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December 19, 2007

Ms. Kimberly D. Bose
Office of the Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, NE
Washington, DC 20426

Subject: *Exotic Species Monitoring Survey*
Sturgeon Falls Hydroelectric Project - FERC Project No. 2720
City of Norway, Michigan, Licensee

Dear Secretary Bose:

The enclosed *Exotic Species Monitoring Survey* for the Sturgeon Falls Hydroelectric Project is submitted on behalf of the City of Norway, Michigan (City), to comply with provisions of the Federal Energy Regulatory Commission's (Commission) *Order Issuing New License* (January 6, 2005). Please note that the timing of this submission reflects the fact that the *Exotic Species Monitoring Survey* was conducted in October 2007 instead of during late July or early August, as originally anticipated. The survey was conducted in October because the growth of Eurasian watermilfoil in the survey area is more abundant and detectable in October than in July, thus allowing for optimal survey results.

The City's *Invasive Monitoring Plan*, which was developed to comply with License Article 406, calls for annual monitoring of the project impoundment through the year 2010. Monitoring for the 2007 calendar year was conducted by Wisconsin Lake & Pond Resource, LLC, of Berlin, Wisconsin.

One original and 7 copies of the monitoring survey are enclosed for the Commission's use. By copy of this letter, copies of the *Exotic Species Monitoring Survey* are also being provided to the Michigan Department of Natural Resources (Marquette Fisheries Station) and the U.S. Fish & Wildlife Service (Green Bay Management Assistance Office).

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If you have any questions regarding this submission or require additional information, please contact me.

Sincerely,

MEAD & HUNT, Inc.

Linda D. Mitchell

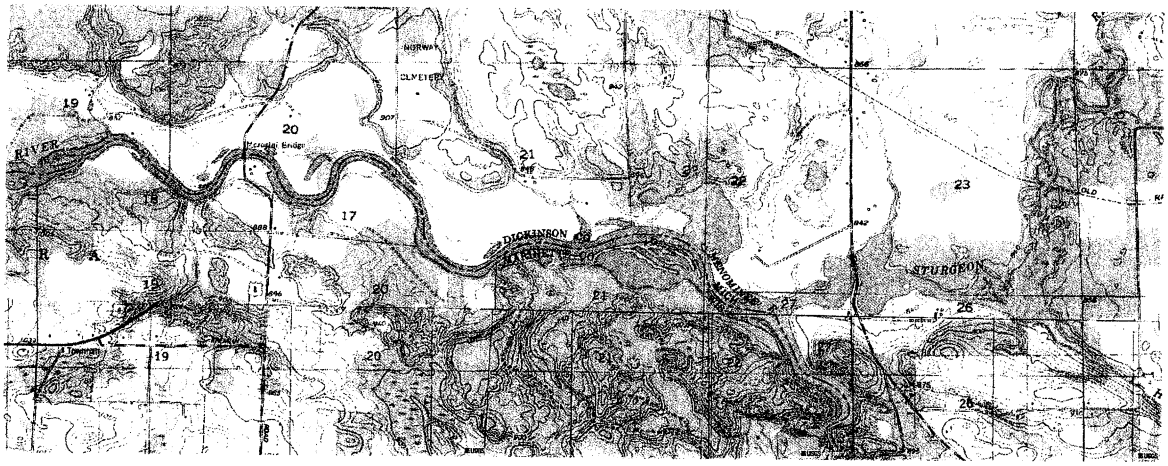
Linda D. Mitchell

Enclosures

cc: Ms. Jessica Mistak – Michigan Department of Natural Resources Marquette Fisheries Station
Mr. Tyler Yasenak – U.S. Fish & Wildlife Green Bay Management Assistance Office
Mr. Joe Pickart – City of Norway

Exotic Species Monitoring Survey; Sturgeon Falls Hydroelectric Project

(FERC Hydro Project No. 2720, Menominee River)



Prepared for:

City of Norway
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December 13, 2007

Introduction

In June 2005, the Invasive Plant Monitoring Plan for the Sturgeon Falls Hydroelectric Project was developed for the City of Norway. This plan was completed in order to comply with an order by the Federal Energy Regulatory Commission (FERC) (FERC Hydro Project No. 2720). This order included mandatory exotic species monitoring of portions of the Menominee River enclosed within the project boundary in Dickinson County, Michigan and Marinette County, Wisconsin. The City of Norway is required to monitor for Eurasian watermilfoil (*Myriophyllum spicatum*) and purple loosestrife (*Lythrum salicaria*) on an annual basis until 2010 and then every two years thereafter.

The first exotic species monitoring survey was conducted by White Water Associates, Inc. in 2006. This survey focused on a two-mile section of the Sturgeon River upstream of the confluence with the Menominee River and as well as a 4 mile stretch of the Menominee River above the City's hydroelectric dam. The researchers found "approximately 64 acres of aquatic plant habitat that have Eurasian watermilfoil present to some extent."

In 2007 a similar survey was conducted by Wisconsin Lake & Pond Resource staff. This report documents the results of this survey and provides the City of Norway with management recommendations for management of exotic species in the study area.

Methods

On October 24, 2007, portions of the Menominee and Sturgeon Rivers were surveyed for the presence of exotic species, specifically Eurasian watermilfoil and purple loosestrife. The same stretches of the rivers surveyed in 2006 were again assessed. The extent and locations of Eurasian watermilfoil were determined from surface observations and rake tows. The locations of the beds were drawn on topographic maps using shoreline features as references. GPS technology and modified acreage grid analysis was used to determine the area of each location. At each location the depth of water and approximate rate of flow was also recorded. In addition, the shores of the Menominee and Sturgeon Rivers were surveyed for the presence of purple loosestrife.

Results

In total approximately 93.7 acres of Eurasian watermilfoil were identified throughout the Menominee and Sturgeon Rivers (see **Figures 1** and **2**). **Table 1** provides further details of this survey. It includes the size in acres, and the depth and approximate flow of water for each location where milfoil was identified. Much of the milfoil was found growing in small isolated beds in shallow slow moving water. The largest and most dense beds were found near the public boat launch on the Sturgeon River (*Sites X* and *Y* in **Figure 2**) and

Figure 1. **Distribution of Eurasian watermilfoil (*Myriophyllum spicatum*) associated with the Sturgeon Falls Hydroelectric Project; mapped October 24, 2007 (Figure 1 of 2).**

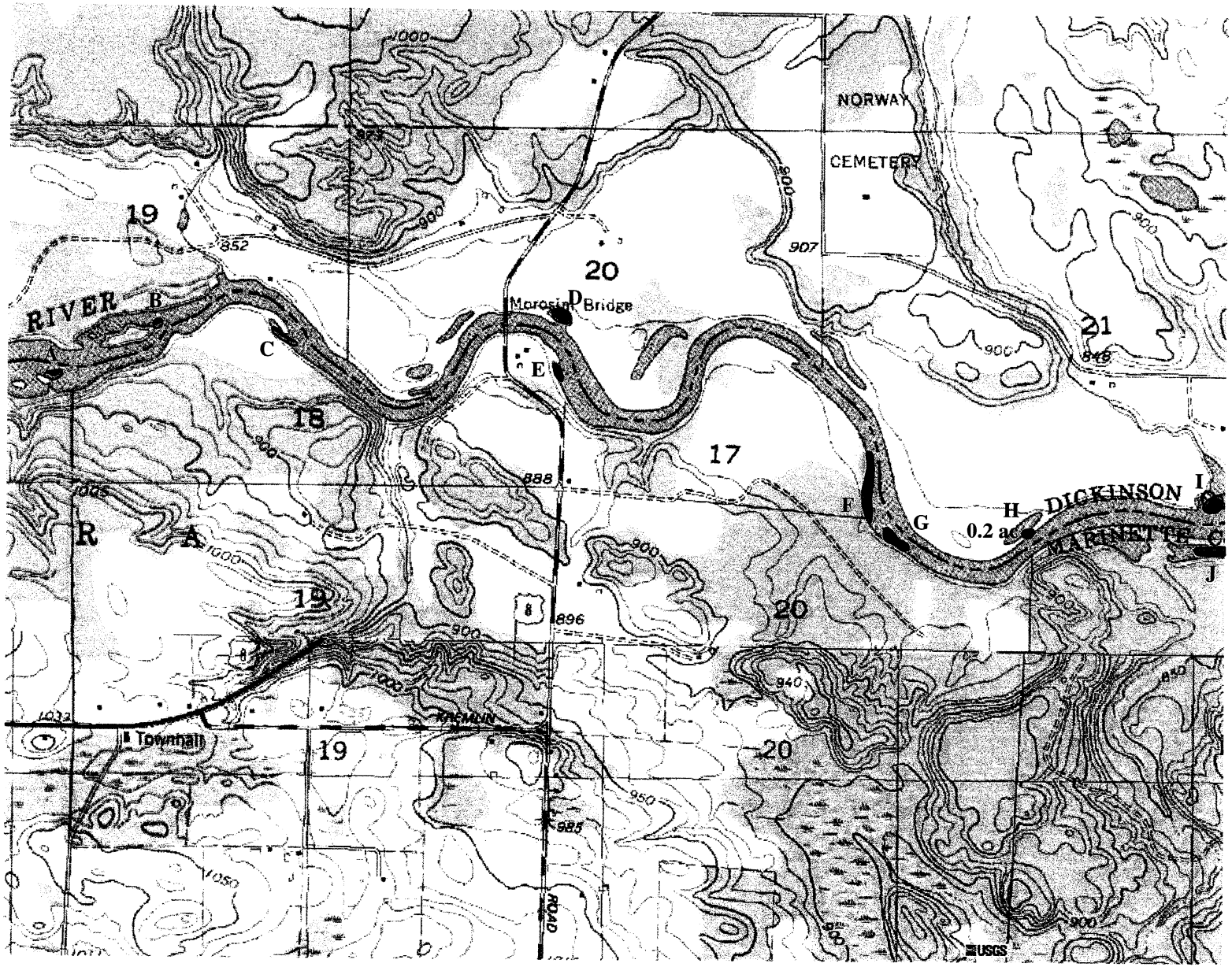

Figure 2. Distribution of Eurasian watermilfoil (*Myriophyllum spicatum*) associated with the Sturgeon Falls Hydroelectric Project; mapped October 24, 2007 (Figure 2 of 2).

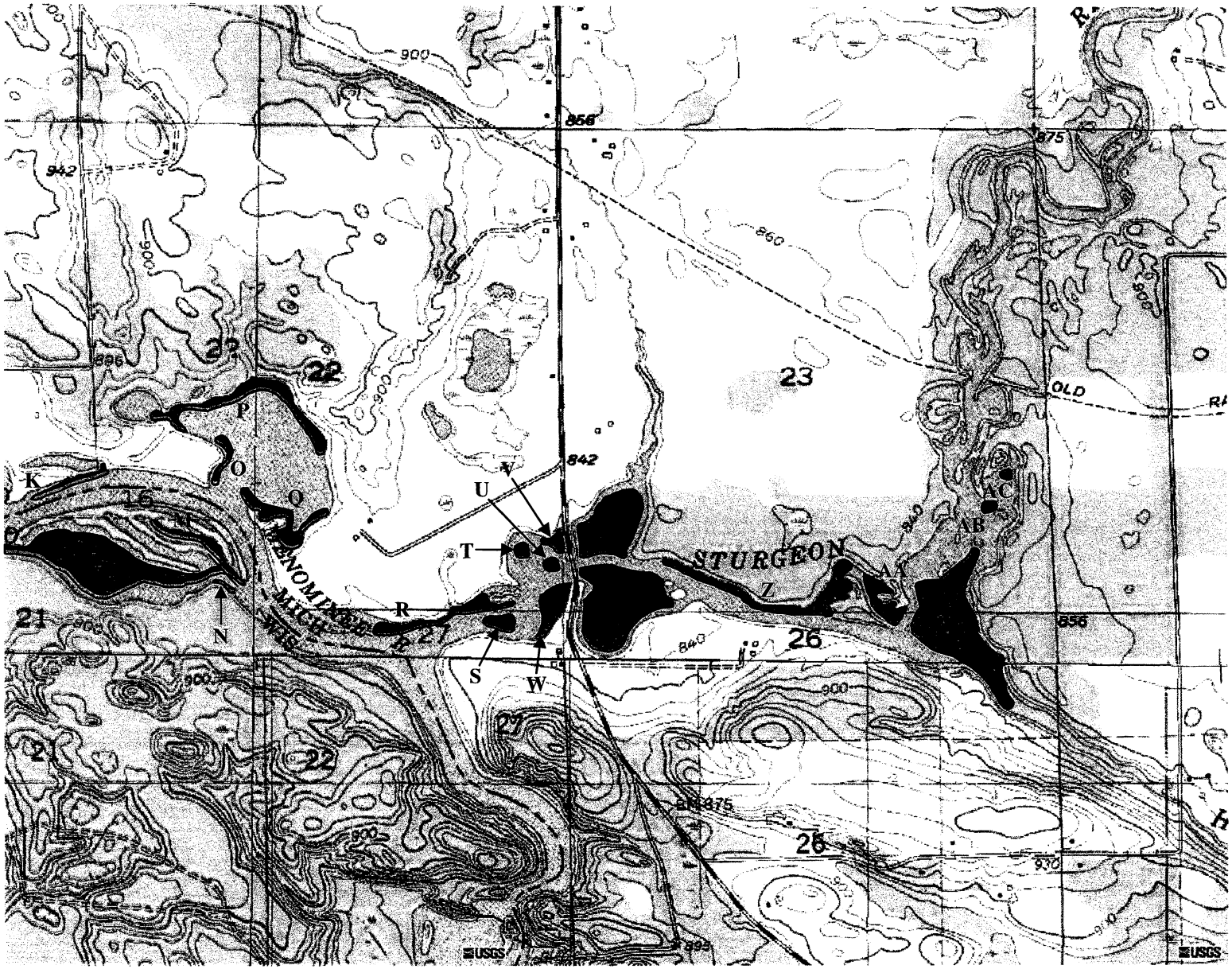

Table 1. Plant bed size, water depth and flow rates at Eurasian watermilfoil locations identified on the Menominee and Sturgeon Rivers, October 24, 2007.

Site	Acres EWM	Depth	Flow (ft/sec)*
A	0.3	2.0	ND
B	0.2	1.8	ND
C	0.4	2.1	ND
D	0.4	1.5	ND
E	0.2	1.7	ND
F	1.5	1.5	0.3
G	0.9	1.5	0.3
H	0.2	1.1	ND
I	0.7	1.7	ND
J	0.7	1.8	ND
K	1.5	2.0	ND
L	17.2	3.4	ND
M	2.2	2.4	ND
N	0.2	2.0	ND
O	1.1	2.1	ND
P	5.4	3.5	ND
Q	3.3	2.9	ND
R	3	3.4	ND
S	1.3	3.0	ND
T	0.4	5.0	ND
U	0.4	5.0	ND
V	0.7	5.0	ND
W	2.6	3.6	ND
X	8.5	2.5	ND
Y	14.4	5.0	ND
Z	6.5	3.1	0.4
AA	2.2	4.2	ND
AB	16.7	3.5	ND
AC	0.4	1.7	ND
AD	0.2	1.9	ND
Total:	93.7		

* ND = non-detectable flow (<0.1 ft/sec)

in the extensive backwater areas to the west of the confluence of the two rivers (*Site L*). As indicated in **Table 1**, these locations exhibited little to no measurable flow of water (less than 0.1 ft/sec.

Only the portions of these beds closest to the main river channel would be subjected to significant water flow. In fact nearly all of the Eurasian watermilfoil locations were found to have little or no flow. As would be expected, the native plant beds were also found in the same habitat situations.

Purple loosestrife was not found anywhere along the stretches of the surveyed river sections. Particular attention was paid to the location where loosestrife was previously identified. At that location the only similar species found where blue vervain (*Verbena hastata*) and marsh milkweed (*Asclepias incarnata*). It would appear the previous efforts to remove and dispose of the purple loosestrife plant(s) found were successful.

Additional plant species were identified during this survey. A full list is included in **Table 2**. Far fewer plant species were identified in 2007 than in 2000, when 26 species were identified. However, the main focus of this survey was to identify and map Eurasian watermilfoil and purple loosestrife. In addition, the 2007 survey was conducted later in the year when some aquatic plant species had already begun to die back. No implications of the loss of species diversity should be made based on these results.

At the mouth of Hamilton Creek (N45° 44.951' W 97° 50,519') an aquatic plant, believed to be another exotic species was found. It appeared to be Brazilian elodea (*Egeria densa)*

Table 2. Aquatic and wetland plant species identified during the survey of the Menominee and Sturgeon Rivers on October 24, 2007.

Common name	Scientific name
Blue vervain	*Verbena hastata*
Clasping-leaf pondweed	*Potamogeton richardsonii*
Common waterweed	*Elodea canadensis*
Coontail	*Ceratophyllum demersum*
Eurasian watermilfoil	*Myriophyllum spicatum*
Large-leaf pondweed	*Potamogeton amplifolius*
Marsh milkweed	*Asclepias incarnata*
Northern water milfoil	*Myriophyllum sibericum*
Sago pondweed	*Stuckenia pectinata*
Spatterdock	*Nuphar variegata*
Wild celery	*Vallisneria americana*

which looks similar to the native elodea or common waterweed (*Elodea canadensis*) but a much larger, robust plant with longer leaves. A viable sample could not be obtained at the time of the survey, however a small bed of this plant was located. This species has been identified throughout the U.S. with the exception of the northern-most states.

Conclusions and Recommendations

There is clearly a significant amount of Eurasian watermilfoil growing in the sections of the Menominee and Sturgeon Rivers surveyed. When compared to the data collected in 2006, it appears milfoil is rapidly expanding. The maps developed in **Figures 1 and 2** represent an increase in milfoil distribution of over 45% in the past year alone. Although Eurasian watermilfoil was not the dominant plant species at every location it was found, it clearly has the potential for rapid growth and expansion.

Specific concerns of the Eurasian watermilfoil infestation for the City of Norway include: restricted navigation, loss of recreational opportunities, such as boating and fishing, the continued spread of the plant within the Menominee and Sturgeon Rivers and to other nearby lakes and rivers, the loss of ecological diversity, reduced water quality and depressed real estate values. These factors should make control of Eurasian watermilfoil a serious management concern for the City of Norway.

A number of options exist for the control of Eurasian watermilfoil. These include biological (weevils), physical (hand-pulling and raking), mechanical (harvesting) and chemical (herbicide applications). For an infestation of this size and density, historical precedence has shown chemical control to be the most time- and cost-effective management option. It is recommended that the full extent of Eurasian watermilfoil within the study area shown in **Figures 1 and 2** be treated with Navigate® (granular 2,4-D) at a rate of 100-150 lbs per acre.

A concern has been raised regarding the effectiveness of herbicide applications in river systems; specifically the dilution of herbicide. Fortunately, the use of Navigate® should

alleviate this concern for a number of reasons. First, as a granular product which settles to the bottom sediment layer, Navigate® is better suited to remaining in the treatment area longer than a liquid herbicide. Secondly, as a systemic herbicide, the concentration of 2,4-D at the roots of the plants is far more important than the concentration in the water column. Lastly, since a vast majority of the milfoil was found in areas of little to no flow, treatment can be scheduled at a time when dilution of the herbicide would be minimal.

It is expected that periodic treatments will be necessary for the foreseeable future. Each treatment should be able to reduce the extent *and* density of milfoil in the treated areas. Until large-scale control is achieved, herbicide treatments will continue to be the most practical management option for the City of Norway. In many cases a management goal is set at reducing the distribution to 10% or less of the original extent. Once this level of control is achieved, additional options may be considered including small-scale spot treatments for maintenance purposes, hand pulling of small infestations in shallow water, etc. With milfoil being present upstream in both the Menominee and Sturgeon Rivers, reintroduction will continue to be a concern and reaching and/or maintaining the 10% goal may take longer than expected. Therefore the level of success will depend on milfoil management in these upstream locations.

In terms of future management of purple loosestrife, continued monitoring will be essential. The monitoring schedule established by the FERC order should be sufficient. As with milfoil, reintroduction will always be a concern. Education and a quick response to new infestations will determine the level of long-term success in management of this and other exotic species.