wausauPAPER

December 1, 2011

VIA UPS DELIVERY

ORIGINAL

The Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington DC 20426

Re: Mosinee Hydroelectric Project, FERC Project No. 2207
Invasive Species Survey Report - 2011

Dear Secretary:

In accordance with the monitoring plan for invasive species, Wausau Paper has completed a fifth and final year of surveillance. Enclosed please find an original and eight (8) copies of a report documenting the results of the current year of the survey.

Three copies of the report have also been filed with the Chicago Regional FERC office.

Enclosed is a copy of a letter sent to the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish and Wildlife Service (USFW) requesting their comments on the survey and report. As indicated in the request letter, their comments were due November 28, 2011. To date we have not received any comments from the USFW or from the WDNR. If there are any questions, please contact me at 715.692.3330.

Sincerely,

James N Pauls 12/1/11

James N. Pauls
Manager of Environmental Services
Wausau Paper Mills, LLC
Mosinee Mill
100 Main Street
Mosinee WI 54455

cc Ms. Peggy Harding, FERC

100 Main Street, Mosinee, WI 54455
tel 715 693 2111 fax 715 693 4723
www.wausaupaper.com

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VIA UPS DELIVERY

October 25, 2011

Ms. Louis Clemency
U.S. Fish and Wildlife Service
Green Bay ES Field Office
2661 Scott Tower Drive
New Franken WI 54229

FERC Licensing Review
Wisconsin Department of Natural Resources
101 South Webster
Madison WI 53707

RE: Mosinee Hydroelectric Project, FERC Project No. 2207, Invasive Species Survey 2011

Dear Ms. Clemency and Sir/Madam:

Article 408 of the FERC license for Project No. 2207 requires that Wausau Paper (Wausau) prepare a plan to monitor invasive species for the Mosinee Hydroelectric Project. This plan was approved by the FERC on September 13, 2006

Enclosed is a copy of Wausau's Fifth annual survey. Please review this survey and provide us with comments on or before November 28, 2011.

I can be reached at 715.692.3330 or jpauls@wausaupaper.com.

Sincerely,

James N. Pauls 10/25/11

James N. Pauls
Manager of Environmental Services
Wausau Paper
Mosinee Mill

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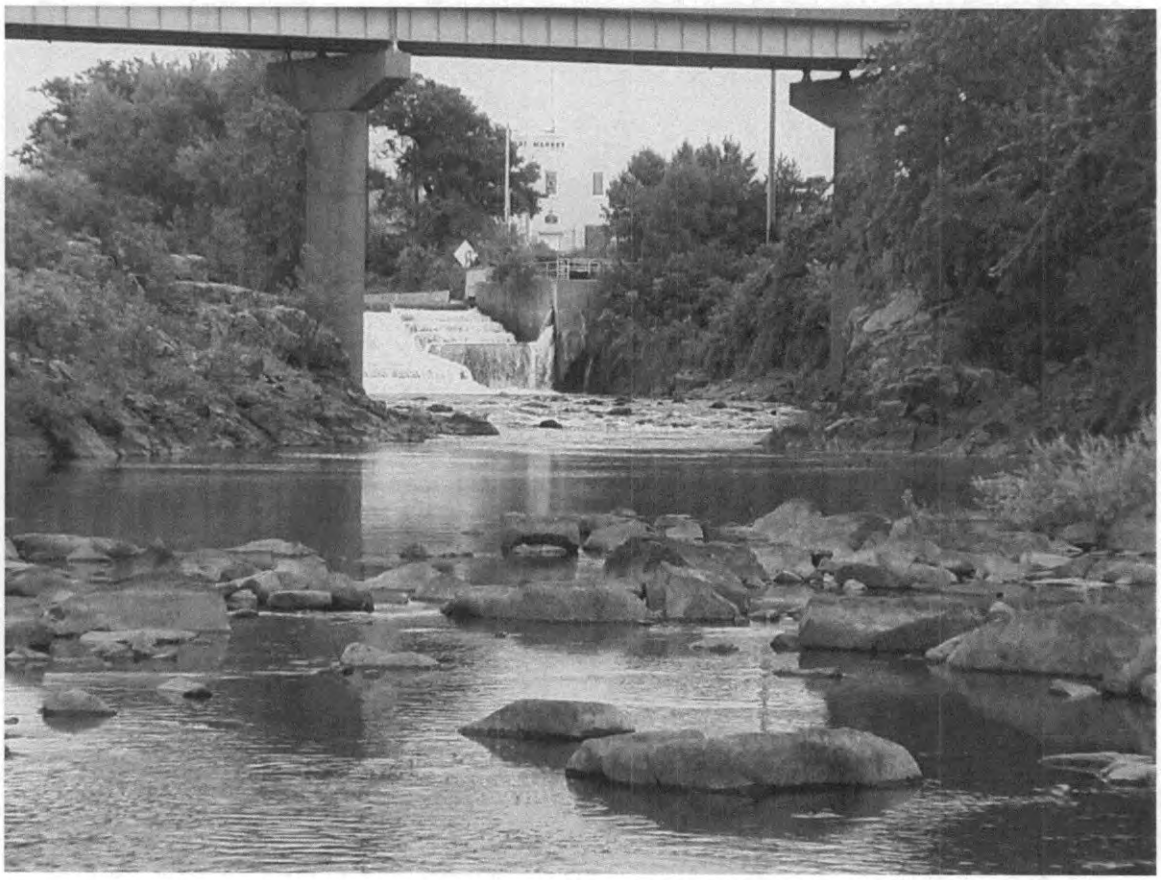
2011
INVASIVE SPECIES REPORT
FOR THE
MOSINEE HYDROELECTRIC PROJECT
MARATHON COUNTY, WISCONSIN
FERC Project No. 2207



Submitted By
Mosinee Paper Corporation

December 2011

Prepared By
North American Hydro, Inc.
P.O. Box 167
116 State Street
Neshkoro, Wisconsin 54960
(920) 293-4628

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1.0 Summary

In July of 2011, a meandered survey for purple loosestrife (*Lythrum salicaria*), Eurasian water milfoil (*Myriophyllum spicatum*), and curly-leaf pondweed (*Potamogeton crispus*) was performed at the Mosinee Hydroelectric Project in Marathon County, Wisconsin. Survey dates were July 11th through July 16th.

Purple Loosestrife (PL) was once again found throughout the entire survey area. The overall densities were higher in 2011 than in 2010 and many areas were upgraded in density ratings. The areas where no PL was found tended to be undisturbed wooded shorelines with northern exposures that limit sunlight penetration.

Galerucella (Cella) beetle populations appear to have spread throughout most of the survey area, however, total Cella numbers have decreased significantly between the 2010 and 2011 surveys as indicated by lesser degrees of leaf damage to PL plants and more robust plant growth. Cella eggs and beetles were observed on PL at a few locations, but numbers were noticeably less than previous years.

This beetle population reduction may be attributed to high water levels as a result of high river flows in the fall of 2010 and the spring of 2011. Cella beetles spend two extended periods of their life cycle, pupation and hibernation, buried within the soil and leaf litter beneath their host PL pants. The timing of these cycles depends on time of year and weather conditions and can vary from year to year. Generally, Cella beetles are in the pupae stage during mid-spring to mid-summer and begin to hibernate in mid-August and continue until early spring after the ground thaws. If areas beneath host plants become wet or inundated during these periods, the Cella beetles located there can die.

A review of flow records from the USGS gage 5398000 Wisconsin River at Rothschild, WI (about 1 mile upstream from the Mosinee project limit) show that on September 24, 2010, an annual peak streamflow of 52,700 cfs was recorded. This was the highest flow recorded at the gage since 1945. On April 11, 2011, the Rothschild gage data (provisional at the time of the writing of this report) shows a daily mean streamflow recording of 44,900 cfs. The following table shows the dates of the ten highest annual peak streamflow records since 1945 (April 11, 2011 provisional data is not included).

Date	Annual Peak Streamflow (cfs)
9/24/2010	52700
4/12/1965	49200
3/31/1967	49200
6/14/1990	48300
9/27/1959	47000
9/28/1986	46700
6/21/1993	44400
3/31/1976	43800
5/7/1960	42900
5/3/1973	42000

USGS gage 5398000 ten highest annual peak streamflow records since 1945

In 2011, most of the beetle damage observed within the survey area was light and no PL plants that were completely brown from beetle damage was observed as it had been in past years. During travel to and from the survey site, the survey crew observed heavy concentrations of PL along transportation corridors (outside of the project boundary), especially along Interstate Hwy I-39 which crosses the river within the survey area.

Eurasian water milfoil (EWM) was found in a few shallow water areas throughout the project waters, and no curly-leaf pondweed (CLP) was found. A point intercept survey was performed concurrently with the meandered survey to quantify these occurrences. In general, wherever EWM did occur, densities were low and did not cause navigational difficulties for the survey crew. A comparison of survey data indicates a decrease in mat densities and coverage of EWM from 2010 to 2011. CLP densities and coverage decreased from 2010 to 2011 and no plants were observed during the survey.

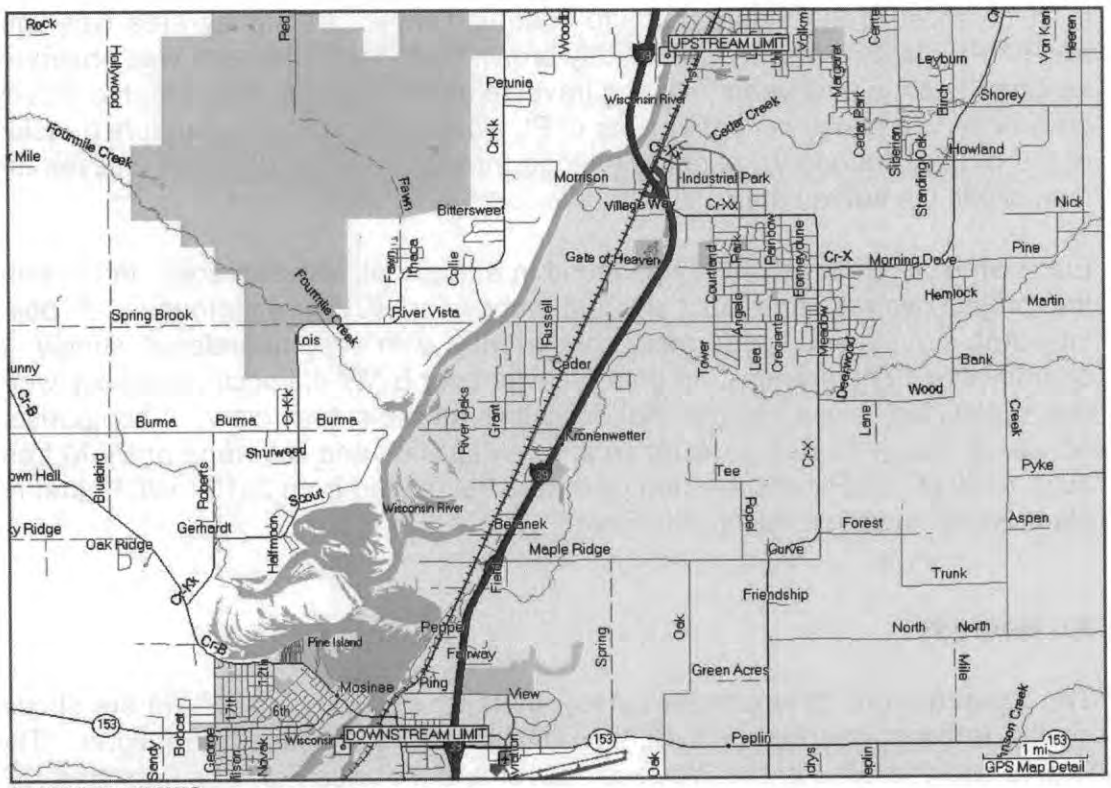
2.0 Methods

The upstream and downstream survey limits for PL, CLP, and EWM are shown on the following map labeled Survey Limits and were defined as follows. The waters and shoreline of the Wisconsin River and Mosinee Flowage from N44° 52' 48.4" W89° 38' 16.6" WGS84 approximately 1.0 miles upstream of the I-39 Bridge to the dam at the Mosinee Hydroelectric Project; the waters and shoreline of the power canal, bypass reach, and tailrace from the dam at the Mosinee Hydroelectric Project downstream to N44° 47' 10.6" W89° 42' 08.6" WGS84 approximately 0.5 miles downstream of the HWY 153 Bridge; the waters and shoreline of Half-Moon Lake and Cemetery Slough.

2.1 Purple Loosestrife

In 2007, a baseline survey for PL was performed at the Mosinee project. Prior to the 2007 field survey, information on PL distribution and treatment was acquired from the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) and the Wisconsin Department of Natural Resources (WIDNR). In addition, a vegetation survey conducted July 9-12, 2001 and included in Exhibit E of the Application For New License for the Mosinee Hydroelectric Project filed with the Federal Energy Regulatory Commission (FERC) on 12/7/2002 was analyzed to assist in the planning of the 2007 baseline PL survey.

In 2007, 2008, 2009 and 2010 the PL meander survey was performed in the same areas and using the same methods as the 2011 survey.



SURVEY LIMITS

The 2011 survey was accomplished by scanning the shoreline and shallow areas of the project waters by two people from a boat. Certain areas were surveyed from land where it was not practical or possible to observe from the boat. These would include the area from the boat barrier to the dam and the head gates of the power canal, the bypass reach, the power canal, the tail race, and the western side of Cemetery Slough along

County HWY B. High powered (15 x 50) image stabilization binoculars were used to facilitate the spotting of plants. When PL was identified, a handheld Garmin Global Positioning System (GPS) unit with Wide Area Augmentation System (WAAS) enabled was used to map the location. Where practical, small occurrences of PL were pulled to help prevent further spread of the plants.

Maps and results of this survey are included in Appendix A in this report.

2.2 Eurasian Water Milfoil and Curly-leaf Pondweed

In 2007, a baseline survey for EWM and CLP was performed at the Mosinee project. Prior to the 2007 baseline field survey, information on EWM and CLP distribution and treatment was acquired from the GLIFWC and the WIDNR. In addition, a vegetation survey conducted July 9-12, 2001 and included in Exhibit E of the Application For New License for the Mosinee Hydroelectric Project filed with the FERC on 12/7/2002 was analyzed to assist in the planning of the 2007 baseline EWM and CLP survey.

In 2007, 2008, 2009, and 2010 the EWM and CLP survey was performed in the same areas and using the same methods as the 2011 survey.

The 2011 EWM and CLP survey was performed by visually scanning shallow areas of the project waters during the PL meander survey by two people from a boat. If a suspected plant was observed, a sample was grabbed and identified. During launch and recovery of the survey boat, boat ramps and parking areas were scanned for the presence of EWM and CLP plants. These would include River Park, Half-Moon Lake, and Chuck's Landing boat ramps. No EWM or CLP was found at any of these boat ramps.

A point intercept survey for EWM and CLP was performed concurrently with the PL/EWM/CLP meander survey. A document received from the WIDNR entitled *Monitoring of Aquatic Macrophytes 2/13/06* was used as a basis for this survey. This document is included in Appendix C at the end of this survey. In November 2006, point intercept sampling locations were acquired from the WIDNR for the Mosinee Flowage (716 acres, 518 sample points), Half-Moon Lake (218 acres, 154 sample points), and Cemetery Slough (135 acres, 102 sample points). These locations were formatted and uploaded to a handheld Garmin GPS device with WAAS capability.

Besides the standard safety devices located in the survey boat, the following equipment was used; handheld Garmin GPS unit with WAAS enabled (with site locations already loaded), lake maps, field data sheets,

18-foot pole-mounted rake, push pole, depth finder, electric trolling motor, and polarized sunglasses.

When navigating to the sites using the GPS unit, the zoom level was set to 80 feet. Once the GPS navigation arrow covered the sample point, a rake was dropped to the bottom and dragged for about 2.5 feet. Weeds retrieved were sorted for the presence of EWM and CLP. For each site, the sample point number, latitude, longitude, depth, sediment type, EWM density, CLP density, and comments were recorded. If northern water milfoil was observed at a sample point, it was noted in the comments field.

For hard to reach sites where no sample could be taken (blocked by logs, blocked by fallen trees, etc.), the depth, sediment type, and EWM and CLP density fields were left blank and N/A (no access) was recorded in the comments field. In the case of inaccessible shallow sloughs with deep muck, the sediment type field was designated as muck even though the survey crew could not actually reach the sample point.

If a sample site produced no weeds, the depth was recorded and a notation was made in the comments field. After the depth of the deepest weed growth was established, for all deeper points, depth was recorded, but no samples were taken and a notation was made in the comments field.

Maps and results of this survey are included in Appendix B in this report.

2.3 Miscellaneous

Previous to initially launching into Mosinee Hydroelectric Project waters, the survey boat and survey equipment were treated with a bleach solution to prevent possible spread of invasive species from other locations. After the survey was completed and before launching into other waters, the survey boat and survey equipment were again treated with a bleach solution. Weeds were removed from boat and trailer after each recovery and before leaving the boat launch.

3.0 Observations

3.1 Purple Loosestrife

As mentioned earlier, a meandered survey for PL was performed in 2011 at the Mosinee Hydroelectric Project from July 11th through July 16th.

During the baseline survey in 2007, Cella beetles were discovered to be present at a quite a number of PL occurrences. Upon closer inspection, it was noted that the beetles were partially defoliating and stunting the

growth of a large amount of PL plants to the point where the flowers were not developing. At that point, the crew found it necessary to slow down, stay closer to shore, and look for additional plants by color and texture rather than just looking for the flowering seed heads. Damaged plants took on a yellow/green or brown color and were readily identified against the darker green surrounding vegetation. These conditions were found to be similar in the 2008, 2009, and 2010 surveys. Although Cella beetle damage was much less in 2011 than previous years, the survey crew was still able to adequately identify PL plants by color and texture rather than just looking for flowering seed heads.

Galerucella Beetles on Purple Loosestrife (2007)

With the amount of PL plants being found at the Mosinee project, a faster and more generalized method of estimating the quantity and locations of plants would be needed in order to avoid an extremely large and unmanageable database of information. Rather than recording every single occurrence of PL, a density rating was assigned to all shoreline areas of the impoundment in the areas designated as Half-Moon Lake, Cemetery Slough, and the Mosinee Flowage. Values were assigned for the estimated amount of PL plants per 1000 square feet of area and are as follows:

N (None) = 0
L (Light) = 1 – 5 plants
M (Medium) = 6 – 25 plants

H (Heavy) = 26 – 100 plants
VH (Very Heavy) = >100 plants

In the areas of Half-Moon Lake, Cemetery Slough, and the Mosinee Flowage, there was a definite increase in the number of PL plants overall from 2010 to 2011. In 2011, Cella beetles were found throughout most of the project area. However, in all areas where beetle presence was detected, their densities were low.

Beetle Damage on Purple Loosestrife Against Darker Green Surrounding Vegetation (2007)

In the 2008, 2009, and 2010, Cella beetle larvae were found on PL plants in a slough in the northeastern area of the Mosinee Flowage (N44° 49' 00.59" W89° 40'.03") along with other locations throughout the project area. During the 2011 survey, no larvae were observed within the survey area.

In 2009, two species of beetles (Galerucella pusilla and Galerucella calmariensis) were detected at the project. On 7/14/09, Galerucella c. beetles were observed mating at MOSN PL0155 (N44° 47' 34.19" W89° 41' 37.39"), and, the following day, new eggs were detected on the plants. Eggs were found on PL at a number of other locations during the 2009 survey, however, in 2010, no eggs were found at any location in the survey area. In 2011, Cella beetle eggs were found at a number of locations within the survey area.

Beetle Larvae on Purple Loosestrife at Mosinee Flowage (2009)

Galerucella Calmariensis Beetles Mating on Purple Loosestrife at Mosinee Flowage (2009)

Galerucella Beetle Eggs on Purple Loosestrife at Mosinee Flowage (2009)

As the crew moved upstream from the Mosinee Flowage and up the Wisconsin River, PL occurrences became fewer and further between. From this point (N44° 48' 52.4" W89° 41' 30.7" WGS84) to the upstream project limit, every occurrence of PL was recorded. There were 17 new PL sites recorded along this stretch of river in 2011 over 2010 while six sites that were surveyed in 2010 were not relocated in 2011. Of the six sites that were not relocated in 2011, four received no treatment in 2010 and two had all plants pulled or cut. 42 occurrences that were not relocated in 2010 reappeared in 2011 within this stretch of river.

In 2007 and 2008, over a stretch of 2.8 river miles (N44° 48' 52.4" W89° 41' 30.7" to N44° 50' 50.3" W89° 40' 00.7" WGS84), all PL plants that could easily be reached were pulled so that this control measure could be compared along this length of river in subsequent surveys. Due to time constraints during the 2009 and 2010 surveys, this area was reduced in length to 1.2 river miles (N44° 48' 52.4" W89° 41' 30.7" to N44° 49' 49.7" W89° 41' 17.4" WGS84), and all PL plants that could easily be reached were pulled. If the roots were too deep to be pulled, the plants were cut off near the ground and removed. Two occurrences in this zone (MOSN PL080 and PL081) were left untreated, because the plants were difficult to pull, beetle damage was heavy, Cella beetles were present, and/or Cella beetle egg clusters and larvae were observed on the plants. It was the survey crew's judgment that it would be best to leave these plants untouched to help promote Cella beetle development in future years. In

2011, all PL occurrences were recorded along this stretch of river, however, no plants were treated (pulled or cut) as in previous years, because the end of the control testing period had been reached.

In the area of the power canal, tailrace, and by-pass reach from the dam and powerhouse to the downstream limit, all individual occurrences of PL that were observed were recorded. This area had a light to medium amount of Cella damage, and the amount beetle activity in this area was less in 2011 than what was observed in the 2010 survey. There was one new PL site recorded within this area in 2011 since 2010 while four sites that were surveyed in 2010 were not relocated in 2011. Of the four sites that were not relocated in 2011, three received no treatment in 2010 and one had all plants pulled. Four occurrences that were not located in 2010 reappeared in 2011 within this area of the river.

Maps and results of this survey are included in Appendix A in this report.

3.2 Eurasian Water Milfoil and Curly-leaf Pondweed

EWM and CLP were documented at the Mosinee project during a 2007 baseline survey and subsequent surveys in 2008, 2009, 2010, and 2011. A meandered survey and a point intercept survey for EWM and CLP similar to the 2007, 2008, 2009, and 2010 surveys were performed at the Mosinee Hydroelectric Project in 2011 from July 11th through July 16th.

No CLP was detected anywhere within the survey area in 2011. This is a decrease from 2010 to 2011.

No EWM was detected in Half-Moon Lake in any of the survey years including 2011. EWM was found in Cemetery Slough in all survey years including 2011. EWM amounts in Cemetery Slough stayed about the same from 2010 to 2011. EWM was found in the Mosinee Flowage in all survey years including 2011. EWM in the Flowage decreased from 2010 to 2011.

EWM was not found in depths greater than 4 feet anywhere within the survey area. This lack of weed growth may due to the water being very turbid. Turbidity may also account for the low densities of both varieties wherever they were located. During the 2009, 2010, and 2011 surveys, secchi disk readings were taken at locations throughout the project area to help determine if water clarity may be affecting EWM and CLP presence.

In 2011, no EWM was detected in the tailrace or the by-pass reach areas.

In 2008, one occurrence of EWM was located at the entry to a short slough (N44° 49' 52.5" W89° 41' 08.1" WGS84) on the left side of the Wisconsin River and another occurrence was detected in the inlet slough

of Fourmile Creek (N44° 49' 56.5" W89° 41' 32.0" WGS84) on the right side of the river upstream from the Mosinee Flowage. In 2009, the number of EWM plants at both these locations decreased to where only a few plants were found, and, in 2010, no EWM plants were detected. In 2011, EWM was found again in the inlet slough of Fourmile Creek (N44° 49' 56.5" W89° 41' 32.0" WGS84) at a size and density estimated to be equal to or greater than that of the 2008 survey when it was first discovered.

Overall, EWM amounts decreased in the entire survey area from 2010 to 2011.

In 2008, one occurrence of CLP was found on the downstream side of an island (N44° 52' 34.8" W89° 38' 21.8" WGS84) on the right side of the river upstream from the Mosinee Flowage and just a short distance downstream from the upstream Project limit. In 2009, 2010, and 2011, no CLP plants were found at this location.

Maps and results of this survey are included in Appendix B in this report.

3.3 Miscellaneous

During the 2008 survey, the survey crew gathered between 100 – 150 Galerucella beetles from a heavy population on Half-Moon Lake with the intent of releasing them in back sloughs of the northeastern area of the Mosinee Flowage where high densities of PL were observed in 2007 where no beetles were detected. When the crew arrived at the potential release site, they discovered that beetle larvae existed on PL plants, so the collected beetles were released on an island in the Mosinee Flowage (N44° 48' 02.0" W89° 41' 48.0") where the population had been high in 2007 and diminished to very few in 2008. This release site was revisited during the 2009 survey, and beetle damage had increased over the 2008 survey. In 2010, beetle damage remained heavy and PL plant density decreased between 2009 and 2010. In 2011, beetle damage was light and plant density increased since 2010. This may be attributed to high water events of the fall of 2010 and spring of 2011 as discussed in the summary section of this report.

The survey crew also noted that PL is abundant in the Mosinee area outside of the project boundary, particularly within the Interstate I-39 corridor which crosses the Wisconsin River near the upstream survey limit. EWM and CLP have been reported found in the Wisconsin River both upstream and downstream of the Mosinee Hydroelectric Project.

Spotted knapweed was observed along roadways and in fields surrounding the Mosinee Project corridor, but no plants were observed within the survey boundary. Reed canary grass and Japanese

honeysuckle have also been observed in the project area, but were not included in the scope of these surveys.

4.0 Recommendations

4.1 Purple Loosestrife

Biological control for PL is already in place at the Mosinee project in the form of Galerucella beetles. This has been proven as one of the most practical and economical methods of controlling the spread of PL. Considering the quantity of PL and the terrain in the survey area, chemical and/or mechanical control methods would be very difficult and, most likely, not as effective. It would be possible to accelerate the effects of Cella beetles on the PL population by redistributing them from areas with high populations to areas were few or no Cella beetles exist. This would be most effectively done in the spring of the year, but could also be done at the time of any subsequent surveys, provided Cella beetles are present at that time.

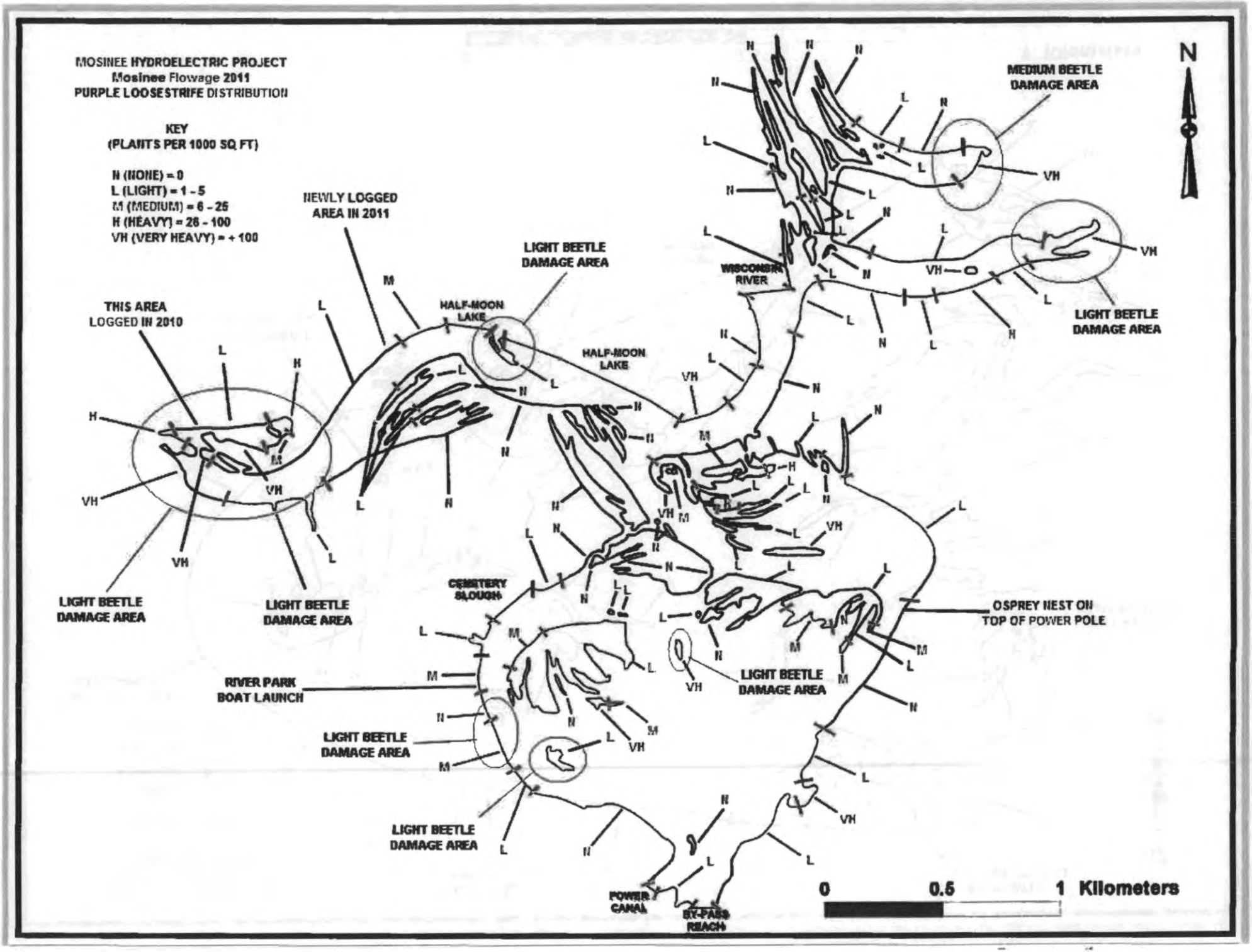
After comparing observations between the 2007, 2008, 2009, 2010, and 2011 surveys, it appears that beetle populations continue to spread and are readily finding new occurrences of PL. The 2011 survey concludes a five year survey period, and a five year comparative survey report for PL will be generated giving a recommendation for any future survey and control measures based on observations from the 2007 through 2011 surveys.

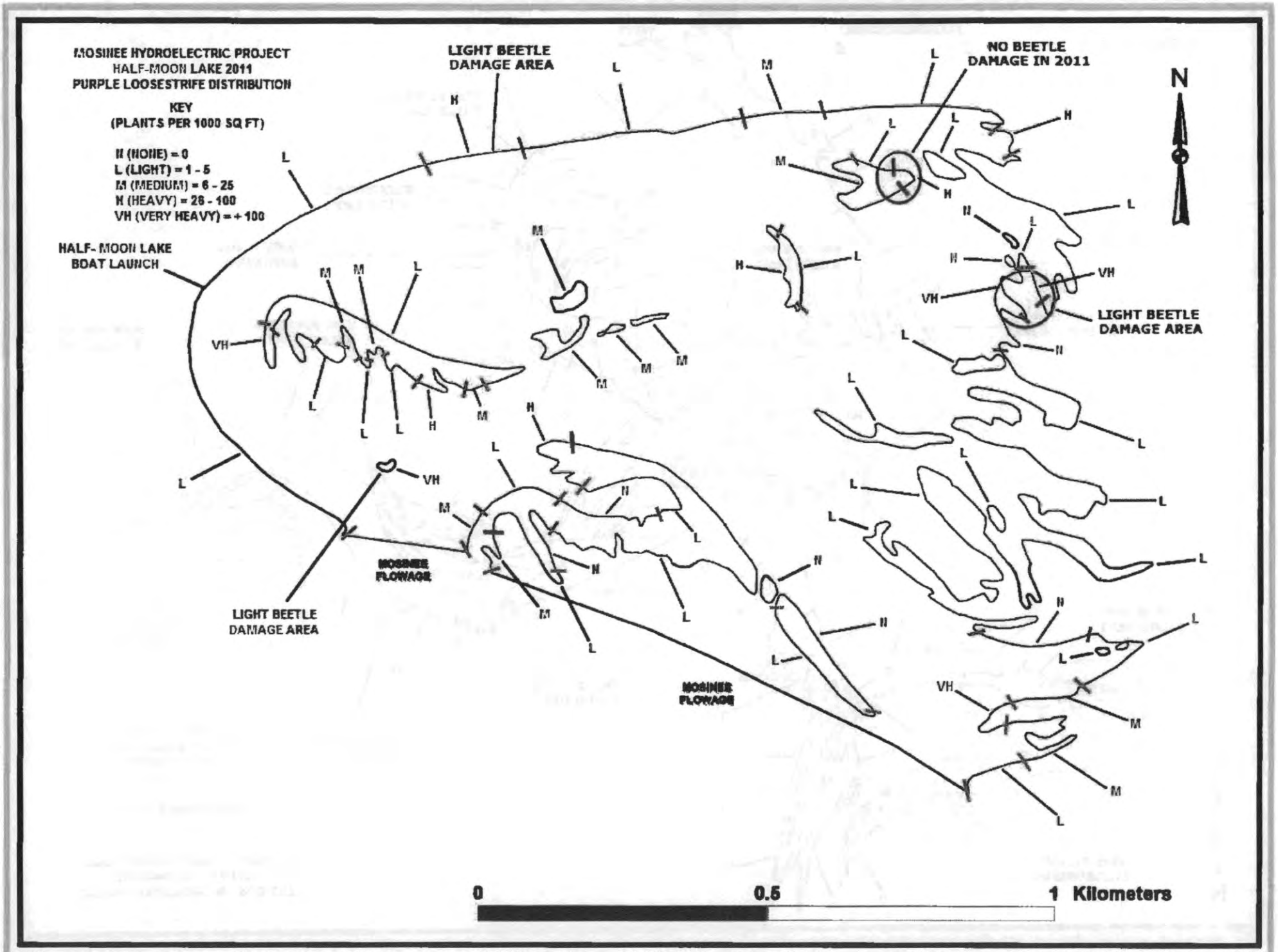
4.2 Eurasian Water Milfoil and Curly-leaf Pondweed

Comparison of the 2007, 2008, and 2009 survey results indicate that CLP and EWM occurrences were reduced in all waters. Comparison of 2009 and 2010 surveys indicated that EWM increased slightly in the Flowage during this timeframe, but remained the same or decreased in other areas. Where CLP and EWM were detected, plants were sparse and posed no impediment to navigation. The 2011 survey concludes a five year survey period, and a five year comparative survey report for EWM and CLP will be generated giving a recommendation for any future survey and control measures based on observations from the 2007 through 2011 surveys.

APPENDIX A

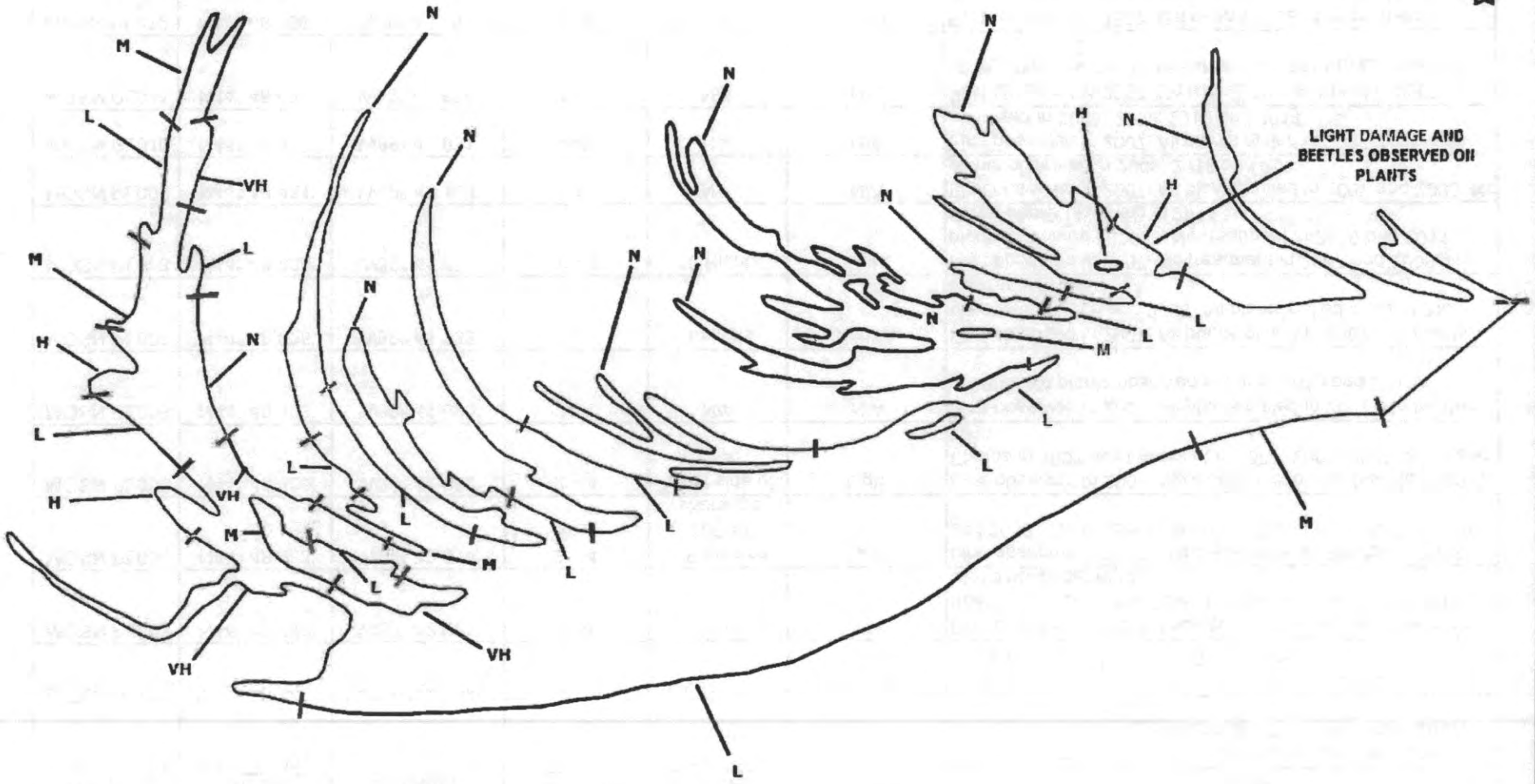
Purple Loosestrife Survey Results





MOSINEE HYDROELECTRIC PROJECT
CEMETERY SLOUGH 2011
PURPLE LOOSESTRIFE DISTRIBUTION

KEY
(PLANTS PER 1000 SQ FT)
N (NONE) = 0
L (LIGHT) = 1 - 5
M (MEDIUM) = 6 - 25
H (HEAVY) = 26 - 100
VH (VERY HEAVY) = + 100



Purple Loosestrife Survey

Project: Mosinee #2207 **Datum:** WGS 84

Date: 7/11 - 7/16, 2011

Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL001	N44° 49.021'	W89° 41.724'	2' - 4'	~70 -100 plants	Light	First observed in 2007. 80% - 90% coverage. Old cane. Some window paining and damage. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL002	N44° 49.096'	W89° 41.878'	2' - 4'	~50 Plants	None	First observed in 2007. Photos in 2009 and 2011. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL003	N44° 49.040'	W89° 42.221'	N/A	N/A	N/A	First observed in 2007. Located on a 5' diameter island. No treatment in 2007 and 2008. In 2009, 2010 and 2011. The island no longer exists.
MOSN PL004	N44° 48.983'	W89° 42.514'	3' - 4'	7 Plants on 100' of shoreline	Light	First observed in 2007. Old cane present. Photos in 2007 and 2010. No treatment in 2007, 2008, 2009, 2010 and 2011
MOSN PL005	N44° 48.800'	W89° 42.362'	2' - 4'	West side of cove	Light	First observed in 2007. Most plants viable at this site in 2011. Photos in 2007. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL006	N44° 48.103'	W89° 41.600'	N/A	N/A	N/A	First observed in 2007. All plants pulled in 2007. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL007	N44° 48.025'	W89° 41.133'	3'	1 plants	Medium	First observed in 2007. All plants pulled in 2007. No plants observed in 2008 and 2009. All plants pulled in 2010. No treatment in 2011
MOSN PL008	N44° 48.438'	W89° 41.802'	1' - 3'	10 Plants	Light	First observed in 2007. No treatment in 2007 and 2008. No plants observed in 2009. No treatment in 2010 and 2011. Some plants blooming in 2011.
MOSN PL009	N44° 48.461'	W89° 42.106'	N/A	N/A	N/A	First observed in 2007. All plants pulled in 2007 and 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL010	N44° 48.293'	W89° 42.031'	N/A	N/A	N/A	First observed in 2007. All plants pulled in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL011	N44° 48.622'	W89° 42.674'	N/A	N/A	N/A	First observed in 2007. On island. No treatment in 2007, 2008, 2009, and 2010. Too shallow in 2011 to be reached.
MOSN PL012	N44° 48.496'	W89° 43.352'	2' - 6'	>1000 Plants	Light	First observed in 2007. Entire end of dead river channel covered with plants. Large amounts of old cane. Very healthy growth and little beetle damage. Past years had heavy beetle damage. Photos in 2007. Video in 2007. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL013	N44° 48.222'	W89° 41.971'	2'	1 Plant	Light	First observed in 2007. All plants pulled in 2007. No plants observed in 2008. All plants pulled in 2009. No plants found in 2010. No treatment in 2011.

Purple Loosestrife Survey

Project: Mosinee #2207 **Datum:** WGS 84

Date: 7/11 - 7/16, 2011

Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL014	N44° 48.388'	W89° 41.148'	2' - 3'	3 Plants	Medium	First observed in 2007. In 2009 beetle and beetle eggs observed. Photos in 2009. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL015	N44° 49.142'	W89° 41.286'	2'	1 Plant	None	First observed in 2007. All plants pulled in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL016	N44° 49.207'	W89° 41.669'	3'	1 Plant	None	First observed in 2007. Right side of river. All plants pulled in 2007. One of two plants pulled in 2008. All plants pulled in 2009 and 2010. Larva on plants in 2010. No treatment in 2011
MOSN PL017	N44° 49.303'	W89° 41.689'	4'	1 Plant	None	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008 and 2009. All plants pulled in 2010. No treatment in 2011.
MOSN PL018	N44° 49.436'	W89° 41.672'	1'	6 Plants	None	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL019	N44° 49.635'	W89° 41.560'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL020	N44° 49.716'	W89° 41.477'	1' - 4'	5 Plants	Medium	First observed in 2007. Right side of river. Beeltes on plants. All plants pulled in 2007. No treatment in 2008. All plants pulled or cut in 2009. No plants found in 2010. No treatment in 2011.
MOSN PL021	N44° 49.832'	W89° 41.403'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL022	N44° 49.848'	W89° 41.341'	2' - 5'	3 Plants	None	First observed in 2007. Right side of river. Beetles observed on plants in 2007. All plants pulled in 2007. No treatment in 2008, 2009, 2010 and 2011.
MOSN PL023	N44° 50.074'	W89° 41.174'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008 and 2009. No treatment in 2010. No plants observed in 2011.
MOSN PL024	N44° 50.157'	W89° 41.105'	1' - 3'	2 Plants	None	First observed in 2007. Right side of river. Plant in the middle of fallen tree and could not be reached. No treatment in 2007. No plants observed in 2008 and 2009. No treatment in 2010 and 2011.
MOSN PL025	N44° 50.357'	W89° 40.957'	4'	1 Plant	None	First observed in 2007. Right side of river. All plants pulled in 2007 and 2008. No plants observed in 2009. No treatment in 2010 and 2011.

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MOSN PL026	N44° 50.454'	W89° 40.795'	2' - 5'	6 Plants	None	First observed in 2007. Right side of river. All plants pulled in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL027	N44° 50.589'	W89° 40.518'	3' - 4'	3 Plants	None	First observed in 2007. Right side of river. All plants pulled in 2007. No treatment in 2008. No plants observed in 2009. No treatment in 2010 and 2011.
MOSN PL028	N44° 50.655'	W89° 40.369'	2' - 3'	9 Plants	None	First observed in 2007. Right side of river. All plants pulled in 2007. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL029	N44° 50.683'	W89° 40.393'	N/A	N/A	N/A	First observed in 2007. Right side of river. Entrance to cove blocked by debris and too shallow to enter. Too far away to detect beetle damage. Location estimated to be south of boat ramp. No treatment in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL030	N44° 50.685'	W89° 40.248'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants pulled in 2007. No treatment in 2008 and 2009. No plants observed in 2010 and 2011.
MOSN PL031	N44° 50.751'	W89° 40.158'	2'	1 Plant	None	First observed in 2007. Right side of river. All plants pulled in 2007. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL032	N44° 50.841'	W89° 40.065'	2' - 3'	3 Plants	None	First observed in 2007. Right side of river. All plants pulled in 2007. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL033	N44° 50.911'	W89° 40.011'	1' - 2'	2 Plants	None	First observed in 2007. Right side of river. All plants on shoreline within 100' of each other. No treatment in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011. Not blooming.
MOSN PL034	N44° 50.957'	W89° 39.986'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants on shoreline within 100' of each other. No treatment in 2007, 2008, and 2009. No plants observed in 2010 and 2011.
MOSN PL035	N44° 50.997'	W89° 39.964'	1' - 3'	3 Plants	None	First observed in 2007. Right side of river. No treatment in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011. Plants not blooming.
MOSN PL036	N44° 51.092'	W89° 39.903'	1' - 3'	3 Plants	None	PL036 was first observed in 2007. PL144, first observed in 2009. In 2010, PL036 and PL144 were grouped as a continuous site. Right side of river. No treatment in 2007. No plants observed in 2008 and 2009. No treatment in 2010 and 2011.

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MOSN PL037	N44° 51.345'	W89° 39.733'	1'	1 Plant	None	First observed in 2007. Right side of river. No treatment in 2007 and 2008. No plants observed in 2009. No treatment in 2010 and 2011.
MOSN PL038	N44° 51.405'	W89° 39.693'	1'	1 Plant	None	First observed in 2007. Right side of river. No treatment in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL039	N44° 51.460'	W89° 39.654'	N/A	N/A	N/A	First observed in 2007. Right side of river. No treatment in 2007, 2008, 2009, and 2010. No plants observed in 2011.
MOSN PL040	N44° 51.568'	W89° 39.591'	3'	1 Plant	None	First observed in 2007. Right side of river. No treatment in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL041	N44° 51.623'	W89° 39.556'	2'	1 Plant	None	First observed in 2007. Right side of river. No treatment in 2007 and 2008. No plants observed in 2009. No treatment in 2010 and 2011.
MOSN PL042	N44° 51.893'	W89° 39.243'	1' - 3'	10 Plants	None	First observed in 2007. Right side of river. Plants are located along the shoreline within 200' of the GPS point. Shoreline weed-wacked. No treatment in 2007, 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL043	N44° 51.999'	W89° 39.021'	2' - 4'	10 Plants	None	First observed in 2007. Right side of river. Plants are located on the shoreline along the entire width of a power line right-of-way. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL044	N44° 52.018'	W89° 38.882'	1' - 2'	3 Plants	None	First observed in 2007. Right side of river. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011. All plants are within 50' of waypoint.
MOSN PL045 MOSN PL046	N44° 52.100' N44° 52.156'	W89° 38.670' W89° 38.591'	1' - 3'	38 Plants	None	First observed in 2007. In 2009, PL045 and PL046 were grouped as a continuous site. Right side of river. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL047	N44° 52.244'	W89° 38.516'	3'	1 Plants	None	First observed in 2007. Right side of river. No treatment in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL048	N44° 52.329'	W89° 38.459'	N/A	N/A	N/A	First observed in 2007. Right side of river. All plants on shoreline within 100' of each other. No treatment in 2007. No plants observed in 2008. No treatment in 2009. No plants observed in 2010 and 2011.
MOSN PL049 MOSN PL050 MOSN PL051	N44° 52.396' N44° 52.467' N44° 52.506'	W89° 38.433' W89° 38.411' W89° 38.401'	1' - 4'	250 - 500	None	First observed in 2007. Right side of river. In 2009, PL049, PL050, PL051, and PL052 were grouped as a continuous site. All plants on shoreline within 100' of each other. In 2011,

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MOSN PL052 MOSN PL053 MOSN PL054 MOSN PL055 MOSN PL056	N44° 52.545' N44° 52.639' N44° 52.680' N44° 52.717' N44° 52.803'	W89° 38.396' W89° 38.373' W89° 38.348' W89° 38.333' W89° 38.322'				PL049, PL050, PL051, PL052,PL053, PL054, PL055, and PL056 were grouped as a continuous site to the end of the project boundary. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL057 MOSN PL058	N44° 52.758' N44° 52.612'	W89° 38.235' W89° 38.267'	-	-	-	First observed in 2007. Left side of river. In 2011, PL057, PL 058, PL148, PL166 and 190 were grouped as a continuous site. See PL190 for detail.
MOSN PL059	N44° 52.426'	W89° 38.335'	N/A	N/A	N/A	First observed in 2007. Left side of river. No treatment in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL060	N44° 52.362'	W89° 38.344'	N/A	N/A	N/A	First observed in 2007. Located within 100' of GPS point. Left side of river. No treatment in 2007, 2008, and 2009. No plants observed in 2010 and 2011.
MOSN PL061 MOSN PL062	N44° 52.284' N44° 52.186'	W89° 38.385' W89° 38.444'	1' - 4'	25 Plants	None	First observed in 2007. Left side of river. In 2011, PL061, and PL62 were grouped as a continuous site. All plants on shoreline within 100' of each other. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL063	N44° 52.118'	W89° 38.510'	1' - 4'	25 Plants	None	First observed in 2007. Left side of river. All plants on shoreline within 100' of each other. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL064	N44° 51.992'	W89° 38.722'	3'	2 Plants	None	First observed in 2007. Left side of river. All plants on shoreline within 100' of each other. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011
MOSN PL065	N44° 51.977'	W89° 38.797'	3'	1 Plant	None	First observed in 2007. Left side of river. All plants on shoreline within 100' of each other. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011
MOSN PL066	N44° 51.694'	W89° 39.311'	1' - 3'	3 Plants	None	First observed in 2007. Left side of river. At power plant outlet. No treatment in 2007, 2008, 2009, 2010 and 2011. Plants not blooming during survey.
MOSN PL067	N44° 51.486'	W89° 39.532'	N/A	N/A	N/A	First observed in 2007. Left side of river. No treatment in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL068	N44° 50.974'	W89° 39.870'	1' - 3'	5 Plants	None	First observed in 2007. Left side of river. All plants pulled in 2007. No plants observed in 2008, 2009 and 2010. No treatment in 2011. Plants not in bloom in 2011

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MOSN PL069	N44° 50.827'	W89° 39.975'	1' - 4'	15 Plants	None	First observed in 2007. Left side of river. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL070	N44° 50.761'	W89° 40.041'	1' - 3'	3 Plants	None	First observed in 2007. Left side of river. All plants on shoreline within 100' of each other. All plants pulled in 2007. No treatment in 2008, 2009, 2010 and 2011
MOSN PL071	N44° 50.640'	W89° 40.197'	N/A	N/A	N/A	First observed in 2007. Left side of river. All plants pulled in 2007. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL072	N44° 50.466'	W89° 40.569'	2'	2 Plants	None	First observed in 2007. Left side of river. All plants pulled in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL073	N44° 50.428'	W89° 40.670'	4'	1 Plant	None	First observed in 2007. Left side of river. In log jam. Could not reach plant. No treatment in 2007, 2008, and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL074	N44° 50.153'	W89° 41.034'	1'	1 Plant	None	First observed in 2007. Left side of river. All plants pulled in 2007. No treatment in 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL075	N44° 50.179'	W89° 40.930'	N/A	N/A	N/A	First observed in 2007. In muck filled slough. Could not reach plant. No treatment in 2007 and 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL076	N44° 49.981'	W89° 41.120'	N/A	N/A	N/A	First observed in 2007. Left side of river. All plants pulled in 2007. No plants observed in 2008, 2009, 2010 and 2011.
MOSN PL077	N44° 49.677'	W89° 41.362'	2'	1 Plant	None	First observed in 2007. Left side of river. All plants pulled in 2007. No treatment in 2008. All plants pulled in 2009 and 2010. No treatment in 2011.
MOSN PL078	N44° 49.488'	W89° 41.556'	2'	1 Plant	None	First observed in 2007. Left side of river. All plants pulled in 2007 and 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL079	N44° 49.015'	W89° 41.505'	N/A	N/A	N/A	First observed in 2007. Left side of river. All plants pulled in 2007. No treatment in 2008. All plants pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL080 MOSN PL081	N44° 48.935' N44° 48.903'	W89° 41.480' W89° 41.468'	1' - 5'	36 Plants	None	First observed in 2007. Left side of river. In 2011, PL080, PL081, and PL135 were grouped as a continuous site. No treatment in 2007. All plants pulled in 2008. Plants harbored beetles and beetle larva and were not pulled in 2009. All plants completely browned out in 2010. No treatment in 2010 and 2011.

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MOSN PL082 MOSN PL083	N44° 47.267' N44° 47.285'	W89° 41.822' W89° 41.802'	1' - 4'	~35 Plants	Light/Medium	First observed in 2007. In 2009, PL082 and PL083 were grouped as a continuous site. Beetles confirmed on plants in 2009. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL084	N44° 47.305'	W89° 41.805'	2' - 3'	~50 Plants	Light/Medium	First observed in 2007. No treatment in 2007, 2008, 2009, 2010 and 2011. No blooming plants in 2011.
MOSN PL085 MOSN PL086	N44° 47.344' N44° 47.348'	W89° 41.756' W89° 41.754'	1' - 2'	~60 Plants	Light	First observed in 2007. In 2009, PL085 and PL086 were grouped as a continuous site. No treatment in 2007, 2008, 2009, 2010 and 2011. Mostly all small plants that were not blooming in 2011.
MOSN PL087	N44° 47.272'	W89° 42.096'	2'	2 Plants	Light	First observed in 2007. All plants pulled in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL088	N44° 47.246'	W89° 42.061'	2'	1 plant	None	First observed in 2007. Beetle larvae on one plant. All plants pulled in 2007. No plants observed in 2008. All plants pulled in 2009. No plants observed in 2010. All plants pulled in 2011.
MOSN PL089	N44° 47.427'	W89° 41.727'	1' - 2'	3 Plants	Unknown	First observed in 2007. Plant in rocks below bridge. Could not get close enough to see beetle damage. No treatment in 2007, 2008, 2009, 2010 and 2011
MOSN PL090	N44° 47.407'	W89° 41.813'	N/A	N/A	N/A	First observed in 2007. No treatment in 2007 and 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL091	N44° 47.447'	W89° 42.014'	N/A	N/A	N/A	First observed in 2007. No treatment in 2007 and 2008. No plants observed in 2009. This site has been eliminated due to new Hwy. 153 bridge expansion in 2009.
MOSN PL092 MOSN PL133	N44° 47.309'	W89° 42.217'	1' - 3'	~49 Plants	Light	PL092 First observed in 2007. PL133 First observed in 2008. In 2009, PL092 and PL133 were grouped as a continuous site. Many very large spiders with nests and young in plants on shoreline here. No treatment in 2007, 2008, 2009, 2010 and 2011. Most plants were very small in size in 2011.
MOSN PL093	N44° 47.296'	W89° 42.165'	3' - 4'	1 Plant	Unknown	First observed in 2007. No treatment in 2007. No plants observed in 2008, 2009, and 2010. No treatment in 2011. This site could not be reached.
MOSN PL094	N44° 47.195'	W89° 41.952'	N/A	N/A	N/A	First observed in 2007. No treatment in 2007. No plants observed in 2008, 2009, 2010 and 2011
MOSN PL095	N44° 47.215'	W89° 41.919'	N/A	N/A	N/A	First observed in 2007. No treatment in 2007. No plants observed in 2008, 2009, 2010 and 2011

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GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL096 MOSN PL123	N44° 47.319' N44° 47.350'	W89° 41.862' W89° 41.846'	1' - 2'	12 Plants	None	PL096, first observed in 2007. PL123, first observed in 2008. In 2009, PL096 and PL123 were grouped as a continuous site. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL097 MOSN PL098 MOSN PL099	N44° 47.330' N44° 47.338' N44° 47.327'	W89° 41.789' W89° 41.784' W89° 41.764'	1' - 3'	~300 Plants	None/Light	First observed in 2007. In 2009, PL097, PL098, and PL099 were grouped as a continuous site. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL100	N44° 48.856'	W89° 42.476'	2' - 4'	10' diameter island	Light	First observed in 2007. On 8/9/07, island had all phases of beetle damage from healthy, blooming plants to dead plants. On 7/17/08, island had fewer and only healthy plants that were just beginning to bloom with little or no beetle damage. On 7/17/09, island had only healthy plants that were just beginning to bloom with little or no beetle damage similar to 2008. On 7/13/10, island had few healthy plants that were just beginning to bloom with little or no beetle damage and a larger number of plants that were stunted with heavy beetle damage. On 7/12/11 the island has been reduced in size due to possible ice damage. Beetle damage very light with plants beginning to bloom. Photos in 2007, 2008, 2009, 2010 and 2011. No treatment in 2007, 2008, 2009, 2010 and 2011.
MOSN PL101	N44° 47.998'	W89° 43.769'	2' - 9'	>1000 Plants	None	First observed in 2007. Plants at the west end of Cemetery Slough create a mosaic pattern of medium to very heavy coverage. No beetle damage observed. Observation point was at Cty Hwy B where a snowmobile trail enters the marsh as indicated by trail signs. Additional visits on 8/9/07 and 4/16/08. Photos in 2007 and 2008. Video in 2007. No treatment in 2007, 2008, 2009, 2010 and 2011. Site has remained unchanged from last survey.
MOSN PL102	N44° 48.433'	W89° 42.097'	N/A	N/A	N/A	First observed in 2008. Plants growing in floating log. All plants pulled and cut in 2008. All plants cut in 2009. No plants observed in 2010 and 2011.
MOSN PL103	N44° 49.258'	W89° 41.687.	3'	1 Plant	None	First observed in 2008. Right side of river. All plants pulled in 2008, 2009, and 2010. No treatment in 2011
MOSN PL104	N44° 49.506'	W89° 41.658'	3'	1 Plant	None	First observed in 2008. Right side of river. No treatment in 2008. No plants observed in 2009 and 2010. No treatment in 2011.

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MOSN PL105	N44° 49.593'	W89° 41.581'	N/A	N/A	N/A	First observed in 2008. Right side of river. On shoreline within fallen tree. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL106	N44° 49.686'	W89° 41.507'	3'	1 Plant	None	First observed in 2008. Right side of river. On shoreline within fallen tree. No treatment in 2008. All plants cut in 2009 and 2010. No treatment in 2011.
MOSN PL107	N44° 49.769'	W89° 41.431'	3'	1 Plant	None	First observed in 2008. Right side of river. Plants growing on shoreline within 300' of each other. Beetle larva on plants in 2009. No treatment in 2008. All plants pulled in 2009 and 2010. No treatment in 2011.
MOSN PL108	N44° 50.216'	W89° 41.075'	3'	1 Plant	None	First observed in 2008. Right side of river. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL109	N44° 50.776'	W89° 40.121'	2' -3'	2 Plants	None	First observed in 2008. Right side of river. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL110	N44° 51.251'	W89° 39.797'	3'	1 Plant	None	First observed in 2008. Right side of river. No treatment in 2008. No plants observed in 2009. No treatment in 2010 and 2011.
MOSN PL111	N44° 51.746'	W89° 39.395'	1' - 3'	6 Plants	None	First observed in 2008. Right side of river. Plant is growing on a log, upstream of the waste water discharge. No treatment in 2008, 2009, 2010 and 2011.
MOSN PL112	N44° 51.305'	W89° 39.660'	1'	2 Plants	None	First observed in 2008. Left side of river. No treatment in 2008, 2009, 2010 and 2011. Plants not blooming in 2011.
MOSN PL113	N44° 51.196'	W89° 39.744'	1' - 2'	4 Plants	None	First observed in 2008. Left side of river. No treatment in 2008. No plants observed in 2009. No treatment in 2010 and 2011.
MOSN PL114	N44° 50.271	W89° 40.953'	N/A	N/A	N/A	First observed in 2008. Left side of river. All plants pulled in 2008. No plants observed in 2009, 2010 and 2011
MOSN PL115	N44° 50.161'	W89° 40.978'	1' - 2'	2 Plants	None	First observed in 2008. Left side of river in slough. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL116	N44° 50.096'	W89° 41.043'	1' - 3'	16 Plants	None	First observed in 2008. Left side of river on island and point. No treatment in 2008, 2009, 2010 and 2011
MOSN PL117 MOSN PL118	N44° 49.896' N44° 49.931'	W89° 41.133' W89° 41.008'	1' - 5'	>50 Plants	None	First observed in 2008. Left side of river. In 2011, PL117 and PL118 were grouped as a continuous site. Plants are on shoreline within 550' of each other on point. No treatment in 2008 and 2009. No plants observed in 2010. No treatment in 2011.

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MOSN PL119	N44° 49.788'	W89° 41.264'	1'	1 Plant	None	First observed in 2008. Left side of river. Beetles on plants in 2009. All plants cut in 2008, 2009, and 2010. No treatment in 2011.
MOSN PL120	N44° 49.429'	W89° 41.586'	3'	1 Plant	None	First observed in 2008. Left side of river. All plants pulled in 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL121	N44° 49.336'	W89° 41.596'	1' - 4'	5 Plants	None	First observed in 2008. Left side of river. All plants pulled in 2008. No plants observed in 2009 and 2010. No treatment in 2011.
MOSN PL122	N44° 49.261'	W89° 41.586'	N/A	N/A	N/A	First observed in 2008. Left side of river. Beetles on plants in 2009. No treatment in 2008. All plants pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL123	N44° 47.350'	W89° 41.846'	-	-	-	First observed in 2008. In 2009, this site was grouped with PL096 as a continuous site. See PL096 for detail. No treatment in 2008.
MOSN PL124 MOSN PL125	N44° 47.373' N44° 47.395'	W89° 41.772' W89° 41.731'	N/A	N/A	N/A	First observed in 2008. In 2009, PL124 and PL125 were grouped as a continuous site. Could not detect beetle damage in 2009. No treatment in 2008, 2009, and 2010. No plants observed in 2011.
MOSN PL126	N44° 47.445'	W89° 41.755'	1' - 4'	3 Plants	Unknown	First observed in 2008. Site could not be reached for close observation. No treatment in 2008, 2009, 2010 and 2011.
MOSN PL127	N44° 47.453'	W89° 41.810'	N/A	N/A	N/A	First observed in 2008. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL128	N44° 47.465'	W89° 41.888'	N/A	N/A	N/A	First observed in 2008. This site cannot be reached for close observation. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL129	N44° 47.377'	W89° 42.021'	N/A	N/A	N/A	First observed in 2008. No treatment in 2008. No plants observed in 2009, 2010 and 2011. This site was chemically treated inadvertently by mill personel.
MOSN PL130	N44° 47.331'	W89° 42.083'	N/A	N/A	N/A	First observed in 2008. All plants pulled in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL131	N44° 47.332'	W89° 42.121'	N/A	N/A	N/A	First observed in 2008. Upstream side of powerhouse. Could not get close enough to detect beetle damage. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL132	N44° 47.274'	W89° 42.176'	N/A	N/A	N/A	First observed in 2008. Site can not be reached for close observation. No treatment in 2008. No plants observed in 2009, 2010 and 2011.
MOSN PL133	N44° 47.216'	W89° 42.313'	-	-	-	First observed in 2008. In 2009, this site was grouped with PL092 as a continuous site. See PL092 for detail

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Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL134	N44° 47.297'	W89° 42.105'	N/A	N/A	N/A	First observed in 2008. All plants pulled in 2008. No plants observed in 2009. All plants pulled in 2010. No plants observed in 2011.
MOSN PL135	N44° 48.963'	W89° 41.486'	-	-	-	First observed in 2009. Left side of river. In 2011, PL080, PL081, and PL135 were grouped as a continuous site. See PL080 and PL081 for detail.
MOSN PL136	N44° 49.713'	W89° 41.331'	N/A	N/A	N/A	First observed in 2009. All plants pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL137	N44° 49.817'	W89° 41.222'	1' - 2'	12 Plants	None	First observed in 2009. Beetles on plant. All plants pulled in 2009. No plants observed in 2010. No treatment in 2011. All plants within 100' of waypoint.
MOSN PL138	N44° 49.245'	W89° 41.682'	N/A	N/A	N/A	First observed in 2009. Right side of river. No beetles on plants. All plants pulled in 2009 and 2010. No plants observed in 2011.
MOSN PL139	N44° 49.270'	W89° 41.684'	2'	2 Plants	None	First observed in 2009. Right side of river. Beetles and larva on plants. All plants pulled in 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL140	N44° 49.442'	W89° 41.674'	4'	2 Plants	None	First observed in 2009. Right side of river. All plants cut in 2009 and 2010. No treatment in 2011.
MOSN PL141	N44° 49.544'	W89° 41.630'	2'	1 Plant	None	First observed in 2009. Right side of river. All plants cut in 2009. All plants pulled in 2010. No treatment in 2011
MOSN PL142	N44° 49.757'	W89° 41.442'	2'	1 Plant	None	First observed in 2009. Right side of river. Beetles and beetle eggs on plant. All plants cut in 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL143	N44° 49.785'	W89° 41.420'	1' - 5'	8 Plants	None	First observed in 2009. Right side of river. Beetles and beetle eggs on plants. No treatment in 2009. All plants pulled or cut in 2010. All plants within 50' of point. No treatment in 2011.
MOSN PL144	N44° 51.115'	W89° 39.885'	-	-	-	First observed in 2009. In 2010, this site was grouped with PL36 to create one continuous site. See PL036 for detail.
MOSN PL145	N44° 51.178'	W89° 39.844'	1' - 4'	4 Plants	None	First observed in 2009. Right side of river. One blooming plant. No treatment in 2009, 2010 and 2011.
MOSN PL146	N44° 51.984'	W89° 39.089'	N/A	N/A	N/A	First observed in 2009. Right side of river. Beetles on plants. No treatment in 2009 or 2010. Not found in 2011.

Purple Loosestrife Survey

Project: Mosinee #2207 **Datum:** WGS 84

Date: 7/11 - 7/16, 2011

Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL147	N44° 52.009'	W89° 38.955'	1' - 2'	4 Plants	None	First observed in 2009. Right side of river. All plants on shoreline within 50' of each other. Beetles on plants. No treatment in 2009. No plants observed in 2010. Plants not blooming. No treatment in 2011.
MOSN PL148	N44° 52.658'	W89° 38.256'	-	-	-	First observed in 2007. Left side of river. In 2011, PL057, PL 058, PL148, and PL166 were grouped as a continuous site to the end of the project boundary. See PL190 for detail.
MOSN PL149	N44° 51.962'	W89° 38.892'	3'	2 Plants	None	First observed in 2009. Left side of river. No treatment in 2009. No plants observed in 2010. Plants not blooming. No treatment in 2011.
MOSN PL150	N44° 50.693'	W89° 40.122'	N/A	N/A	N/A	First observed in 2009. Left side of river. No treatment in 2009. No plants observed in 2010 and 2011.
MOSN PL151	N44° 50.549'	W89° 40.378'	1' - 4'	5 Plants	None	First observed in 2009. Left side of river. All plants on shoreline within 50' of each other. All plants pulled in 2009. No plants observed in 2010. No treatment in 2011.
MOSN PL152	N44° 49.817'	W89° 41.397'	N/A	N/A	N/A	First observed in 2009. Right side of river. All plants pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL153	N44° 48.130'	W89° 41.064'	N/A	N/A	N/A	First observed in 2009. All plants pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL154	N44° 47.367'	W89° 42.046'	N/A	N/A	N/A	First observed in 2009. Blooming plant growing on log boom. No treatment in 2009. No plants observed in 2010 and 2011.
MOSN PL155	N44° 47.575'	W89° 41.626'	2' - 4'	6 Plants	Light/Medium	First observed in 2009. Galerucella C. beetles on plants mating, eggs on plants, near pumphouse. Photos in 2009. No treatment in 2009, 2010 and 2011.
MOSN PL156	N44° 47.464'	W89° 41.808'	N/A	N/A	N/A	First observed in 2009. Blooming plant. Could not get close enough to see if there was beetle damage. No treatment in 2009 and 2010. No plants observed in 2011.
MOSN PL157	N44° 47.442'	W89° 41.928'	N/A	N/A	N/A	First observed in 2009. Blooming plant. Pulled in 2009. No plants observed in 2010 and 2011.
MOSN PL158	N44° 47.289'	W89° 41.934'	N/A	N/A	N/A	First observed in 2009. No treatment in 2009. No plants observed in 2010 and 2011.
MOSN PL159	N44° 47.250'	W89° 41.871'	N/A	N/A	N/A	First observed in 2009. Blooming plants on gravel/rock bar. Could not get close enough to observe beetle damage. No treatment in 2009 and 2010. No plants observed in 2011.

Purple Loosestrife Survey

Project: Mosinee #2207 **Datum:** WGS 84

Date: 7/11 - 7/16, 2011

Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL160	N44° 47.441'	W89° 41.670'	3' - 4'	2 Plant	Light	First observed in 2009. Blooming plants next to water intake at east side of spillway. No treatment in 2009, 2010 and 2011.
MOSN PL161	N44° 48.006'	W89° 41.151'	N/A	N/A	N/A	First observed in 2010. Seed heads cut in 2010. No plants observed in 2011.
MOSN PL162	N44° 49.994'	W89° 41.235'	1' - 4'	3 Plants	None	First observed in 2010. Right side of river. No treatment in 2010 and 2011.
MOSN PL163	N44° 50.264'	W89° 41.052'	3'	1 Plant	None	First observed in 2010. Right side of river. Plants in mid-bloom. No treatment in 2010 and 2011.
MOSN PL164	N44° 50.287'	W89° 41.030'	N/A	N/A	N/A	First observed in 2010. Right side of river. Plants in mid-bloom. No treatment in 2010. No plants observed in 2011.
MOSN PL165	N44° 50.879'	W89° 41.041'	1' - 2'	4	None	First observed in 2010. Right side of river. Plants in mid-bloom. No treatment in 2010 and 2011.
MOSN PL166	N44° 52.507'	W89° 38.313'	1' - 4'	>100 Plants	None	First observed in 2007. Left side of river. In 2011, PL057, PL058, PL148, PL166 and 190 were grouped as a continuous site. See PL190 for detail. No treatment in 2011.
MOSN PL167	N44° 51.053'	W89° 38.822'	3' - 4'	2 Plants	None	First observed in 2010. Left side of river. No treatment in 2010 and 2011.
MOSN PL168	N44° 50.517'	W89° 40.452'	3'	1 Plant	None	First observed in 2010. Left side of river. No treatment in 2010 and 2011.
MOSN PL169	N44 49.494	W89 41.680	N/A	N/A	N/A	First observed in 2010. Right side of river. All plants pulled in 2010. No plants observed in 2011.
MOSN PL170	N44 50.020	W89 41.380	N/A	N/A	N/A	First observed in 2010. Right side of river in slough All plants pulled in 2010. No plants observed in 2011.
MOSN PL171	N44 47.758	W89 41.277	N/A	N/A	N/A	First observed in 2010 on a sand bar in a small feeder creek. No treatment in 2010. Unreachable in 2011.
MOSN PL172	N44 47.544	W89 41.858	3' - 4'	3 Plants	Unknown	First observed in 2010 on the west side of the power canal and above the head gates. GPS point estimated. No treatment in 2010 and 2011.
MOSN PL173	N44 48.928	W89 41.590	4'	1 Plant	None	First observed in 2011. Right side of river. No treatment in 2011.
MOSN PL174	N44 49.156	W89 41.666	3'	2 Plants	None	First observed in 2011 on right side of river. Plants within 50' of each other and not blooming. No treatment in 2011.
MOSN PL175	N44 49.376	W89 41.685	3'	1 Plant	None	First observed in 2011. Right side of river. No treatment in 2011.

Purple Loosestrife Survey

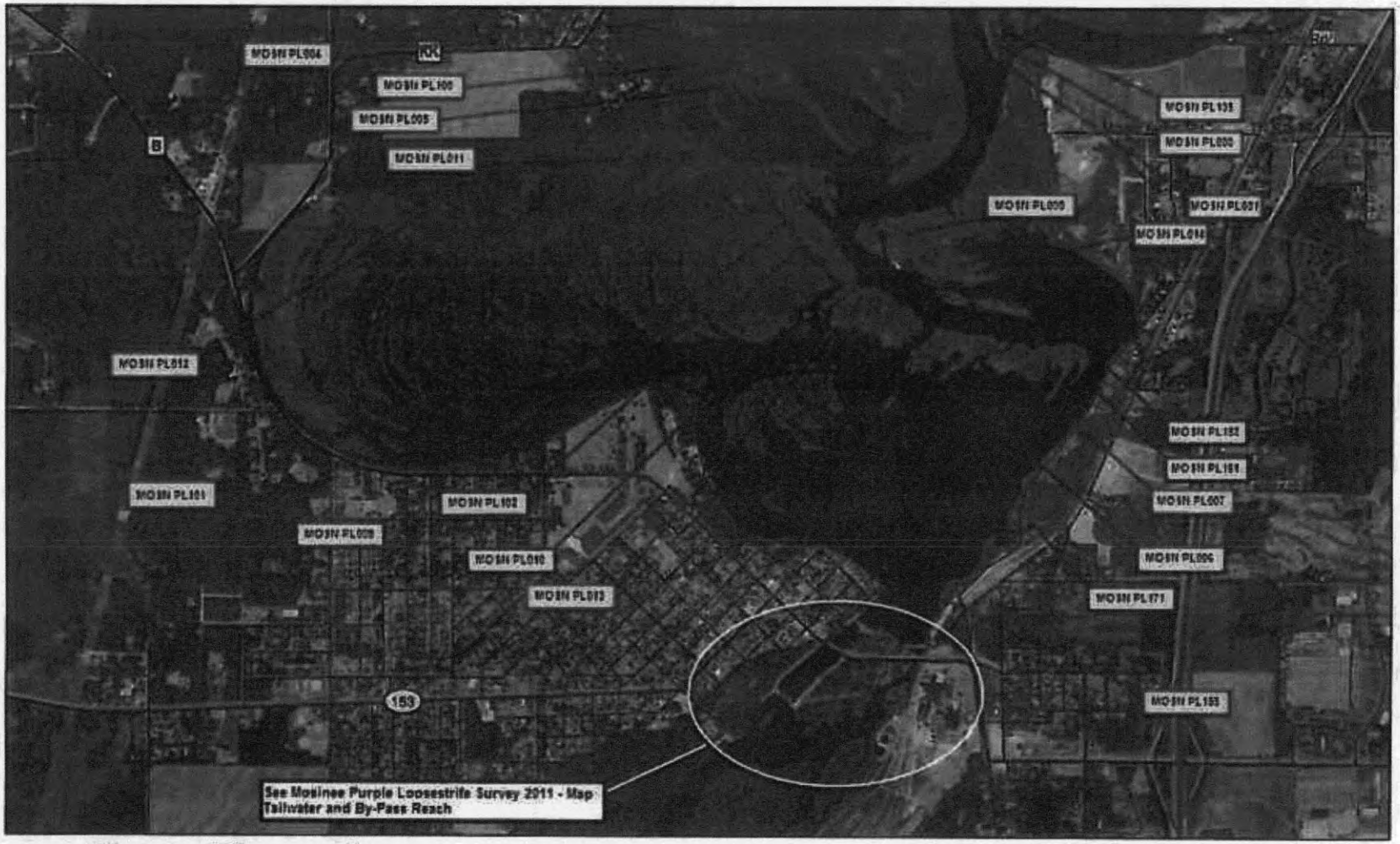
Project: Mosinee #2207 **Datum:** WGS 84

Date: 7/11 - 7/16, 2011

Crew: RAL & CTM

GPS point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
MOSN PL176	N44 49.695	W89 41.498	3'	2 Plants	None	First observed in 2011. Right side of river. Plants not blooming. Site within 50' of PL 106. No treatment in 2011.
MOSN PL177	N44 49.870	W89 41.325	2' - 3'	2 Plants	None	First observed in 2011 on the right side of river. Plants not blooming. No treatment in 2011.
MOSN PL178	N44 49.940	W89 41.271	1'	2 Plants	None	First observed in 2011 on the right side of river. Plants not blooming. No treatment in 2011.
MOSN PL179	N44 50.110	W89 41.143	3'	1 Plant	None	First observed in 2011 on the right side of river. Plant not blooming. No treatment in 2011.
MOSN PL180	N44 50.628	W89 40.427	3'	2 Plants	None	First observed in 2011. Right side of river. No treatment in 2011.
MOSN PL181	N44 50.635	W89 40.388	1' - 3'	2 Plants	None	First observed in 2011. Right side of river. No treatment in 2011.
MOSN PL182	N44 51.918	W89 39.043	1' - 3'	20 Plants	None	First observed in 2011 on the left side of river. Plants not blooming. No treatment in 2011.
MOSN PL183	N44 51.545	W89 39.500	1'	1 Plant	None	First observed in 2011 on the left side of river. Plant not blooming. No treatment in 2011.
MOSN PL184	N44 51.230	W89 39.720	1'	2 Plants	None	First observed in 2011 on the left side of river. Plants not blooming. No treatment in 2011.
MOSN PL185	N44 50.590	W89 40.282	4'	1 Plant	None	First observed in 2011 on the left side of river. Plant not blooming. No treatment in 2011.
MOSN PL186	N44 50.330	W89 40.865	4' - 5'	4 Plant	None	First observed in 2011 on left side of river. No treatment in 2011.
MOSN PL187	N44 50.045	W89 41.075	1'	2 Plants	None	First observed in 2011 on the left side of river. Plants not blooming. No treatment in 2011.
MOSN PL188	N44 49.197	W89 41.563	1'	1 Plant	None	First observed in 2011 on the left side of river. Plant not blooming. No treatment in 2011.
MOSN PL189	N44 47.457	W89 41.972	3' - 5'	2 Plants	None	First observed in 2011 on the right side of power canal.No treatment in 2011.
MOSN PL190	N44 52.803	W89 38.228	1' - 4'	>100 Plants	None	First observed in 2011. Left side of river. In 2011, PL057, PL058, PL148, PL166 and 190 were grouped as a continuous site.

Mosinee Purple Loosestrife Survey 2011 - Map 01



0 1750 3500 5250 ft.

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Legend

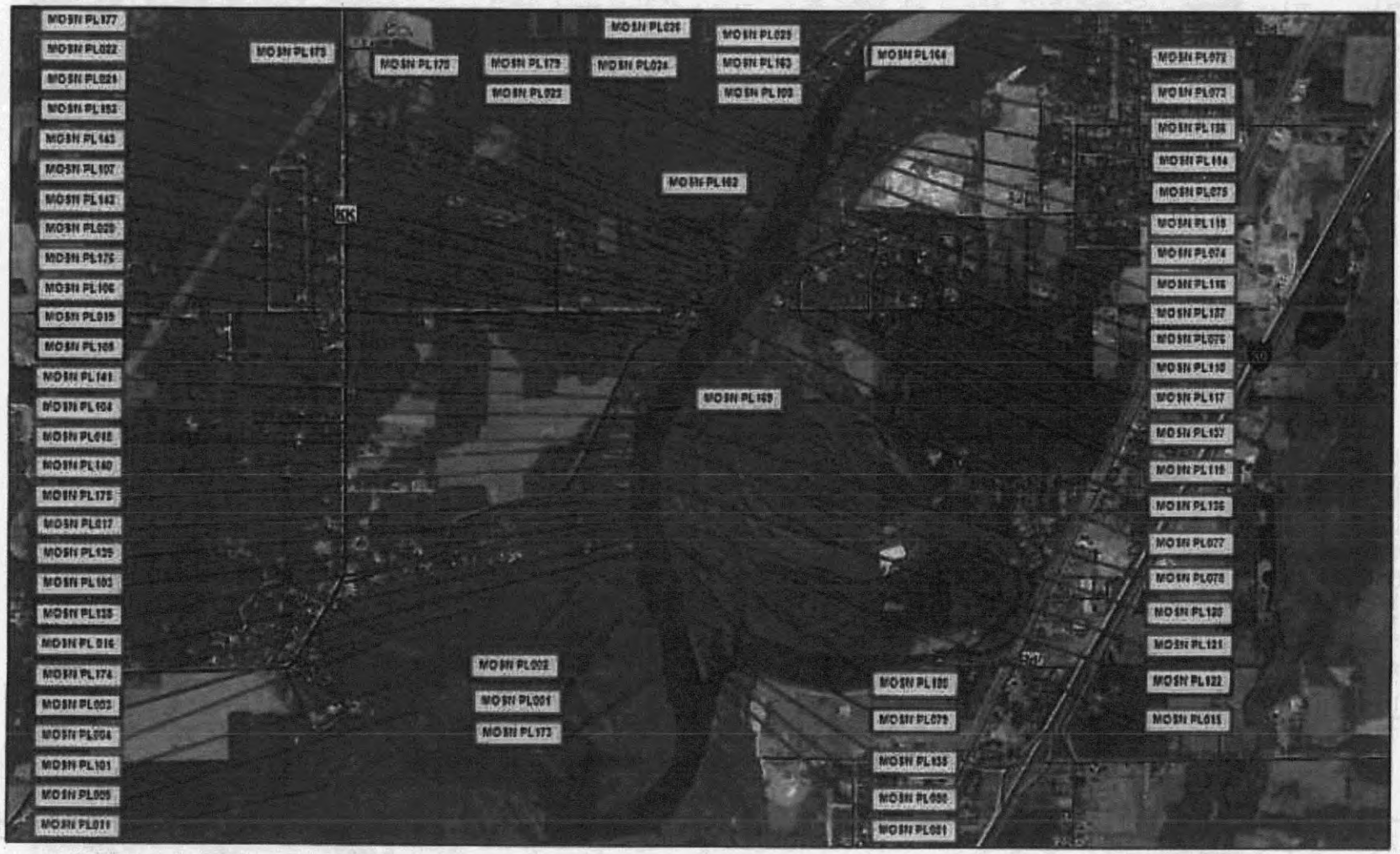
- Dams
- Major Highways
- Interstate
- State Highway
- US Highways
- County Roads
- Local Roads

Purple Loosestrife Observed in 2011

Purple Loosestrife Observed in Previous Years and not in 2011

Scale: 1:18,000

Mosinee Purple Loosestrife Survey 2011 - Map 02



Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

Purple Loosestrife Observed in 2011

Purple Loosestrife Observed in Previous Years and not in 2011

Scale: 1:16,000

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Mosinee Purple Loosestrife Survey 2011 - Map 03

0 1750 3500 5250 ft.

Legend

Major Highways

- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

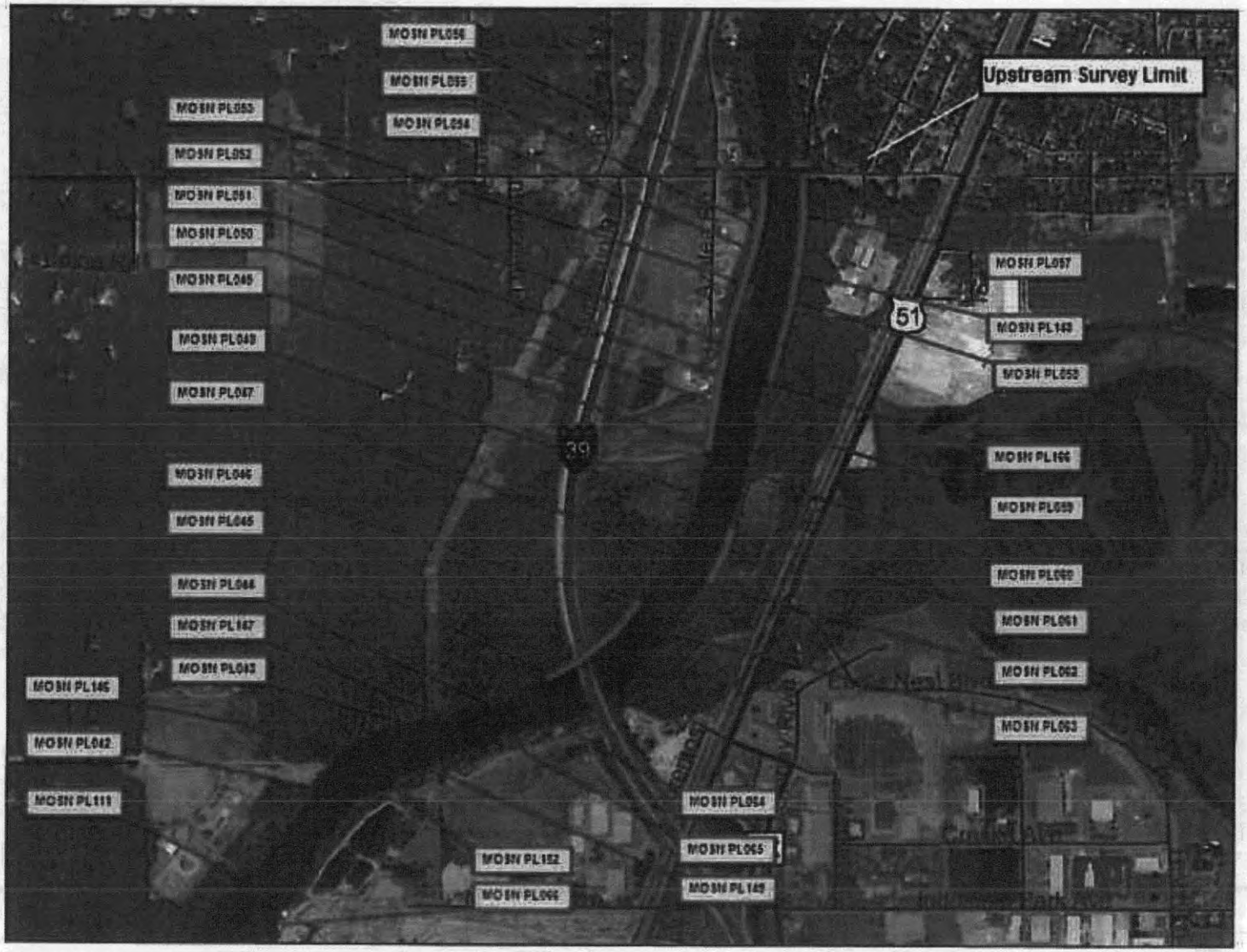
Purple Loosestrife Observed in 2011

Purple Loosestrife Observed in Previous Years and not in 2011

Scale: 1:18,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Mosinee Purple Loosestrife Survey 2011 - Map 04



Legend

Major Highways

- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

Purple Loosestrife Observed in 2011

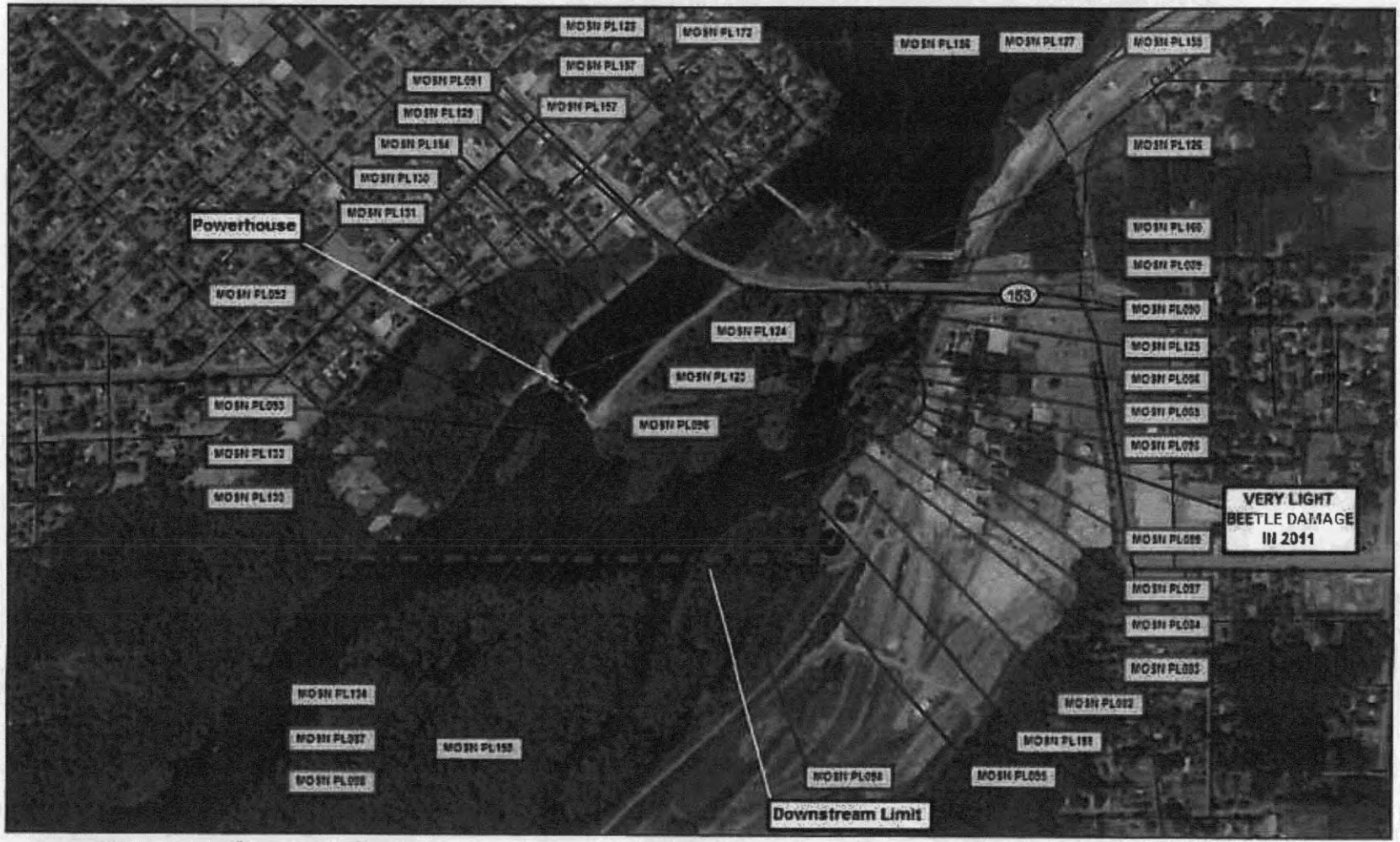
Purple Loosestrife Observed in Previous Years and not in 2011

0 1750 3500 5250 ft.

Scale: 1:18,000

This map is a user generated **static** output from **an Internet** mapping **site and** is for general **reference only.** Data layers that appear on this map may or may not be accurate, current, **or otherwise reliable.** THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Mosinee Purple Loosestrife Survey 2011 - Map of Tailwater and By-Pass Reach



Legend

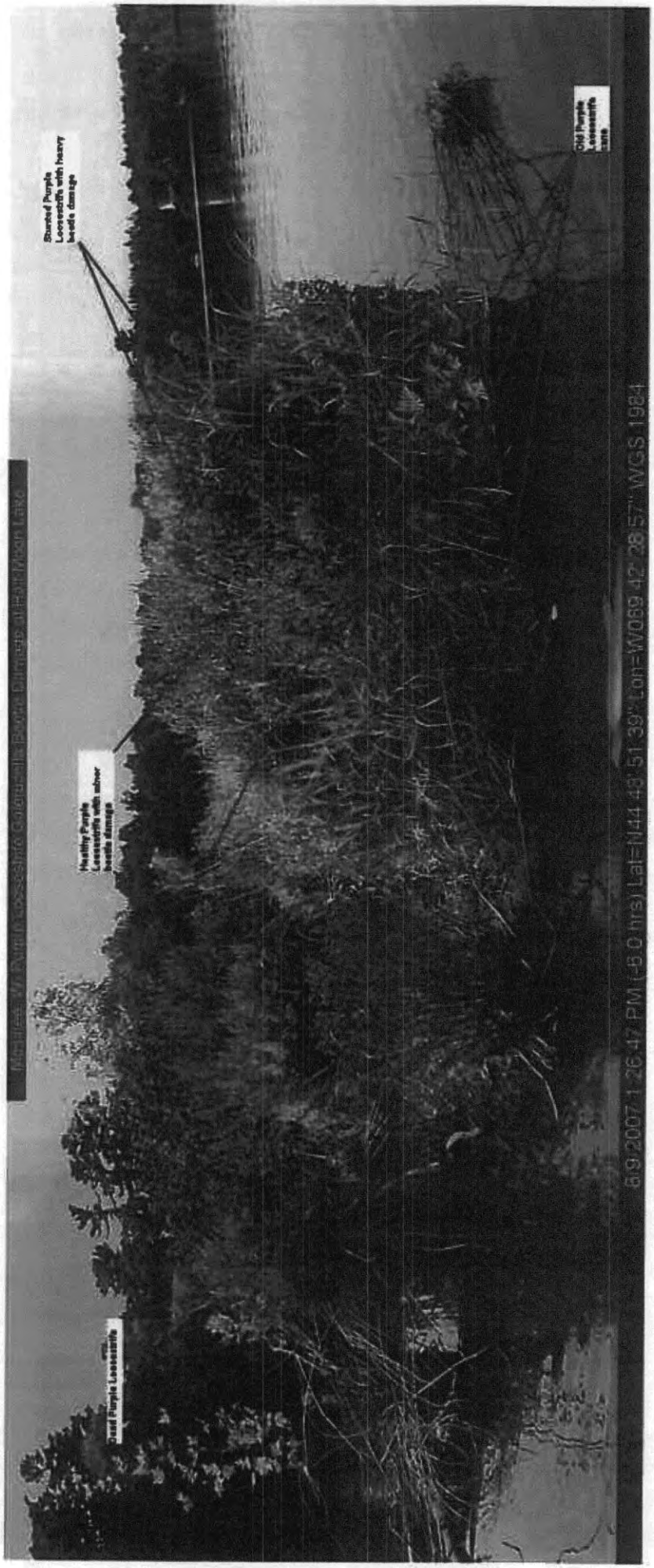
Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

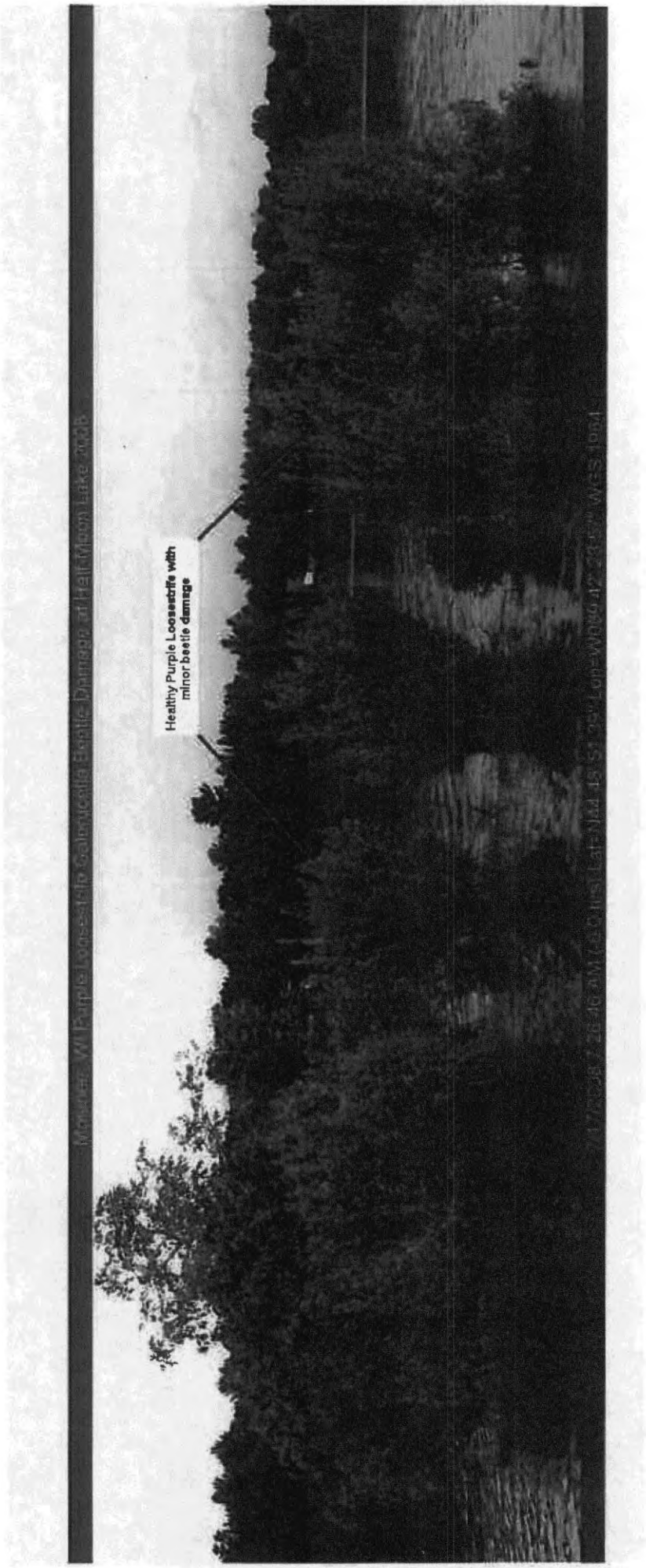
Purple Loosestrife Observed in 2011

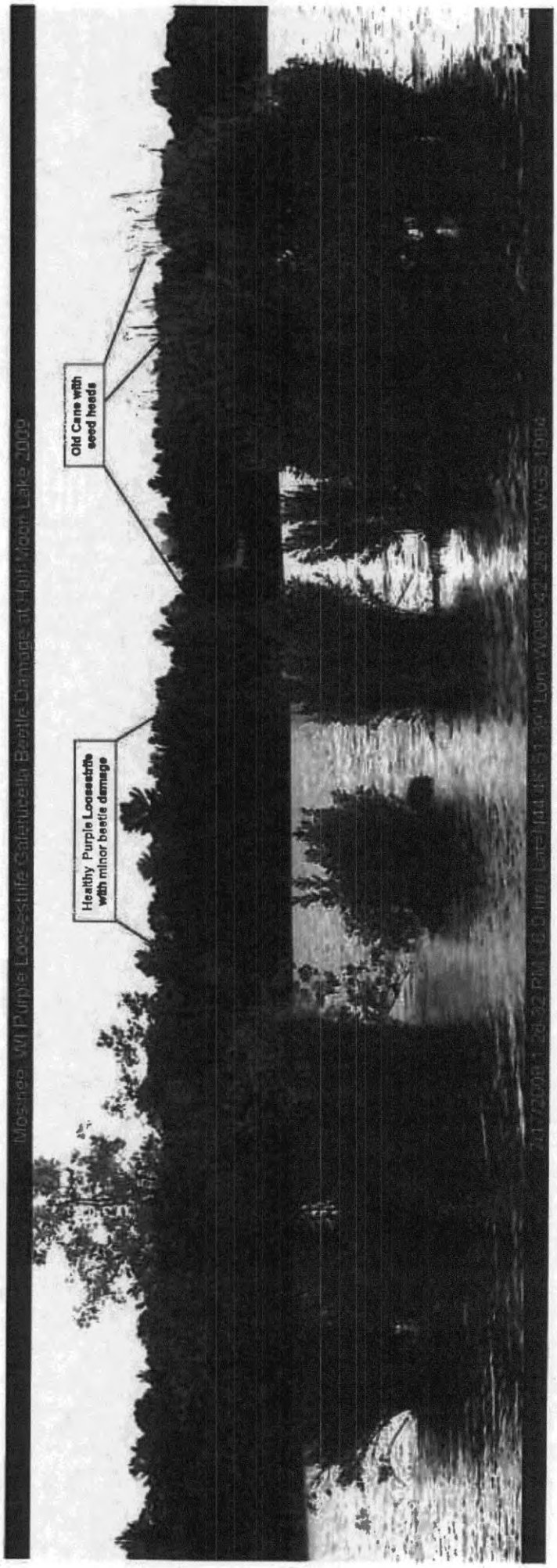
Purple Loosestrife Observed in Previous Years and not in 2011

Scale: 1:6,500

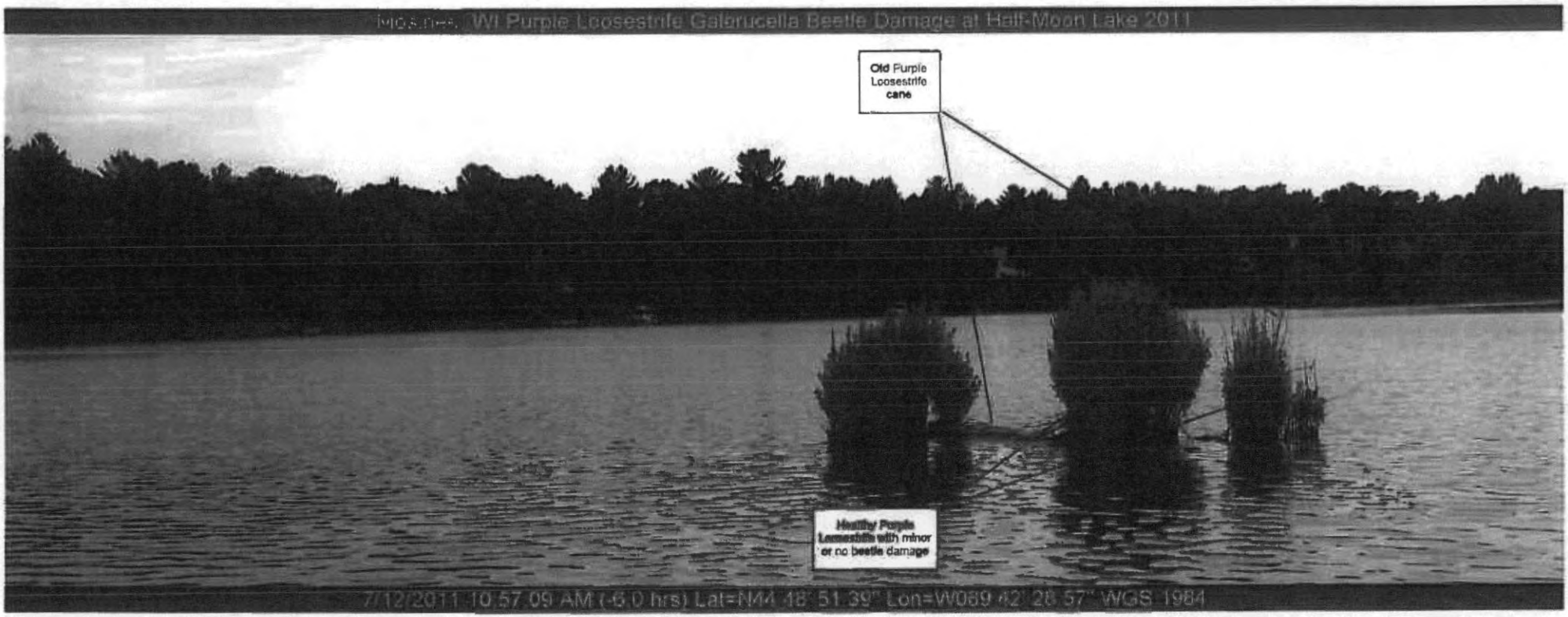
This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.


Dead Purple Loosestrife
Stunted Purple Loosestrife with heavy beetle damage
Healthy Purple Loosestrife with minor beetle damage
Old Purple Loosestrife Stalk
6 9 2007 1 26 47 PM (-5 0 hrs) Lat=N44 45' 51 39" Lon=W069 42' 28 57" WGS 1984


Healthy Purple Loosestrife with minor beetle damage

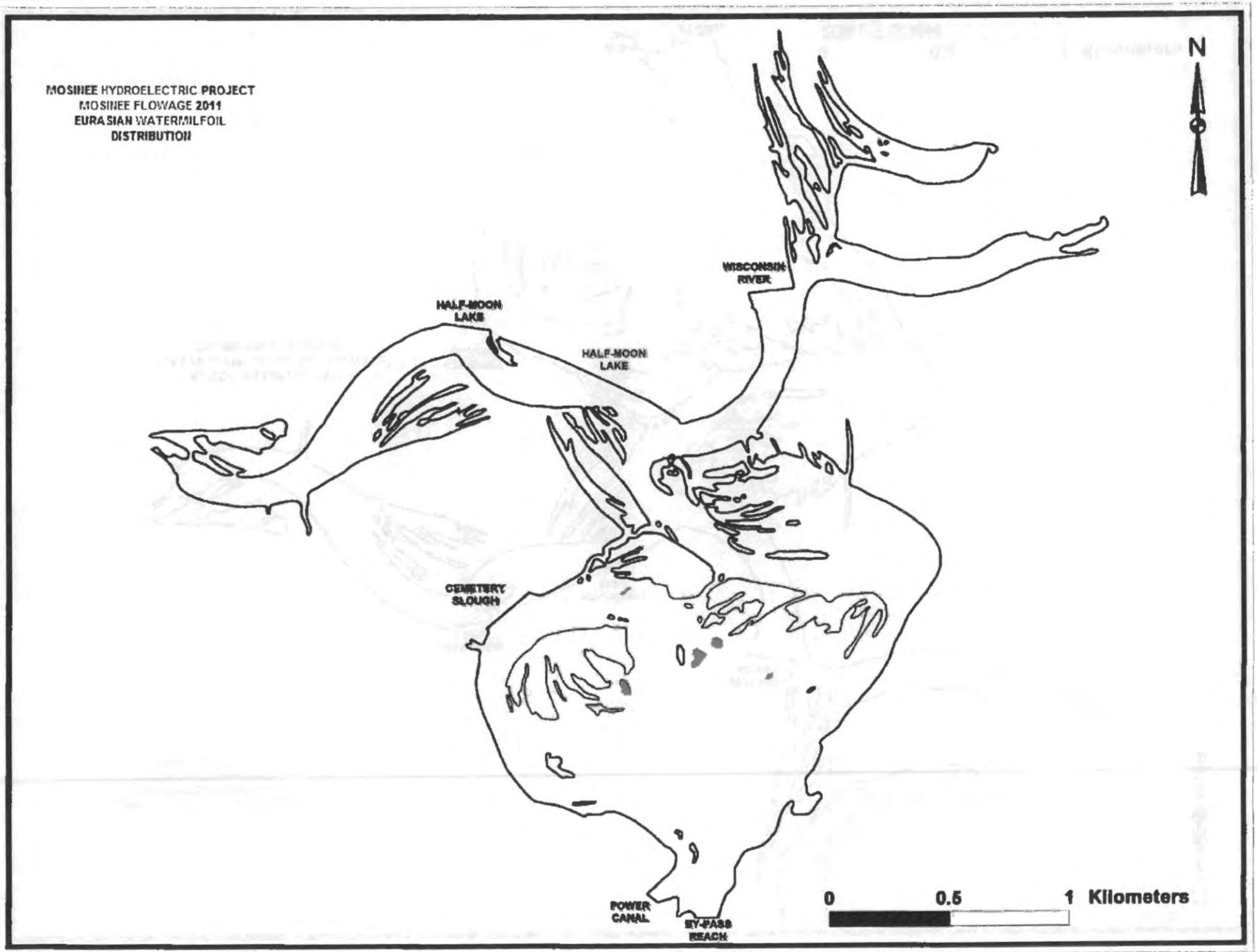


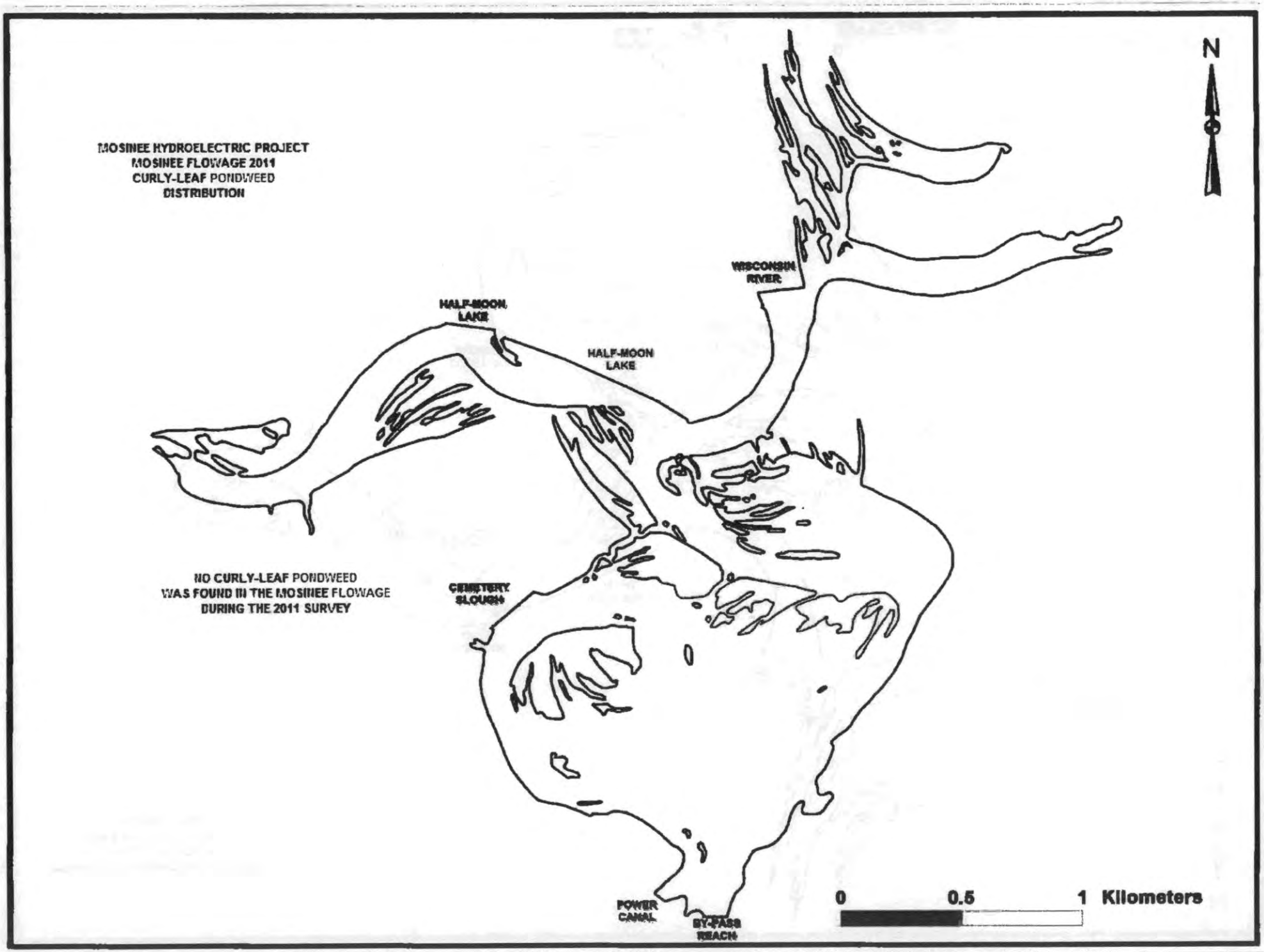
Old Purple Loosestrife stem
Stunted Purple Loosestrife with heavy beetle damage

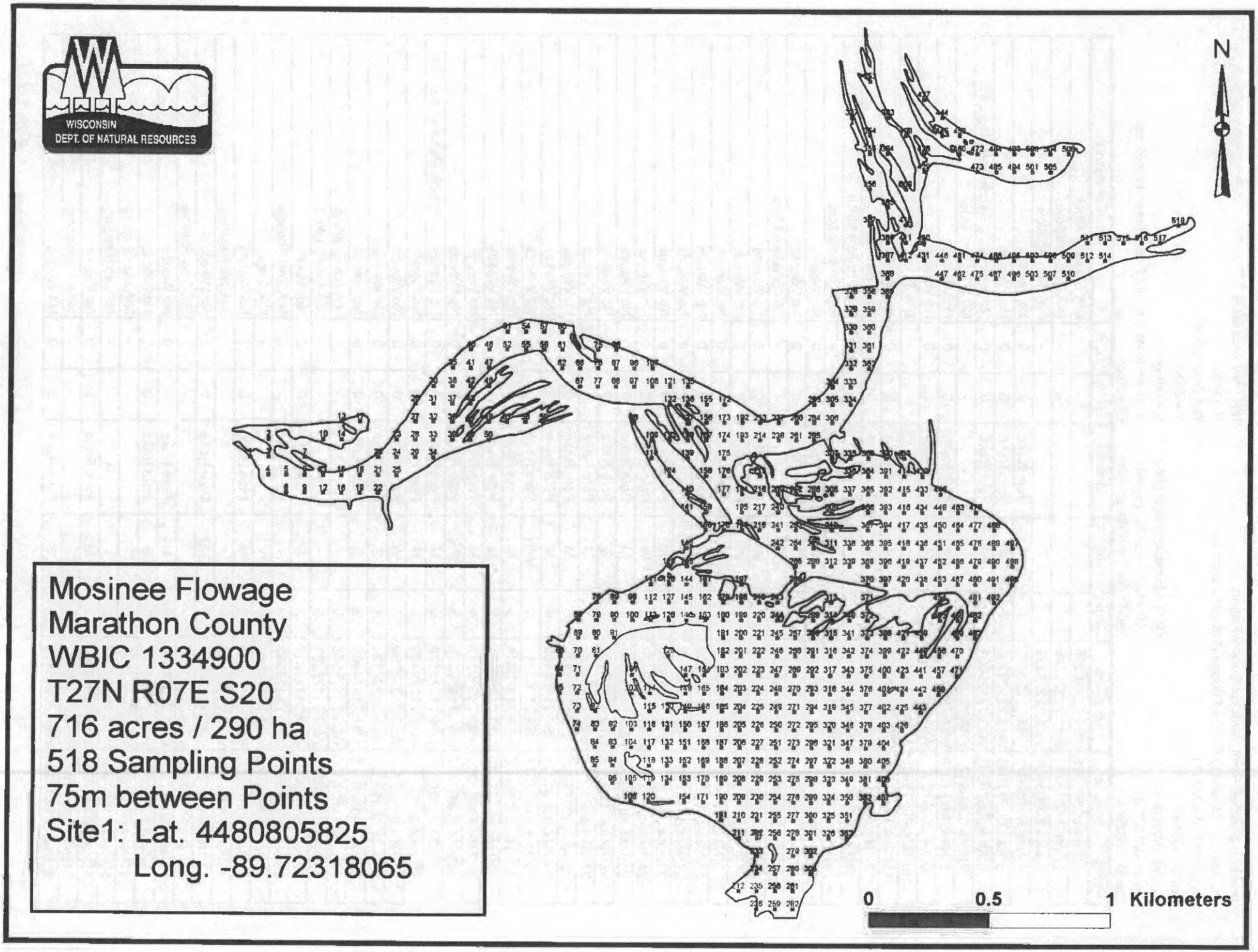


APPENDIX B

Eurasian Water Milfoil & Curly-leaf Pondweed Survey Results







Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1334900
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
1	N44.80805825	W89.72318065	-	-	-	-	-	N/A Shallow Muck
2	N44.80873111	W89.72222899	-	-	-	-	-	N/A Too Shallow
3	N44.80805595	W89.72223223	-	-	-	-	-	N/A Too Shallow
4	N44.80738079	W89.72223547	1	M	Pole Rake	0	0	No Weeds
5	N44.80737848	W89.72128706	2	M	Pole Rake	0	0	No Weeds
6	N44.80670332	W89.72129031	2	M	Pole Rake	0	0	No Weeds Secchi Reading 0.75'
7	N44.80805132	W89.72033539	-	-	-	-	-	N/A Shallow Muck
8	N44.80737616	W89.72033865	2	M	Pole Rake	0	0	No Weeds
9	N44.806701	W89.72034191	2	M	Pole Rake	0	0	No Weeds
10	N44.80872415	W89.7193837	-	-	-	-	-	N/A Too Shallow
11	N44.80737384	W89.71939024	2	M	Pole Rake	0	0	No Weeds
12	N44.80669868	W89.71939352	3	M	Pole Rake	0	0	No Weeds
13	N44.80939698	W89.71843198	-	-	-	-	-	N/A Shallow Muck
14	N44.80872182	W89.71843527	-	-	-	-	-	N/A Shallow Muck
15	N44.8073715	W89.71844184	3	M	Pole Rake	0	0	No Weeds
16	N44.80669634	W89.71844512	3	M/W	Pole Rake	0	0	No Weeds
17	N44.80939464	W89.71748354	-	-	-	-	-	N/A Shallow Muck
18	N44.80736916	W89.71749343	4	W	Pole Rake	0	0	No Weeds
19	N44.806694	W89.71749672	3	W	Pole Rake	0	0	No Weeds
20	N44.80804197	W89.71654171	3	W	Pole Rake	0	0	No Weeds
21	N44.80736681	W89.71654502	4	M	Pole Rake	0	0	No Weeds
22	N44.80669165	W89.71654833	2	S	Pole Rake	0	0	No Weeds
23	N44.80871477	W89.71558998	4	W	Pole Rake	0	0	No Weeds
24	N44.80803961	W89.71559329	5	W	Pole Rake	0	0	No Weeds
25	N44.80736445	W89.71559661	4	M	Pole Rake	0	0	No Weeds
26	N44.81006272	W89.71463489	2	S	Pole Rake	0	0	No Weeds
27	N44.80938756	W89.71463822	5	M	Pole Rake	0	0	No Weeds
28	N44.8087124	W89.71464155	5	M	Pole Rake	0	0	No Weeds
29	N44.80803725	W89.71464488	4	M	Pole Rake	0	0	No Weeds
30	N44.81073551	W89.7136831	5	M/W	Pole Rake	0	0	No Weeds
31	N44.81006035	W89.71368644	5	M	Pole Rake	0	0	No Weeds
32	N44.80938519	W89.71368978	5	M	Pole Rake	0	0	No Weeds
33	N44.80871003	W89.71369312	4	M	Pole Rake	0	0	No Weeds
34	N44.80803487	W89.71369646	3	S/W	Pole Rake	0	0	No Weeds
35	N44.81140828	W89.71273128	5	M	Pole Rake	0	0	No Weeds Secchi Reading 1.8'
36	N44.81073312	W89.71273463	5	M	Pole Rake	0	0	No Weeds
37	N44.81005797	W89.71273799	4	W	Pole Rake	0	0	No Weeds
38	N44.80938281	W89.71274134	1	S	Pole Rake	0	0	No Weeds
39	N44.80870765	W89.71274469	2	S	Pole Rake	0	0	No Weeds
40	N44.81208105	W89.71177945	6	-	-	-	-	N/A No Reading
41	N44.81140589	W89.71178281	6	-	-	-	-	N/A No Reading
42	N44.81073074	W89.71178617	3	S	Pole Rake	0	0	No Weeds
43	N44.81005558	W89.71178953	-	-	-	-	-	N/A Too Shallow
44	N44.80938042	W89.7117929	-	-	-	-	-	N/A Land
45	N44.80870526	W89.71179626	2	M	Pole Rake	0	0	No Weeds
46	N44.81207865	W89.71083096	6	-	-	-	-	N/A No Reading
47	N44.8114035	W89.71083434	3	G/S	Pole Rake	0	0	No Weeds
48	N44.81072834	W89.71083771	-	-	-	-	-	N/A Too Shallow
49	N44.80937802	W89.71084446	2	M	Pole Rake	0	0	No Weeds
50	N44.80870286	W89.71084783	1	S	Pole Rake	0	0	No Weeds
51	N44.81275141	W89.70987909	6	-	-	-	-	N/A No Reading
52	N44.81207625	W89.70988248	6	-	-	-	-	N/A No Reading
53	N44.80937562	W89.70989602	2	M	Pole Rake	0	0	No Weeds
54	N44.81274899	W89.7089306	7	-	-	-	-	N/A No Reading
55	N44.81207384	W89.70893399	3	S	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1334900
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
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S = Sand
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R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
56	N44.8093732	W89.70894758	1	S	Pole Rake	0	0	No Weeds
57	N44.81274657	W89.7079821	10	-	-	-	-	N/A No Reading
58	N44.81207141	W89.70798551	9	-	-	-	-	N/A No Reading
59	N44.80937078	W89.70799914	-	-	-	-	-	N/A Land
60	N44.81274414	W89.70703361	9	-	-	-	-	N/A No Reading
61	N44.81206898	W89.70703702	10	-	-	-	-	N/A No Reading
62	N44.81139383	W89.70704044	12	-	-	-	-	N/A No Reading
63	N44.80059129	W89.70709511	2	S	Pole Rake	0	0	No Weeds
64	N44.79991613	W89.70709853	8	-	-	-	-	N/A No Reading
65	N44.79924097	W89.70710195	8	-	-	-	-	N/A No Reading
66	N44.81139139	W89.70609197	10	-	-	-	-	N/A No Reading
67	N44.81071623	W89.7060954	10	-	-	-	-	N/A No Reading
68	N44.80193917	W89.70613996	7	-	-	-	-	N/A No Reading
69	N44.80126401	W89.70614339	7	-	-	-	-	N/A No Reading
70	N44.80058885	W89.70614682	4	S	Pole Rake	0	0	No Weeds
71	N44.79991369	W89.70615025	4	S	Pole Rake	0	0	No Weeds
72	N44.79923853	W89.70615367	5	S	Pole Rake	0	0	No Weeds Secchi Reading 2.6'
73	N44.79856337	W89.7061571	7	-	-	-	-	N/A No Reading
74	N44.79788821	W89.70616053	9	-	-	-	-	N/A No Reading
75	N44.8120641	W89.70514006	2	S	Pole Rake	0	0	No Weeds
76	N44.81138895	W89.7051435	6	S/W	Pole Rake	0	0	No Weeds
77	N44.81071379	W89.70514694	10	-	-	-	-	N/A No Reading
78	N44.80261188	W89.70518821	6	-	-	-	-	N/A No Reading
79	N44.80193673	W89.70519165	4	S	Pole Rake	0	0	No Weeds
80	N44.80126157	W89.70519508	4	S	Pole Rake	0	0	No Weeds
81	N44.80058641	W89.70519852	3	S	Pole Rake	0	0	No Weeds
82	N44.79856093	W89.70520884	1	S	Pole Rake	0	0	No Weeds
83	N44.79788577	W89.70521227	4	M/W	Pole Rake	0	0	No Weeds
84	N44.79721061	W89.70521571	7	-	-	-	-	N/A No Reading
85	N44.79653545	W89.70521915	5	W	Pole Rake	0	0	No Weeds
86	N44.81206165	W89.70419157	4	W	Pole Rake	0	0	No Weeds
87	N44.81138649	W89.70419502	7	-	-	-	-	N/A No Reading
88	N44.81071133	W89.70419848	10	-	-	-	-	N/A No Reading
89	N44.80260943	W89.70423988	5	M/S	Pole Rake	0	0	No Weeds
90	N44.80193427	W89.70424333	4	S	Pole Rake	0	0	No Weeds
91	N44.80125911	W89.70424678	3	S/W	Pole Rake	0	0	No Weeds
92	N44.79788332	W89.70426402	3	S	Pole Rake	0	0	No Weeds
93	N44.79720816	W89.70426747	3	S	Pole Rake	0	0	No Weeds
94	N44.796533	W89.70427092	7	-	-	-		N/A No Reading
95	N44.79585784	W89.70427437	2	S	Pole Rake	0	0	No Weeds
96	N44.81138403	W89.70324655	7	-	-	-	-	N/A No Reading
97	N44.81070887	W89.70325001	9	-	-	-	-	N/A No Reading
98	N44.80935856	W89.70325694	-	-	-	-	-	N/A Shallow Muck
99	N44.80260697	W89.70329155	4	S	Pole Rake	0	0	No Weeds
100	N44.80193181	W89.70329501	3	S	Pole Rake	0	0	No Weeds
101	N44.79990634	W89.70330539	1	S	Pole Rake	0	0	No Weeds
102	N44.79923118	W89.70330885	3	M	Pole Rake	0	0	No Weeds
103	N44.79788086	W89.70331577	4	S	Pole Rake	0	0	No Weeds
104	N44.7972057	W89.70331923	1	S	Pole Rake	0	0	No Weeds
105	N44.79585538	W89.70332615	7	-	-	-	-	N/A No Reading
106	N44.79518022	W89.70332961	1	S	Pole Rake	0	0	No Weeds
107	N44.81138156	W89.70229808	7	-	-	-	-	N/A No Reading
108	N44.81070641	W89.70230155	9	-	-	-	-	N/A No Reading
109	N44.80868093	W89.70231197	-	-	-	-	-	N/A Shallow Muck
110	N44.80800577	W89.70231544	-	-	-	-	-	N/A Too Shallow

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1334900
County: Marathon
Crew: RAL/CTM
Datum: WGS84

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Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
111	N44.80327966	W89.70233975	3	S	Pole Rake	0	0	No Weeds
112	N44.80260451	W89.70234322	5	S	Pole Rake	0	0	No Weeds
113	N44.80192935	W89.70234669	3	S	Pole Rake	0	0	No Weeds
114	N44.79922871	W89.70236058	2	M/S	Pole Rake	0	0	No Weeds
115	N44.79855355	W89.70236405	2	S/W	Pole Rake	0	0	No Weeds
116	N44.79787839	W89.70236752	4	S	Pole Rake	0	0	No Weeds
117	N44.79720323	W89.70237099	2	S	Pole Rake	0	0	No Weeds
118	N44.79652807	W89.70237446	2	S/W	Pole Rake	0	0	No Weeds
119	N44.79585291	W89.70237793	6	-	-	-	-	N/A No Reading
120	N44.79517775	W89.7023814	1	S	Pole Rake	0	0	No Weeds
121	N44.81070393	W89.70135309	9	-	-	-	-	N/A No Reading
122	N44.81002877	W89.70135658	-	-	-	-	-	N/A Land
123	N44.80867846	W89.70136354	-	-	-	-	-	N/A Too Shallow
124	N44.80732814	W89.70137051	-	-	-	-	-	N/A Land
125	N44.80395235	W89.70138793	2	S	Pole Rake	0	0	No Weeds
126	N44.80327719	W89.70139141	2	S	Pole Rake	0	0	No Weeds
127	N44.80260203	W89.70139489	4	S	Pole Rake	0	0	No Weeds
128	N44.80192687	W89.70139838	3	S	Pole Rake	0	0	No Weeds
129	N44.80057655	W89.70140534	-	-	-	-	-	N/A Shallow Muck
130	N44.79855108	W89.70141579	2	S	Pole Rake	0	0	No Weeds
131	N44.79787592	W89.70141927	5	S	Pole Rake	0	0	No Weeds
132	N44.79720076	W89.70142275	4	M/S	Pole Rake	0	0	No Weeds
133	N44.7965256	W89.70142623	1	S	Pole Rake	0	0	No Weeds
134	N44.79585044	W89.70142971	6	-	-	-	-	N/A No Reading
135	N44.81070145	W89.70040463	8	-	-	-	-	N/A No Reading
136	N44.81002629	W89.70040813	-	-	-	-	-	N/A Blocked By Down Tree
137	N44.80935113	W89.70041162	-	-	-	-	-	N/A Land
138	N44.80867597	W89.70041512	1	M	Pole Rake	0	0	No Weeds
139	N44.80800081	W89.70041861	3	M/S	Pole Rake	0	0	No Weeds
140	N44.8066505	W89.7004256	-	-	-	-	-	N/A Land
141	N44.80597534	W89.70042909	1	S/W	Pole Rake	0	0	No Weeds
142	N44.80462502	W89.70043608	2	S	Pole Rake	0	0	No Weeds Secchi Reading 2.7'
143	N44.80394986	W89.70043958	5	S	Pole Rake	0	0	No Weeds
144	N44.8032747	W89.70044307	4	S	Pole Rake	0	0	No Weeds
145	N44.80259955	W89.70044656	3	S	Pole Rake	0	0	No Weeds
146	N44.80192439	W89.70045006	4	S/W	Pole Rake	0	0	No Weeds
147	N44.79989891	W89.70046054	-	-	-	-	-	N/A Too Shallow
148	N44.79922375	W89.70046403	2	M/S	Pole Rake	0	0	No Weeds
149	N44.79854859	W89.70046753	1	S	Pole Rake	0	0	No Weeds
150	N44.79787343	W89.70047102	5	M/S	Pole Rake	0	0	No Weeds
151	N44.79719827	W89.70047451	4	M/S	Pole Rake	0	0	No Weeds
152	N44.79652311	W89.700478	4	S/W	Pole Rake	0	0	No Weeds
153	N44.79584795	W89.7004815	6	M/S	Pole Rake	0	0	No Weeds
154	N44.7951728	W89.70048499	3	S	Pole Rake	0	0	No Weeds
155	N44.8100238	W89.69945968	9	-	-	-	-	N/A No Reading
156	N44.80934864	W89.69946318	3	S	Pole Rake	0	0	No Weeds
157	N44.80867348	W89.69946669	4	S	Pole Rake	0	0	No Weeds
158	N44.80732316	W89.6994737	10	-	-	-	-	N/A No Reading
159	N44.80597285	W89.69948071	-	-	-	-	-	N/A Land
160	N44.80529769	W89.69948422	9	-	-	-	-	N/A No Reading
161	N44.80327221	W89.69949473	3	S	Pole Rake	0	0	No Weeds
162	N44.80259705	W89.69949824	4	S	Pole Rake	0	0	No Weeds
163	N44.8019219	W89.69950174	4	S	Pole Rake	0	0	No Weeds
164	N44.79989642	W89.69951225	2	S/W	Pole Rake	0	0	No Weeds
165	N44.79922126	W89.69951576	3	S	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
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Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
166	N44.7985461	W89.69951926	2	S	Pole Rake	0	0	No Weeds
167	N44.79787094	W89.69952277	7	-	-	-	-	N/A No Reading
168	N44.79719578	W89.69952627	7	-	-	-	-	N/A No Reading
169	N44.79652062	W89.69952978	7	-	-	-	-	N/A No Reading
170	N44.79584546	W89.69953328	7	-	-	-	-	N/A No Reading
171	N44.7951703	W89.69953678	6	-	-	-	-	N/A No Reading
172	N44.8100213	W89.69851123	9	-	-	-	-	N/A No Reading
173	N44.80934614	W89.69851474	10	-	-	-	-	N/A No Reading
174	N44.80867098	W89.69851826	15	-	-	-	-	N/A No Reading
175	N44.80799582	W89.69852178	10	-	-	-	-	N/A No Reading
176	N44.80732066	W89.69852529	12	-	-	-	-	N/A No Reading
177	N44.80664551	W89.69852881	11	-	-	-	-	N/A No Reading
178	N44.80529519	W89.69853584	7	-	-	-	-	N/A No Reading
179	N44.80259456	W89.69854991	4	S/W	Pole Rake	0	0	No Weeds
180	N44.8019194	W89.69855342	4	S	Pole Rake	0	0	No Weeds
181	N44.80124424	W89.69855694	3	S	Pole Rake	0	0	No Weeds
182	N44.80056908	W89.69856046	7	-	-	-	-	N/A No Reading
183	N44.79989392	W89.69856397	4	S	Pole Rake	0	0	No Weeds
184	N44.79921876	W89.69856749	2	S	Pole Rake	0	0	No Weeds
185	N44.7985436	W89.698571	6	-	-	-	-	N/A No Reading
186	N44.79786844	W89.69857452	7	-	-	-	-	N/A No Reading
187	N44.79719328	W89.69857803	8	-	-	-	-	N/A No Reading
188	N44.79651812	W89.69858155	8	-	-	-	-	N/A No Reading
189	N44.79584297	W89.69858506	9	-	-	-	-	N/A No Reading
190	N44.79516781	W89.69858858	9	-	-	-	-	N/A No Reading
191	N44.79449265	W89.69859209	3	S	Pole Rake	0	0	No Weeds
192	N44.80934363	W89.6975663	7	-	-	-	-	N/A No Reading
193	N44.80866847	W89.69756983	9	-	-	-	-	N/A No Reading
194	N44.806643	W89.69758042	-	-	-	-	-	N/A Too Shallow
195	N44.80596784	W89.69758394	9	-	-	-	-	N/A No Reading
196	N44.80529268	W89.69758747	11	-	-	-	-	N/A No Reading
197	N44.80326721	W89.69759805	2	S	Pole Rake	0	0	No Weeds
198	N44.80259205	W89.69760158	2	S	Pole Rake	0	0	No Weeds
199	N44.80191689	W89.69760511	4	S	Pole Rake	0	0	No Weeds
200	N44.80124173	W89.69760863	4	S	Pole Rake	0	0	No Weeds
201	N44.80056657	W89.69761216	3	S	Pole Rake	0	0	No Weeds
202	N44.79989141	W89.69761569	2	S/W	Pole Rake	0	0	No Weeds
203	N44.79921625	W89.69761921	6	S	Pole Rake	0	0	No Weeds
204	N44.7985411	W89.69762274	7	-	-	-	-	N/A No Reading
205	N44.79786594	W89.69762627	8	-	-	-	-	N/A No Reading
206	N44.79719078	W89.69762979	8	-	-	-	-	N/A No Reading
207	N44.79651562	W89.69763332	8	-	-	-	-	N/A No Reading
208	N44.79584046	W89.69763684	8	-	-	-	-	N/A No Reading
209	N44.7951653	W89.69764037	9	-	-	-	-	N/A No Reading
210	N44.79449014	W89.6976439	8	-	-	-	-	N/A No Reading
211	N44.79381498	W89.69764742	3	RK	Pole Rake	0	0	No Weeds
212	N44.7917895	W89.697658	-	-	-	-	-	Boat Barrier
213	N44.80934111	W89.69661787	2	S	Pole Rake	0	0	No Weeds
214	N44.80866596	W89.69662141	10	-	-	-	-	N/A No Reading
215	N44.80731564	W89.69662848	-	-	-	-	-	N/A Too Shallow
216	N44.80664048	W89.69663202	2	S	Pole Rake	0	0	No Weeds
217	N44.80596533	W89.69663556	2	S	Pole Rake	0	0	No Weeds
218	N44.80529017	W89.6966391	13	-	-	-	-	N/A No Reading
219	N44.80258953	W89.69665325	2	S	Pole Rake	0	0	No Weeds
220	N44.80191438	W89.69665679	5	S	Pole Rake	0	0	No Weeds

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Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
221	N44.80123922	W89.69666033	2	S/G	Pole Rake	0	0	No Weeds
222	N44.80056406	W89.69666387	1	S	Pole Rake	0	0	No Weeds
223	N44.7998889	W89.6966674	3	S	Pole Rake	0	0	No Weeds
224	N44.79921374	W89.69667094	6	-	-	-	-	N/A No Reading
225	N44.79853858	W89.69667448	5	W	Pole Rake	0	0	No Weeds
226	N44.79786342	W89.69667802	6	-	-	-	-	N/A No Reading
227	N44.79718826	W89.69668155	7	-	-	-	-	N/A No Reading
228	N44.7965131	W89.69668509	7	-	-	-	-	N/A No Reading
229	N44.79583794	W89.69668863	8	-	-	-	-	N/A No Reading
230	N44.79516279	W89.69669216	9	-	-	-	-	N/A No Reading
231	N44.79448763	W89.6966957	9	-	-	-	-	N/A No Reading
232	N44.79381247	W89.69669924	3	S	Pole Rake	0	0	No Weeds
233	N44.79313731	W89.69670277	9	-	-	-	-	N/A No Reading
234	N44.79246215	W89.69670631	10	-	-	-	-	N/A No Reading
235	N44.79178699	W89.69670985	-	-	-	-	-	Boat Barrier
236	N44.79111183	W89.69671338	-	-	-	-	-	Boat Barrier
237	N44.80933859	W89.69566943	1	S	Pole Rake	0	0	No Weeds
238	N44.80866343	W89.69567298	12	-	-	-	-	N/A No Reading
239	N44.80663796	W89.69568363	-	-	-	-	-	N/A Land
240	N44.8059628	W89.69568718	-	-	-	-	-	N/A Too Shallow
241	N44.80528764	W89.69569073	7	-	-	-	-	N/A No Reading
242	N44.80461249	W89.69569428	12	-	-	-	-	N/A No Reading
243	N44.80258701	W89.69570492	7	-	-	-	-	N/A No Reading
244	N44.80191185	W89.69570847	1	S	Pole Rake	0	0	No Weeds
245	N44.80123669	W89.69571202	1	S	Pole Rake	0	0	No Weeds
246	N44.80056154	W89.69571557	3	S	Pole Rake	0	0	No Weeds Secchi Reading N/A
247	N44.79988638	W89.69571912	5	S	Pole Rake	0	0	No Weeds
248	N44.79921122	W89.69572267	5	S	Pole Rake	0	0	No Weeds
249	N44.79853606	W89.69572622	5	S	Pole Rake	0	0	No Weeds
250	N44.7978609	W89.69572977	6	M/S	Pole Rake	0	0	No Weeds
251	N44.79718574	W89.69573331	5	S	Pole Rake	0	0	-
252	N44.79651058	W89.69573686	6	-	-	-	-	N/A No Reading
253	N44.79583542	W89.69574041	7	-	-	-	-	N/A No Reading
254	N44.79516026	W89.69574396	9	-	-	-	-	N/A No Reading
255	N44.7944851	W89.6957475	15	-	-	-	-	N/A No Reading
256	N44.79380994	W89.69575105	6	-	-	-	-	N/A No Reading
257	N44.79245963	W89.69575815	10	-	-	-	-	N/A No Reading
258	N44.79178447	W89.69576169	-	-	-	-	-	Boat Barrier
259	N44.79110931	W89.69576524	-	-	-	-	-	Boat Barrier
260	N44.80933606	W89.69472099	3	S	Pole Rake	0	0	No Weeds
261	N44.8086609	W89.69472455	12	-	-	-	-	N/A No Reading
262	N44.80663543	W89.69473523	-	-	-	-	-	N/A Land
263	N44.80528511	W89.69474236	2	S	Pole Rake	0	0	No Weeds
264	N44.80460995	W89.69474592	7	-	-	-	-	N/A No Reading
265	N44.8039348	W89.69474948	8	-	-	-	-	N/A No Reading
266	N44.80325964	W89.69475304	9	-	-	-	-	N/A No Reading
267	N44.80123416	W89.69476372	3	S	Pole Rake	0	0	No Weeds
268	N44.800559	W89.69476728	2	S	Pole Rake	0	0	No Weeds
269	N44.79988385	W89.69477084	5	S	Pole Rake	0	0	No Weeds
270	N44.79920869	W89.6947744	5	S	Pole Rake	0	0	No Weeds Secchi Reading 2.6'
271	N44.79853353	W89.69477796	4	S	Pole Rake	0	0	No Weeds
272	N44.79785837	W89.69478152	5	S	Pole Rake	0	0	No Weeds
273	N44.79718321	W89.69478507	7	-	-	-	-	N/A No Reading
274	N44.79650805	W89.69478863	5	S	Pole Rake	0	0	No Weeds
275	N44.79583289	W89.69479219	3	S	Pole Rake	0	0	No Weeds

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Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
276	N44.79515773	W89.69479575	6	-	-	-	-	N/A No Reading
277	N44.79448257	W89.69479931	15	-	-	-	-	N/A No Reading
278	N44.79380741	W89.69480287	15	-	-	-	-	N/A No Reading
279	N44.79313225	W89.69480643	16	-	-	-	-	N/A No Reading
280	N44.7924571	W89.69480999	17	-	-	-	-	N/A No Reading
281	N44.79178194	W89.69481354	14	-	-	-	-	N/A No Reading
282	N44.79110678	W89.6948171	-	-	-	-	-	Boat Barrier
283	N44.81000868	W89.69376898	2	S	Pole Rake	0	0	No Weeds
284	N44.80933352	W89.69377255	7	-	-	-	-	N/A No Reading
285	N44.80865836	W89.69377612	12	-	-	-	-	N/A No Reading
286	N44.80663289	W89.69378684	-	-	-	-	-	N/A Too Shallow
287	N44.80460742	W89.69379756	-	-	-	-	-	N/A Blocked By Down Tree
288	N44.80393226	W89.69380113	5	S	Pole Rake	0	0	No Weeds
289	N44.80190678	W89.69381184	2	S	Pole Rake	0	0	No Weeds
290	N44.80123162	W89.69381541	1	S	Pole Rake	0	0	No Weeds
291	N44.80055647	W89.69381898	4	S	Pole Rake	0	0	No Weeds
292	N44.79988131	W89.69382255	4	S	Pole Rake	0	0	No Weeds
293	N44.79920615	W89.69382612	4	M/S	Pole Rake	0	0	No Weeds
294	N44.79853099	W89.69382969	4	W	Pole Rake	0	0	No Weeds
295	N44.79785583	W89.69383327	6	M	Pole Rake	0	0	No Weeds
296	N44.79718067	W89.69383684	2	S	Pole Rake	0	0	No Weeds
297	N44.79650551	W89.69384041	5	S	Pole Rake	0	0	No Weeds
298	N44.79583035	W89.69384398	11	-	-	-	-	N/A No Reading
299	N44.7951552	W89.69384755	9	-	-	-	-	N/A No Reading
300	N44.79448004	W89.69385112	4	S	Pole Rake	0	0	No Weeds
301	N44.79380488	W89.69385468	9	-	-	-	-	N/A No Reading
302	N44.79312972	W89.69385825	13	-	-	-	-	N/A No Reading
303	N44.79245456	W89.69386182	13	-	-	-	-	N/A No Reading
304	N44.81068129	W89.69281695	5	G	Pole Rake	0	0	No Weeds
305	N44.81000613	W89.69282053	11	-	-	-	-	N/A No Reading
306	N44.80933097	W89.69282411	14	-	-	-	-	N/A No Reading
307	N44.80798066	W89.69283128	-	-	-	-	-	N/A Blocked By Logs
308	N44.80663034	W89.69283845	1	M/S	Pole Rake	0	0	No Weeds
309	N44.80595519	W89.69284203	-	-	-	-	-	N/A Shallow Muck
310	N44.80528003	W89.69284561	2	S	Pole Rake	0	0	No Weeds
311	N44.80460487	W89.69284919	2	S	Pole Rake	0	0	-
312	N44.80392971	W89.69285278	3	S	Pole Rake	0	0	No Weeds
313	N44.80257939	W89.69285994	-	-	-	-	-	N/A Too Shallow
314	N44.80190424	W89.69286352	1	S	Pole Rake	0	0	No Weeds
315	N44.80122908	W89.69286711	2	S	Pole Rake	0	0	No Weeds
316	N44.80055392	W89.69287069	4	S	Pole Rake	0	0	No Weeds
317	N44.79987876	W89.69287427	4	S/W	Pole Rake	0	0	No Weeds
318	N44.7992036	W89.69287785	4	S	Pole Rake	0	0	No Weeds
319	N44.79852844	W89.69288143	5	M/S	Pole Rake	0	0	No Weeds
320	N44.79785329	W89.69288502	7	-	-	-	-	N/A No Reading
321	N44.79717813	W89.6928886	4	S/W	Pole Rake	0	0	No Weeds
322	N44.79650297	W89.69289218	8	-	-	-	-	N/A No Reading
323	N44.79582781	W89.69289576	8	-	-	-	-	N/A No Reading
324	N44.79515265	W89.69289934	3	S	Pole Rake	0	0	No Weeds
325	N44.79447749	W89.69290292	7	-	-	-	-	N/A No Reading
326	N44.79380233	W89.6929065	11	-	-	-	-	N/A No Reading
327	N44.82080608	W89.69181455	-	-	-	-	-	N/A Shallow Muck
328	N44.81405452	W89.69185051	9	-	-	-	-	N/A No Reading
329	N44.81337936	W89.69185411	10	-	-	-	-	N/A No Reading
330	N44.8127042	W89.6918577	11	-	-	-	-	N/A No Reading

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Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
331	N44.81202905	W89.6918613	11	-	-	-	-	N/A No Reading
332	N44.81135389	W89.69186489	13	-	-	-	-	N/A No Reading
333	N44.81067873	W89.69186849	15	-	-	-	-	N/A No Reading
334	N44.81000358	W89.69187208	11	-	-	-	-	N/A No Reading
335	N44.8079781	W89.69188286	-	-	-	-	-	N/A Land
336	N44.80730295	W89.69188646	1	M	Pole Rake	0	0	No Weeds
337	N44.80662779	W89.69189005	2	M/S	Pole Rake	0	0	No Weeds
338	N44.80460231	W89.69190083	-	-	-	-	-	N/A Blocked By Bullrush
339	N44.80392716	W89.69190443	2	S	Pole Rake	0	0	No Weeds Secchi Reading 2.9'
340	N44.80190168	W89.69191521	1	S	Pole Rake	0	0	No Weeds
341	N44.80122652	W89.6919188	3	S	Pole Rake	0	0	No Weeds
342	N44.80055137	W89.69192239	3	S	Pole Rake	0	0	No Weeds
343	N44.79987621	W89.69192599	3	S/W	Pole Rake	0	0	No Weeds
344	N44.79920105	W89.69192958	3	S	Pole Rake	0	0	No Weeds
345	N44.79852589	W89.69193317	3	S	Pole Rake	0	0	No Weeds
346	N44.79785073	W89.69193677	8	-	-	-	-	N/A No Reading
347	N44.79717557	W89.69194036	7	-	-	-	-	N/A No Reading
348	N44.79650041	W89.69194395	8	-	-	-	-	N/A No Reading
349	N44.79582525	W89.69194754	4	S	Pole Rake	0	0	No Weeds
350	N44.7951501	W89.69195113	9	-	-	-	-	N/A No Reading
351	N44.79447494	W89.69195473	9	-	-	-	-	N/A No Reading
352	N44.79379978	W89.69195832	1	G	Pole Rake	0	0	No Weeds
353	N44.82215383	W89.69085871	-	-	-	-	-	N/A Blocked By Logs
354	N44.82012836	W89.69086953	-	-	-	-	-	N/A Blocked By Down Tree
355	N44.81945321	W89.69087314	2	M	Pole Rake	0	0	No Weeds
356	N44.81810289	W89.69088035	-	-	-	-	-	N/A Shallow Muck
357	N44.81675258	W89.69088757	-	-	-	-	-	N/A Land
358	N44.81405196	W89.69090199	8	-	-	-	-	N/A No Reading
359	N44.8133768	W89.6909056	9	-	-	-	-	N/A No Reading
360	N44.81270164	W89.69090921	10	-	-	-	-	N/A No Reading
361	N44.81202648	W89.69091281	10	-	-	-	-	N/A No Reading
362	N44.81135133	W89.69091642	3	G	Pole Rake	0	0	No Weeds
363	N44.80797554	W89.69093445	3	S	Pole Rake	0	0	No Weeds
364	N44.80730038	W89.69093805	-	-	-	-	-	N/A Land
365	N44.80662523	W89.69094166	2	M/S	Pole Rake	0	0	No Weeds
366	N44.80595007	W89.69094526	2	M/S	Pole Rake	0	0	No Weeds
367	N44.80527491	W89.69094887	2	S	Pole Rake	0	0	No Weeds
368	N44.80459975	W89.69095247	-	-	-	-	-	N/A Land
369	N44.80392459	W89.69095608	2	S	Pole Rake	0	0	No Weeds
370	N44.80324944	W89.69095968	4	S/W	Pole Rake	0	0	No Weeds
371	N44.80257428	W89.69096329	-	-	-	-	-	N/A Land
372	N44.80189912	W89.69096689	1	S	Pole Rake	0	0	No Weeds
373	N44.80122396	W89.6909705	3	M/S	Pole Rake	0	0	No Weeds
374	N44.8005488	W89.6909741	3	S	Pole Rake	0	0	No Weeds
375	N44.79987365	W89.6909777	3	S/W	Pole Rake	0	0	No Weeds
376	N44.79919849	W89.69098131	2	S	Pole Rake	0	0	No Weeds
377	N44.79852333	W89.69098491	3	S	Pole Rake	0	0	No Weeds
378	N44.79784817	W89.69098852	8	-	-	-	-	N/A No Reading
379	N44.79717301	W89.69099212	8	-	-	-	-	N/A No Reading
380	N44.79649785	W89.69099572	7	-	-	-	-	N/A No Reading
381	N44.79582269	W89.69099933	2	S	Pole Rake	0	0	No Weeds
382	N44.79514753	W89.69100293	1	G	Pole Rake	0	0	No Weeds
383	N44.82080095	W89.6899173	-	-	-	-	-	N/A Blocked By Logs
384	N44.81945064	W89.68992453	-	-	-	-	-	N/A Blocked By Logs
385	N44.81742517	W89.68993539	2	M	Pole Rake	0	0	No Weeds

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Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
386	N44.81607485	W89.68994263	2	M	Pole Rake	0	0	No Weeds
387	N44.8153997	W89.68994624	3	M	Pole Rake	0	0	No Weeds
388	N44.81472454	W89.68994986	4	M	Pole Rake	0	0	No Weeds
389	N44.81404938	W89.68995348	6	-	-	-	-	N/A No Reading
390	N44.80797297	W89.68998603	1	S	Pole Rake	0	0	No Weeds
391	N44.80729781	W89.68998965	2	S	Pole Rake	0	0	No Weeds
392	N44.80662266	W89.68999327	2	S	Pole Rake	0	0	No Weeds
393	N44.8059475	W89.68999688	2	M/S	Pole Rake	0	0	No Weeds
394	N44.80527234	W89.6900005	5	S	Pole Rake	0	0	No Weeds
395	N44.80459718	W89.69000411	1	S	Pole Rake	0	0	No Weeds
396	N44.80392202	W89.69000773	2	S	Pole Rake	0	0	No Weeds
397	N44.80324687	W89.69001135	4	S	Pole Rake	0	0	No Weeds
398	N44.80122139	W89.69002219	2	S	Pole Rake	0	0	No Weeds
399	N44.80054623	W89.69002581	2	S	Pole Rake	0	0	No Weeds
400	N44.79987108	W89.69002942	3	M/S	Pole Rake	1	0	-
401	N44.79919592	W89.69003304	1	S	Pole Rake	0	0	No Weeds
402	N44.79852076	W89.69003665	3	S	Pole Rake	0	0	No Weeds
403	N44.7978456	W89.69004027	10	-	-	-	-	N/A No Reading
404	N44.79717044	W89.69004388	9	-	-	-	-	N/A No Reading
405	N44.79649528	W89.69004749	1	S	Pole Rake	0	0	No Weeds
406	N44.79582012	W89.69005111	1	G	Pole Rake	0	0	No Weeds
407	N44.79514496	W89.69005472	1	S	Pole Rake	0	0	No Weeds
408	N44.82012321	W89.6889723	-	-	-	-	-	N/A Blocked By Logs
409	N44.81809774	W89.68898319	2	M	Pole Rake	0	0	No Weeds
410	N44.81674743	W89.68899045	3	M	Pole Rake	0	0	No Weeds
411	N44.81607227	W89.68899408	3	S	Pole Rake	0	0	No Weeds
412	N44.81539712	W89.68899771	3	S	Pole Rake	0	0	No Weeds Secchi 2.3'
413	N44.80797039	W89.68903762	-	-	-	-	-	N/A Land
414	N44.80729523	W89.68904125	3	S	Pole Rake	0	0	No Weeds
415	N44.80662008	W89.68904487	3	M/S	Pole Rake	0	0	No Weeds
416	N44.80594492	W89.6890485	3	M/S	Pole Rake	0	0	No Weeds
417	N44.80526976	W89.68905213	4	S	Pole Rake	0	0	No Weeds
418	N44.8045946	W89.68905575	2	S	Pole Rake	0	0	No Weeds
419	N44.80391945	W89.68905938	-	-	-	-	-	N/A Land
420	N44.80324429	W89.68906301	4	S	Pole Rake	0	0	No Weeds
421	N44.80121881	W89.68907389	1	S	Pole Rake	0	0	No Weeds
422	N44.80054366	W89.68907751	3	S	Pole Rake	0	0	No Weeds
423	N44.7998685	W89.68908114	2	S	Pole Rake	0	0	No Weeds
424	N44.79919334	W89.68908477	1	S	Pole Rake	0	0	No Weeds
425	N44.79851818	W89.68908839	-	-	-	-	-	N/A No Reading
426	N44.79784302	W89.68909202	-	-	-	-	-	N/A No Reading
427	N44.82147094	W89.6880164	1	M	Pole Rake	0	0	No Weeds
428	N44.81944547	W89.68802733	-	-	-	-	-	N/A Blocked By Logs
429	N44.81877031	W89.68803097	2	M/S	Pole Rake	0	0	No Weeds
430	N44.81606969	W89.68804553	2	M	Pole Rake	0	0	No Weeds
431	N44.81539453	W89.68804917	4	M	Pole Rake	0	0	No Weeds
432	N44.80729265	W89.68809284	1	M/S	Pole Rake	0	0	No Weeds
433	N44.80661749	W89.68809648	3	M	Pole Rake	0	0	No Weeds
434	N44.80594233	W89.68810012	4	S	Pole Rake	0	0	No Weeds
435	N44.80526718	W89.68810376	4	S	Pole Rake	0	0	No Weeds
436	N44.80459202	W89.68810739	4	S	Pole Rake	0	0	No Weeds
437	N44.80391686	W89.68811103	2	S	Pole Rake	0	0	No Weeds
438	N44.8032417	W89.68811467	4	S	Pole Rake	0	0	No Weeds
439	N44.80121623	W89.68812558	1	S	Pole Rake	0	0	No Weeds
440	N44.80054107	W89.68812922	1	S	Pole Rake	0	0	No Weeds

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441	N44.79986591	W89.68813286	1	S	Pole Rake	0	0	No Weeds
442	N44.79919075	W89.68813649	8	-	-	-	-	N/A No Reading
443	N44.7985156	W89.68814013	12	-	-	-	-	N/A No Reading
444	N44.82079318	W89.68707142	3	M	Pole Rake	0	0	No Weeds
445	N44.82011803	W89.68707507	-	-	-	-	-	N/A Shallow Muck
446	N44.81539194	W89.68710063	4	M	Pole Rake	0	0	No Weeds
447	N44.81471678	W89.68710428	4	M	Pole Rake	0	0	No Weeds
448	N44.8066149	W89.68714809	4	M	Pole Rake	0	0	No Weeds
449	N44.80593974	W89.68715174	4	M/S	Pole Rake	0	0	No Weeds
450	N44.80526458	W89.68715539	4	M/S	Pole Rake	0	0	No Weeds
451	N44.80458942	W89.68715903	4	S	Pole Rake	0	0	No Weeds
452	N44.80391427	W89.68716268	3	S	Pole Rake	0	0	No Weeds
453	N44.80323911	W89.68716633	4	S	Pole Rake	0	0	No Weeds
454	N44.80256395	W89.68716998	-	-	-	-	-	N/A Shallow Muck
455	N44.80188879	W89.68717363	-	-	-	-	-	N/A Too Shallow
456	N44.80053848	W89.68718093	2	S	Pole Rake	0	0	No Weeds
457	N44.79986332	W89.68718457	8	-	-	-	-	N/A No Reading
458	N44.79918816	W89.68718822	14	-	-	-	-	N/A No Reading
459	N44.82011543	W89.68612646	1	M/S	Pole Rake	0	0	No Weeds
460	N44.81944027	W89.68613012	1	M	Pole Rake	0	0	No Weeds
461	N44.81538933	W89.6861521	4	M	Pole Rake	0	0	No Weeds
462	N44.81471418	W89.68615576	4	M	Pole Rake	0	0	No Weeds
463	N44.80593714	W89.68620335	4	M	Pole Rake	0	0	No Weeds
464	N44.80526198	W89.68620701	5	M	Pole Rake	0	0	No Weeds
465	N44.80458682	W89.68621067	6	-	-	-	-	N/A No Reading
466	N44.80391166	W89.68621433	4	S/W	Pole Rake	0	0	No Weeds
467	N44.80323651	W89.68621799	4	S	Pole Rake	0	0	No Weeds
468	N44.80188619	W89.68622531	-	-	-	-	-	N/A Too Shallow
469	N44.80121103	W89.68622897	3	S	Pole Rake	0	0	No Weeds
470	N44.80053588	W89.68623263	10	-	-	-	-	N/A No Reading
471	N44.79986072	W89.68623629	11	-	-	-	-	N/A No Reading
472	N44.81943766	W89.68518152	2	M/W	Pole Rake	0	0	No Weeds
473	N44.81187625	W89.68518519	-	-	-	-	-	N/A Blocked By Down Tree
474	N44.81538672	W89.68520356	4	M	Pole Rake	0	0	No Weeds
475	N44.81471157	W89.68520723	4	M	Pole Rake	0	0	No Weeds
476	N44.80593453	W89.68525497	4	M	Pole Rake	0	0	No Weeds
477	N44.80525937	W89.68525864	6	-	-	-	-	N/A No Reading
478	N44.80458421	W89.68526232	6	-	-	-	-	N/A No Reading
479	N44.80390906	W89.68526599	7	-	-	-	-	N/A No Reading
480	N44.8032339	W89.68526966	18	-	-	-	-	N/A No Reading
481	N44.80255874	W89.68527333	15	-	-	-	-	N/A No Reading
482	N44.80188358	W89.685277	16	-	-	-	-	N/A No Reading
483	N44.80120842	W89.68528067	13	-	-	-	-	N/A No Reading
484	N44.81943504	W89.68423292	2	M/S	Pole Rake	0	0	No Weeds
485	N44.81875988	W89.6842366	3	M	Pole Rake	0	0	No Weeds
486	N44.81538841	W89.68425502	4	S/W	Pole Rake	0	0	No Weeds
487	N44.81470895	W89.68425871	4	M	Pole Rake	0	0	No Weeds
488	N44.80525675	W89.68431027	6	-	-	-	-	N/A No Reading
489	N44.8045816	W89.68431396	6	-	-	-	-	N/A No Reading
490	N44.80390644	W89.68431764	7	-	-	-	-	N/A No Reading
491	N44.80323128	W89.68432132	10	-	-	-	-	N/A No Reading
492	N44.80255612	W89.684325	8	-	-	-	-	N/A No Reading
493	N44.81943241	W89.68328431	3	M/W	Pole Rake	0	0	No Weeds
494	N44.81875726	W89.68328801	3	M	Pole Rake	0	0	No Weeds
495	N44.81538148	W89.68330649	4	M	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1334900
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
496	N44.81470632	W89.68331018	3	M/W	Pole Rake	0	0	No Weeds Secchi Reading 2.0'
497	N44.80457897	W89.6833656	6	-	-	-	-	N/A No Reading
498	N44.80390381	W89.68336929	6	-	-	-	-	N/A No Reading
499	N44.80322865	W89.68337298	4	W	Pole Rake	0	0	- Lilly Pads
500	N44.81942978	W89.68233571	3	M	Pole Rake	0	0	No Weeds
501	N44.81875462	W89.68233942	3	M	Pole Rake	0	0	No Weeds
502	N44.81537884	W89.68235795	4	M	Pole Rake	0	0	No Weeds
503	N44.81470369	W89.68236166	3	R	Pole Rake	0	0	No Weeds
504	N44.81942714	W89.68138711	3	M	Pole Rake	0	0	No Weeds
505	N44.81875198	W89.68139083	-	-	-	-	-	N/A Too Shallow
506	N44.8153762	W89.68140942	4	M	Pole Rake	0	0	No Weeds
507	N44.81470105	W89.68141313	3	M/W	Pole Rake	0	0	No Weeds
508	N44.81942449	W89.68043851	-	-	-	-	-	N/A Shallow Muck
509	N44.81537355	W89.68046088	3	M	Pole Rake	0	0	No Weeds
510	N44.8146984	W89.68046461	2	M/S	Pole Rake	0	0	No Weeds
511	N44.81604605	W89.6795086	3	M/W	Pole Rake	0	0	No Weeds
512	N44.81537089	W89.67951234	1	W	Pole Rake	0	0	No Weeds
513	N44.81604338	W89.67856006	3	M	Pole Rake	0	0	No Weeds
514	N44.81536823	W89.67856381	2	M/W	Pole Rake	0	0	No Weeds
515	N44.81604071	W89.67761151	3	M	Pole Rake	0	0	No Weeds
516	N44.81603803	W89.67666296	3	M	Pole Rake	0	0	No Weeds
517	N44.81603534	W89.67571442	2	M	Pole Rake	0	0	No Weeds
518	N44.8167078	W89.67476208	1	M	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Mosinee Flowage (518 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1334900
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

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W = Woody Debris
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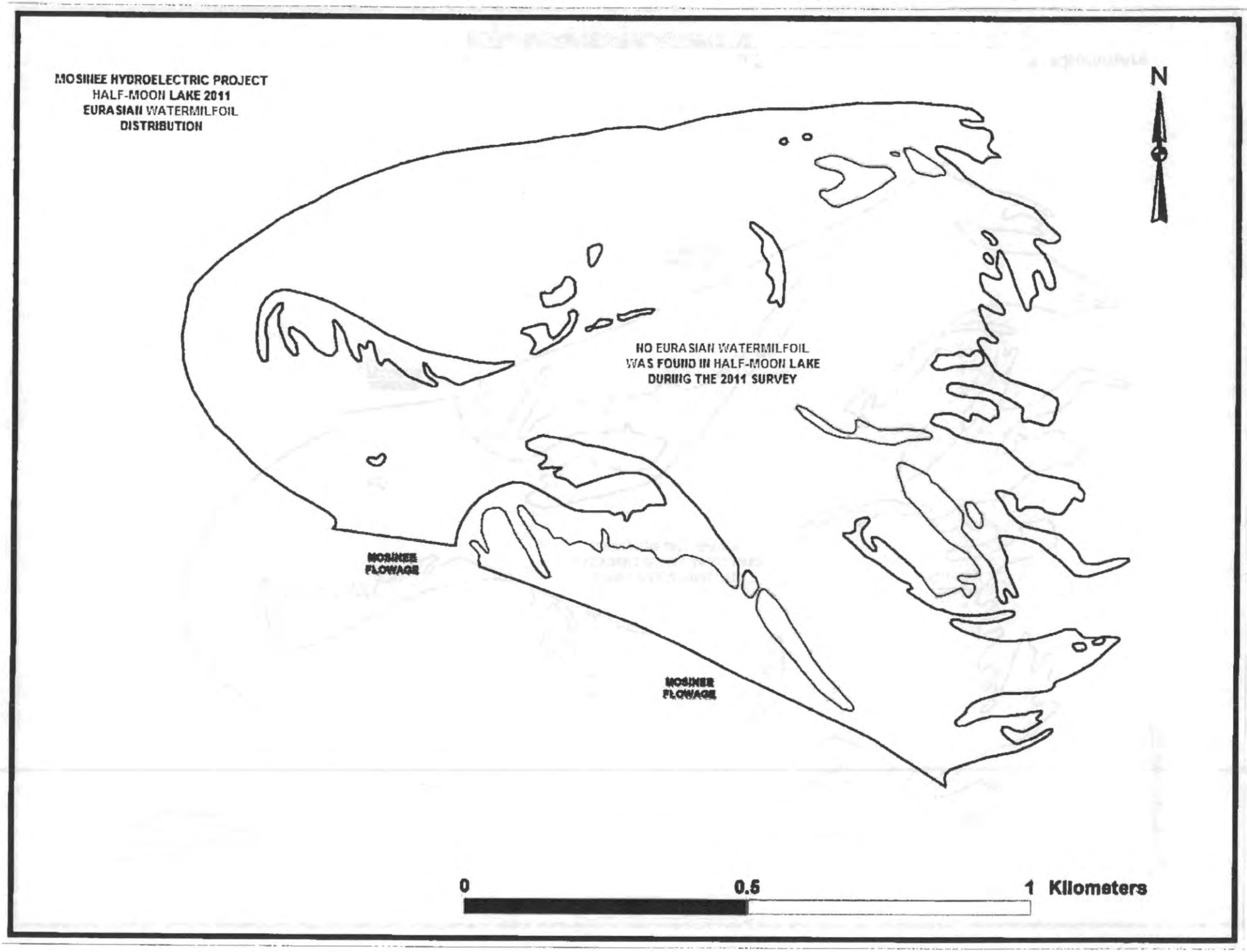
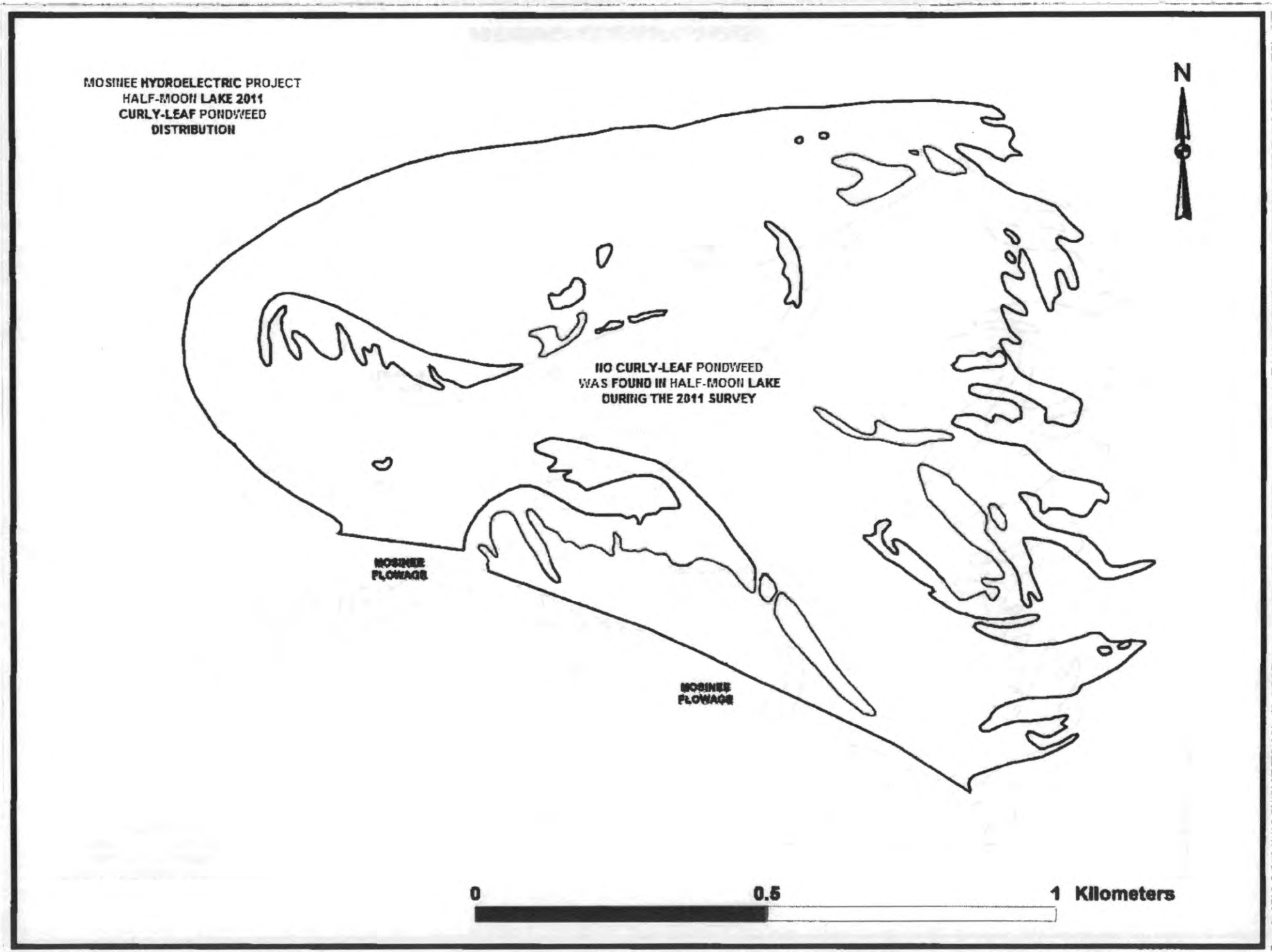
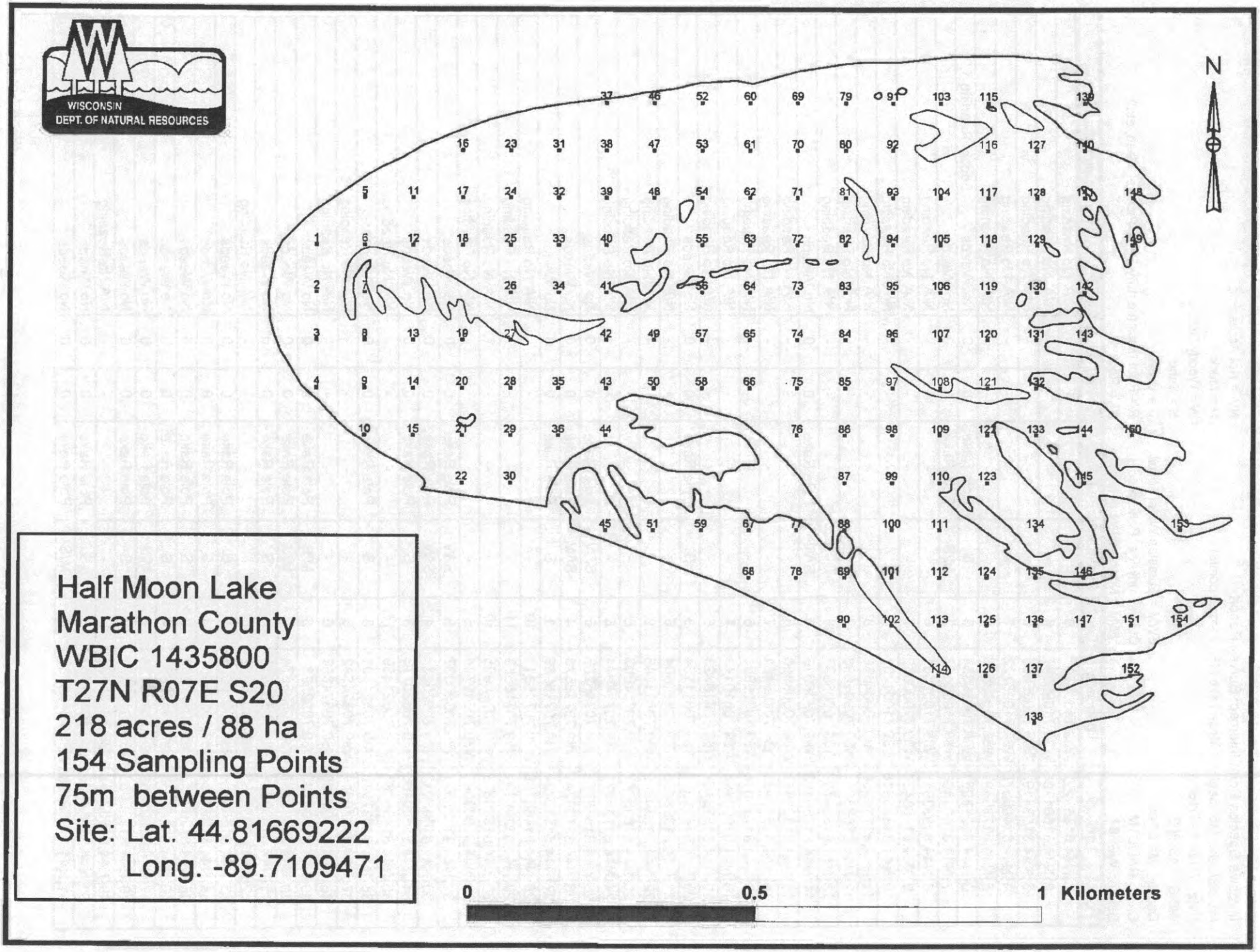
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments







Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Half Moon Lake (154 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435800
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

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M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
1	N44.81669222	W89.7109471	9	-	-	-	-	N/A No Reading
2	N44.81601706	W89.71095047	6	-	-	-	-	N/A No Reading
3	N44.8153419	W89.71095385	8	-	-	-	-	N/A No Reading
4	N44.81466675	W89.71095722	7	-	-	-	-	N/A No Reading
5	N44.81736497	W89.70999516	9	-	-	-	-	N/A No Reading
6	N44.81668981	W89.70999854	3	S	Pole Rake	0	0	No Weeds Secchi Reading 1.7'
7	N44.81601466	W89.71000192	2	M/S	Pole Rake	0	0	No Weeds
8	N44.8153395	W89.71000531	6	-	-	-	-	N/A No Reading
9	N44.81466434	W89.71000869	7	-	-	-	-	N/A No Reading
10	N44.81398918	W89.71001207	6	-	-	-	-	N/A No Reading
11	N44.81736256	W89.70904658	8	-	-	-	-	N/A No Reading
12	N44.8166874	W89.70904998	7	-	-	-	-	N/A No Reading
13	N44.81533709	W89.70905677	6	-	-	-	-	N/A No Reading
14	N44.81466193	W89.70906016	4	S/W	Pole Rake	0	0	No Weeds
15	N44.81398677	W89.70906356	6	-	-	-	-	N/A No Reading
16	N44.8180353	W89.70809461	7	-	-	-	-	N/A No Reading
17	N44.81736014	W89.70809801	6	-	-	-	-	N/A No Reading
18	N44.81668498	W89.70810142	7	-	-	-	-	N/A No Reading
19	N44.81533467	W89.70810823	6	-	-	-	-	N/A No Reading
20	N44.81465951	W89.70811164	3	S	Pole Rake	0	0	No Weeds
21	N44.81398435	W89.70811504	6	-	-	-	-	N/A No Reading
22	N44.81330919	W89.70811845	9	-	-	-	-	N/A No Reading
23	N44.81803287	W89.70714603	6	-	-	-	-	N/A No Reading
24	N44.81735771	W89.70714944	6	-	-	-	-	N/A No Reading
25	N44.81668255	W89.70715286	6	S/W	Pole Rake	0	0	No Weeds
26	N44.8160074	W89.70715628	4	S/W	Pole Rake	0	0	No Weeds
27	N44.81533224	W89.70715969	1	S	Pole Rake	0	0	No Weeds
28	N44.81465708	W89.70716311	10	-	-	-	-	N/A No Reading
29	N44.81398192	W89.70716653	11	-	-	-	-	N/A No Reading
30	N44.81330676	W89.70716995	10	-	-	-	-	N/A No Reading
31	N44.81803043	W89.70619744	6	-	-	-	-	N/A No Reading
32	N44.81735527	W89.70620087	5	S/W	Pole Rake	0	0	No Weeds
33	N44.81668012	W89.7062043	4	S/W	Pole Rake	0	0	No Weeds
34	N44.81600496	W89.70620773	3	S	Pole Rake	0	0	No Weeds
35	N44.81465464	W89.70621459	11	-	-	-	-	N/A No Reading
36	N44.81397949	W89.70621801	3	S	Pole Rake	0	0	No Weeds
37	N44.81870314	W89.70524542	6	-	-	-	-	N/A No Reading
38	N44.81802799	W89.70524886	6	-	-	-	-	N/A No Reading
39	N44.81735283	W89.7052523	5	M/S	Pole Rake	0	0	No Weeds
40	N44.81667767	W89.70525574	4	M/S	Pole Rake	0	0	No Weeds
41	N44.81600251	W89.70525918	2	S	Pole Rake	0	0	No Weeds
42	N44.81532736	W89.70526262	10	-	-	-	-	N/A No Reading
43	N44.8146522	W89.70526606	5	S	Pole Rake	0	0	No Weeds
44	N44.81397704	W89.7052695	3	S	Pole Rake	0	0	No Weeds
45	N44.81262673	W89.70527638	2	S	Pole Rake	0	0	No Weeds
46	N44.81870069	W89.70429683	4	S	Pole Rake	0	0	No Weeds
47	N44.81802553	W89.70430028	5	M/S	Pole Rake	0	0	No Weeds
48	N44.81735038	W89.70430373	2	S	Pole Rake	0	0	No Weeds
49	N44.81532491	W89.70431408	11	-	-	-	-	N/A No Reading
50	N44.81464975	W89.70431753	3	S	Pole Rake	0	0	No Weeds
51	N44.81262428	W89.70432788	4	M/S	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Half Moon Lake (154 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435800
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
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Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
52	N44.81869823	W89.70334824	4	S/W	Pole Rake	0	0	No Weeds
53	N44.81802307	W89.7033517	2	S/W	Pole Rake	0	0	No Weeds
54	N44.81734792	W89.70335516	4	M	Pole Rake	0	0	No Weeds
55	N44.81667276	W89.70335862	3	M	Pole Rake	0	0	No Weeds
56	N44.8159976	W89.70336208	5	S	Pole Rake	0	0	No Weeds
57	N44.81532245	W89.70336555	10	-	-	-	-	N/A No Reading
58	N44.81464729	W89.70336901	7	-	-	-	-	N/A No Reading
59	N44.81262182	W89.70337939	5	S	Pole Rake	0	0	No Weeds
60	N44.81869576	W89.70239965	4	S	Pole Rake	0	0	No Weeds
61	N44.81802061	W89.70240312	5	S	Pole Rake	0	0	No Weeds
62	N44.81734545	W89.70240659	3	S/W	Pole Rake	0	0	No Weeds
63	N44.81667029	W89.70241006	3	M/W	Pole Rake	0	0	No Weeds
64	N44.81599514	W89.70241354	5	S	Pole Rake	0	0	No Weeds
65	N44.81531998	W89.70241701	9	-	-	-	-	N/A No Reading
66	N44.81464482	W89.70242048	9	-	-	-	-	N/A No Reading
67	N44.81261935	W89.7024309	4	S	Pole Rake	0	0	No Weeds
68	N44.81194419	W89.70243437	6	-	-	-	-	N/A No Reading
69	N44.81869329	W89.70145105	4	S	Pole Rake	0	0	No Weeds
70	N44.81801813	W89.70145454	2	S	Pole Rake	0	0	No Weeds
71	N44.81734297	W89.70145802	3	M/S	Pole Rake	0	0	No Weeds
72	N44.81666782	W89.7014615	3	S	Pole Rake	0	0	No Weeds
73	N44.81599266	W89.70146499	4	W	Pole Rake	0	0	No Weeds
74	N44.8153175	W89.70146847	4	S	Pole Rake	0	0	No Weeds
75	N44.81464235	W89.70147195	9	-	-	-	-	N/A No Reading
76	N44.81396719	W89.70147544	9	-	-	-	-	N/A No Reading
77	N44.81261687	W89.7014824	4	S	Pole Rake	0	0	No Weeds
78	N44.81194172	W89.70148589	2	S	Pole Rake	0	0	No Weeds
79	N44.8186908	W89.70050246	3	W	Pole Rake	0	0	No Weeds
80	N44.81801565	W89.70050596	3	W	Pole Rake	0	0	No Weeds
81	N44.81734049	W89.70050945	2	S	Pole Rake	0	0	No Weeds
82	N44.81666533	W89.70051295	2	S	Pole Rake	0	0	No Weeds
83	N44.81599018	W89.70051644	4	W	Pole Rake	0	0	No Weeds
84	N44.81531502	W89.70051993	4	S	Pole Rake	0	0	No Weeds
85	N44.81463986	W89.70052343	5	S	Pole Rake	0	0	No Weeds
86	N44.8139647	W89.70052692	8	-	-	-	-	N/A No Reading
87	N44.81328955	W89.70053042	8	-	-	-	-	N/A No Reading
88	N44.81261439	W89.70053391	4	S/W	Pole Rake	0	0	No Weeds
89	N44.81193923	W89.70053741	4	S	Pole Rake	0	0	No Weeds
90	N44.81126407	W89.7005409	7	-	-	-	-	N/A No Reading
91	N44.81868831	W89.69955387	3	W	Pole Rake	0	0	No Weeds
92	N44.81801316	W89.69955738	4	M	Pole Rake	0	0	No Weeds
93	N44.817338	W89.69956088	4	M	Pole Rake	0	0	No Weeds
94	N44.81666284	W89.69956439	4	M	Pole Rake	0	0	No Weeds Secchi Reading 1.2'
95	N44.81598769	W89.69956789	4	W	Pole Rake	0	0	No Weeds
96	N44.81531253	W89.6995714	3	W	Pole Rake	0	0	No Weeds
97	N44.81463737	W89.6995749	4	S/W	Pole Rake	0	0	No Weeds
98	N44.81396221	W89.69957841	5	S	Pole Rake	0	0	No Weeds
99	N44.81328706	W89.69958191	7	-	-	-	-	N/A No Reading
100	N44.8126119	W89.69958542	7	-	-	-	-	N/A No Reading
101	N44.81193674	W89.69958892	7	-	-	-	-	N/A No Reading
102	N44.81126158	W89.69959243	1	S	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Half Moon Lake (154 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435800
County: Marathon
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Datum: WGS84

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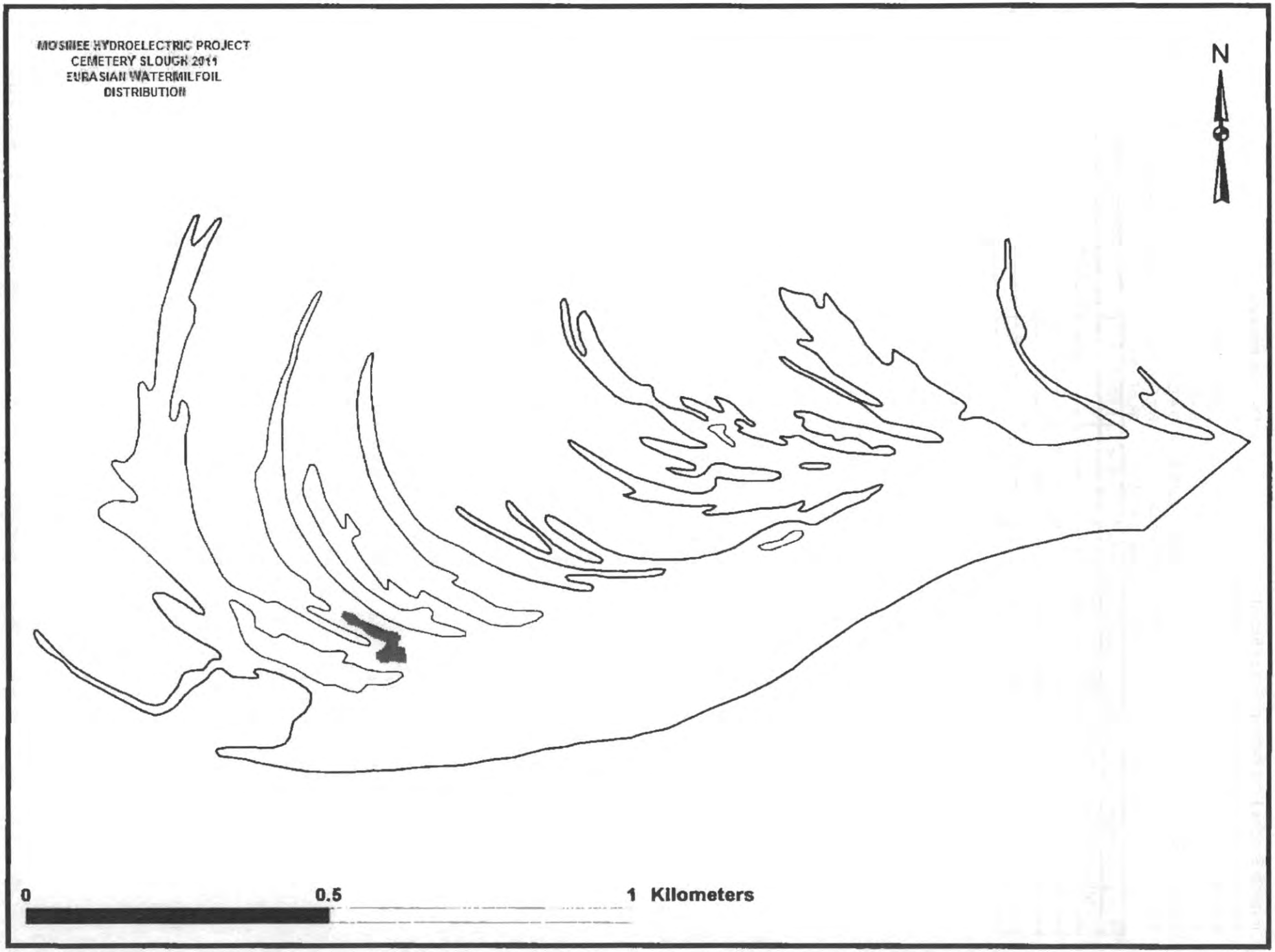
Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
103	N44.81868581	W89.69860528	2	M	Pole Rake	0	0	No Weeds
104	N44.8173355	W89.69861231	4	M	Pole Rake	0	0	No Weeds
105	N44.81666034	W89.69861583	4	S	Pole Rake	0	0	No Weeds
106	N44.81598519	W89.69861935	3	W	Pole Rake	0	0	No Weeds
107	N44.81531003	W89.69862286	3	S	Pole Rake	0	0	No Weeds
108	N44.81463487	W89.69862638	2	S	Pole Rake	0	0	No Weeds
109	N44.81395971	W89.69862989	3	M/S	Pole Rake	0	0	No Weeds
110	N44.81328456	W89.69863341	2	S/W	Pole Rake	0	0	No Weeds
111	N44.8126094	W89.69863693	6	-	-	-	-	N/A No Reading
112	N44.81193424	W89.69864044	6	-	-	-	-	N/A No Reading
113	N44.81125908	W89.69864396	6	W	Pole Rake	0	0	No Weeds
114	N44.81058393	W89.69864748	3	S	Pole Rake	0	0	No Weeds
115	N44.81868331	W89.69765669	-	-	-	-	-	N/A Land
116	N44.81800815	W89.69766021	4	M	Pole Rake	0	0	No Weeds
117	N44.81733299	W89.69766374	4	M	Pole Rake	0	0	No Weeds
118	N44.81665784	W89.69766727	3	S	Pole Rake	0	0	No Weeds
119	N44.81598268	W89.6976708	4	M/S	Pole Rake	0	0	No Weeds
120	N44.81530752	W89.69767433	3	M/S	Pole Rake	0	0	No Weeds
121	N44.81463236	W89.69767785	1	M/S	Pole Rake	0	0	No Weeds
122	N44.81395721	W89.69768138	1	S	Pole Rake	0	0	No Weeds
123	N44.81328205	W89.69768491	3	M/W	Pole Rake	0	0	No Weeds
124	N44.81193174	W89.69769196	5	M/S	Pole Rake	0	0	No Weeds
125	N44.81125658	W89.69769549	4	W	Pole Rake	0	0	No Weeds
126	N44.81058142	W89.69769902	5	W	Pole Rake	0	0	No Weeds
127	N44.81800563	W89.69671163	3	M	Pole Rake	0	0	No Weeds
128	N44.81733048	W89.69671517	3	S/W	Pole Rake	0	0	No Weeds
129	N44.81665532	W89.69671871	2	S	Pole Rake	0	0	No Weeds
130	N44.81598016	W89.69672225	2	M	Pole Rake	0	0	No Weeds
131	N44.81530501	W89.69672579	2	S	Pole Rake	0	0	No Weeds
132	N44.81462985	W89.69672933	1	S	Pole Rake	0	0	No Weeds
133	N44.81395469	W89.69673287	-	-	-	-	-	N/A Too Shallow
134	N44.81260438	W89.69673994	2	M/W	Pole Rake	0	0	No Weeds
135	N44.81192922	W89.69674348	1	S	Pole Rake	0	0	No Weeds
136	N44.81125406	W89.69674702	4	M/S	Pole Rake	0	0	No Weeds
137	N44.81057891	W89.69675056	2	W	Pole Rake	0	0	No Weeds
138	N44.80990375	W89.6967541	3	S	Pole Rake	0	0	No Weeds
139	N44.81867827	W89.6957595	-	-	-	-	-	N/A Land
140	N44.81800311	W89.69576305	2	M/S	Pole Rake	0	0	No Weeds
141	N44.81732795	W89.6957666	1	S	Pole Rake	0	0	No Weeds
142	N44.81597764	W89.6957737	-	-	-	-	-	N/A Land
143	N44.81530248	W89.69577725	2	M	Pole Rake	0	0	No Weeds
144	N44.81395217	W89.69578435	-	-	-	-	-	N/A Too Shallow
145	N44.81327701	W89.6957879	-	-	-	-	-	N/A Too Shallow
146	N44.8119267	W89.695795	-	-	-	-	-	N/A Land
147	N44.81125154	W89.69579855	3	M/S	Pole Rake	0	0	No Weeds
148	N44.81732542	W89.69481803	-	-	-	-	-	N/A Land
149	N44.81665027	W89.6948216	-	-	-	-	-	N/A Land
150	N44.81394964	W89.69483584	-	-	-	-	-	N/A Too Shallow
151	N44.81124901	W89.69485008	2	M/S	Pole Rake	0	0	No Weeds
152	N44.81057385	W89.69485364	-	-	-	-	-	N/A Land
153	N44.81259679	W89.69389447	-	-	-	-	-	N/A Too Shallow

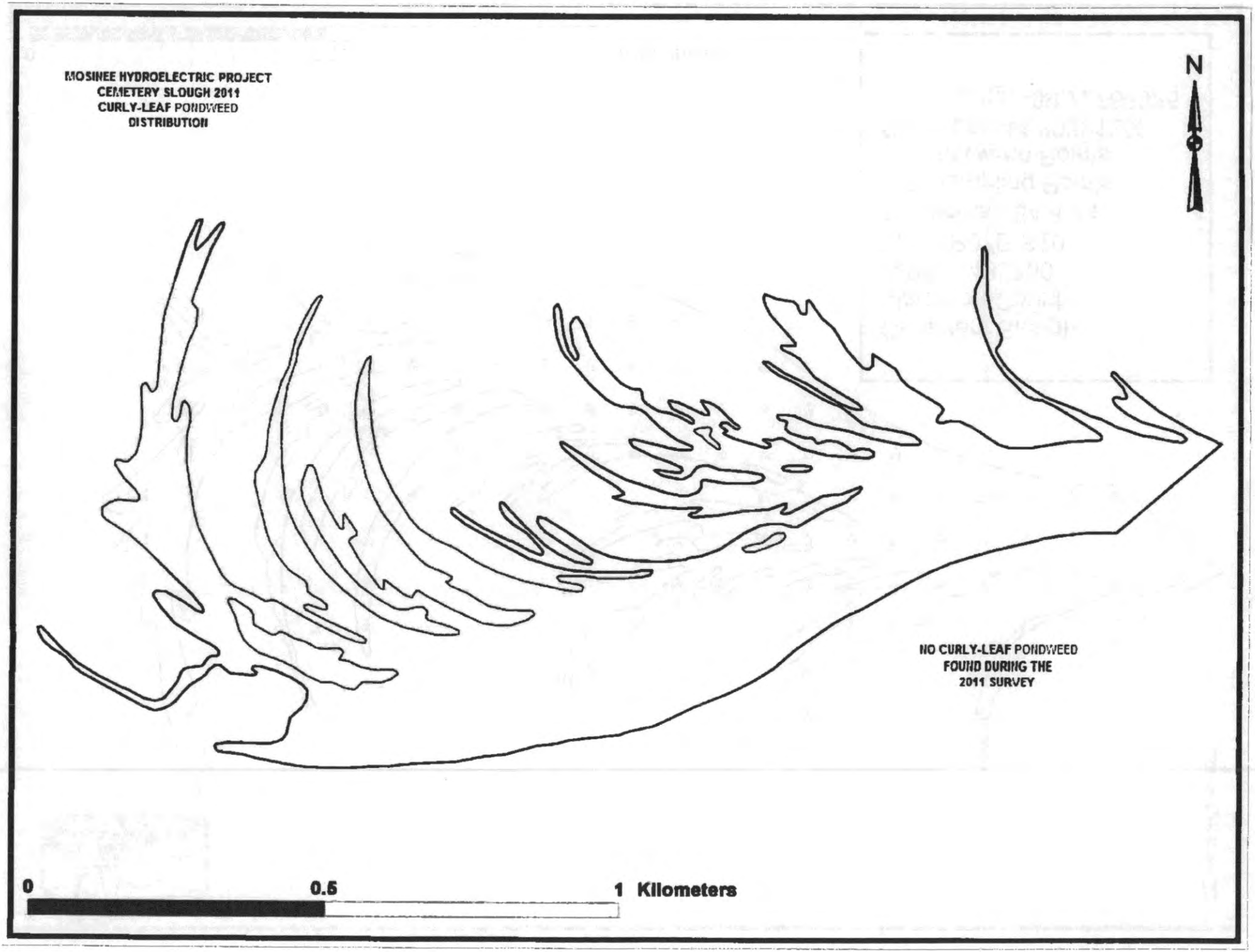
Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Half Moon Lake (154 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435800
County: Marathon
Crew: RAL/CTM
Datum: WGS84

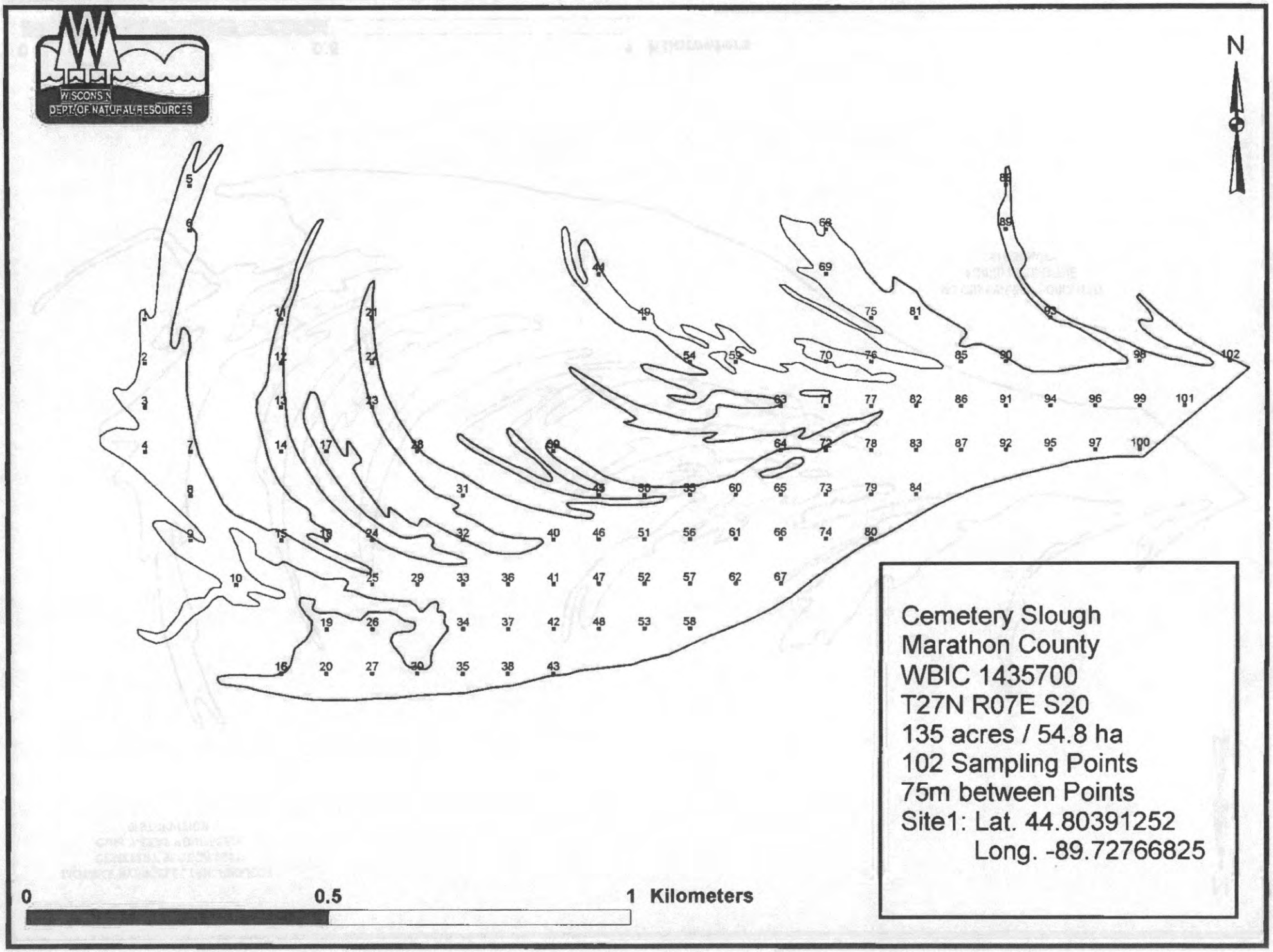
EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
154	N44.81124647	W89.69390161	-	-	-	-	-	N/A Land







Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Cemetery Slough - (102 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435700
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
1	N44.80391252	W89.72766825	2	M	Pole Rake	0	0	No Weeds
2	N44.80323736	W89.72767143	2	M	Pole Rake	0	0	No Weeds
3	N44.8025622	W89.7276746	3	M	Pole Rake	0	0	No Weeds
4	N44.80188704	W89.72767778	3	M	Pole Rake	0	0	No Weeds Secchi Reading 1.4'
5	N44.80593573	W89.72671033	2	M/S	Pole Rake	0	0	No Weeds
6	N44.80526057	W89.72671352	2	M	Pole Rake	0	0	No Weeds
7	N44.80188477	W89.72672946	2	M	Pole Rake	0	0	No Weeds
8	N44.80120961	W89.72673265	3	M	Pole Rake	0	0	No Weeds
9	N44.80053445	W89.72673583	-	-	-	-	-	N/A Too Shallow
10	N44.79985702	W89.72579073	2	M	Pole Rake	0	0	No Weeds
11	N44.8039057	W89.72482319	-	-	-	-	-	N/A Shallow Muck
12	N44.80323054	W89.7248264	1	S	Pole Rake	0	0	No Weeds
13	N44.80255538	W89.72482961	1	S	Pole Rake	0	0	No Weeds
14	N44.80188022	W89.72483282	2	M	Pole Rake	0	0	No Weeds
15	N44.8005299	W89.72483924	2	M	Pole Rake	1	0	-
16	N44.79850442	W89.72484887	-	-	-	-	-	N/A Land
17	N44.80187793	W89.7238845	-	-	-	-	-	N/A Shallow Muck
18	N44.80052761	W89.72389094	1	M	Pole Rake	1	0	-
19	N44.79917729	W89.72389738	-	-	-	-	-	N/A Shallow Muck
20	N44.79850213	W89.7239006	2	M	Pole Rake	0	0	No Weeds
21	N44.80390111	W89.72292649	-	-	-	-	-	N/A Blocked By Logs
22	N44.80322595	W89.72292972	-	-	-	-	-	N/A Blocked By Logs
23	N44.80255079	W89.72293295	-	M	-	-	-	N/A Shallow Muck
24	N44.80052531	W89.72294265	2	S	Pole Rake	0	0	No Weeds
25	N44.79985015	W89.72294588	2	M	Pole Rake	1	0	-
26	N44.79917499	W89.72294911	-	-	-	-	-	N/A Shallow Muck
27	N44.79849983	W89.72295234	3	M	Pole Rake	0	0	-
28	N44.80187333	W89.72198787	-	-	-	-	-	Too Shallow
29	N44.79984785	W89.72199759	3	M	Pole Rake	0	0	No Weeds
30	N44.79849753	W89.72200408	3	M	Pole Rake	0	0	No Weeds
31	N44.80119586	W89.7210428	2	M	Pole Rake	0	0	No Weeds
32	N44.8005207	W89.72104606	1	S	Pole Rake	0	0	No Weeds
33	N44.79984554	W89.72104931	3	M	Pole Rake	0	0	No Weeds
34	N44.79917038	W89.72105256	3	M	Pole Rake	0	0	No Weeds
35	N44.79849522	W89.72105581	3	M	Pole Rake	0	0	No Weeds
36	N44.79984322	W89.72010102	3	M	Pole Rake	0	0	No Weeds
37	N44.79916806	W89.72010429	3	M	Pole Rake	0	0	No Weeds
38	N44.7984929	W89.72010755	3	M	Pole Rake	0	0	No Weeds
39	N44.80186637	W89.71914291	-	-	-	-	-	N/A Blocked By Logs
40	N44.80051605	W89.71914946	2	S/W	Pole Rake	0	0	No Weeds
41	N44.79984089	W89.71915274	3	M	Pole Rake	0	0	No Weeds
42	N44.79916573	W89.71915601	3	M	Pole Rake	0	0	No Weeds
43	N44.79849057	W89.71915929	1	G	Pole Rake	0	0	No Weeds
44	N44.80456467	W89.71818145	-	-	-	-	-	N/A Shallow Muck
45	N44.80118887	W89.71819788	-	-	-	-	-	N/A Blocked By Logs
46	N44.80051371	W89.71820117	4	M	Pole Rake	0	0	No Weeds
47	N44.79983855	W89.71820445	3	M	Pole Rake	0	0	No Weeds
48	N44.79916339	W89.71820774	4	M	Pole Rake	0	0	No Weeds
49	N44.80388717	W89.71723638	-	-	-	-	-	N/A Shallow Muck
50	N44.80118653	W89.71724957	-	-	-	-	-	N/A Blocked By Logs
51	N44.80051137	W89.71725287	4	M	Pole Rake	0	0	No Weeds
52	N44.79983621	W89.71725617	4	M	Pole Rake	0	0	No Weeds
53	N44.79916105	W89.71725947	4	M	Pole Rake	0	0	No Weeds
54	N44.80320966	W89.71629134	-	-	-	-	-	N/A Land
55	N44.80118418	W89.71630127	2	S	Pole Rake	0	0	No Weeds

Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Cemetery Slough - (102 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435700
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Root Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments
56	N44.80050902	W89.71630458	4	M	Pole Rake	0	0	No Weeds
57	N44.79983386	W89.71630789	4	M	Pole Rake	0	0	No Weeds
58	N44.7991587	W89.71631119	4	M	Pole Rake	0	0	No Weeds
59	N44.8032073	W89.715343	-	-	-	-	-	N/A Shallow Muck
60	N44.80118182	W89.71535296	4	M/S	Pole Rake	0	0	No Weeds
61	N44.80050666	W89.71535628	4	M	Pole Rake	0	0	No Weeds
62	N44.7998315	W89.7153596	4	M	Pole Rake	0	0	No Weeds
63	N44.80252977	W89.71439799	-	-	-	-	-	N/A Too Shallow
64	N44.80185461	W89.71440132	2	S	Pole Rake	0	0	No Weeds Secchi Reading 1.7'
65	N44.80117945	W89.71440466	4	M	Pole Rake	0	0	-
66	N44.80050429	W89.71440799	4	M	Pole Rake	0	0	No Weeds
67	N44.79982913	W89.71441132	4	M	Pole Rake	0	0	No Weeds
68	N44.80522803	W89.7134363	-	-	-	-	-	N/A Shallow Muck
69	N44.80455287	W89.71343964	1	M	Pole Rake	0	0	No Weeds
70	N44.80320255	W89.71344632	-	-	-	-	-	N/A Shallow Muck
71	N44.80252739	W89.71344967	3	M/S	Pole Rake	0	0	No Weeds
72	N44.80185223	W89.71345301	2	S	Pole Rake	0	0	No Weeds
73	N44.80117707	W89.71345635	5	M	Pole Rake	0	0	No Weeds
74	N44.80050191	W89.71345969	4	M	Pole Rake	0	0	No Weeds
75	N44.80387533	W89.71249463	-	-	-	-	-	N/A Too Shallow
76	N44.80320017	W89.71249798	-	-	-	-	-	N/A Too Shallow
77	N44.80252501	W89.71250134	3	M	Pole Rake	0	0	No Weeds
78	N44.80184985	W89.71250469	5	M	Pole Rake	0	0	-
79	N44.80117469	W89.71250804	5	M	Pole Rake	0	0	No Weeds
80	N44.80049953	W89.7125114	5	M	Pole Rake	0	0	No Weeds
81	N44.80387294	W89.71154628	3	M	Pole Rake	0	0	No Weeds
82	N44.80252262	W89.71155301	4	S	Pole Rake	0	0	No Weeds
83	N44.80184746	W89.71155637	6	M	Pole Rake	0	0	No Weeds
84	N44.8011723	W89.71155974	6	M	Pole Rake	0	0	No Weeds
85	N44.80319538	W89.71060131	4	M/S	Pole Rake	0	0	No Weeds
86	N44.80252022	W89.71060468	6	M	Pole Rake	0	0	No Weeds
87	N44.80184506	W89.71060806	6	M	Pole Rake	0	0	No Weeds
88	N44.80589361	W89.70963942	-	-	-	-	-	N/A Shallow Muck
89	N44.80521845	W89.70964281	-	-	-	-	-	N/A Shallow Muck
90	N44.80319297	W89.70965297	2	S	Pole Rake	0	0	No Weeds
91	N44.80251781	W89.70965635	6	M	Pole Rake	0	0	No Weeds Secchi Reading 2.6'
92	N44.80184265	W89.70965974	6	-	-	-	-	N/A No Reading
93	N44.80386572	W89.70870123	-	-	-	-	-	N/A Shallow Muck
94	N44.8025154	W89.70870803	6	-	-	-	-	N/A No Reading
95	N44.80184024	W89.70871142	6	-	-	-	-	N/A No Reading
96	N44.80251298	W89.7077597	6	-	-	-	-	N/A No Reading
97	N44.80183782	W89.70776311	5	S	Pole Rake	0	0	No Weeds
98	N44.8031857	W89.70680795	1	S	Pole Rake	0	0	No Weeds
99	N44.80251054	W89.70681137	6	-	-	-	-	N/A No Reading
100	N44.80183539	W89.70681479	3	S	Pole Rake	0	0	No Weeds
101	N44.80250811	W89.70586304	6	W	Pole Rake	0	0	No Weeds
102	N44.80318082	W89.70491127	2	S	Pole Rake	0	0	No Weeds

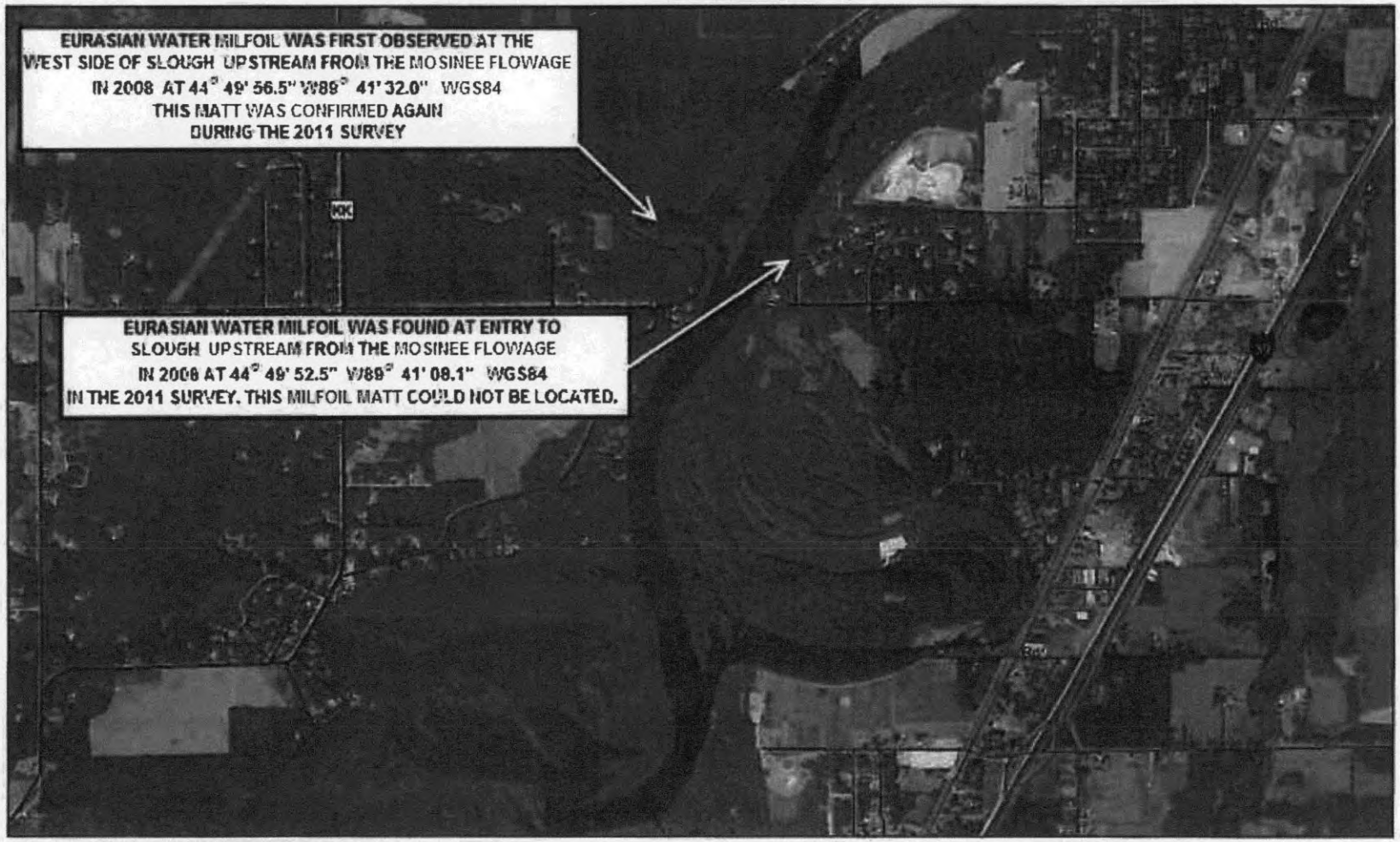
Invasive Species Point Intercept Survey Report
Project/Lake: Mosinee/Cemetery Slough - (102 Sample points)
Date: 7/11/11 - 7/16/11
WBIC: 1435700
County: Marathon
Crew: RAL/CTM
Datum: WGS84

EWM = Eurasian Water Milfoil
CLP = Curly-leaf Pondweed
NWM = Northern Water Milfoil

N/A = Not Accessible
M = Muck
W = Woody Debris
S = Sand
G = Gravel
R = Rool Mass (i.e. Lily Pads, Pickerel Weed, etc.)
Rk = Rock

Point	Lattitude	Longitude	Depth	Sediment	Method	EWM	CLP	Comments

Mosinee Eurasian Water Milfoil Survey 2011 Upstream Locations



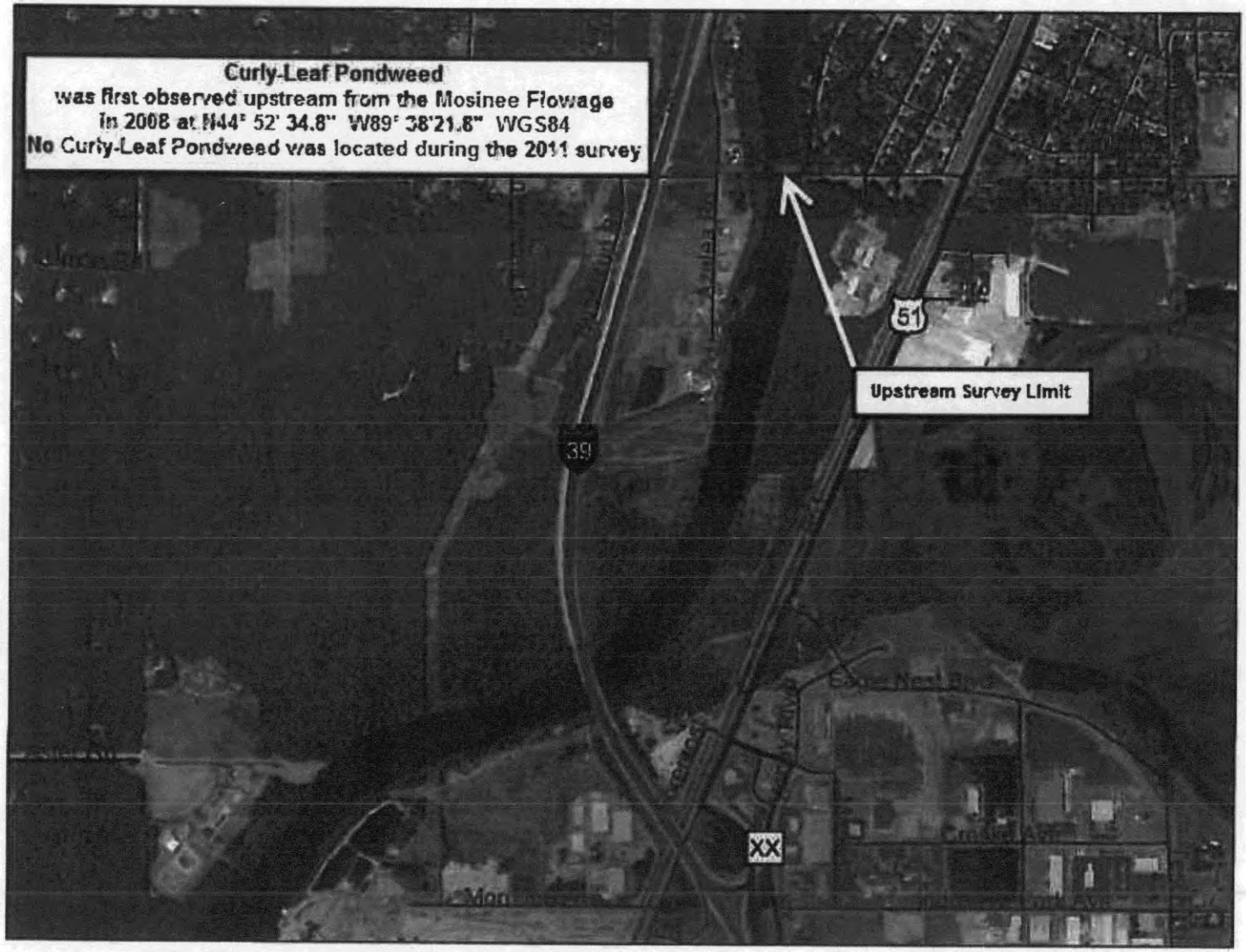
Legend

- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

Scale: 1:16,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Mosinee Curly-Leaf Pondweed Survey 2011 Upstream Location



0 1750 3500 5250 ft.

Legend

Major Highways

- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads

Scale: 1:18,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

APPENDIX C

Monitoring of Aquatic Macrophytes 2/13/06 (WIDNR)

Baseline Monitoring of Aquatic Macrophytes
2/13/06

Below we outline the protocol for statewide baseline sampling of aquatic macrophytes, with the primary goals of 1) comparing year-to-year data within a lake, and 2) comparing data among lakes. We describe a formal quantitative survey conducted at pre-determined sampling locations distributed evenly over the lake surface (point-intercept approach). We believe that this method, when combined with a boat survey to gather additional information on areas not sampled directly, will best characterize a lake's plant community. The chief benefit of adopting a statewide protocol is that variation in the sample set can be primarily attributed to actual differences in plant communities, instead of the confounding variables introduced by using different sampling techniques.

These guidelines are intended to work on most lakes. However, modifications may be required if a lake is uniquely shaped so that a uniform distribution of points isn't representative (long, skinny lake shape), or if obtaining rake samples is difficult due to substrate (rocky/cobble bottom).

Please note these are "baseline" recommendations. Additional monitoring activities may be warranted if the goal is to assess a specific management activity. For example, to gauge the success of chemical spot-treating stands of an exotic species in a relatively large lake, we recommend additional mapping of the beds within a season before and after treatment.

The baseline sampling described below should be conducted between early July and mid August. Although changes (such as biomass) in the plant community through this long sampling window might complicate data interpretation, in this survey we are mostly interested in species diversity and frequency, variables that should be fairly constant through the growing season. However, as described below, field workers are asked to assess rake fullness for all species and these ratings will likely vary with sample date. For many species, including Eurasian water-milfoil, plant biomass and density will probably increase as the season progresses. Narrow-leaved pondweeds begin to disappear by mid-August. Data for these species must be interpreted carefully with the sampling date in mind.

Curly-leaf pondweed (CLP) creates a special problem because it is often gone before the recommended sampling window between early July and mid-August. If you have any suspicion that CLP is present but not found when sampled, be sure to talk to APM staff to work out the best sampling scheme.

DNR personnel and groups using state money (e.g. planning, protection or aquatic invasive species grants) should follow this protocol.

I. Field Equipment

1. Required field equipment: boat, handheld GPS unit with WAAS (Wide Area Augmentation System) capability (with site locations already loaded, Garmin 76 is a commonly used model

within DNR), a lake map, waterproof field data sheets, pole-mounted rake, weighted rake on a rope, depth finder, storage bags for vouchered specimens, personal flotation device.

2. **Recommended equipment** (helpful, but not necessary): trolling motor, underwater video camera, plant ID references, hand lens, cooler for storing samples, digital camera to document shoreline features (e.g., deadfall, dock, house) for sample points near shore that will provide a visual complement to a dot on a map, waterproof paper tags and/or Sharpie for labeling bags with vouchers and unknown plant species.

II. Point Intercept Sampling Method

1. Description

We require the following point-intercept sampling protocol. In this method, a large number of sampling sites are distributed in a grid across the lake. There are several benefits to a grid sampling design. An evenly spaced distribution of points results in a good overview of the entire lake. It is easy to replicate, and it is easy to preserve and present the spatial information. Please contact Jen Hauxwell (Jennifer.Hauxwell@dnr.state.wi.us) with lake name, county, water body identification code (WBIC), and any other depth and plant information available so that she can establish sampling points for the lake.

The size of the littoral zone and shape of the lake determines the number of points and the grid resolution. You will receive an electronic file of sampling points to upload into a GPS unit (below). Once on the lake, you will go to each site and collect plants and data as described below.

2. Uploading sampling points to the GPS unit

The following step-by-step instructions were adapted from the WIDNR Garmin GPS Tool User Manual v. 8.2.5, available to DNR employees on the intranet.
<file:///%5C%5Ccentral%5Cet_apps%5CPROD%5CWiDNR_Garmin%5Cstandalone_garmin%5CDEV_Doc%5CWIDNR_Garmin_Standalone_GPS_Tool_User_Guide.pdf>
This is a two step process. First you need to *_load_* the sample points you receive from Jen Hauxwell in a text file into the WIDNR Garmin GPS Tool, a computer file. Second you need to *_upload_* the points from your computer onto the GPS unit itself. For more information or troubleshooting help consult the User Manual.

Please note that GPS units vary in how many way points they can store. In the event that the number of sampling points exceeds your unit's storage capacity, simply split the text file containing the point information into multiple files. Upload successive files of points as needed. (For more information on Garmin GPS units, please see http://www.garmin.com/ and navigate to consumer/outdoor/GPS mapping. Choose a unit and then click on "specifications" and, under navigation features, find the number of waypoints/icons.)

To upload points into your GPS unit from a text file (.txt) using the WIDNR Garmin GPS Tool you will need:

- **PC/laptop with WIDNR Garmin GPS Tool software.** If you do not have the software on your computer contact your administrator for installation.
- **Waypoint .txt file** in the same format as one created by the WI DNR Garmin GPS Tool. Text files received from DNR Research will be in the correct format.
- **PC Interface cable.** Comes standard with the GPS unit, or can be ordered at http://www.garmin.com/outdoor/products.html#mapping.
- **GPS unit with external data port.**

Step 1: SET "SIMULATING GPS" MODE

You must operate the Garmin GPS receiver in Simulating GPS mode while uploading/downloading data, so that the receiver is not trying to acquire satellite data during these activities. Check your GPS manual to determine how to do this. Instructions for the GPSMap 76 are given below.

1. Press and hold the [ON/OFF] button for two seconds to turn the GPS receiver on.
2. Several informational screens will display. Press the [PAGE] button until the first Acquiring Satellites screen appears.
3. Press the [MENU] button and select Start Simulator to see the Simulating GPS page.

Step 2: SET SERIAL DATA FORMAT

You must set the serial data format to GARMIN prior to transferring data. Failure to set the serial data format to GARMIN will cause a communication error between the WIDNR Garmin Tool and the GPS unit. Instructions for a GPSMap 76 are given below.

1. Press the [MENU] button twice, use the rocker key to select Setup, and then press [ENTER].
2. Use the rocker key to scroll left or right until the Interface tab is highlighted. Use the rocker key to scroll down to highlight the drop-down box and press [ENTER].
3. A menu will appear; select GARMIN and [ENTER]. Press [QUIT] twice to return to the main screen.

Step 3: PLUG IN THE PC INTERFACE CABLE

1. Plug the 9-pin serial connector into COM port #1 on your PC. If port #1 is in use, plug into the next available port, and note the port number. The WIDNR Garmin GPS Tool does not support connection through a USB port.

2. Plug the round end of the cable into the external data/auxiliary power port on the back of the GPS receiver. Check your GPS manual if you do not know where the data port is located. The GPS receiver should be on and in "simulating GPS" mode.

Step 4: LOAD WAYPOINT DATA FROM A TEXT FILE TO THE WIDNR GARMIN GPS TOOL

1. Open the WIDNR Garmin GPS Tool file on computer. Select the WIDNR Garmin GPS Tool > File > Load > Waypoints From > GPS Text File option.

2. Enter/Select the path and name of the text file to load into the Open window. The GPS data will be loaded into the WIDNR Garmin GPS Tool. If you have trouble at this point, see the next section on troubleshooting. Otherwise, go on to section 4, Waypoints.

3. Troubleshooting. If you encounter problems during loading, a pop-up window will notify the user. Click OK.

    a. If problems are encountered, check that the COM port is set correctly: GPS > Assign Port > select correct port #.

    b. Also check that the baud rate matches that of the GPS unit: GPS > Assign Port > Baud Rate > select correct rate. A GPSMap 76 will transfer at 9600.

    c. Check that the Serial Data Format is set to GARMIN (outlined in Step 2).

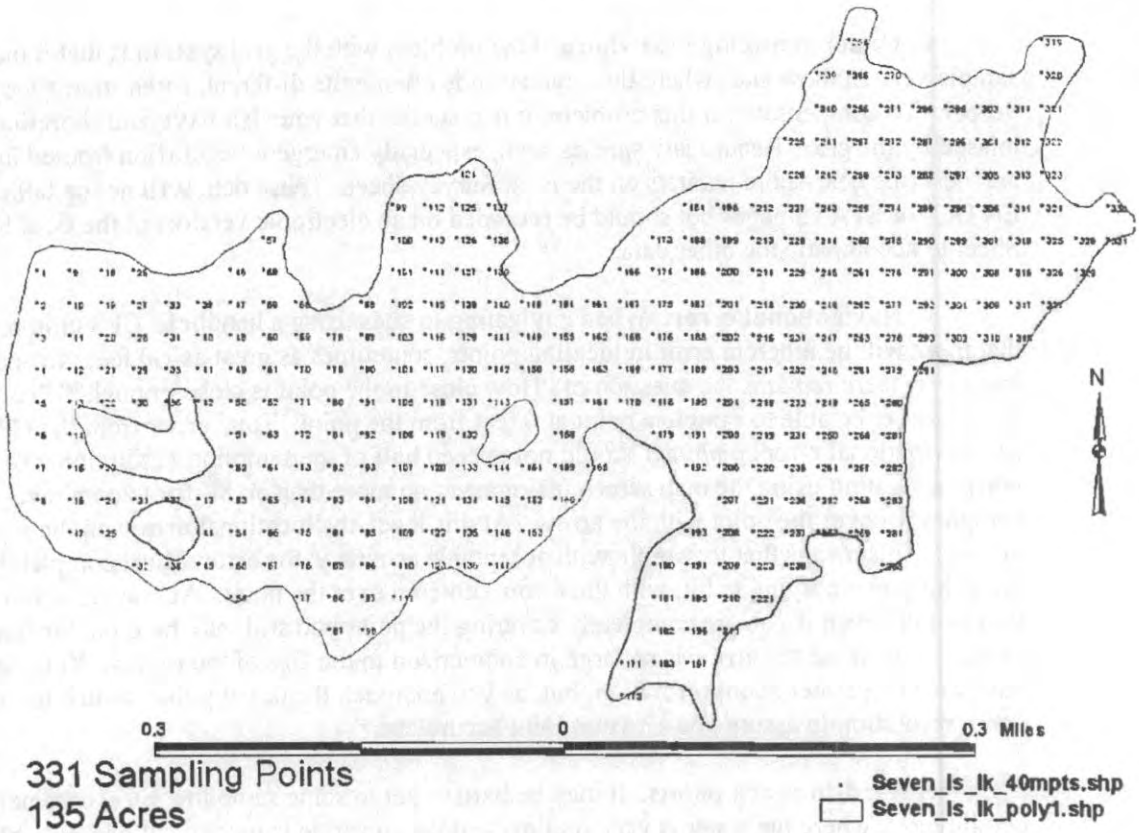
4. Waypoints. You can now view/edit waypoints by clicking the [Advanced] button on the WIDNR Garmin GPS Tool window.

Step 5: UPLOAD WAYPOINT DATA TO THE GPS RECEIVER

1. Select the WIDNR Garmin GPS Tool > Waypoint > Upload option.

2. When complete, the number of uploaded points appears at the bottom of the Garmin GPS Tool window. A pop-up window also indicates the number of waypoints successfully uploaded. Click OK. The uploaded waypoints should now be visible on the GPS receiver's Waypoints display.

3. Below is an example of lake with waypoints.



III. Collecting and Recording Plant Data

1. The rake sampler. The rake is constructed of two rake heads (double rake head) welded together, measuring 13.8 inches (35 centimeters) long with 14 teeth on each side. The handle is 8 ft (2.4 meters) in length, and should include a telescoping extension that results in a total handle length (from tip of rake head to fully extended end) of 15 feet (4.6 meters). You will also need a second, weighted, double rake head on a rope (rake-on-a-rope) to sample deeper sites. See section on "rake construction" for more detail.

2. Using the rake. Collect one rake sample per site. In waters less than 12 feet, handle the rake using the pole. In deeper water, toss the rake-on-a-rope. In either case, try to drag the rake along the bottom for 2.5 feet (0.75 meters). The rake may dislodge plants that will float to the surface, especially short rosette species not easily caught in the rake tines. Record these plants as present and estimate the rake fullness rating, just as you would plants brought up on the rake (see below).

3. Point-intercept sampling issues and procedures.

a. Under-sampling near shore. One problem with the grid system is that it may under-sample very shallow sites where the vegetation is often quite different, even from sites just a bit deeper. To compensate for this problem, it is essential that you visit bays and shoreline areas missed by the grid. Record any species seen, especially emergent vegetation (rooted in water), and describe near-shore habitats on the Boat Survey sheet. These data will not be tallied in the ENTRY or STATS pages but should be recorded on an electronic version of the Boat Survey Sheet to accompany the other data.

b. Navigational error. When navigating to sites using a handheld GPS unit, remember that there will be inherent error in locating points, sometimes as great as 60 feet. In addition to that error, there remains the question of "How close to the point is close enough?" You will almost never be able to sample a point at 0 feet from the point. Total error from the GPS error and navigational error *combined* should not exceed half of the sampling resolution. To avoid this when navigating using the map screen, navigate at no more than an 80-foot zoom level and completely cover the point with the arrow. At this level, the locational arrow on the screen is ~8 m long. This means that to sample with acceptable accuracy, the arrow must completely cover the point you are trying to hit, with the arrow centered over the point. At coarser zoom – 120-foot and up, even if you are completely covering the point you still may be quite far from the point, just because the arrow is so large in comparison to the size of the points. You may need to navigate at a greater zoom resolution, but, as you approach the target point, switch to the 80-ft zoom resolution to assure you hit your point accurately.

c. Hard-to-reach points. It may be hard to get to some sampling sites, especially in certain bays, where the water is very shallow and the substrate is mucky. When possible and practical, try to get to the point by poling with an oar, but do not spend undue time poling to these shallow sites. Due to safety concerns, field workers should not get out and drag the boat through mucky sediment to reach a site. If the sampling site is shallow but the substrate is firm, you should walk to the site from shore. If you cannot access a site, leave the depth blank and record NA (no access) or "land" (if the site is on land) in the comments column. (Remember to transfer these comments to the ENTRY sheet).

4. Filling out the Field Data sheet. Print the FIELD DATA sheet from the Excel workbook APMstats123.xls for use in the field. We recommend printing the data sheet onto waterproof paper such as Xerox Never Tear Paper.

a. Top portion. Fill out the top portion of the Field sheet with lake name, WBIC, county, and date. Also, record all the observers and how many hours they worked on this lake.

b. Site Number. Each site location is defined by the lat/long data imported onto your GPS unit and each site should have one row of data.

c. . Depth. Measure and record the depth at each site sampled, regardless of whether vegetation is present. It is often easiest to mark the pole to establish depth for the shallower sites. However, a variety of options exist for taking depth measurements, including SONAR guns, depth finders that attach to the boat, or depth increments marked on the rope attached to the weighted rake sampler. If using a depth finder, please note that the accuracy decreases greatly in densely vegetated areas—depth will often be given to the top of the vegetation instead of to the lake bottom.

d. Dominant sediment type: Record sediment type (based on how the rake feels when in contact with the bottom) at each site where plants are sampled as: mucky (M), sandy (S), or rocky (R).

e. Pole vs. rope. Record whether the field team held the rake by the pole (P) or rope (R).

f. Species information. Note that the field data entry sheet does not include any species names, except for EWM (Eurasian water-milfoil) and CLP (curly-leaf pondweed). The sampling team must enter the species name the first time that species is encountered. Names will have to be entered again on successive field sheets (as they are encountered). The use of standard abbreviations can greatly shorten this process.

For all species, record the rake fullness rating (1- few, 2- moderate, 3-abundant, see illustration following this text) on the field data entry sheet at each sampling point where it is found. Record rake fullness for filamentous algae as well. Record the rake fullness rating for plants dislodged by, but not collected on the rake (please see "Under-sampling near shore", above). While at a site, look for any other plants (not already recorded) at that site within 6 ft (2m) of the boat. Record these species as a "visual" (V) on the data sheet. These species will be included in total number of species seen but will not be included in summary statistics. Account for plant parts that dangle or trail from the rake tines as if they were fully wrapped around the rake head.

5. Filling out the Boat Survey Data sheet. . Often there will be localized occurrences of certain species (e.g., floating-leaf or emergent species) that are obvious to the viewer but could possibly be missed by the point-intercept grid. As discussed above in "Under-sampling near shore", you should examine shoreline areas that are out of the grid. While you need not make a separate trip around the entire lake, do visit areas that may be under-sampled and record the information (including the closest sampling point) on the Boat Survey (see APMstats123.xls) and on a lake map. Be sure to create an electronic version of the Boat Survey from the field notes.

6. If no plants are found. If no plants are found at a sampling site while approaching a deep section in the lake, record the depth but do not record any species information. Sample one more (deeper) site beyond that point to ensure that you have correctly identified the maximum plant depth. This should be done for each set of points surrounding the deep portion of the lake. Along any N-S or E-W transect, sampling should continue for at least 2 points beyond the last site with plants. Some sites may not have any plants, even if the site is shallower than the maximum plant depth. For these sites, fill out the data sheet as usual (with no species identified). These sites will be included as sites as deep as, or shallower than, the maximum plant depth.

7. Collect voucher samples. Collect 2 samples of each species found on each lake. These samples must be pressed and dried according to the protocol in Appendix F. Send one prepared specimen to the local DNR office (who will pass them on to a University herbarium). Keep one specimen for the lake group as a reference for future plant identification. If the field team is unable to identify a plant, please try to get fresh plants to the local DNR lake management specialist as it is much easier to identify fresh plants than pressed plants. Be sure to let them know you are sending plants so that they can be processed promptly.

IV. Entering data on the spreadsheets and summary data

The APMstats123.xls Excel workbook has 5 spreadsheets:

a. READ ME, with a summary of all the spreadsheets included in the worksheet. The date records the most recent version.

b. Field Data, discussed above.

c. ENTRY, a data entry sheet for transferring field data to the computer spread sheet. You must transfer all of the information collected in the field to the ENTRY sheet. You should be able to copy the coordinates for the sampling points from the text file you uploaded onto the GPS unit and paste these into the entry sheet. There is a column for comments on the ENTRY sheet.

d. STATS, an automated statistics page that provides a summary of the plant data. The summary statistics of the plant survey will automatically appear in the STATS sheet of APMstats123.xls after data are entered in ENTRY.

e. Boat Survey, discussed above.

V. Where to Send Data
Send electronic copies of the ENTRY, STATS and Boat Survey to Jen Hauxwell (Jennifer.Hauxwell@dnr.state.wi.us).

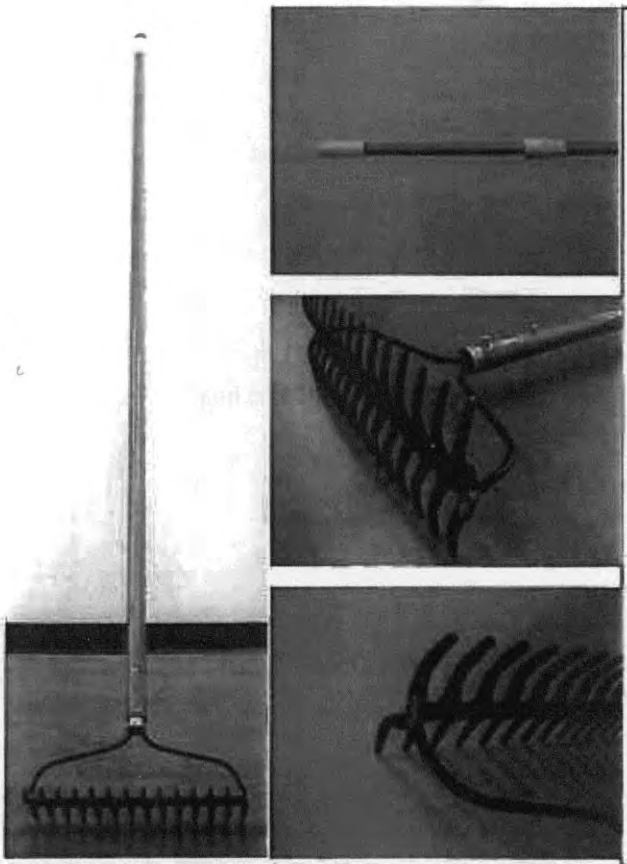
Rake Fullness Ratings

Rake fullness ratings are given from 1-3 for each species. Conditions of the ratings are described below:

Rating	Coverage	Description
1		A few plants on rake head
2		Rake head is about ½ full Can easily see top of rake head
3		Overflowing Cannot see top of rake head

Rake Construction

Pictures of a rake are shown below, with potential vendors of the components indicated. (These are not endorsements of specific vendors.)



Pole Sampler
The rake sampler is made from two rake heads welded together, measuring 13.8 inches (35 centimeters) long with 14 teeth on each side. This example purchased from Menards with wooden poles attached and subsequently removed).

The handle is 8 ft (2.4 meters) in length, and should include a telescoping extension that results in a total handle length (from tip of rake head to fully extended end) of 15 feet (4.6 meters). This example was purchased from a pool supply company in Madison, WI (Bachmann Pool & Spas).

Rope Sampler
A similar rake head should be constructed for the rope sampler. At the point where the pole would be attached, tie on a rope or anchor line of at least 40 ft in length. If desired, attach a 5 lb weight to the top of the rake (away from the tines) or thread it on the rake rope. This example has a length of steel tubing welded to the rake head to serve as a handle through which is strung ~45 ft of climbing rope.

APPENDIX D

Reservoir Elevations During Survey Dates

Mosinee Hydroelectric Project impoundment operating levels for the dates of the 2011 invasive species survey (7/11/11 – 7/16/11) as confirmed by operation personnel were as follows:

Reservoir Elevations

7/11/11 – 1138.00' MSL
7/12/11 – 1137.55' MSL
7/13/11 – 1138.15' MSL
7/14/11 – 1137.65' MSL
7/15/11 – 1137.60' MSL
7/16/11 – 1137.70' MSL

Document Content(s)