We Energies
2007 Annual Report - Nuisance Plant Control Survey
White Rapids Reservoir
FERC Project #2357

We Energies' Environmental department staff, Mr. Mike Grisar and Mr. John Hrobar, conducted a survey from a boat of the entire shoreline at the White Rapids Reservoir project on August 5, 2007. All waters and appropriate wetlands accessible from the boat were evaluated. Those species targeted for the survey included purple loosestrife (*Lythrum salicaria*) and Eurasian water milfoil (*Myriophyllum spicatum*). The visual meander survey included areas of shallow water adjacent to the shorelines. Shallow water was surveyed to a point where the water depth and clarity excluded visibility conducive to observing submerged vegetation. On average, this depth was at approximately 7-feet.

No purple loosestrife plants were observed along the shores of the White Rapids Reservoir project area.

For each stand of Eurasian water milfoil encountered during the 2007 surveys, the stand location and perimeter were compared and verified with the 2006 monitoring data using a Trimble Geo XH GPS unit. Where the stand size was negligible, a single point in the center of the stand was located with the GPS. When significant changes in the stand perimeter were observed, these changes were marked with the GPS and reflected in the attached map. Changes in stand density were updated and are shown in Table 1. New stands not previously observed were mapped and recorded.

Various data were collected at each stand including stand/mat density and mat thickness (when present). The stand size was subsequently calculated from the collected GPS boundaries. A percent cover scale from 1-5 (sparse – dense) was used to accurately and consistently estimate stand densities:

Estimated Density Rating	% Cover
1 (sparse)	0 - 5%
2 (moderately sparse)	>5 - 25%
3 (moderate)	>25 - 75%
4 (moderately dense)	>75 - 95%
5 (dense)	>95%

Thirty-one stands of Eurasian water milfoil were observed to occur in 2007 at the White Rapids Reservoir project area (see attached map), an increase of 10 stands from 2006. The identified stands are distributed throughout the project area and range in size from 0.06-acre up to 15.44-acres.

Table 1. Eurasian Water Milfoil Stand Data.

Stand #	Stand/Mat Density[1]	Mat Thickness	Stand Size (acres)[2]
1	4	None	0.70
2	1	None	3.06
3	4 (+1)	None	7.98
4	5	0-4 inches	1.01
5	5	0-4 inches	3.47
6	1	None	10.58

Stand #	Stand/Mat Density[1]	Mat Thickness	Stand Size (acres)[2]
7	1	None	11.97
8	5	0-4 inches	1.88
9	1	None	1.46
10	1	None	0.64
11	1	None	1.20
12	1	None	1.11
13	4	None	0.59
14	1	None	0.95
15	1	None	0.88
16	4	None	1.57
17	2	None	15.44
18	4	0-4 inches	0.92
19	5	0-4 inches	1.46
20	1	None	8.77
21	4 (-1)	0-4 inches	3.57
22	1	None	0.17
23	1	None	0.99
24	1	None	0.22
25	1	None	0.06
26	1	None	0.23
27	1	None	0.10
28	1	None	0.43
29	1	None	0.62
30	1	None	0.26
31	1	None	3.50

1 – change in density rating from 2006 to 2007
2 – change in stand size from 2006 to 2007

Eurasian water milfoil is present in approximately 88-acres in the White Rapids Reservoir project area, an increase of approximately 9-acres from 2006. Cumulatively, the average stand size is 2.84-acres and has an average density rating of 2.13 per stand. In 2006, the average stand size was 3.77-acres and had an average density rating of 2.67 per stand. The decreases are attributable to all ten new stands having an average size of 0.60-acre and observed at a rating of 1 (sparse).

Out of the 31 observed stands, 10 (#1, 3, 4, 5, 8, 13, 16, 18, 19, and 21) have a high density (>75% cover). Stand 3 increased from a rating of 3 (moderate) in 2006 to 4 (moderately dense) in 2007. These stands are scattered throughout the reservoir, and they cover approximately 22-acres. The average size of these densely covered stands is approximately 2.21-acres. The only other stand where a change in density occurred was Stand 21 where the observed cover decreased from dense to moderately dense in 2007.

20 of the 31 stands have very low densities of Eurasian water milfoil with single stems growing sporadically among a lot of native species. The most common native species included northern water milfoil (*Myriophyllum sibiricum*), two-leaf water milfoil (*Myriophyllum heterophyllum*), a variety of pondweeds (*Potamogetan* sp.), common waterweed (*Elodea canadensis*), bladderwort (*Utricularia* sp.), coon's tail (*Ceratophyllum demersum*), water celery (*Vallisneria americana*), yellow pond lilies (*Nuphar* sp.), and white pond lily (*Nymphaea odorata*). These low density stands account for approximately 75% (65.80-acres) of the total area observed to have Eurasian water milfoil present.

In conclusion, there was a large increase in the number Eurasian water milfoil stands observed in the White Rapids project area. While the number of stands increased by nearly 50-percent, these newly observed stands were relatively small and observed at very low densities. This increase in the number of stands was a similar trend observed in the Chalk Hill and Brule project areas, also monitored in 2006.

A notable difference in the water clarity was observed in 2007 during the annual nuisance plant control surveys. The improved water clarity can be attributed to the low levels of precipitation that fell in the months prior to the 2007 monitoring. Less precipitation also led to less current in the impoundments on the system. Less current and better light penetration appears to have promoted the establishment of the new stands. Additionally, better clarity also allowed for clearer visibility of Eurasian water milfoil.

With the exception of the two stands that were noted above to have changed in density between 2006 and 2007, the balance of the stands observed in 2006 exhibited no detectable change in 2007. One additional factor related to visibility was the obvious presence of dense algae growth on the surface of the large vegetation beds. Low precipitation was likely one root cause; nonetheless, density estimations were difficult to observe where dense algae beds prevailed.