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FEDERAL ENERGY
COMMISSION

1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

2006 OCT -2 P 12: 23

September 28, 2006

Magalie Roman Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

ORIGINAL

Subject: Monitoring Results Of The 2006 Survey Of Purple Loosetrife Populations At The White River Project (FERC Project No. 2444), The Superior Falls Project (FERC Project No. 2587), The Big Falls Project (FERC Project No. 2390), The Thomapple Project (FERC Project No. 2475) And The Hayward Project (FERC Project No. 2417).

(1054) (1023)
051 053 060

Dear Ms Salas:

Enclosed is an original and eight copies of the 2006 purple loosetrife monitoring report for the above-mentioned projects as directed by the Federal Energy Regulatory Commission's (Commission) license orders. The license orders requires Northern States Power Company - Wisconsin (d.b.a. Xcel Energy) to perform annual surveys of project shorelines for the presence of purple loosetrife and to file the monitoring results with the Commission.

The above-mentioned flowages were surveyed during a period of peak biomass and an estimate of purple loosetrife densities were determined and compared to previous years' surveys. The 2006 monitoring results indicated that purple loosetrife populations have remained relatively stable over the last several years on the Thomapple Flowage and Lake Hayward. It is expected that purple loosetrife presence and abundance may be reduced on the Thomapple Flowage as the previous beetle introductions begin to take effect. Surveys of the Superior Falls Flowage, White River Flowage and the Big Falls Flowage indicated that purple loosetrife was not present.

If you have any questions in regards to this filing, please feel free to contact me by telephone at (715) 839-1353 or by electronic mail at robert.w.olson@xcelenergy.com.

Very truly yours,

Robert W. Olson
Hydro License Compliance Consultant

Attachment: 2006 Purple Loosetrife Monitoring Report

c: Ms. Louise Clemency (U.S. Fish and Wildlife Service)
Mr. Jeff Scheirer (Wisconsin DNR)
Project Files

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OFFICE OF THE
SECRETARY

2006 OCT -2 P 12:23

**2006 Monitoring Results Of Purple Loosestrife Surveys
Performed At The White River, Superior Falls, Big Falls,
Thornapple and Hayward Hydro Projects**

September 28, 2006

Monitoring Results Of Purple Loosestrife Surveys Performed On The White River Flowage, The Superior Falls Flowage, The Big Falls Flowage, The Thornapple Flowage And Lake Hayward.

1.0 Introduction

The operating licenses for the White River, Superior Falls, Big Falls, Thomapple and Hayward hydro projects directed the Licensee to develop a purple loosestrife (Lythrum salicaria) monitoring plan for project shorelines. The plans were developed with input from the Wisconsin Department of Natural Resources (WDNR), the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS). The plans involve annual monitoring of project shorelines during a period of peak purple loosestrife biomass (late July through August). The following report is a summary of the surveys that were performed during the 2006 field season and comparisons made to the results of surveys from previous years.

2.0 Methods

The shorelines of the Superior Falls and White River Flowages were surveyed on August 22, 2006. The Hayward, Big Falls and Thomapple Flowages were surveyed on August 23, 2006. The survey dates coincided with the time of maximum flowering where purple loosestrife could be easily identified and surveyed for relative abundance. The project lands downstream from the Hayward Hydro Project were also surveyed.

Project shorelines were classified to indicate whether purple loosestrife was absent, present or abundant. Present indicated a light scattering of a few plants over an area, and in most cases, presence was limited to only an individual plant. Abundant indicated a dense growth of numerous plants over an area. Absent indicated that no purple loosestrife plants were present. Using these determinations of infestation, purple loosestrife locations were mapped on bathymetric maps and an estimate of shoreline miles occupied determined using a planimeter. This method overestimates the amount of shoreline where loosestrife is present, as a single dot from a highlighting pen covers a much larger area on the map than the individual plant. However, the method has been used consistently over the survey period and provides for a reliable and consistent means for comparing changes in loosestrife populations from year to year.

3.0 Results

3.1 White River Flowage. Purple loosestrife plants were not found on the shorelines of the White River Flowage. This was similar to the findings from surveys conducted between 1998-2005.

3.2 Superior Falls Flowage. The shorelines of the flowage were absent of any purple loosestrife plants, which was similar to the findings from surveys conducted between 1998-2005. In addition to the purple loosestrife surveys, a survey of flowage waters for

Eurasian milfoil (Myriophyllum spicatum) was conducted and no plants were observed. This is consistent with the results from previous surveys.

3.3 Big Falls Flowage. There were no purple loosestrife plants found on the shorelines of the Big Falls Flowage. Again, this was similar to the results of the previous surveys conducted between 1998-2005.

3.4 Thomapple Flowage. A number of purple loosestrife plants were found to be growing on the shorelines of the Thomapple Flowage (*Figure 1*). The majority of plants appear largely concentrated in the wetland area in the middle part of the flowage and in some of the small backwater areas surrounding the flowage. Otherwise, purple loosestrife was present throughout much of the flowage shoreline as scattered pioneering plants. Many of the scattered plants were located on shorelines where lakefront homes and lawns had caused a disturbance to the natural shoreline.

During the 2006 survey, purple loosestrife was found to be present on 1.76 miles of shoreline or 23.1% of the shoreline. Purple loosestrife's presence on the flowage in 2006 decreased slightly from 2.15 miles in 2005. Areas of shoreline with populations that were considered abundant were 0.39 miles, which was similar to the 0.42 miles identified in the 2005 survey. A summary of the findings from previous surveys that were performed on the Thomapple Flowage is included below:

<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

The limited overall change in presence and abundance of loosestrife indicates that the plants have likely reached their peak numbers, which is limited by suitable growing conditions. Many of the pioneering plants don't appear to be exceptionally healthy as the shoreline areas where these plants are located are more upland, with steep shoreline banks, that don't provide suitable growing conditions for abundant loosestrife populations. The wetland areas have greater populations of loosestrife plants.

In July of 2004, Licensee cooperated with the Lake Holcombe Improvement Association (LHIA) to introduce a beetle population to the shorelines of the Thomapple Flowage that specifically targets purple loosestrife plants. These beetles have been introduced at the Licensee's Hayward and Holcombe Projects in past years with great success. An estimated 20,000 beetles were introduced in the wetland area in the middle part of the flowage where the highest densities of purple loosestrife exist. It is hoped that the beetles will be successful in establishing themselves over the next several years and

that purple loosestrife abundance will be significantly reduced. The heavy infestation area of purple loosestrife is a likely seed source for the rest of the flowage as well as the Thornapple Project tailwaters. It is expected that the success of the beetle introductions will be more pronounced in the 2007 survey. Licensee will continue to monitor purple loosestrife presence and abundance through the term of the new license.

3.5 Lake Hayward. The presence and abundance of purple loosestrife on Lake Hayward has increased slightly over the last several years of the survey. Purple loosestrife plants had historically been very prevalent in some shoreline areas on Lake Hayward.

The 2002 survey had found a significant reduction in loosestrife presence and abundance. During the 2002 survey, observations made in some of the areas that have historically been heavily infested with loosestrife, indicated that there were many skeletal remains of loosestrife from previous years, although the abundance of live plants appeared to be significantly reduced. During the 2003 survey, Licensee intensely searched the shoreline for loosestrife plants, as areas that had abundant populations in the past were almost non-existent. The 2004 survey indicated that purple loosestrife coverage had increased slightly, although it was not found in abundant populations. In 2005, a total of 0.54 miles of shoreline had purple loosestrife present, and there were 0.04 miles of shoreline where purple loosestrife was considered abundant. This was a slight increase from the 2004 survey. The miles of shoreline where purple loosestrife was present increased to 0.82 miles although the miles of shoreline where it was classified as abundant remained the same. The native vegetation has repopulated the areas that had been displaced by purple loosestrife where it had been historically found in abundance.

The following table summarizes the results of surveys performed on Lake Hayward from 1997 to the present.

Year	<u>Shoreline Miles (Present)</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	0.0
2004	0.54	0.0
2005	0.54	0.04
2006	0.82	0.04

The main areas of purple loosestrife infestation on Lake Hayward have been concentrated in the northwest section of the flowage at the mouth of Smith Lake Creek. This infestation has been reduced to a scattering of small purple loosestrife plants that became more numerous from the 2004 and 2005 surveys. Project lands on the

Namekagon River immediately downstream from the Hayward Dam were also surveyed and no loosestrife plants were found. Licensee is aware of control efforts that the National Park Service is conducting in the Hayward Project tailwaters.

Licensee donated money to the Hayward High School's Environmental Studies class several years ago to initiate a biological control program for purple loosestrife on Lake Hayward. The class cooperated with the WDNR to secure beetles for transplantation on the shoreline. Their efforts appear to have been very successful over the last several years in significantly reducing the quantity of purple loosestrife present on the shorelines of Lake Hayward despite a gradual increase in its presence. Continued monitoring will help determine the long-term success of the beetle introduction.

4.0 Conclusion

Purple loosestrife was not present on the White River Flowage, the Superior Falls Flowage or the Big Falls Flowage. The Thornapple Flowage shorelines are scattered with purple loosestrife plants, although there are heavier densities in a few of the wetland areas where growing conditions are more suitable. The number of pioneering plants appears to be constant from earlier surveys. The areas around the Thornapple Flowage that have steeper slopes at the shoreline have limited purple loosestrife presence and abundance. The abundant populations found in several areas on the Thornapple Flowage are significant enough that they are a good seed source for spreading to unpopulated shorelines as well as the downstream river sections. It is expected that the beetle introduction on the Thornapple Flowage will eventually have a similar outcome to the introductions on Lake Hayward.

Lake Hayward has experienced a drastic decline in purple loosestrife over the past several years due to the introduction of a beetle population, which specifically targets the plant. The plants have increased slightly in abundance since 2004. The long-term effectiveness of the beetle's introduction will be determined in subsequent surveys.

H:\reference\purpleloosestrife\2006LoosestrifeReport.doc

Purple Loosestrife Survey - 2006

* Flowage shoreline was surveyed on August 23, 2006

LAKE Thornapple Flow
 SECTION 18, 19, 22, 23, 24
 RANGE 6, 7 W
 TOWN Thornapple
 TOWNSHIP 34 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 Thornapple Quadrangle

RUSK COUNTY

MAP NO.

5129

Density Classification

Abundant

Common



LEGEND

TOPOGRAPHIC SYMBOLS

- BRUSH REFUGE ----- ⊕
- SAPPING TANGLE ----- W
- SPAWNING BOX ----- □
- MINNOW SPAWNER ----- *
- WEED BED ----- ⊙
- ROCKY SHOAL ----- ⊙
- DWELLING ----- ■
- ABANDONED DWELLING ----- □
- RESORT ----- □
- STEEP SLOPE ----- ≡≡≡
- SPRING ----- ○
- INTERMITTENT INLET ----- →
- BRUSH ----- ⊙
- WOODED ----- W
- PASTURED ----- P
- CULTIVATED ----- C
- ENCROACH. SHORE ----- ⊙
- PERMANENT INLET ----- →
- PERMANENT OUTLET ----- ←
- MARSH ----- ⊙
- PARTIALLY WOODED ----- PW
- CLEARED ----- C
- BENCH MARK ----- B.M.

LAKE BOTTOM SYMBOLS

- PULPY PEAT ----- P
- MUCK ----- K
- CLAY ----- C
- SAND ----- S
- RUBBLE ----- R
- EMERGENT VEG. ----- L
- FIBROUS PEAT ----- F
- DETRITUS ----- D
- MARL ----- M
- GRAVEL ----- G
- BEDROCK ----- Br.
- SUBMERGENT VEGET. ----- T

Area of Purple Loosestrife Present

$\frac{2.5 \text{ clicks}}{4,000 \text{ ft.}} = \frac{5.8 \text{ clicks}}{x}$

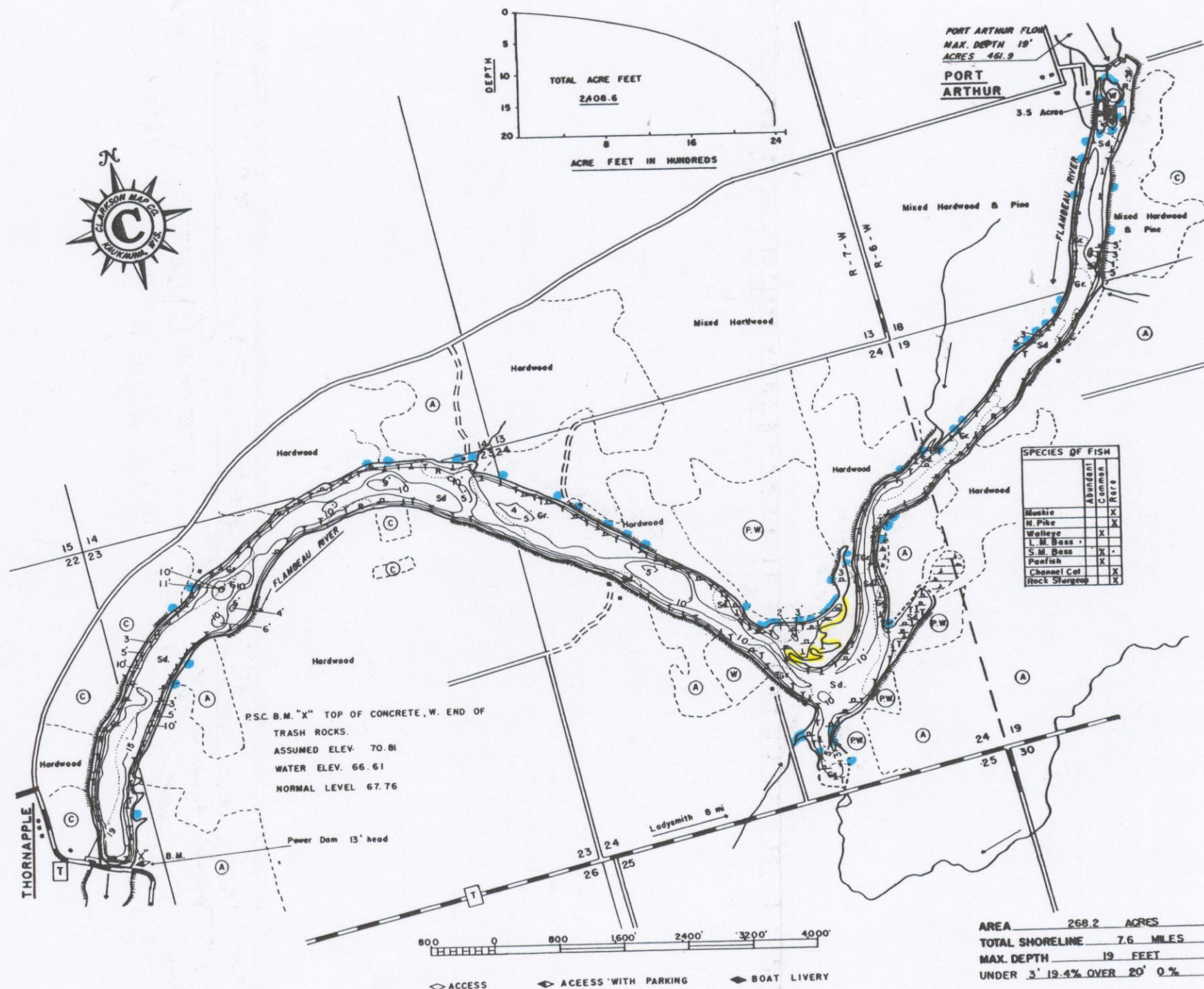
$x = 9,280 \text{ feet or } 1.76 \text{ miles of Shoreline (23.1\% of shoreline)}$

Area of Purple Loosestrife Abundant

$\frac{2.5 \text{ clicks}}{4,000 \text{ ft.}} = \frac{1.3 \text{ clicks}}{x}$

$x = 2,080 \text{ feet or } 0.39 \text{ miles of Shoreline (5.2\% of shoreline)}$

Figure 1



CLARKSON MAP CO.

724 DESNOYER STREET
 Kaukauna, Wisconsin 54130

Public 061023-0099-001

Purple Loosestrife Survey - 2006

* Flowage shoalines were surveyed on August 23, 2006

Density Classification

Abundant

Common

1 mile = 7.2 clicks

Area of Purple Loosestrife Present

$\frac{7.2 \text{ clicks}}{1 \text{ mile}} = \frac{5.9 \text{ clicks}}{x \text{ miles}}$

$x = 0.82 \text{ miles or } 4,327 \text{ feet of shoreline (9.5\% of shoreline)}$

Area of Purple Loosestrife Abundant

$\frac{7.2 \text{ clicks}}{1 \text{ mile}} = \frac{0.3 \text{ clicks}}{x \text{ miles}}$

$x = 0.04 \text{ miles or } 220 \text{ feet of shoreline (0.46\% of shoreline)}$

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.

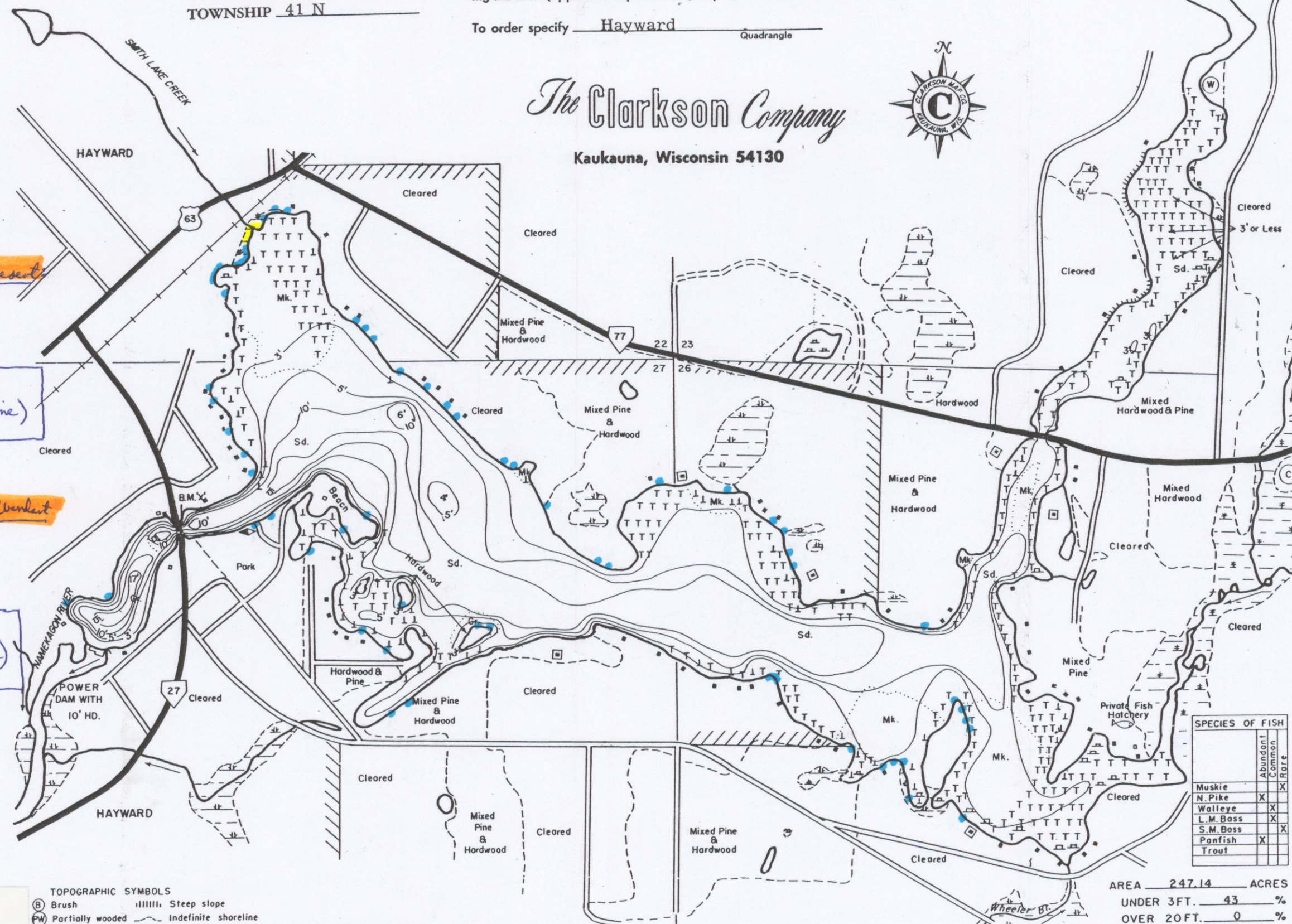
To order specify Hayward Quadrangle

SAWYER COUNTY

Map No. 5260

The Clarkson Company

Kaukauna, Wisconsin 54130



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

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

- 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
 - o 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

Figure 2

061023-0099-002