2	4	0.00009	0.000000	N	Two rooted *M. spicatum* found along river's edge right at the mouth of Fumee Creek.
G	2004	45.77982 -87.98366		Y	N	1	2	0.00005	0.000000		Floating un-rooted mass (ca. 2 square feet) of *M. spicatum* caught along river's edge upstream of fire dock.
H	2004	45.77453 -87.98065	5.5	Y	N	1	2	0.00005	0.000000		Floating un-rooted mass (ca. 2 square feet) caught along river's edge.

Table 1. History of Eurasian Water Milfoil (*Myriophyllum spicatum* L.) in the Little Quinnesec Falls Project (FERC #2536)

Site Code	Year	Latitude & Longitude Coordinates	Backwater Area (acres)	Present (Y/N)	Rooted (Y/N)	Number of Plants	Plant Surface Area (sq. ft).	Plant Surface Area (acres)	% Project boundary acres (349 total acres)	Weevil evidence (Y/N)[1]	Comments
H	2007			Y	Y	15	30	0.00069	0.000002	N	Fifteen rooted *M. spicatum* (each ca. 2 sq ft) were observed among a diverse community of native aquatic plants. Eight of these plants were just upstream of the downstream tip of the island on the west side (river side) of the island and seven were just upstream of the downstream tip of the island on east side of the island.
I	2002	45.79204 -87.98893	17.6	Y	Y	3	6	0.00014	0.000000		A few rooted plants scattered within a species-rich community of native aquatic plants. This was original site for *M. spicatum* in the Little Quinnesec Falls Project area.
I	2003			Y	Y	4	12	0.00028	0.000001		A few rooted plants scattered within a species-rich community of native plants.
I	2004			Y	Y	4	12	0.00028	0.000001		A few rooted plants scattered within a species-rich community of native plants.
I	2005			Y	Y	4	12	0.00028	0.000001		A few rooted plants scattered within a species-rich community of native plants.
I	2006			N							All *M. spicatum* were absent.
I	2007			N							Shallow water prevented entry into this bay. We assume no change since 2006.
J	2006	45.79119 -88.01104	16.9	Y	N	1	2	0.00005	0.000000	N	Floating un-rooted mass (ca. 2 sq. feet) of *M. spicatum* in area of diverse native plants.

Table 1. History of Eurasian Water Milfoil (*Myriophyllum spicatum* L.) in the Little Quinnesec Falls Project (FERC #2536)

Site Code	Year	Latitude & Longitude Coordinates	Backwater Area (acres)	Present (Y/N)	Rooted (Y/N)	Number of Plants	Plant Surface Area (sq. ft).	Plant Surface Area (acres)	% Project boundary acres (349 total acres)	Weevil evidence (Y/N)[1]	Comments
J	2007			Y	N	3	6	0.00014	0.000000	N	Floating un-rooted plant fragments (ca. 6 sq. feet) of *M. spicatum* in area of diverse native plants.
K	2006	45.78674 -88.034822		Y	Y	3	6	0.00014	0.000000	N	Three rooted *M. spicatum* (each ca. 2 sq ft) observed in a bed of yellow water lilies.
K	2007			Y	Y	100	200	0.00459	0.000013	N	Rooted plants have increased in number to ca. 100 rooted plants in an area approximately 100x300 feet. These plants are mixed in with *Nuphar, Valisineria*, and *Potamogeton richardsonii*
L	2006	45.796423 -87.996198	5.2	Y	Y	15	30	0.00069	0.000002	N	Fifteen rooted *M. spicatum* (each ca. 2 sq ft) were observed among a diverse community of native aquatic plants.
L	2007			Y	Y	15	30	0.00069	0.000002	N	Shallow water prevented access into all parts of this bay, so it was estimated that the same number of rooted *M. spicatum* were present as in 2006 (among a diverse community of native aquatic plants).
M	2006	45.78440 -87.984675		Y	Y	1	2	0.00005	0.000000	N	An individual rooted plant of *M. spicatum* (ca. 2 square feet) was observed among native plants at the mouth of a small bay.
M	2007			N							No *M. spicatum* were observed at this location in 2007.
N	2006	45.780751 -87.984406		Y	Y	6	12	0.00028	0.000001	N	Six individual rooted *M. spicatum* (each ca. 2 sq ft) observed among a community of native plants at the mouth of a small bay.

Table 1. History of Eurasian Water Milfoil (*Myriophyllum spicatum* L.) in the Little Quinnesec Falls Project (FERC #2536)

Site Code	Year	Latitude & Longitude Coordinates	Backwater Area (acres)	Present (Y/N)	Rooted (Y/N)	Number of Plants	Plant Surface Area (sq. ft).	Plant Surface Area (acres)	% Project boundary acres (349 total acres)	Weevil evidence (Y/N)[1]	Comments
N	2007		3.7	Y	Y	6	12	0.00028	0.000001	N	Shallow water prevented access to this shallow bay; we therefore assume conditions to be the same as in 2006.
O	2006	45.791406 -87.985502	1.6	Y	Y	7	14	0.00032	0.000001	N	Seven individual rooted *M. spicatum* (each ca. 2 sq ft) observed among a diverse community of native plants in a bay upstream of Verso park.
O	2007			Y	Y	6	12	0.00028	0.000001	N	Six individual rooted *M. spicatum* (each ca. 2 sq ft) observed among a community of native plants in bay upstream of Verso park.
P	2007	45.79002 -88.04108		Y	Y	15	30	0.00069	0.000002	N	New find in area just below the Big Quinnesec Dam on the north side of the river. They were distributed in an area of 10x20 ft.
Q	2007	45.79491 -88.00246	7.4	Y	Y	15	30	0.00069	0.000002	N	This new find is in an apparent natural riverine channel adjacent the area where old man-made excavations (canals) were made. These plants were scattered throughout the channel.
R	2007	45.79563 -88.00259	1.2	Y	Y	2	4	0.00009	0.000000		Two rooted plants present in 2007 among native plants.
S	2007	45.78943 -87.98668		Y	Y	6	12	0.00028	0.000001	N	Six individual rooted *M. spicatum* (each ca. 2 sq ft) were observed among a community of native plants in quiet water along the river's edge.

[1] *Field staff began checking for evidence of weevil herbivory on M. spicatum in 2006.*

Table 2. Summary of Total Plant Observations of Eurasian Water Milfoil in the Little Quinnesec Falls Project (FERC #2536)

Year of Survey	Number of Sites with Rooted Plants	Number of Rooted Plants	Number of Un-rooted Plants	Total Number of Plants	Surface Area (sq. ft.)[1]	Surface Area (acres)[1]	Percent Project Boundary Acres[2]
2002	2	5	0	5	10	0.00023	0.000001
2003	1	4	0	4	12	0.00028	0.000001
2004	2	10	5	15	34	0.00078	0.000002
2005	2	14	1	14	32	0.00073	0.000002
2006	9	140	1	141	282	0.00647	0.000018
2007	13	290	3	293	586	0.01349	0.000039

[1] *The surface area is based on the total number of plants (rooted and un-rooted) and assumes two square feet of surface area coverage (as viewed from above) for each plant.*

[2] *Calculation of percent project boundary acres assumes 349 acres for the project area.*

APPENDIX B
(PHOTOS)

Photo 1. *Mryiophyllum spicatum* (Eurasian water milfoil) with a typical number of leaflets (14 on this specimen -counting on one side of the leaf).

Photo 2. Eurasian water milfoil leaf with a typical number of leaflets (14 on this specimen -counting on one side of the leaf).

Photo 3. Eurasian water milfoil leaf with a typical number of leaflets and some calcium precipitate encrust-ing the leaf (this specimen was from the human-made channel designated Location D on Figure 1).

Photo 4. Eurasian water milfoil leaf displaying no evidence of weevil damage to the stems. (Despite careful inspection, no weevil evidence was detected on Eurasian water milfoil in the Little Quinnesec Falls population.)

APPENDIX C

Report on 2007 Herbicide Treatment for Eurasian Water Milfoil at selected sites in the Little Quinnesec Falls Project Area

By
Tom Witt, Utilities Technical Coordinator
Stora Enso North American Corporation
1101 Mill Street
Niagara, WI. 54151a

Date:	October 8, 2007
Subject:	HERBICIDE TREATMENT REPORT (Eurasian Water Milfoil Control Plan) prepared by Tom Witt Stora Enso
To:	Dean Premo – White Water Associates Inc.
CC:	Mark Anderson (Stora Enso)
From:	Tom Witt (Stora Enso (715) 251- 8334))

The Stora Enso Niagara mill submitted last fall to FERC a Eurasian Water Milfoil Control Plan for Article 409. This plan was accepted by FERC on February 7, 2007 (Project No. 2536-071). Tracking dates for chemically treating three project backwater areas with 2,4 D chemical treatment are listed below.

4/19/07 - Permit submitted to Michigan DEQ for approval applying 2,4 D chemical at 150# per acre.

6/6/07 - Permit approved by Michigan DEQ for chemical treatment by Wisconsin Lakeand Pond Resource LLC. There were several delays for additional information or clarification of treatment areas.

6/11/07 - Wisconsin Lake and Pond Resource LLC applied 2,4 D chemical to three permit approved areas (0.74 acres total). Table 1-A and 1-B map out the three treatment areas. Aquatic Vegetation Surveys (Tables 2-A, 2-B, 2-C) were completed for each area per Michigan's DEQ direction. River temperature was approximately 64 degrees F on this day.

7/30/07_- Follow-up chemical effectiveness survey completed by Stora Enso staff on July 30 during White Water Associates' annual exotic species survey. Aquatic Vegetation Surveys (Tables 3-A, 3-B, 3-C) were completed for each area per Michigan's DEQ direction.

October 2007 - Eurasian Water Milfoil Control Plan effectiveness documented in a report prepared by Stora Enso staff and include as Appendix C in 2007 Project Report: Monitoring The Little Quinnesec Falls Hydroelectric Project for Eurasian Water Milfoil and Purple Loosestrife FERC Hydro Project No. 2536, Little Quinnesec Fallsprepared by White Water Associates, Inc.

Chemical Treatment Notes

Site #1: AVAS #1 and #2 (using aerial map – letter D)

1. Dye was added after the treatment area with no movement or flow detected.
2. AVAS #1 area was underestimated and only the west end was chemically treated.

3. AVAS #1 area is about 1.0 acres verses the permit area because the leg to the river is much longer than the original estimate.
4. Eurasian Water Milfoil (EWM) had areas in AVAS #1 where it was canopied and buds were evident.
5. Wis. Lake and Pond felt the EWM treatment timing was too late for an effective kill.
6. There did not appear to be any kill of EWM in AVAS #1 when surveyed on 7/30/07.
7. Most abundant species were EWM, chara and native milfoil. All were present in both surveys and the chemical treatment did not impact the non-EWM species.

Site #2: AVAS #3, #4 and #5 (using aerial map – letter L)

1. Dye was added in AVAS #4 area and moved towards AVAS #3 due to the wind, no detectable flow was observed.
2. The area for treating AVAS #4 and #5 was underestimated in length and only AVAS #4 was chemically treated. AVAS #3 would have been difficult to treat due to shallow water constraints for a boat.
3. AVAS #3 and #4 areas are about 3.0 acres verses the permit area because the leg to the river is much longer than the original estimate.
4. Eurasian Water Milfoil (EWM) was observed in all three areas with minimal canopies and some buds.
5. Wis. Lake and Pond felt the EWM treatment timing was too late for an effective kill.
6. There did not appear to be any kill of EWM in AVAS #4 when surveyed on 7/30/07.
7. Most abundant species were flat stem pondweed, wild celery, yellow waterlily and buttercup. All were present in both surveys and the chemical treatment did not impact the non-EWM species.

Site #3: AVAS #6 and #7 (using aerial map – bay after letter O which is before Verso park)

1. Dye was added after the treatment area and formed a circular pattern, no detectable flow.
2. The area for treating AVAS #6 was estimated close to actual area.
3. All of the AVAS #6 area was chemically treated.
4. EWM in AVAS #6 was limited to a few scattered plants with no canopy or buds.
5. Wis. Lake and Pond felt the EWM treatment timing was too late for an effective kill.
6. There did not appear to be any kill of EWM in AVAS #6 when surveyed on 7/30/07.
7. Most abundant species were white waterlily and wild celery. These did not appear to be impacted by the chemical treatment.

Summary

The 2,4 D chemical treatment did not appear to have any impact on killing or controlling EWM. This is most likely a direct result of the warmer river temperature (64 degrees F) and maturity of the EWM plants (canopied and with buds). Other native species were not impacted negatively with the 2,4 D chemical treatment.

Recommendations

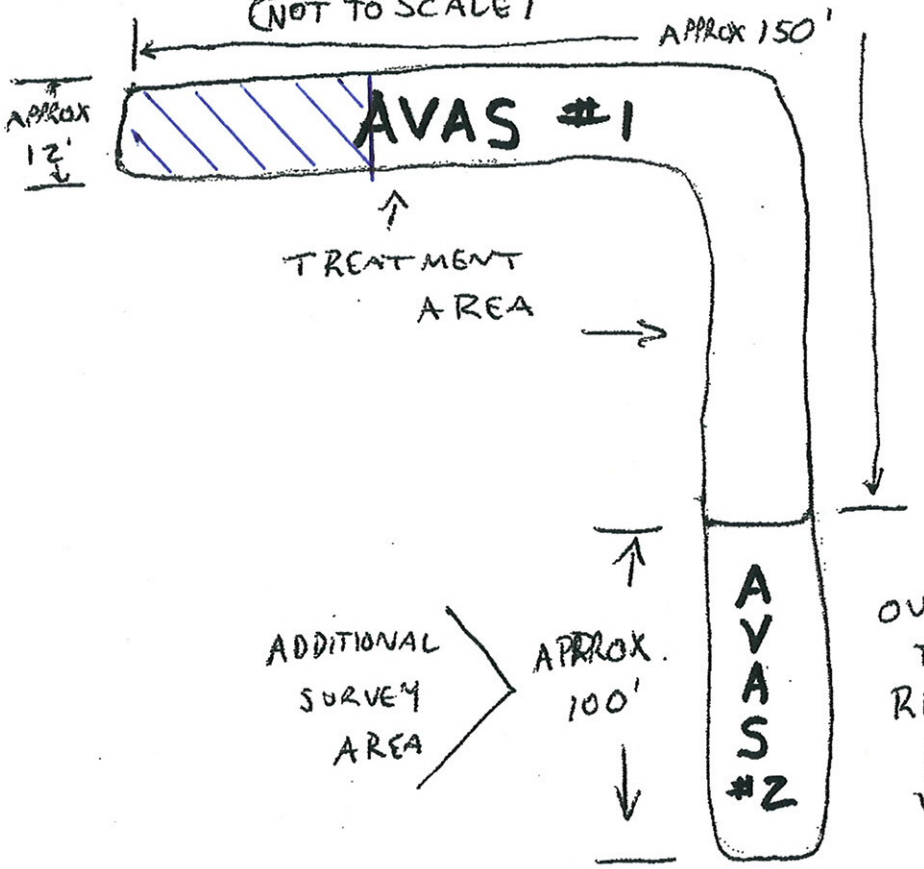
The 2007 chemical treatment does not provide a clear direction for 2008 EWM control. Based on the river temperature and EWM plant maturity, it is proposed the same three sites be treated in 2008 prior to the river temperature reaching 52 degrees F. The sites would be treated with 2,4 D at 150# per acre and then followed with 100 # per acre two weeks later. This was suggested by Wisconsin Lake and Pond as a better treatment method to control EWM. The same three sites would be expanded back to the original permit application which would require enough chemical to treat 5 acres. At this time, the Stora Enso Niagara mill would like to delay use of weevils until more data can be collected on their effectiveness on river systems.

Map produced by John Riley (MDEQ) 6-5-07

Table 1-A

MENOMINEE RIVER BACKWATER AREAS
AQUATIC VEGETATION SURVEY MAPS

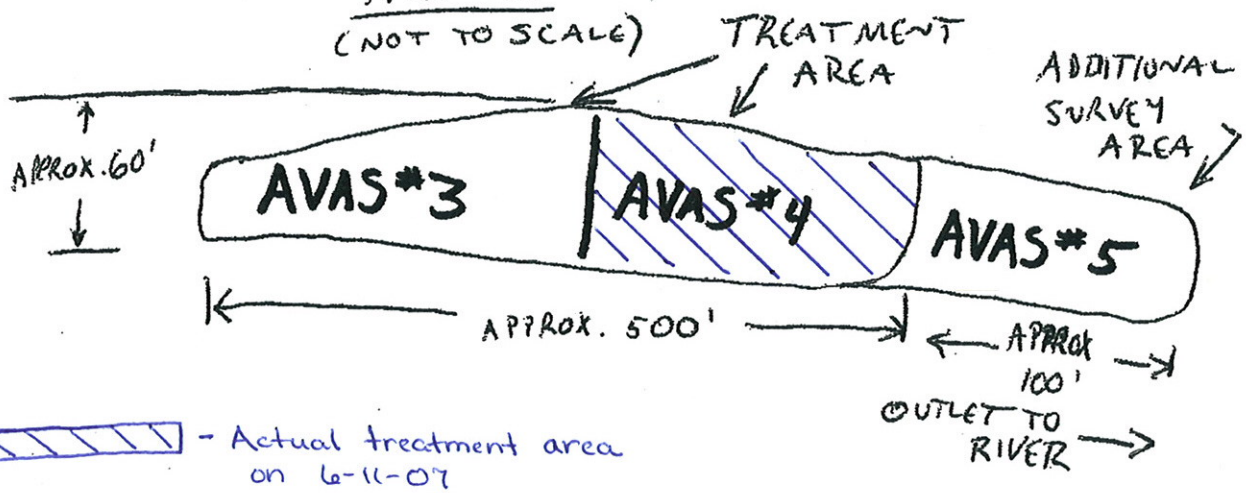
AREA 1
(NOT TO SCALE)



SURVEY ENTIRE TREATMENT AREA IN ADDITION TO 100 FEET DOWNSTREAM OF TREATMENT AREA.

AVAS: AQUATIC VEGETATION ASSESSMENT SITE

AREA 2
(NOT TO SCALE)



▨ - Actual treatment area on 6-11-07

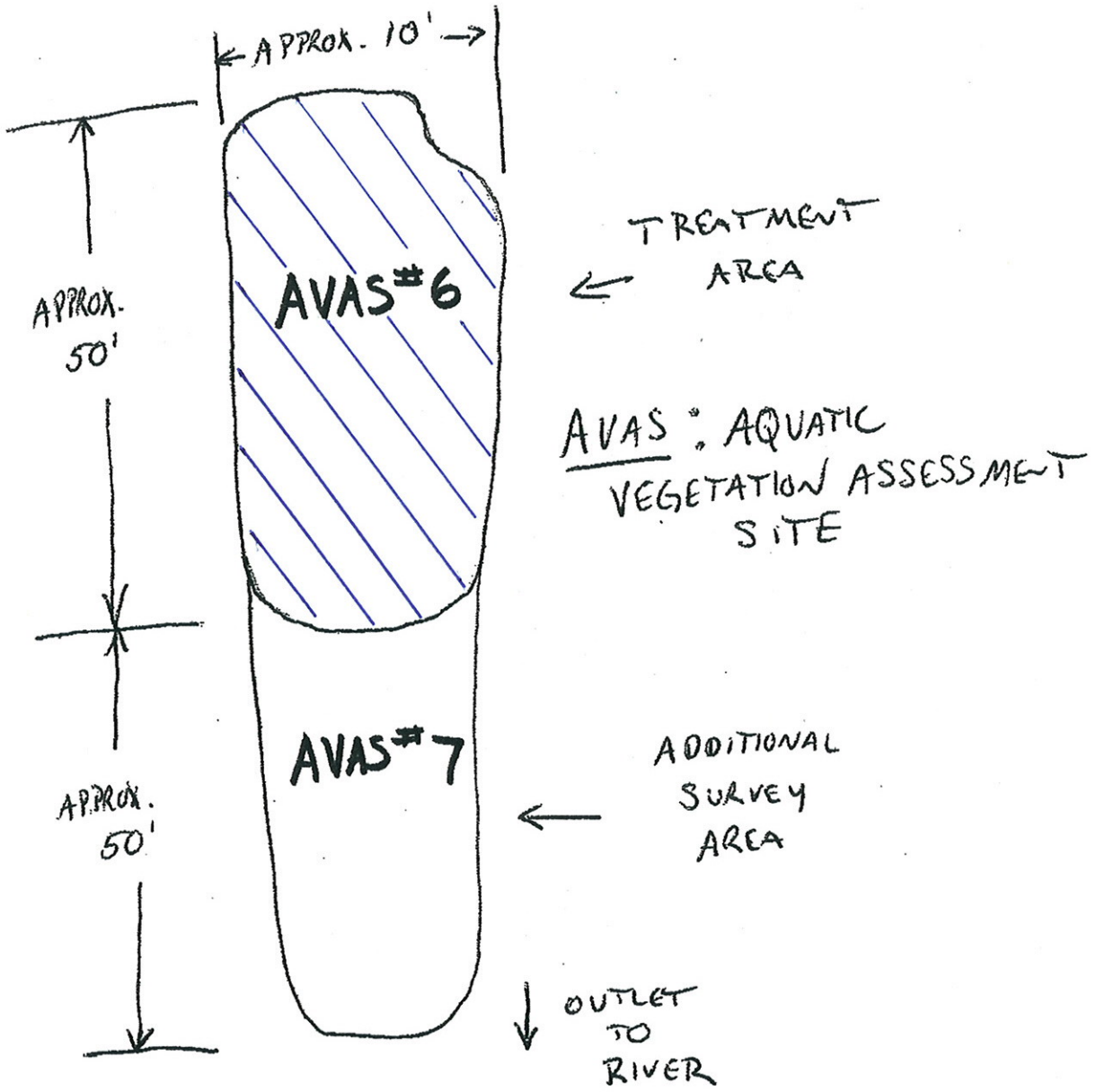
Map produced by John Riley (MDEQ) 6-5-07

Table 1-B

MENOMINEE RIVER BACKWATER AREAS
AQUATIC VEGETATION SURVEY MAPS

AREA 3

(NOT TO SCALE)



SURVEY ENTIRE TREATMENT AREA IN ADDITION TO 50 FEET DOWNSTREAM OF TREATMENT AREA.

- Actual Treatment Area on 6-11-07

Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: Area #1 Survey Date: 6-11-07

Table 2-A

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 1	NO. 2	NO.	NO.	NO.	NO.	NO.	NO.	Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil	C	C							1	Eurasian watermilfoil								
2	Curly leaf pondweed									2	Curly leaf pondweed								
3	Chara	C	C							3	Chara								
4	Thin leaf pondweed									4	Thin leaf pondweed								
5	Flat stem pondweed	A	A							5	Flat stem pondweed								
6	Robbins pondweed									6	Robbins pondweed								
7	Variable pondweed	A	–							7	Variable pondweed								
8	White stem pondweed									8	White stem pondweed								
9	Richardsons pondweed	A	B							9	Richardsons pondweed								
10	Illinois pondweed									10	Illinois pondweed								
11	Large leaf pondweed									11	Large leaf pondweed								
12	American pondweed									12	American pondweed								
13	Floating leaf pondweed	A	–							13	Floating leaf pondweed								
14	Water stargrass									14	Water stargrass								
15	Wild Celery									15	Wild Celery								
16	Arrowhead (submergent)									16	Arrowhead (submergent)								
17	Native milfoil	B	B							17	Native milfoil								
18	Whorled watermilfoil									18	Whorled watermilfoil								
19	Various leaf watermilfoil									19	Various leaf watermilfoil								
20	Coontail									20	Coontail								
21	Elodea	–	A							21	Elodea								
22	Bladderwort									22	Bladderwort								
23	Bladderwort (mini)									23	Bladderwort (mini)								
24	Buttercup	A	–							24	Buttercup								
25	Najas spp.									25	Najas spp.								
26	Brittle naiad									26	Brittle naiad								
27	Sago pondweed	A	A							27	Sago pondweed								
28										28									
29										29									
30	White waterlily									30	White waterlily								
31	Yellow waterlily	B	B							31	Yellow waterlily								
32	Watershield									32	Watershield								
33	Small duckweed									33	Small duckweed								
34	Great duckweed									34	Great duckweed								
35	Watermeal									35	Watermeal								
36	Arrowhead									36	Arrowhead								
37	Pickerelweed									37	Pickerelweed								
38	Arrow arum									38	Arrow arum								
39	Cattail	A	A							39	Cattail								
40	Bulrush	A	A							40	Bulrush								
41	Iris									41	Iris								
42	Swamp Loosestrife	–	A							42	Swamp Loosestrife								
43	Purple Loosestrife									43	Purple Loosestrife								
44										44									
45										45									

A ≤ 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Sheet Number _____ of _____

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Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: Area #2 Survey Date: 6-11-07

Table 2-B

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil			A	B	A				1	Eurasian watermilfoil								
2	Curly leaf pondweed									2	Curly leaf pondweed								
3	Chara									3	Chara								
4	Thin leaf pondweed									4	Thin leaf pondweed								
5	Flat stem pondweed			C	C	C				5	Flat stem pondweed								
6	Robbins pondweed									6	Robbins pondweed								
7	Variable pondweed									7	Variable pondweed								
8	White stem pondweed									8	White stem pondweed								
9	Richardsons pondweed			B	B	A				9	Richardsons pondweed								
10	Illinois pondweed									10	Illinois pondweed								
11	Large leaf pondweed									11	Large leaf pondweed								
12	American pondweed									12	American pondweed								
13	Floating leaf pondweed									13	Floating leaf pondweed								
14	Water stargrass									14	Water stargrass								
15	Wild Celery			C	C	B				15	Wild Celery								
16	Arrowhead (submergent)									16	Arrowhead (submergent)								
17	Native milfoil									17	Native milfoil								
18	Whorled watermilfoil									18	Whorled watermilfoil								
19	Various leaf watermilfoil									19	Various leaf watermilfoil								
20	Coontail			A	–	–				20	Coontail								
21	Elodea			–	–	A				21	Elodea								
22	Bladderwort									22	Bladderwort								
23	Bladderwort (mini)									23	Bladderwort (mini)								
24	Buttercup			B	B	A				24	Buttercup								
25	Najas spp.									25	Najas spp.								
26	Brittle naiad									26	Brittle naiad								
27	Sago pondweed			B	–	–				27	Sago pondweed								
28										28									
29										29									
30	White waterlily									30	White waterlily								
31	Yellow waterlily			B	B	B				31	Yellow waterlily								
32	Watershield									32	Watershield								
33	Small duckweed									33	Small duckweed								
34	Great duckweed									34	Great duckweed								
35	Watermeal									35	Watermeal								
36	Arrowhead									36	Arrowhead								
37	Pickerelweed									37	Pickerelweed								
38	Arrow arum									38	Arrow arum								
39	Cattail			–	A	–				39	Cattail								
40	Bulrush									40	Bulrush								
41	Iris									41	Iris								
42	Swamp Loosestrife									42	Swamp Loosestrife								
43	Purple Loosestrife									43	Purple Loosestrife								
44										44									
45	Filamentous Algae			A	A	A				45									

A ≤ 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Sheet Number _____ of _____

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Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: Area #3 Survey Date: 6-11-07

Table 2-C

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 6	NO. 7	NO. 8	Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil	A	A		1	Eurasian watermilfoil								
2	Curly leaf pondweed				2	Curly leaf pondweed								
3	Chara				3	Chara								
4	Thin leaf pondweed				4	Thin leaf pondweed								
5	Flat stem pondweed				5	Flat stem pondweed								
6	Robbins pondweed				6	Robbins pondweed								
7	Variable pondweed				7	Variable pondweed								
8	White stem pondweed				8	White stem pondweed								
9	Richardsons pondweed	A	A		9	Richardsons pondweed								
10	Illinois pondweed				10	Illinois pondweed								
11	Large leaf pondweed				11	Large leaf pondweed								
12	American pondweed				12	American pondweed								
13	Floating leaf pondweed				13	Floating leaf pondweed								
14	Water stargrass				14	Water stargrass								
15	Wild Celery	C	C		15	Wild Celery								
16	Arrowhead (submergent)				16	Arrowhead (submergent)								
17	Native milfoil				17	Native milfoil								
18	Whorled watermilfoil				18	Whorled watermilfoil								
19	Various leaf watermilfoil				19	Various leaf watermilfoil								
20	Coontail				20	Coontail								
21	Elodea	A	B		21	Elodea								
22	Bladderwort				22	Bladderwort								
23	Bladderwort (mini)				23	Bladderwort (mini)								
24	Buttercup	A	B		24	Buttercup								
25	Najas spp.				25	Najas spp.								
26	Brittle naiad				26	Brittle naiad								
27	Sago pondweed				27	Sago pondweed								
28					28									
29					29									
30	White waterlily	D	—		30	White waterlily								
31	Yellow waterlily				31	Yellow waterlily								
32	Watershield				32	Watershield								
33	Small duckweed				33	Small duckweed								
34	Great duckweed				34	Great duckweed								
35	Watermeal				35	Watermeal								
36	Arrowhead				36	Arrowhead								
37	Pickerelweed				37	Pickerelweed								
38	Arrow arum				38	Arrow arum								
39	Cattail				39	Cattail								
40	Bulrush				40	Bulrush								
41	Iris				41	Iris								
42	Swamp Loosestrife				42	Swamp Loosestrife								
43	Purple Loosestrife				43	Purple Loosestrife								
44					44									
45					45									

A ≤ 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Sheet Number _____ of _____

Table 3-A

Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: Area # 1 Survey Date: 7-30-07

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 1	NO. 2	NO.	NO.	NO.	NO.	NO.	NO.
1	Eurasian watermilfoil	C	C						
2	Curly leaf pondweed								
3	Chara	C	C						
4	Thin leaf pondweed								
5	Flat stem pondweed	A	A						
6	Robbins pondweed								
7	Variable pondweed	A	–						
8	White stem pondweed								
9	Richardsons pondweed	A	B						
10	Illinois pondweed								
11	Large leaf pondweed								
12	American pondweed								
13	Floating leaf pondweed	A	–						
14	Water stargrass								
15	Wild Celery								
16	Arrowhead (submergent)								
17	Native milfoil	B	B						
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail								
21	Elodea	–	A						
22	Bladderwort								
23	Bladderwort (mini)	A	–						
24	Buttercup								
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed	A	A						
28									
29									
30	White waterlily								
31	Yellow waterlily	B	B						
32	Watershield								
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail	A	A						
40	Bulrush	A	A						
41	Iris								
42	Swamp Loosestrife	–	A						
43	Purple Loosestrife								
44									
45									

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil								
2	Curly leaf pondweed								
3	Chara								
4	Thin leaf pondweed								
5	Flat stem pondweed								
6	Robbins pondweed								
7	Variable pondweed								
8	White stem pondweed								
9	Richardsons pondweed								
10	Illinois pondweed								
11	Large leaf pondweed								
12	American pondweed								
13	Floating leaf pondweed								
14	Water stargrass								
15	Wild Celery								
16	Arrowhead (submergent)								
17	Native milfoil								
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail								
21	Elodea								
22	Bladderwort								
23	Bladderwort (mini)								
24	Buttercup								
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed								
28									
29									
30	White waterlily								
31	Yellow waterlily								
32	Watershield								
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail								
40	Bulrush								
41	Iris								
42	Swamp Loosestrife								
43	Purple Loosestrife								
44									
45									

NOTE: AVAS #1 - only West corner chemically treated (Fw)

A ≤ 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Sheet Number _____ of _____

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Table 3-B

Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: Area # 2 Survey Date: 7-30-07

NOTE: AVAS #4 only area chemically treating 6-11-07 (TW)

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8
1	Eurasian watermilfoil			A	B	A			
2	Curly leaf pondweed								
3	Chara								
4	Thin leaf pondweed								
5	Flat stem pondweed			C	C	C			
6	Robbins pondweed								
7	Variable pondweed								
8	White stem pondweed								
9	Richardsons pondweed			B	B	A			
10	Illinois pondweed								
11	Large leaf pondweed								
12	American pondweed								
13	Floating leaf pondweed								
14	Water stargrass								
15	Wild Celery			C	C	B			
16	Arrowhead (submergent)								
17	Native milfoil								
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail			A	–	–			
21	Elodea			–	–	A			
22	Bladderwort								
23	Bladderwort (mini)								
24	Buttercup			B	B	A			
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed			B	–	–			
28									
29									
30	White waterlily								
31	Yellow waterlily			B	B	B			
32	Watershield								
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail			–	A	–			
40	Bulrush								
41	Iris								
42	Swamp Loosestrife								
43	Purple Loosestrife								
44									
45									

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil								
2	Curly leaf pondweed								
3	Chara								
4	Thin leaf pondweed								
5	Flat stem pondweed								
6	Robbins pondweed								
7	Variable pondweed								
8	White stem pondweed								
9	Richardsons pondweed								
10	Illinois pondweed								
11	Large leaf pondweed								
12	American pondweed								
13	Floating leaf pondweed								
14	Water stargrass								
15	Wild Celery								
16	Arrowhead (submergent)								
17	Native milfoil								
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail								
21	Elodea								
22	Bladderwort								
23	Bladderwort (mini)								
24	Buttercup								
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed								
28									
29									
30	White waterlily								
31	Yellow waterlily								
32	Watershield								
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail								
40	Bulrush								
41	Iris								
42	Swamp Loosestrife								
43	Purple Loosestrife								
44									
45									

A ≤ 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Table 3-C

Lake Name: Menominee River County: Dickenson Surveyor Name: SE Site: #3 Survey Date: 7-30-07

Standard Aquatic Vegetation Assessment Site Species Density Sheet

Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	Code No.	Plant Name	Aquatic Vegetation Assessment Site Numb NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil									1	Eurasian watermilfoil								
2	Curly leaf pondweed									2	Curly leaf pondweed								
3	Chara									3	Chara								
4	Thin leaf pondweed									4	Thin leaf pondweed								
5	Flat stem pondweed									5	Flat stem pondweed								
6	Robbins pondweed									6	Robbins pondweed								
7	Variable pondweed									7	Variable pondweed								
8	White stem pondweed									8	White stem pondweed								
9	Richardsons pondweed									9	Richardsons pondweed								
10	Illinois pondweed									10	Illinois pondweed								
11	Large leaf pondweed									11	Large leaf pondweed								
12	American pondweed									12	American pondweed								
13	Floating leaf pondweed									13	Floating leaf pondweed								
14	Water stargrass									14	Water stargrass								
15	Wild Celery									15	Wild Celery								
16	Arrowhead (submergent)									16	Arrowhead (submergent)								
17	Native milfoil									17	Native milfoil								
18	Whorled watermilfoil									18	Whorled watermilfoil								
19	Various leaf watermilfoil									19	Various leaf watermilfoil								
20	Coontail									20	Coontail								
21	Elodea									21	Elodea								
22	Bladderwort									22	Bladderwort								
23	Bladderwort (mini)									23	Bladderwort (mini)								
24	Buttercup									24	Buttercup								
25	Najas spp.									25	Najas spp.								
26	Brittle naiad									26	Brittle naiad								
27	Sago pondweed									27	Sago pondweed								
28										28									
29										29									
30	White waterlily									30	White waterlily								
31	Yellow waterlily									31	Yellow waterlily								
32	Watershield									32	Watershield								
33	Small duckweed									33	Small duckweed								
34	Great duckweed									34	Great duckweed								
35	Watermeal									35	Watermeal								
36	Arrowhead									36	Arrowhead								
37	Pickerelweed									37	Pickerelweed								
38	Arrow arum									38	Arrow arum								
39	Cattail									39	Cattail								
40	Bulrush									40	Bulrush								
41	Iris									41	Iris								
42	Swamp Loosestrife									42	Swamp Loosestrife								
43	Purple Loosestrife									43	Purple Loosestrife								
44										44									
45										45									

A < 2%
B > 2% to ≤ 20%
C > 20% to ≤ 60%
D > 60%

Sheet Number _____ of _____

R:\Wms\Inlandlk\Lk Vegetation Survey-lake\Templates\SPDENSITYWORKSHEET.xls

Submission Contents