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September 30, 2014

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Subject: 2014 Purple Loosetrife Monitoring Report
White River (P-2444), Superior Falls (P-2587), Hayward (P-2417), Big
Falls (P-2390-01), and Thornapple (P-2475)**

Dear Secretary:

Enclosed is a copy of the 2014 purple loosetrife monitoring report for the above-referenced hydro projects. The operating license issued by the Federal Energy Regulatory Commission (Commission) for each project directs Xcel Energy (licensee) to annually monitor project shorelines for purple loosetrife presence. The results are then documented and submitted to the resource agencies and the Commission.

This year's surveys were conducted in August during a period of peak loosetrife flowering. The results were then compared to previous surveys in order to determine any trends. Superior Falls, White River, and Big Falls continue to remain free of purple loosetrife. Loosetrife populations on Thornapple Flowage and Lake Hayward have remained quite stable over the last several years.

Should you have any questions regarding this report, please feel free to contact Matthew Miller of this office by telephone at (715) 737-1353 or by electronic mail at matthew.j.miller@xcelenergy.com.

Sincerely,

A handwritten signature in cursive script that reads 'William Zawacki'.

William Zawacki
Director, Hydro Plants

Enclosure: 2014 Purple Loosetrife Report

c: Nick Utrup - U.S. Fish and Wildlife Service (via e-mail)
Cherly Laatsch - Wisconsin DNR (via email)
Project Files

**2014 Purple Loosestrife Monitoring Report for Superior Falls
Flowage, White River Flowage, Lake Hayward, Big Falls Flowage
and Thornapple Flowage**

Xcel Energy

September 30, 2014

2014 Purple Loosestrife Monitoring At Superior Falls Flowage, White River Flowage, Lake Hayward, Big Falls Flowage And Thornapple Flowage.

1.0 INTRODUCTION

The operating licenses for the above-referenced hydro projects direct Xcel Energy (licensee) to develop a purple loosestrife (*Lythrum salicaria*) monitoring plan for project shorelines. The plans were developed in consultation with the Wisconsin Department of Natural Resources (WDNR), the U.S. Fish and Wildlife Service (USFWS), and the National Park Service (NPS). The plans require licensee to annually monitor project shorelines during the period of peak purple loosestrife biomass (late July through August). The following report is a summary of the surveys that were performed in August 2014 and includes a comparison with surveys from previous years.

2.0 METHODS

Superior Falls Flowage and White River Flowage were surveyed on August 6 and Lake Hayward on August 7, 2014. Project lands immediately downstream of the Hayward Dam were also surveyed. Big Falls and Thornapple flowages were surveyed on August 26, 2014. The survey dates coincided with peak flowering whereby purple loosestrife could easily be identified and documented for relative abundance. Field observations were conducted by boat with the aid of binoculars.

Shorelines infested with purple loosestrife were divided into two classes, either present or common and abundant. Areas categorized as present or common indicated a single plant or a few plants scattered along the shoreline. Those areas categorized as abundant indicated a large concentration of plants approaching a near monotypic stand. The areas of infestation were then documented on a bathymetric map and the length of infested shoreline was calculated with a planimeter. This method has a tendency to overestimate the amount of shoreline that is infested, as a single dot on the map often indicates just one plant. However, it does provide a reliable indication of the relative abundance of purple loosestrife and whether it is increasing or decreasing in coverage from year to year.

3.0 RESULTS

3.1 Superior Falls Flowage. No purple loosestrife was observed on Superior Falls Flowage which is consistent with previous surveys since monitoring began in 1998. A survey of flowage waters was also conducted for Eurasian Water Milfoil (*Myriophyllum spicatum*) and no plants were found. This is also consistent with past surveys.

3.2 White River Flowage. There was no purple loosestrife observed in 2014. No evidence of purple loosestrife has been found since monitoring began in 1998.

3.3 Lake Hayward. The presence and abundance of purple loosestrife on Lake

Hayward has been relatively stable over the last several years. Appendix A includes a survey map of Lake Hayward depicting the presence and abundance of loosestrife. This year's survey indicated a slight decrease in areas categorized as present or common. There were no areas classified as abundant this year. Of particular note this year was the lack of loosestrife in the vicinity of Smith Creek inlet. This area was virtually absent of loosestrife plants. Over the last several years, licensee has observed that many of the single plant infestations appear to be sporadic in nature as riparian owners often mow or cut down plants either inadvertently or intentionally. These single specimens can appear one year and not the next due to the actions of landowners.

Licensee is aware of annual purple loosestrife (and other invasive species) control efforts by the National Park Service (NPS) on Lake Hayward including the project tailwaters. This year's survey documented two plants located immediately below the spillway, the same as in 2013.

The table below summarizes the results of surveys from Lake Hayward since they began in 1997.

<u>Year</u>	<u>Shoreline Miles (Present or Common)</u>	<u>Shoreline Miles (Abundant)</u>
1997	0.3	0.70
1998	Shoreline coverage not determined	-
1999	1.08	0.25
2000	1.28	0.10
2001	1.13	0.19
2002	0.90	0.07
2003	0.10	0.07
2004	0.54	0.0
2005	0.54	0.0
2006	0.82	0.04
2007	0.80	0.04
2008	0.46	0.07
2009	0.47	0.06
2010	0.57	0.06
2011	0.63	0.06
2012	0.76	0.01
2013	0.72	0.00
2014	0.63	0.00

Licensee donated money to the Hayward High School's Environmental Studies class a number of years ago to initiate a biological control program for purple loosestrife on Lake Hayward. The class cooperated with the WDNR to secure a population of leaf-eating beetles (*Galerucella californiensis* or *G. pusilla*) which specifically targets purple loosestrife plants. The beetles were then transplanted to those areas with the greatest concentration of plants. Their efforts along with the NPS's annual chemical control appear to have been very successful, especially in those areas classified as abundant. Continued monitoring will help evaluate the long-term benefits of these control efforts.

3.4 Big Falls Flowage. There were no purple loosestrife plants found on the

shoreline of Big Falls Flowage. Purple loosestrife has never been documented since monitoring began in 1998.

3.5 Thornapple Flowage. The presence of purple loosestrife showed a modest decrease compared to 2013. Purple loosestrife was found to be present or common along 1.42 miles of shoreline this year compared to 1.94 miles in 2013. Approximately 0.03 miles of shoreline were categorized as abundant this year which is the same as the previous two years. The wetland areas near the middle of the flowage continue to account for the greatest concentration of loosestrife plants. See Appendix A for a survey map of Thornapple Flowage depicting the results of this year's monitoring.

Significant increases in purple loosestrife are unlikely due to a combination of past bio-control efforts and a lack of available habitat. Shoreline areas where pioneering plants were observed were often the result of a recent disturbance (lawn cutting, brush removal, etc.) along privately developed shorelines. In contrast, single specimens recorded in one year may be absent the next due to lawn mowing and other landscape activities, only to reappear the following year.

The table below summarizes the results from surveys conducted from 1998-2014 on the Thornapple Flowage.

<u>Year</u>	<u>Shoreline Miles (Present)</u>	<u>Shoreline Miles Common</u>	<u>Shoreline Miles (Abundant)</u>
1998		<i>Shoreline coverage not determined</i>	
1999	2.36	0.27	0.67
2000	1.64	-	0.70
2001	2.52	-	0.67
2002	2.52	-	0.48
2003	2.10	-	0.48
2004	2.33	-	0.45
2005	2.15	-	0.42
2006	1.76	-	0.39
2007	1.40	-	0.33
2008	1.30	-	0.15
2009	0.45	-	0.06
2010	0.79	-	0.00
2011	1.91	-	0.00
2012	1.42	-	0.03
2013	1.94	-	0.03
2014	1.42	-	0.03

In July of 2004, licensee cooperated with the Lake Holcombe Improvement Association (LHIA) to introduce a beetle population to the shorelines of the Thornapple Flowage that specifically targets purple loosestrife plants. Approximately 20,000 beetles were introduced in the wetland areas of the flowage where purple loosestrife densities have historically been highest. Earlier introductions of these beetles at licensee's Hayward and Holcombe projects have been met with great success. The overall decline of loosestrife presence and abundance indicates that the beetles have had a significant impact. Future surveys will hopefully continue to document this trend. Licensee will

continue to monitor purple loosestrife densities on the flowage throughout the term of the license.

4.0 CONCLUSION

Purple loosestrife was not observed on Superior Falls Flowage, White River Flowage or Big Falls Flowage in 2014. Lake Hayward has experienced a drastic decline in purple loosestrife since 2000 due to the introduction of a beetle population, which specifically targets the plant, and the NPS's annual invasive species control efforts. The overall loosestrife population on Lake Hayward has remained stable for the past 5 years.

Much of the Thornapple Flowage shoreline is scattered with purple loosestrife plants, with heavier concentrations confined to the wetland areas in the central portion of the impoundment. There has been a decline over the last decade, primarily in those areas classified as abundant, on Thornapple Flowage. Some of this is likely attributable to the biological control efforts of 2004. It may have taken several years for the beetle population to become well established, with their impact only now appearing over the last several years. Minor fluctuations in loosestrife presence from year-to-year can be expected due to the natural variability of weather and growing conditions. Overall, the Thornapple loosestrife population has remained quite stable over the last several years.

APPENDIX A

**2014 Purple Loosestrife Survey Maps for
Lake Hayward and Thornapple Flowage**

Annual Purple Loosestrife Monitoring August 7, 2014

LAKE Hayward Flowage
SECTION 26, 27
RANGE 9 W
TOWN Hayward
TOWNSHIP 41 N

This is the only hydrographic map of this lake available, produced from original charts of Dept. of Natural Resources — Madison

A U. S. Geological Survey Map is available from us showing the area (approx. 12 square miles) adjacent to this lake.

To order specify Hayward Quadrangle

SAWYER COUNTY

Map No. 5260

 Present or common

 Abundant

Areas of loosestrife present or common

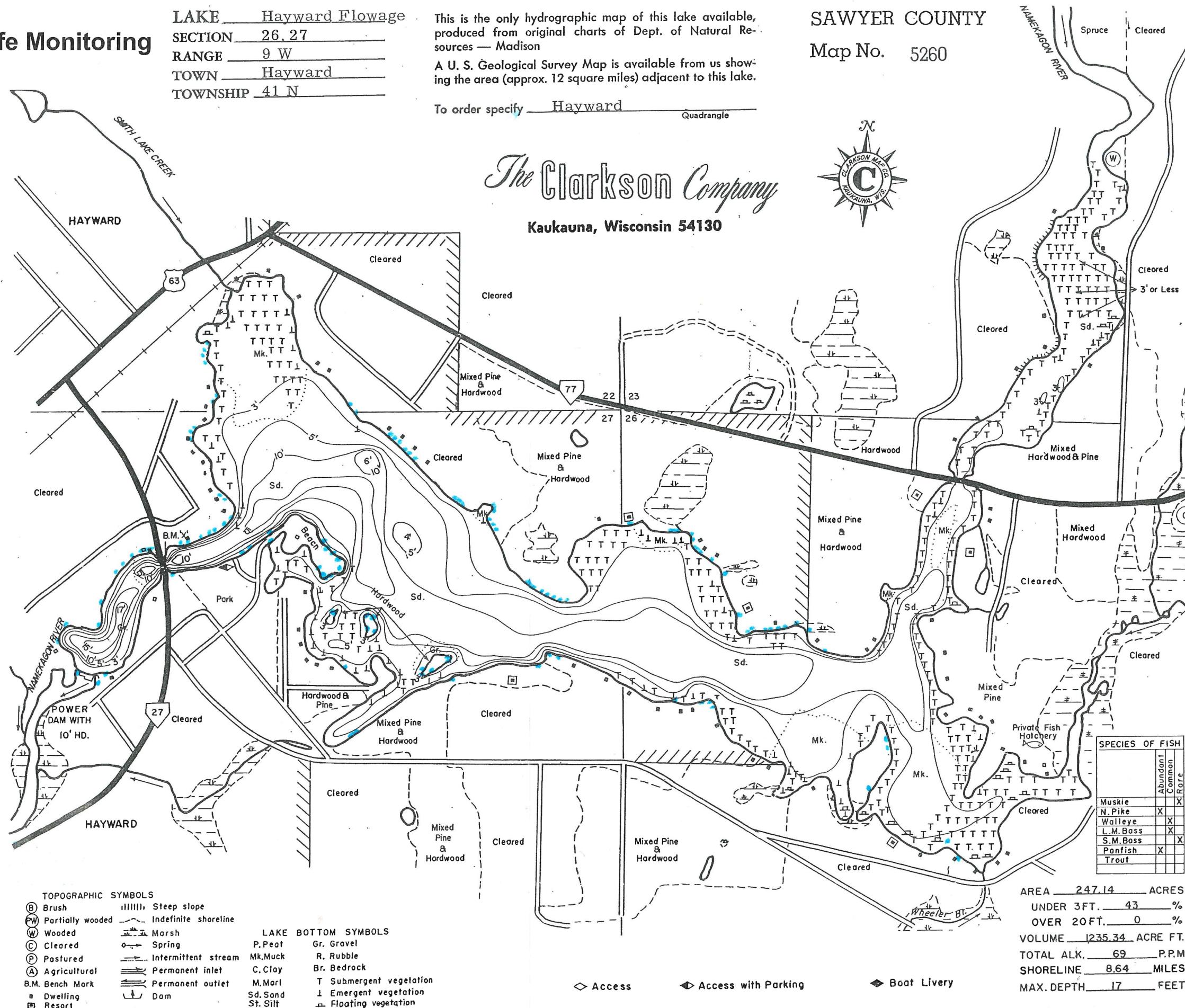
$$\frac{7.2 \text{ CLICKS}}{1 \text{ MILE}} = \frac{4.5 \text{ CLICKS}}{X}$$

$$X = 0.63 \text{ MILES} = 3326 \text{ FT.}$$

OR 7.3% OF SHORELINE

Areas of loosestrife abundant

NONE



The Clarkson Company

Kaukauna, Wisconsin 54130



SPECIES OF FISH	Abundant		Common		Rare	
	X		X		X	
Muskie					X	
N. Pike	X					
Walleye			X			
L.M. Bass			X			
S.M. Bass			X			
Panfish	X					
Trout						

- TOPOGRAPHIC SYMBOLS**
- (B) Brush
 - (PW) Partially wooded
 - (W) Wooded
 - (C) Cleared
 - (P) Pastured
 - (A) Agricultural
 - B.M. Bench Mark
 - Dwelling
 - Resort
 - ||||| Steep slope
 - ~ Indefinite shoreline
 - Marsh
 - Spring
 - Intermittent stream
 - Permanent inlet
 - Permanent outlet
 - Dam
- LAKE BOTTOM SYMBOLS**
- P. Peat
 - Mk. Muck
 - C. Clay
 - M. Marl
 - Sd. Sand
 - St. Silt
 - Gr. Gravel
 - R. Rubble
 - Br. Bedrock
 - T Submergent vegetation
 - ↓ Emergent vegetation
 - Floating vegetation

- ◇ Access
- ◀ Access with Parking
- ◆ Boat Livery

AREA 247.14 ACRES
 UNDER 3FT. 43 %
 OVER 20FT. 0 %
 VOLUME 1235.34 ACRE FT.
 TOTAL ALK. 69 P.P.M.
 SHORELINE 8.64 MILES
 MAX. DEPTH 17 FEET

Document Content(s)

20140930 Loosestrife Monitoring Report.PDF.....1-9