

ORIGINAL



North American Hydro Holdings, LLC.

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December 26, 2012

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

FILED
SECRETARY OF THE
COMMISSION
2013 JAN -2 A 11:29
FEDERAL ENERGY
REGULATORY COMMISSION

**RE: Oconto Falls Upper - FERC P-2523
NEW Hydro LLC
Article 407 - 2012 Purple Loosestrife and Eurasian Watermilfoil Inventory**

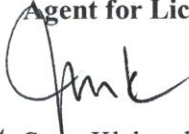
Dear Secretary:

On behalf of NEW Hydro LLC., North American Hydro Holdings hereby submits the 2012 Purple Loosestrife and Eurasian Watermilfoil Inventory in accordance with Article 407 of the project License. Please find attached (1) original and (8) copies of the report.

Copies of the inventory have been sent to the WDNR and USFWS. Their response comments are also attached as a part of this submittal. To address the WDNR comments, the Licensee has included two GPS locations where Curly Leaf Pondweed (CLP) was observed during the survey. CLP is not currently a part of our prescribed plan however if CLP is observed the information is logged and has been included with this report as a courtesy.

If you have any questions regarding this submittal please contact Mr. Jereme Klassy at 920-293-4628 (ext 322) or email at Jklassy@nahydro.com.

Sincerely,
North American Hydro Holdings
Agent for Licensee


for Scott Klabunde
Executive Vice President of Operations

Attachments: 2012 Purple Loosestrife and Eurasian Watermilfoil Inventory
Email Comments from WDNR - December 5, 2012
Email Comments from USFWS - November 27, 2012

CC: Cheryl Laatsch - WDNR
Nick Utrup - FWS

Wisconsin Department of Natural Resources

(☎) phone: (920) 662-5117

(☎) fax: (920) 662-5498

(✉) e-mail: andrew.hudak@wisconsin.gov

From: Laatsch, Cheryl - DNR

Sent: Tuesday, December 04, 2012 2:05 PM

To: Hudak, Andrew J - DNR

Cc: McLennan, Robin - DNR

Subject: FW: Oconto Falls Upper 2012 PL and EWM inventory

Send me comments ASAP. Thanks

Cheryl Laatsch, Water Mgt Specialist

Horicon DNR

N7725 HIGHWAY 28

HORICON WI 53032

(920) 387-7869

e-mail: Cheryl.laatsch@wisconsin.gov

Website: dnr.wi.gov

www.facebook.com/WIDNR

From: Jereme Klassy [<mailto:jklassy@nahydro.com>]

Sent: Tuesday, November 27, 2012 3:26 PM

To: Laatsch, Cheryl - DNR; Nick_Utrup@fws.gov

Subject: Oconto Falls Upper 2012 PL and EWM inventory

Nick and Cheryl,

Please find your attached copies of the 2012 PL/EWM survey report. The 2012 survey results show a decline in the population for both EWM and PL. Please review the report and email me your comments by **December 27, 2012** so they can be included in final report that will be submitted to the FERC by December 31, 2012. Thank you for your attention to this matter and I look forward to continuing our cooperative efforts to develop more effective measures to control AIS.

Jereme Klassy

Regulatory/Compliance



North American Hydro

116 State Street, P.O. Box 167

Neshkoro, WI 54960 USA

Tel: 920-293-4628

Cell: 920-765-0713

Jereme Klassy

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Thursday, December 06, 2012 4:09 PM
To: Jereme Klassy
Subject: FW: Oconto Falls Upper 2012 PL and EWM inventory

See comments below. Let me know if you wanna discuss or set up a conf call with regional staff. ☺

Cheryl Laatsch, Water Mgt Specialist

*Horicon DNR
N7725 HIGHWAY 28
HORICON WI 53032
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e-mail: Cheryl.laatsch@wisconsin.gov
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From: Hudak, Andrew J - DNR
Sent: Wednesday, December 05, 2012 2:31 PM
To: Laatsch, Cheryl - DNR
Cc: McLennan, Robin - DNR
Subject: RE: Oconto Falls Upper 2012 PL and EWM inventory

Comments on PL and EWM Survey-

- 1) Based on the information of potential sources from PLS, I have sent a copy of the report to Amanda Strick at Oconto County who is the County AIS coordinator. She should be able to work with the Highway Department to address PLS in the Hwy 32 ROW which could help control this source.
- 2) If data is collected on Curly leaf pondweed, I would request that this information is included with the report.
- 3) The state accepted monitoring protocol for submerged aquatic plant growth is the point intercept method. A consideration to update the method for EWM monitoring should be made for future years to stay current with the state sampling protocol.
- 4) Has there been any issue with power generation caused by EWM or CLP?
- 5) A revision to their PLS and EWM monitoring requirement should include that during annual PLS and EWM surveys, a general observation for other NR 40 listed species was conducted and included in the report. The Department should be notified of any new infestations and should be included with the annual report.

Let me know if you have any questions

 *Andrew Hudak*
Water Resources Management Specialist
Bureau of Watershed Management

Jereme Klassy

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Tuesday, November 27, 2012 3:51 PM
To: Jereme Klassy
Subject: Re: Oconto Falls Upper 2012 PL and EWM inventory

Jereme,

The USFWS will not be providing any comments on the Oconto Falls Upper 2012 PL and EWM inventory.

Nick

Nicholas J. Utrup
U.S. Fish and Wildlife Service
Wisconsin Ecological Services Office
2661 Scott Tower Drive
New Franken, WI 54229

Office: (920) 866-1736
Cell: (920) 530-9937
FAX: (920) 866-1710
Email: Nick_Utrup@fws.gov

On Tue, Nov 27, 2012 at 3:25 PM, Jereme Klassy <jklassy@nahydro.com> wrote:

Nick and Cheryl,

Please find your attached copies of the 2012 PL/EWM survey report. The 2012 survey results show a decline in the population for both EWM and PL. Please review the report and email me your comments by **December 27, 2012** so they can be included in final report that will be submitted to the FERC by December 31, 2012. Thank you for your attention to this matter and I look forward to continuing our cooperative efforts to develop more effective measures to control AIS.

Jereme Klassy

Regulatory/Compliance

North American Hydro

116 State Street, P.O. Box 167

The 2012 Purple Loosestrife & Eurasian Watermilfoil Inventory
For the
Oconto Falls Upper Hydroelectric Project
Oconto County, Wisconsin
FERC Project #2523 License Article 407



Prepared For
Northeast Wisconsin Hydro, LLC

2012 Final Report

Prepared By
North American Hydro, LLC
Neshkoro, Wisconsin 54960

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APPENDIX A – Purple Loosestrife Survey Results and Maps

APPENDIX B – Eurasian Watermilfoil Survey Results and Maps

APPENDIX C – Curly Leaf Pondweed – GPS Locations from 2012 Survey

Purple Loosestrife:

On August 8, 2012 and August 9, 2012, NEW Hydro, LLC (*Licensee*) performed an inventory of purple loosestrife plants at the Oconto Falls Upper Project in Oconto County, Wisconsin. The inventory is a requirement of license article 407 for the project. The method of inventory as approved and modified by the Federal Energy Regulatory Commission (FERC) Order of November 19, 1999 was defined as follows:

After Purple Loosestrife has bloomed in mid July to early August, the inventory should be conducted using a boat to survey the impoundment above the dam and on foot or by boat below the dam. County wetland maps will be used to determine other areas where Purple Loosestrife could be found on lands owned by NEW within the Project Boundary. These areas will be surveyed on foot. A pair of binoculars should be used to search for the purple flowered spikes of the plant. When plants are located, the person(s) inventorying should get close enough to make a positive identification without disturbing the plants or the immediate area around the plants as this could cause them to spread. A GPS receiver will be used to establish a GPS coordinate for the location of the plants. If it is not possible to get close enough to establish an accurate location, an approximate location will be established with reference to an established GPS coordinate. The plant should be inventoried by marking and numbering the location on a lake map along with notes approximating size of plants, stand area, percent cover, stem density, plant density, and location with reference to established GPS coordinates. Photos and/or videotape will be taken of the largest occurrences.

Example:

#1 6' tall plants; 4' X 20'; 30% cover; 4 – 5 stems per plant; 4 plants; on shoreline N44° 52.9092' E88° 10.0000'; no photo

#2 5' - 7' tall plants; 10' X 10'; 25% cover; 4 – 5 stems per plant; in marsh 50 feet bearing 25° from N44° 52.5092' E88° 10.0000'; photo No. 1

The area to be inventoried shall be the shoreline and lands owned by NEW within the Project Boundary as indicated on the Project Boundary map included as Exhibit G of NEW Hydro, Inc. Application For New License for the Oconto Falls Hydroelectric Project FERC Project #2523. The Project Boundary is shown as the water and shoreline of the impoundment from approximately 6000' upstream of the State Highway 32 bridge to approximately 500' downstream of the Project dam.

General Observations – (PL):

In August, 2012, a meandered survey for purple loosestrife (*Lythrum salicaria*), was performed at the Oconto Falls Upper Hydroelectric Project in Oconto County, Wisconsin. The purpose of the survey is to inventory all purple loosestrife growing within the project boundaries. The survey was conducted using a boat on project waters and by land on project owned property.

Weather conditions at the time of the survey were favorable with ample sun and moderate wind speeds creating ideal conditions for the survey. During the survey purple loosestrife (PL) was located within the project boundary, but densities were once again reduced from the previous year's survey totals.



Photo of site #OFUP PL001 from the 2012 survey.

For the purple loosestrife survey, the Oconto Falls Upper Project Boundary was divided into four distinctly different areas; **the tailrace** (from the dam to 500' immediately downstream of the dam on the east end of the impoundment), **the main basin** (from the dam to 2 miles upstream of the dam where the river narrows), **the headwaters** (from 2 miles upstream of the dam where the river narrows to the western point of the project boundary ~6,000 feet upstream of the Highway 32 bridge), and **outlying project owned lands**.

The tailrace was surveyed on foot and was found to contain no visible purple loosestrife plants.

The main basin was surveyed by boat and was found to contain no visible purple loosestrife plants.

The headwaters were surveyed by boat. Four occurrences of purple loosestrife plants were observed in this area. Details and locations are noted in Appendix A of this report. One of these occurrences appears to be on project owned land and is so noted.

The outlying project owned lands were first researched using aerial wetland maps to determine the areas conducive to purple loosestrife growth. These areas were then surveyed on foot and were found to contain no visible purple loosestrife plants.

A comparison of PL quantities from all sites within the Oconto Falls project beginning in 2011 to 2012 resulted in the following;

In 2011 there were a total of six PL sites containing approximately 47 plants versus only four PL sites with only 22 plants in 2012. Of the four sites located in 2012, three contained damage from Galerucella beetles (Cella) and one was undetectable due to its location on private property.

During the inventory, a digital camera has been used to document occurrences of purple loosestrife as noted in the survey comments at the end of this report.

At the Oconto Falls project there are approximately eighteen sites where purple loosestrife is known to exist or did exist and has been eradicated. Of all the PL locations within the project only one, GPS point OFUP PL001 has had a long history of having consistent stands of PL growing annually at the site. The site is surrounded by a slough adjacent to the river and is located on property owned by NEW Hydro LLC. The slough is surrounded by dense woodland cover and makes an ideal environment for PL to prosper. This site has been monitored since 2000 and has been treated with a WDNR approved herbicide beginning in 2003 through 2011. Biological control in the form of Galerucella beetles (Cella) have been positively identified on plants beginning in 2007. The 2012 survey results indicated a total of only two plants (less than 1' tall) were located at the site. It should be noted that unusually dry weather conditions in 2012 appeared to be unfavorable for optimum PL growth.

To this point, PL densities at the Oconto Falls project continue to decline in size from the baseline survey conducted in 2000. Hand pulling of PL plants, chemical treatment (on project owned lands), and the established biological control in the

form of Cella beetles have all combined to be successful in controlling PL at the project. However, it should be noted that the licensee has no control in preventing the spread of PL from outside sources. An example of potential spreading could be the large amount of PL growing in the State Highway 32 right-of-way just south of the Oconto River Bridge. Water run-off in this area appears to flow to the river, which could bring PL seed into the impoundment and continue the spread of this invasive species within the river system.

Eurasian Watermilfoil:

On August 8, 2012 and August 9, 2012, NEW Hydro, LLC (*Licensee*) performed an inventory of Eurasian Watermilfoil plants (EWM) at the Oconto Falls Upper Project in Oconto County, Wisconsin. The inventory is a requirement of license article 407 for the project. The method of inventory as approved and modified by FERC Order of November 19, 1999 was defined as follows:

"After Eurasian Watermilfoil has developed in mid July to early August, the inventory should be conducted by boating transects in the impoundment above and below the dam. Number and locations of transects will be determined at the time of the first inventory and appropriately marked on the inventory lake map. A GPS receiver will be used to establish GPS coordinates for the beginning and endpoints of the transects. The person(s) inventorying should visually search areas with depths of 12 feet or less for the dense mats of the plants on and below the water surface. When plants are located, the person(s) inventorying should get close enough to make a positive identification without disturbing the plants or the immediate area around the plants as this could cause them to spread. If necessary, a sample may be taken for identification later. The plant should be inventoried by marking and numbering the location on a lake map along with notes approximating area that they cover, perimeter of bed, mat density, overall mat thickness, and location with reference to the GPS coordinates. Photos and/or videotape will be taken of the largest occurrences".

Example:

#1 40' X 20'; 3' depth; perimeter N44° 52.8925' E88° 10.0000'
N44° 52.8860' E88° 10.0000', N44° 52.8860' E88° 09.9953', N44°
52.8925' E88° 09.9953'; 50% density; 3' thick; no photo

#2 8' X 10'; 10' depth; N44° 52.9008' E88° 10.0000', N44° 52.8995'
E88° 10.0000', N44° 52.8995' E88° 09.9980', N44° 52.9008' E88°
09.9980'; 25% density; 8' thick; photo No. 1

The area to be inventoried shall be that within the Project Boundary as indicated on the Project Boundary map included as Exhibit G of NEW Hydro, Inc. Application for New License for the Oconto Falls Hydroelectric Project FERC Project #2523. The project boundary is shown as the water and shoreline of the impoundment from approximately 6000' upstream of the State Highway 32 bridge to approximately 500' downstream of the Project dam.

General Observations – (EWM):

Monitoring for Eurasian Watermilfoil (EWM) at the Oconto Falls Project began in 2000. Data has been collected annually on EWM distribution throughout the project. Eight transects sites, established in 2000 have been sampled annually through 2012 along with annual inspections of project waters where EWM mats/beds are visually located and GPS points and tracks are used to distinguish their outline. Details and locations are noted in Appendix B of this report.

Annual reports have shown that EWM has been found growing in the waters of the Oconto Falls project in all survey years. Results of the 2012 survey indicate densities of EWM declined from previous years. The decline may be attributed weather conditions and water levels at the project in 2012.

For Eurasian Watermilfoil survey, the Oconto Falls Upper Project was divided into three areas: the **tailrace** (from the dam to 500' immediately downstream of the dam on the east end of the impoundment), the **main basin** (from the dam to 2 miles upstream of the dam where the river narrows), and the **headwaters** (from 2 miles upstream of the dam where the river narrows to the western point of the project boundary – 6,000 feet upstream of the Highway 32 bridge).

Eurasian Watermilfoil plants were found in the **tailrace** of the Oconto Falls project. An area of established plants was located below the County Highway CC Bridge. The plants were dispersed in a shallow area and were not considered a mat or bed of EWM.

Eight transects were established in the **main basin** in 2000 with sample points at 1.5', 5', and 10' depths. Each sample point of each transect was an 8' circle divided into quadrants. Each quadrant was sampled using a survey rake. If the teeth of the rake contained less than 50% Eurasian Watermilfoil, a rating of (1) was assigned, and if 50% or more, a rating of (2) was assigned. A (0) was used if no EWM was found. In addition, areas of weed growth were searched while skirting the perimeter of the weed beds and shoreline.

No Eurasian Watermilfoil was detected at sampling locations with depths greater than 5'. The occurrences at 5' depth and less were easily identified without the use of dredging techniques, as the plants had grown to the surface and most had reddish tops.

In past years, some sampling points did not yield any Eurasian Watermilfoil plants, although there may have been some plants floating on the surface and/or growing from the bottom within 25' of the sampling point. In 2002, a column was added to the Survey Transects spreadsheet in Appendix B of this report to show these observations.

Since 2000, a total of fourteen mats/beds containing Eurasian Watermilfoil have been identified within the project boundary. No new mats were found in 2012. Mats #1 through #4 were first identified in 2000. Mat #5 was found in 2001. Mats #6 and #7 were found in 2003. Mat #8 was found in 2005. Mats #9 through #11 were found in 2006. Mat #12 was found in 2008. Mats #13 and #14 were found in 2009. All fourteen mats/beds were discovered visually. All of these mats were interspersed with other types of aquatic plants and all of them had Eurasian Watermilfoil densities as noted in the survey comments in Appendix B of this report. Mats #1 through #10 are located in the **main basin**. The **headwaters** contain mats #11, #12, #13, and #14.

Each year during the survey the furthest upstream infestation of EWM is noted in the annual report. Since the baseline was established in 2000, EWM has made a constant progression upstream. In 2012, the furthest upstream infestation that could be located was at GPS point W088°12.128'. This location has receded from the previous year.

Eurasian Watermilfoil weed densities, overall, decreased dramatically from 2011 to 2012. Mat size, in 2012, has also decreased substantially with some EWM mats not being located at all.

Floating segments of Eurasian Watermilfoil were found during the survey, so special attention was paid to each of the boat landings. All public boat landings located within the project boundaries were inspected for EWM and all were found to have individual strands or broken fragments of EWM on the launch ramp. The canoe takeout located near the Highway 32 Bridge was checked and no EWM was found at that location.

Miscellaneous:

Curly-Leaf pond weed (CLP) was once again observed during the 2012 survey of the Oconto Falls project. GPS locations of these sites were recorded during the survey, but are not a requirement of the operating license. These locations will be provided to the Agencies by the Licensee upon request.

Previous to initially launching into Oconto Falls Upper Hydroelectric Project waters, the survey boat and survey equipment were treated with a bleach solution to prevent the 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 and any water remaining in the hull was drained.

APPENDIX A

Purple Loosestrife Survey Results and Maps

Oconto Falls Upper, Purple Loosestrife Location Map 2012

Oconto Falls WI, FERC #2523 (Map - West)



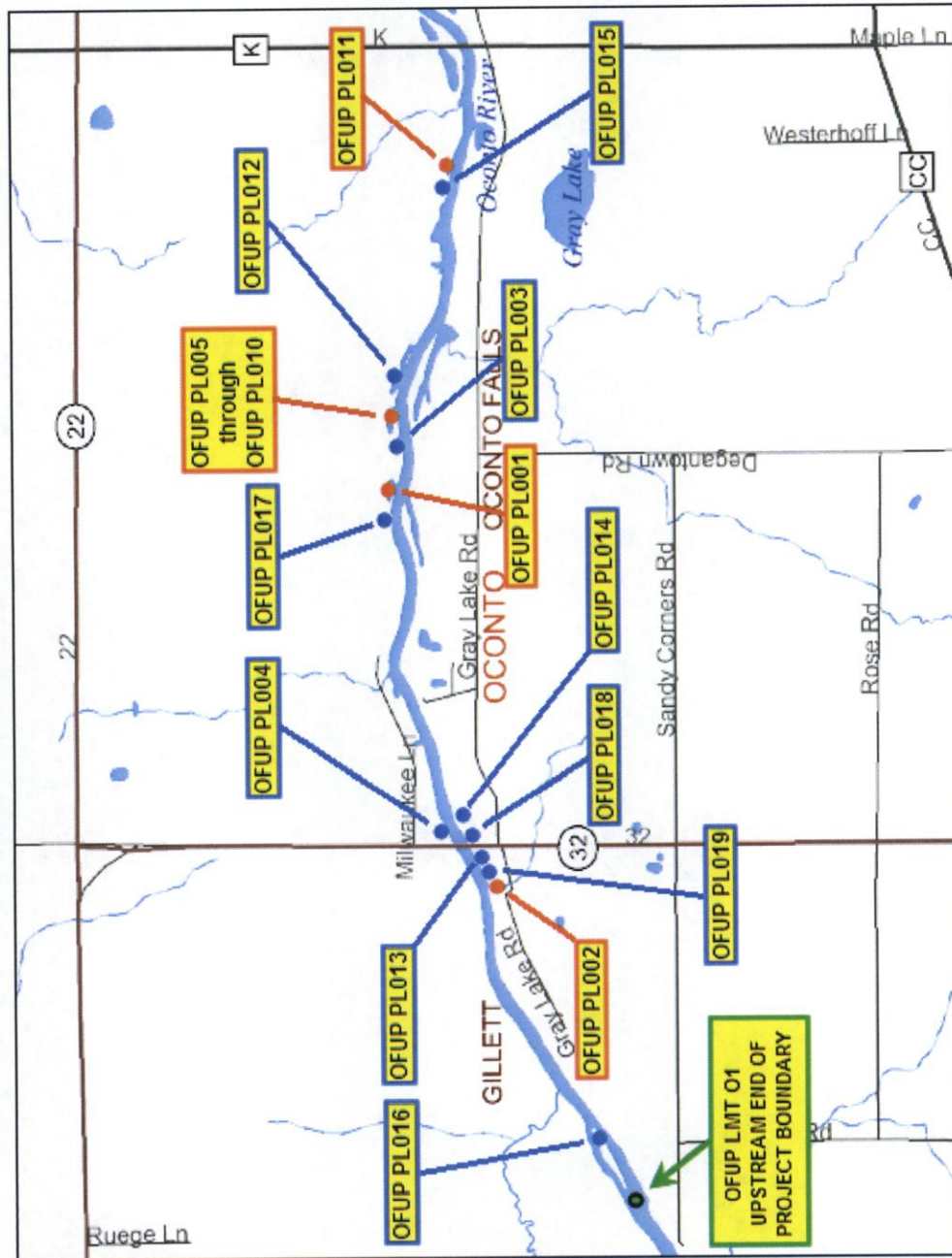
Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Intermittent
- Fluctuating
- Perennial
- Cities and Villages
- Village
- City

Purple Loosestrife
Observed in 2012

Purple Loosestrife
Observed in
Previous Years and
not in 2012

Scale: 1:25,671

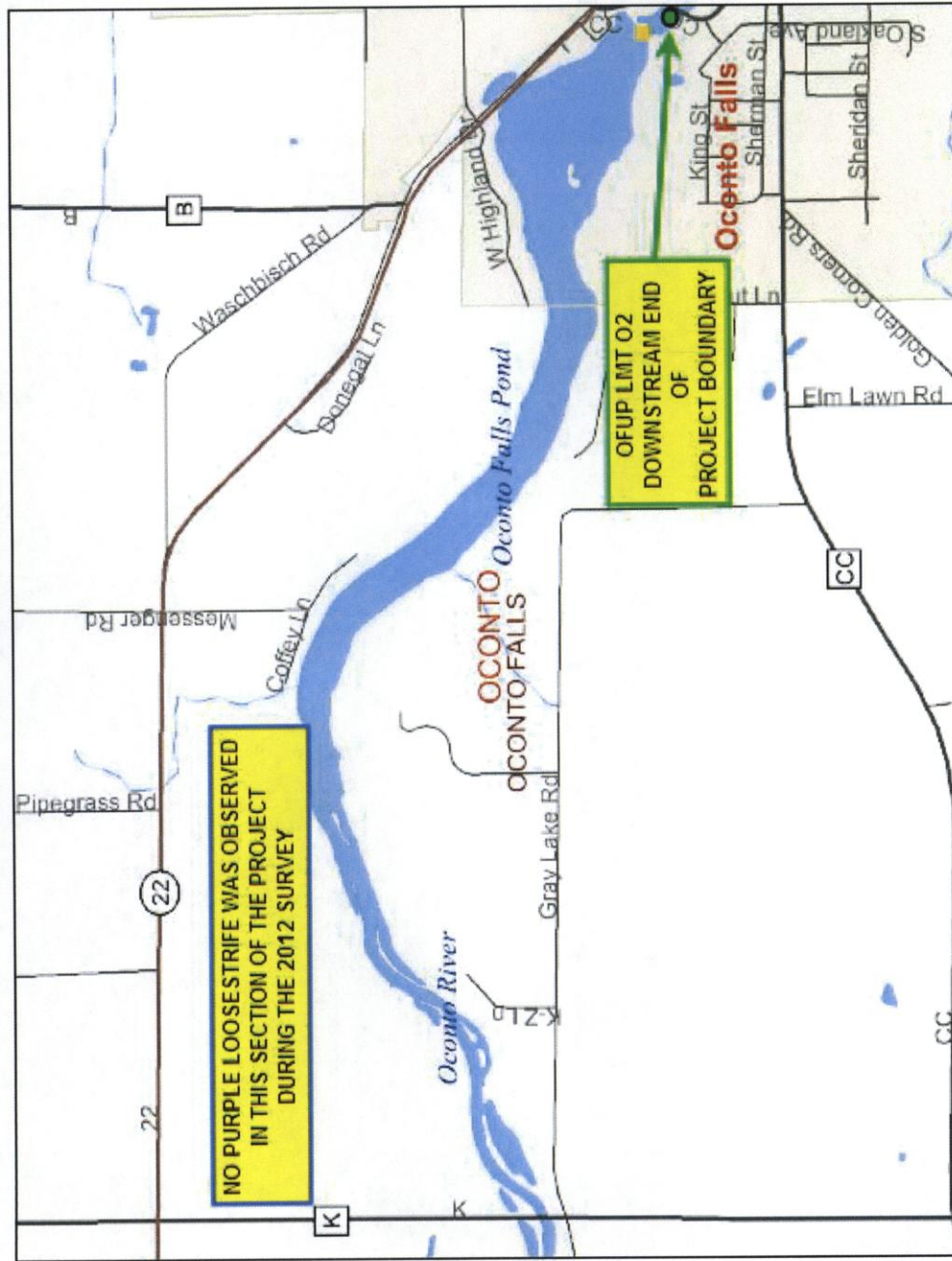


0 2500 5000 7500 ft.

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.

Oconto Falls Upper, Purple Loosetrife Location Map 2012

Oconto Falls WI, FERC #2523 (Map - East)



Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Intermittent
- Fluctuating
- Perennial
- Cities and Villages
- Village
- City

Purple Loosetrife Observed in 2012

Purple Loosetrife Observed in Previous Years and not in 2012

Scale: 1:26,808



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.

Purple Loosestrife Survey

Project: Oconto Falls Upper #2523

Datum: WGS 84

Date: 8/6/2012

Crew: JK & CTM

GPS Point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
OFUP PL001	N44°53.0397'	W088°13.7630'	Less than 1'	2 Plants	Yes	First observed in 2000. Located 30 yards bearing 0° (north) of GPS point on the north side of a marshy slough. Appears to be on a snowmobile trail, as snowmobile trail signs are on either side of slough opening into the river channel. In 2012, only 2 plants were located of which one was pulled. No treatment on remaining plants due to established Galerucella beetle population. The number of plants and plant size has dropped considerably compared to last year. The plants are all located on project owned lands. Video tape in 2000. Video taken of damaged plants in 2005. Galerucella beetles were positively identified on plants each year from 2007-2012. All plants sprayed with herbicide each year from 2003-2011. No herbicide spraying in 2012.
OFUP PL002	N44°52.8626'	W088°14.9756'	2' - 6'	8 Plants	Yes	First observed in 2000. Located 30 yards bearing 180° (south) of GPS point on the south side of a marshy slough located directly west of the HWY 32 wayside boat landing. Video in 2000. No treatment has been made to this site since it was first observed due to location on private property and marshy area. Plants found each year since 2000 except for 2009. Five large plants found in 2011. Eight plants found in 2012, similar in size to the previous year. Beetle damage has been observed on the plants.
OFUP PL003	N44°53.012'	W088°13.614'	N/A	N/A	N/A	First observed in 2001. Located 10 yards bearing 0° (north) of GPS point on the left side of the river. Video in 2001. Seed heads removed in 2002 and 2003. No plants visible in 2004. Reappeared in 2005, and pulled. No plants observed in 2006, 2007, and 2008. Reappeared in 2009, and pulled. No beetle damage observed. No plants observed in 2010, 2011 and 2012.

Purple Loosestrife Survey

Project: Oconto Falls Upper #2523

Datum: WGS 84

Date: 8/6/2012

Crew: JK & CTM

GPS Point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
OFUP PL004	N44°52.943'	W088°14.809'	N/A	N/A	N/A	First observed in 2001. Located near the water's edge on the northeast side of the HWY 32 bridge. Video in 2001. All plants pulled in 2001. No plants observed since initial finding, including 2012.
OFUP PL005	N44°53.029'	W088°13.524'	2' - 6'	8 Plants	N/A	First observed in 2002. Located on the edge of the far side of a slough 30 - 60 yards northwest of waypoint 178. Recorded on video in 2002. No treatment from 2002-2005, 2010, or 2011. All plants pulled in 2006, 2007, and 2008. In 2007 and 2008, all plants showed minor beetle damage. No plants observed in 2009. Three multi-stem plants observed in 2010. No plants were observed in 2011. Eight plants found in 2012. Beetle damage was undetectable due to location. Due to their close proximity, sites #PL005 - PL010 have been combined to make one continuous site.
OFUP PL006	N44°53.059'	W088°13.549'	N/A	N/A	N/A	
OFUP PL007	N44°53.057'	W088°13.562'	N/A	N/A	N/A	
OFUP PL008	N44°53.056'	W088°13.578'	N/A	N/A	N/A	
OFUP PL009	N44°53.050'	W088°13.615'	N/A	N/A	N/A	
OFUP PL010	N44°53.055'	W088°13.530'	N/A	N/A	N/A	
OFUP PL011	N44°52.895'	W088°12.805'	2' - 3'	4 Plants	Yes	First observed in 2002. Located on left side of river 10' due north of the waypoint on the bank. Video in 2002. Seed heads removed in 2002, 2003, and 2004. No plants observed in 2005. All plants pulled each year from 2006-2010. Five plants observed in 2011 and pulled. Beetle damage in 2007-2009. No beetle damage in 2010. Heavy beetle damage found in 2011 and 2012. Four plants pulled in 2012.

Purple Loosestrife Survey**Project:** Oconto Falls Upper #2523**Date:** 8/6/2012**Crew:** JK & CTM**Datum:** WGS 84

GPS Point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
OFUP PL012	N44°53.024'	W088°13.439'	N/A	N/A	N/A	First observed in 2005. Located on left side of river 10' due north of the waypoint on the bank. All plants pulled in 2005 had heavy beetle damage. No plants observed in 2006, 2007, or 2008. All plants pulled in 2009. No plants observed in 2010, 2011 and 2012.
OFUP PL013	N44°53.024'	W088°13.439'	N/A	N/A	N/A	First observed in 2005. Located 10' due south of the waypoint on the bank west of HWY 32 bridge. All plants pulled in 2005. No plants observed since initial finding, including 2012.
OFUP PL014	N44°52.915'	W088°14.823'	N/A	N/A	N/A	First observed in 2006. Located 10' due south of the waypoint on the bank east of HWY 32 bridge. All plants pulled in 2006 and 2007. No plants observed in 2008, 2009 or 2010. One plant without beetle damage was found and pulled in 2011. No plants observed in 2012.
OFUP PL015	N44°52.915'	W088°52.915'	N/A	N/A	N/A	First observed in 2006. Located on the left side of river 10' due north of the waypoint. All plants pulled in 2006. No plants observed in 2007 or 2008. All plants pulled in 2009, with beetle damage found on plants. No plants observed in 2010, 2011 and 2012.
OFUP PL016	N44°52.643'	W088°15.762'	N/A	N/A	N/A	First observed in 2007. Located 10' due south of waypoint on small island in river. All plants pulled in 2007. No plants observed since initial finding, including 2012.
OFUP PL017	N44°53.050'	W088°13.863'	N/A	N/A	N/A	First observed in 2007. Located on the left side of river, 10' due north of waypoint. No old cane. No damage. All plants pulled in 2007, 2008 and 2009. No plants found at this site in 2010. One plant with beetle damage was found and pulled in 2011. No plants observed in 2012.

Purple Loosestrife Survey

Project: Oconto Falls Upper #2523

Datum: WGS 84

Date: 8/6/2012

Crew: JK & CTM

GPS Point	Latitude	Longitude	Plant Height	Stand Area	Beetle Damage	Comments
OFUP PL018	N44°52.914'	W088°14.829'	N/A	N/A	N/A	First observed in 2008. Located below the southeast corner of the HWY 32 bridge at the waypoint. All plants pulled in 2008 and 2009. No plants found in 2010. One plant without beetle damage was found and pulled in 2011. No plants observed in 2012.
OFUP PL019	N44°52.898'	W088°14.868'	N/A	N/A	N/A	First observed in 2009. Located 80' west of the HWY 32 bridge on the right side of river at the waypoint. All plants pulled in 2009. No beetle damage was found. No plants observed at this site in 2010, 2011 and 2012.

APPENDIX B

Eurasian Watermilfoil Survey Results and Maps

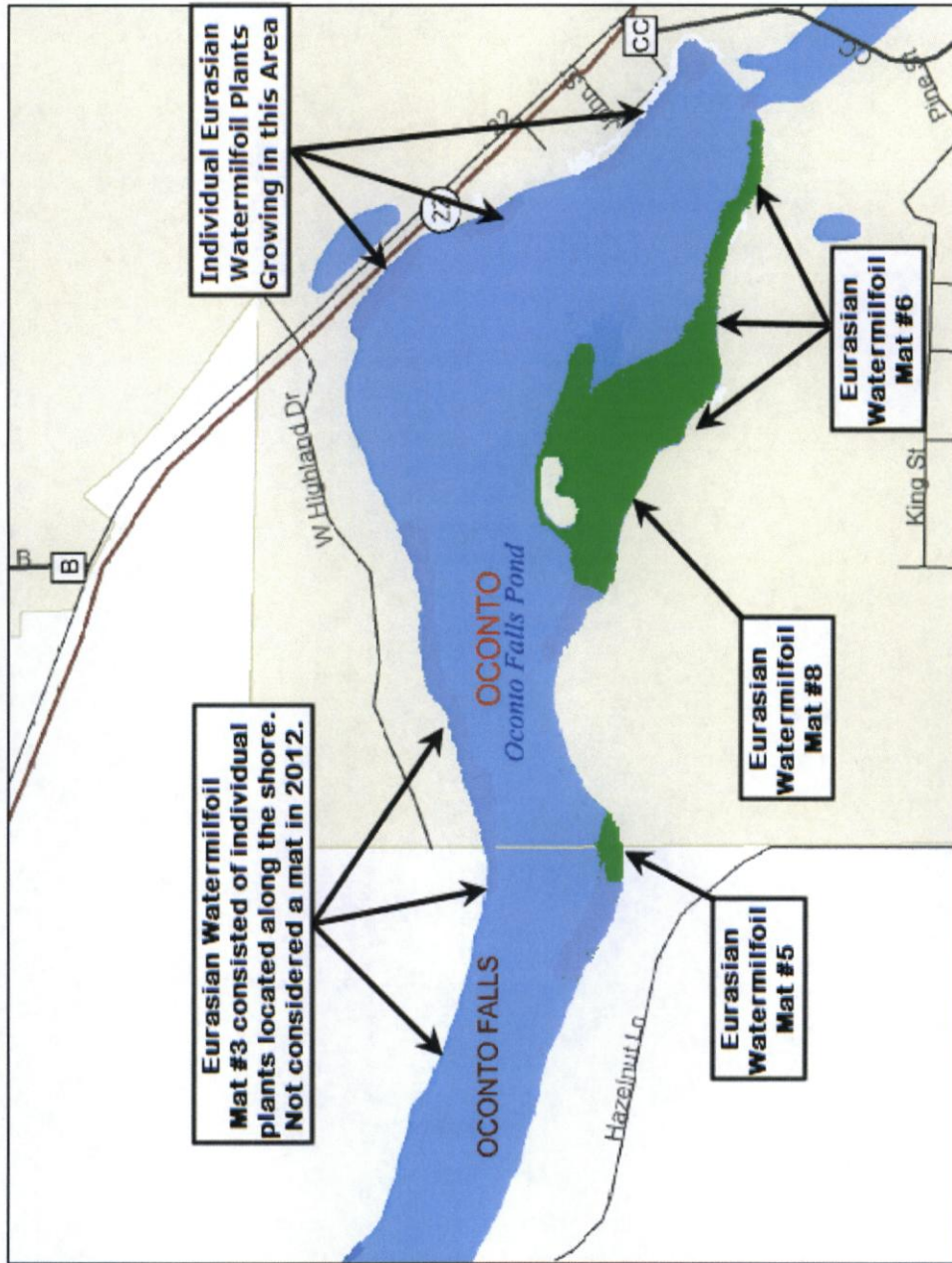
Oconto Falls Upper, Eurasian Watermilfoil Location Map 2012

Oconto Falls WI, FERC #2523 (Map #1 East)



- Legend**
- Dams
 - Major Highways
 - Interstate
 - State Highway
 - U.S. Highways
 - County Roads
 - Local Roads
 - 24K County Boundaries
 - Civil Towns
 - Civil Town
 - 24K Open Water
 - 24K Rivers and Shorelines
 - Intermittent
 - Fluctuating
 - Perennial
 - Cities and Villages
 - Village
 - City

Scale: 1:9,790



0 950 1900 2850 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.

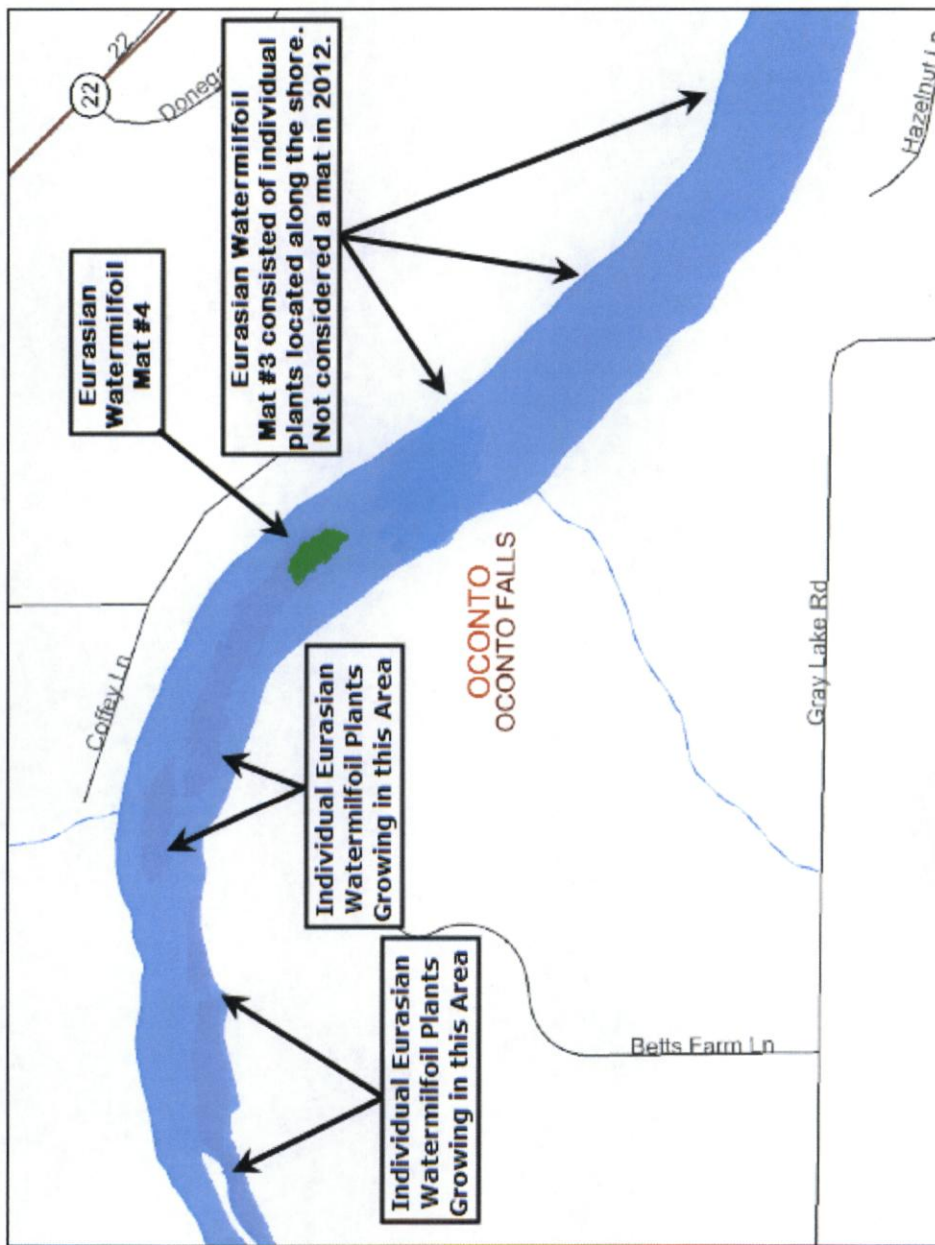
Oconto Falls Upper, Eurasian Watermilfoil Location Map 2012

Oconto Falls WI, FERC #2523 (Map #2)



- Legend**
- Dams
 - Major Highways
 - Interstate
 - State Highway
 - U.S. Highways
 - County Roads
 - Local Roads
 - 24K County Boundaries
 - Civil Towns
 - Civil Town
 - 24K Open Water
 - 24K Rivers and Shorelines
 - Intermittent
 - Fluctuating
 - Perennial
 - Cities and Villages
 - Village
 - City

Scale: 1:9,791



0 950 1900 2850 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.

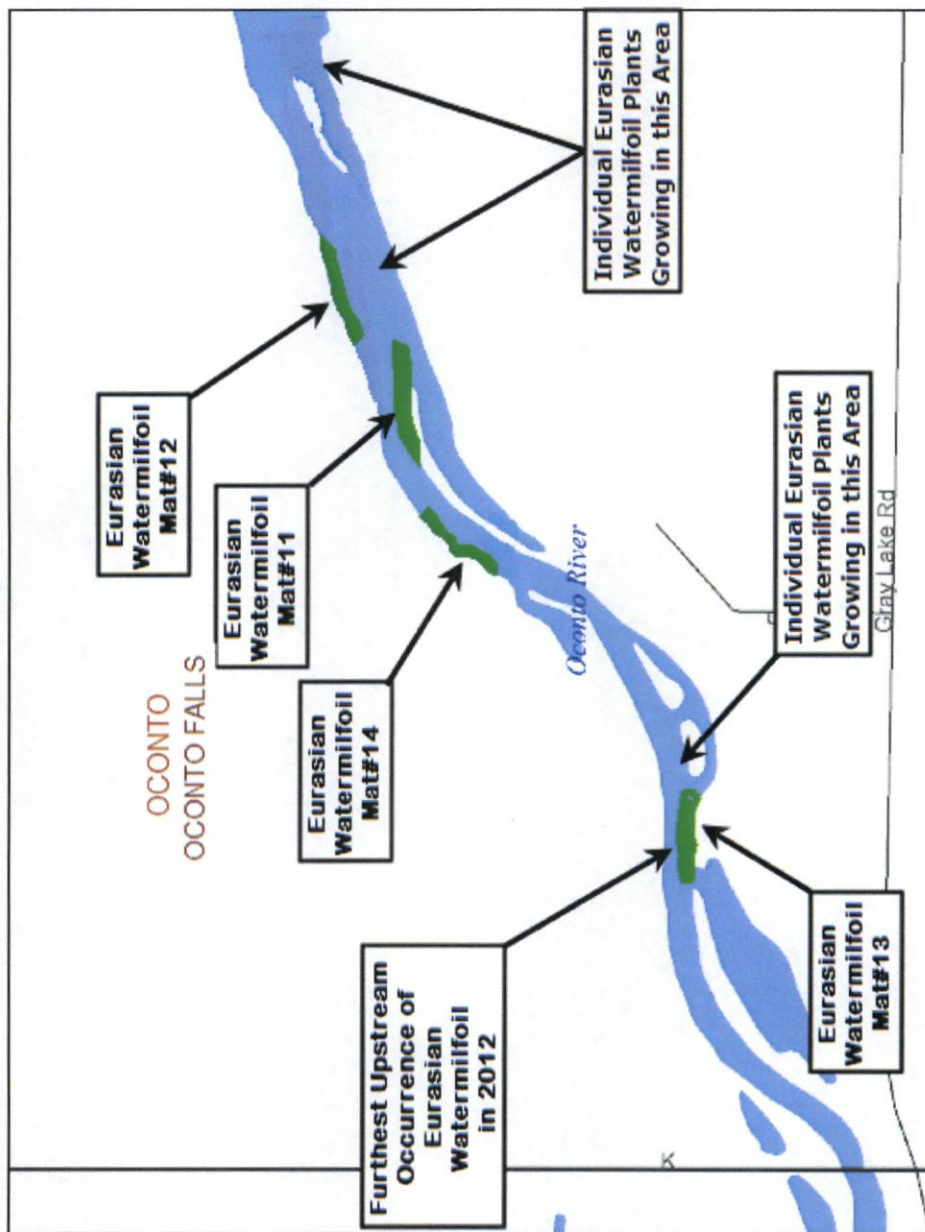
Oconto Falls Upper, Eurasian Watermilfoil Location Map 2012

Oconto Falls WI, FERC #2523 (Map #3 West)



Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Intermittent
- Fluctuating
- Perennial
- Cities and Villages
- Village
- City



0 950 1900 2850 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.

Eurasian Watermilfoil Survey - Mat Descriptions

Project: Oconto Falls Upper #2523 Datum: WGS 84

Date: 8/6/2012

Crew: JK & CTM

Note - Italicised GPS points were not used in this survey

Mat #	Depth	GPS point	Latitude	Longitude	Comments
1	N/A	OFUP EW01-A	N44°52.7679'	W088°08.9863'	First observed in 2000. Located immediately on the east side of the swimming beach and following the shoreline to the boat launch docks to the southeast. In previous years this mat has measured approx. 180' x 20' and extended out from shore in the 2' - 5' depth range. In 2012 there was no visible mat and no visible Eurasian Watermilfoil at this location.
		OFUP EW01-B	N44°52.7729'	W088°08.9940'	
		OFUP EW01-C	N44°52.7892'	W088°09.0109'	
2	N/A	OFUP EW02-A	N44°52.8133'	W088°09.0233'	First observed in 2000 and located immediately on the west side of the swimming beach northwest to where State Hwy. 22 meets the lakeshore. The mat originally measured approximately 695' x 20' and extended out from shore in the 2' - 5' depth range. In 2012, no mat was located only sparse individual plants were observed of which less than 10% was Eurasian Watermilfoil.
		OFUP EW02-B	N44°52.8286'	W088°09.0265'	
		OFUP EW02-C	N44°52.8437'	W088°09.0283'	
3	0' - 5'	OFUP EW03-O	N44°52.887'	W088°09.245'	First observed in 2000. Located on the north shore beginning 500 feet upstream from where State Hwy. 22 meets the lakeshore. In 2009 the survey crew divided mat #3 into two sections (Mat #3 East & Mat #3 West) to produce a more accurate report. Mat #3 East is .7 miles long x 30' wide and runs parallel to shore in the 2' - 5' depth range. Eurasian Watermilfoil was interspersed with other weeds in the area. Total mat density was 25% - 30% of which less than 10% is Eurasian Watermilfoil. Mat #3 west is 1 mile x 30' wide and runs parallel to shore in the 2' - 5' depth range. This mat is also interspersed with other weeds. Of the total plants observed at this location in 2012, less than 10% was identified as Eurasian Watermilfoil.
		OFUP EW03-P	N44°52.868'	W088°09.309'	
		OFUP EW03-I	N44°52.837'	W088°09.914'	
		OFUP EW03-J	N44°52.843'	W088°09.959'	
		OFUP EW03-A	N44°52.8465'	W088°09.9786'	
		OFUP EW03-B	N44°52.8541'	W088°10.0106'	
		OFUP EW03-C	N44°52.8613'	W088°10.0369'	
		OFUP EW03-D	N44°52.8675'	W088°10.0597'	
		OFUP EW03-E	N44°52.8805'	W088°10.0931'	
		OFUP EW03-F	N44°52.8952'	W088°10.1251'	
		OFUP EW03-G	N44°52.9184'	W088°10.1610'	
		OFUP EW03-H	N44°52.9358'	W088°10.1870'	
		OFUP EW03-K	N44°52.964'	W088°10.217'	
		OFUP EW03-L	N44°52.984'	W088°10.230'	
		OFUP EW03-M	N44°53.030'	W088°10.300'	
		OFUP EW03-N	N44°53.094'	W088°10.386'	
		OFUP EW03-Q	N44°53.287'	W088°10.571'	
		OFUP EW03-R	N44°53.094'	W088°10.386'	

Eurasian Watermilfoil Survey - Mat Descriptions

Project: Oconto Falls Upper #2523

Datum: WGS 84

Date: 8/6/2012

Crew: JK & CTM

Note - Italicised GPS points were not used in this survey

Mat #	Depth	GPS point	Latitude	Longitude	Comments
4	4' -5'	OFUP EW04-A	N44°53.0944'	W088°10.4541'	First observed in 2000. Located in center of river 1400 yards upstream from the West Side Park boat landing on the south side of the impoundment in Oconto Falls. In previous years this mat measured 2050' x 200' and is located in the center of the river. In 2012 this mat was still in place but densities of EWM were at times, nonexistent. Total mat density is 50% - 95% of which 5% - 50% is Eurasian Watermilfoil. Heaviest concentrations of Eurasian Watermilfoil are located on the south and east side of the mat with lighter concentrations on the north and west sides. Only the southeastern tip of the mat had densities of EWM reaching 50%.
		OFUP EW04-B	N44°53.1284'	W088°10.4607'	
		OFUP EW04-C	N44°53.1601'	W088°10.4738'	
		OFUP EW04-D	N44°53.2086'	W088°10.5103'	
		OFUP EW04-E	N44°53.1968'	W088°10.5389'	
		OFUP EW04-F	N44°53.1701'	W088°10.5475'	
		OFUP EW04-G	N44°53.1220'	W088°10.5007'	
		OFUP EW04-H	N44°53.1081'	W088°10.4868'	
		OFUP EW04-I	N44°53.233'	W088°10.533'	
		OFUP EW04-J	N44°53.256'	W088°10.555'	
		OFUP EW04-K	N44°53.277'	W088°10.585'	
		OFUP EW04-L	N44°53.303'	W088°10.650'	
		OFUP EW04-M	N44°53.303'	W088°10.791'	
5	0' - 5'	OFUP EW05-H	N44°52.778'	W088°10.002'	First observed in 2001. This mat is located west of the boat landing at West Side Park in Oconto Falls. The mat can be found on the south side of the impoundment and extends 367' x 50' upstream (west) of the boat landing. Eurasian Watermilfoil was observed growing on the outside edge of an existing mat of submergent weed growth in the 3' - 6' depth range. Total mat density is 30% - 60% of which 10% - 25% is Eurasian Watermilfoil. Mat #5 was recorded on video in 2001.
		OFUP EW05-A	N44°52.756'	W088°09.898'	
		OFUP EW05-B	N44°52.743'	W088°09.859'	
		OFUP EW05-C	N44°52.735'	W088°09.810'	
		OFUP EW05-D	N44°52.720'	W088°09.750'	
		OFUP EW05-E	N44°52.715'	W088°09.702'	
		OFUP EW05-F	N44°52.723'	W088°09.673'	
		OFUP EW05-G	N44°52.728'	W088°09.643'	

Eurasian Watermilfoil Survey - Mat Descriptions

WGS 84

Datum:

Project: Oconto Falls Upper #2523

Date: 8/6/2012

Crew: JK & CTM

Note - Italicised GPS points were not used in this survey

Mat #	Depth	GPS point	Latitude	Longitude	Comments
6	2' -5'	OFUP EW06-A	N44°52.765'	W088°09.253'	First observed in 2003. Located southeast of the island in the impoundment 600 yards east of the West Side Park boat landing and on the south side of the impoundment in Oconto Falls. Mat is 2500' x 200' and has not changed in size in 2012. The mat is interspersed with other weeds. Total mat density is 30% - 70% of which 20% - 25% is Eurasian Watermilfoil. Mat #6 remains joined with mat #8 to form one continuous mat.
		OFUP EW06-B	N44°52.759'	W088°09.218'	
		OFUP EW06-C	N44°52.746'	W088°09.186'	
		OFUP EW06-D	N44°52.736'	W088°09.154'	
		OFUP EW06-E	N44°52.718'	W088°09.125'	
		OFUP EW06-F	N44°52.700'	W088°09.109'	
		OFUP EW06-G	N44°52.684'	W088°09.094'	
		OFUP EW06-H	N44°52.681'	W088°09.095'	
		OFUP EW06-I	N44°52.680'	W088°09.134'	
		OFUP EW06-J	N44°52.686'	W088°09.172'	
		OFUP EW06-K	N44°52.680'	W088°09.184'	
		OFUP EW06-L	N44°52.671'	W088°09.183'	
		OFUP EW06-M	N44°52.650'	W088°09.146'	
7	0' -5'	OFUP EW06-N	N44°52.629'	W088°09.119'	First observed in 2004. Located 1250 yards upstream from the West Side Park boat landing on the south side of the impoundment in Oconto Falls. This mat could not be located in 2007, 2008, 2009, 2010, 2011, and 2012.
		OFUP EW06-O	N44°52.623'	W088°09.088'	
		OFUP EW06-P	N44°52.619'	W088°09.051'	
		OFUP EW06-Q	N44°52.623'	W088°09.027'	
		OFUP EW06-R	N44°52.608'	W088°09.005'	
		OFUP EW06-S	N44°52.580'	W088°08.986'	
		OFUP EW07-A	N44°53.042'	W088°10.468'	
8	2' -5'	OFUP EW07-B	N44°53.007'	W088°10.425'	First observed in 2005. This mat is located west of the island in the impoundment and 150 yards east of the West Side Park boat landing in Oconto Falls. The mat measures approximately 1139' x 100' and is interspersed with other weeds. Total mat density is 30% - 70% of which 20% - 25%
		OFUP EW07-C	N44°52.996'	W088°10.411'	
		OFUP EW08-A	N44°52.743'	W088°09.595'	
		OFUP EW08-B	N44°52.755'	W088°09.547'	
		OFUP EW08-C	N44°52.761'	W088°09.488'	
		OFUP EW08-D	N44°52.763'	W088°09.407'	
		OFUP EW08-E	N44°52.766'	W088°09.313'	

Eurasian Watermilfoil Survey - Mat Descriptions

Project: Oconto Falls Upper #2523

WGS 84

Datum:

Date: 8/6/2012

Crew: JK & CTM

Note - Italicised GPS points were not used in this survey

Mat #	Depth	GPS point	Latitude	Longitude	Comments
		OFUP EW08-F	N44°52.765'	W088°09.253'	is Eurasian Watermilfoil. Mat #8 remains joined with mat #6 to form one continuous mat.
9	2' - 5'	OFUP EW09-A OFUP EW09-B OFUP EW09-C OFUP EW09-D OFUP EW09-E OFUP EW09-F	N44°52.623' N44°52.631' N44°52.651' N44°52.684' N44°52.707' N44°52.702'	W088°08.831' W088°08.852' W088°08.891' W088°08.936' W088°08.955' W088°08.955'	First observed in 2006 and located at the boat ramp northeast of the hydroelectric plant. Previously measuring 515' x 15', this mat could not be found in 2012. Only sparse individual Eurasian Watermilfoil plants could be seen in the area.
10	2' - 5'	OFUP EW10-A OFUP EW10-B OFUP EW10-C OFUP EW10-D OFUP EW10-E OFUP EW10-F OFUP EW10-G OFUP EW10-H OFUP EW10-I	N44°53.343' N44°53.353' N44°53.353' N44°53.341' N44°53.336' N44°53.333' N44°53.337' N44°53.315' N44°53.320'	W088°10.790' W088°10.845' W088°10.882' W088°10.899' W088°10.871' W088°10.838' W088°10.809' W088°10.679' W088°10.814'	First observed in 2006. Located in the center of the river 2200 yards upstream from the West Side Park boat landing in Oconto Falls. The size of mat #10 has remained approximately 985' x 610' since 2009 and was interspersed with other weeds. In 2012, no mat could be found only small pockets of Eurasian Watermilfoil with a density of less than 10%.
11	2' - 5'	OFUP EW11-A OFUP EW11-B OFUP EW11-C OFUP EW11-D OFUP EW11-E OFUP EW11-F OFUP EW11-G OFUP EW11-H OFUP EW11-I OFUP EW11-J	N44°53.305' N44°53.323' N44°53.332' N44°53.327' N44°53.304' N44°53.259' N44°53.245' N44°53.246' N44°53.156' N44°53.309'	W088°10.960' W088°10.979' W088°11.055' W088°11.134' W088°11.228' W088°11.325' W088°11.329' W088°11.372' W088°11.719' W088°10.911'	First observed in 2006. Located 2475 yards upstream from the West Side Park boat landing on the south side of the impoundment in Oconto Falls. In previous years, this mat had reached a length of 4400' x 30' and was located on the south side of the river. In 2012 only 237' x 30' could be considered an EWM mat and was interspersed with other weeds. Total mat density is 40% - 75% of which 50% - 60% is Eurasian Watermilfoil. In the area that was considered mat status in previous years, only sparse individual EWM plants were observed, totaling 10% or less of total weed density.
12	2' - 5'	OFUP EW12-A OFUP EW12-B	N44°53.293' N44°53.274'	W088°11.320' W088°11.358'	Mat #12 was first observed in 2008. Located 2880 yards upstream from the West Side Park boat landing in Oconto

Eurasian Watermilfoil Survey - Mat Descriptions

WGS 84

Datum:

Project: Oconto Falls Upper #2523

Date: 8/6/2012

Crew: JK & CTM

Note - Italicised GPS points were not used in this survey

Mat #	Depth	GPS point	Latitude	Longitude	Comments
		OFUP EW12-C <i>OFUP EW12-D</i>	N44°53.259' N44°53.243'	W088°11.398' W088°11.474'	Falls. In past years this mat measured approximately 738' x 30' and is on the north side of the river at a power line crossing. In 2012 the length of this mat was only 398' and it was interspersed with other weeds. Total mat density was 35% - 85% of which 50% - 60% is Eurasian Watermilfoil.
13	2' - 5'	OFUP EW13-A OFUP EW13-B OFUP EW13-C OFUP EW13-D	N44°53.003' N44°52.995' N44°52.996' N44°52.997'	W088°11.943' W088°12.027' W088°12.074' W088°12.128'	First observed in 2009 and is the furthest EWM mat upriver to date. The mat is located approx. 560 yards downstream from the County K. highway bridge and on the south side of the river. In previous years this mat measured 807' x 30' wide and ran parallel to shore in the 2' - 5' depth range. In 2012 it measured only 236' x 30'. Total mat density was 50% - 60% of which 10% - 50% is Eurasian Watermilfoil.
14	2' - 5'	OFUP EW14-A <i>OFUP EW14-B</i> <i>OFUP EW14-C</i>	N44°53.184' N44°53.116' N44°53.113'	W088°11.726' W088°11.782' W088°11.787'	Mat #14 was first observed in 2009. Located 1158 yards downstream from the County K. highway bridge on the north side of the river. In previous years mat #14 measured approximately 509' x 30' wide and ran parallel to shore in the 2' - 5' depth range. This mat is interspersed with other weeds. In 2012, mat #14 measured only 269' x 30'. Total mat density is 30% - 60% of which 30% - 40% is Eurasian Watermilfoil.

Oconto Falls Upper, Eurasian Watermilfoil Transect Location Map 2012

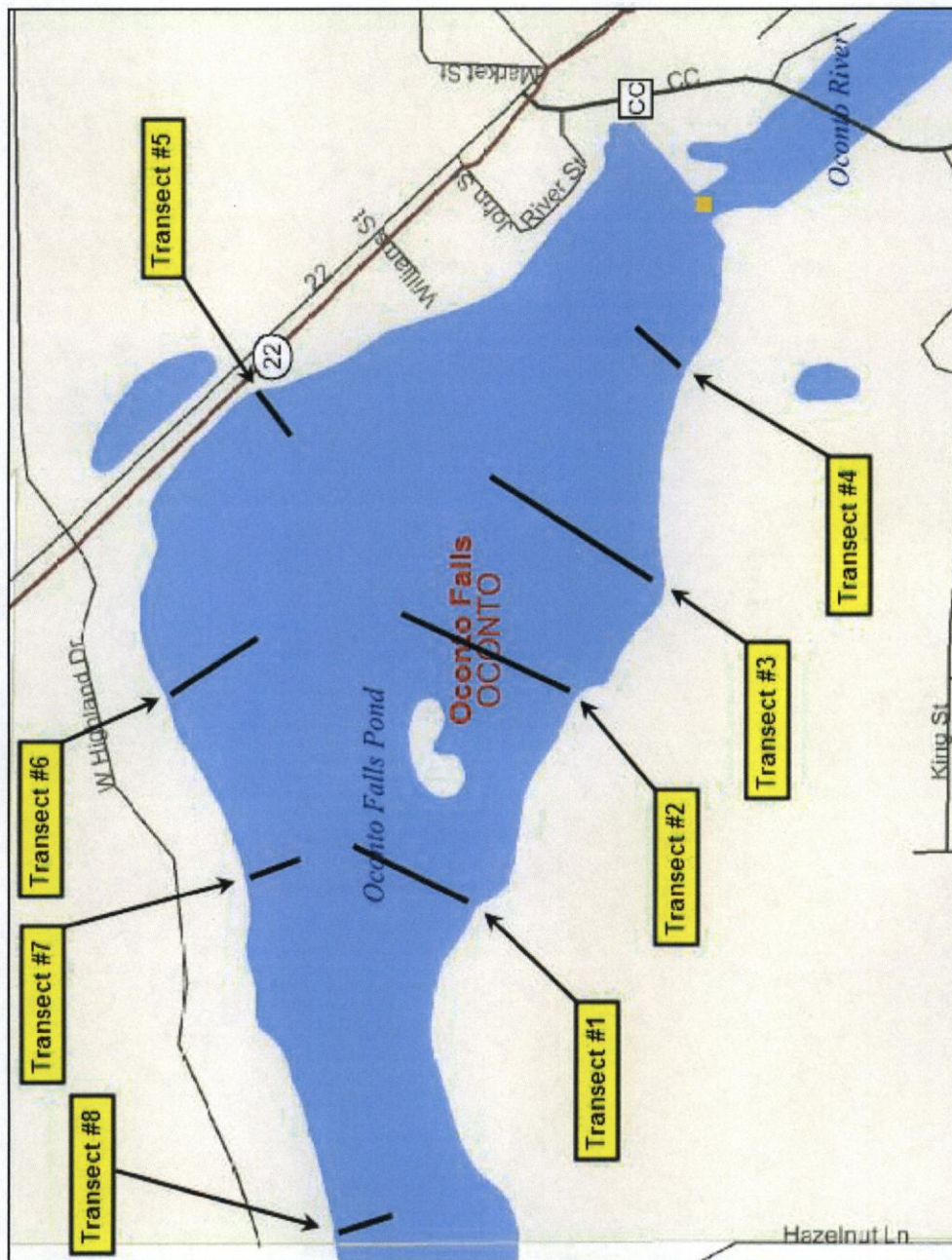
Oconto Falls WI, FERC #2523



Legend

- Dams
- Major Highways
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- Cities and Villages
 - Village
 - City

Scale: 1:7,000



0 700 1400 2100 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.

Eurasian Watermilfoil Survey - Transects**Project:** Oconto Falls Upper #2523**Date:** 8/6/2012**Crew:** JK & CTM**Datum:**

WGS 84

Page:

1 of 1

12-08-06 OFSU 2012 Milfoil Survey form.xls

Eurasian watermilfoil growing from bottom within 25' of sample point = #

Eurasian watermilfoil floating within 25' of sample point = *

1<50%	1<50%	1<50%	1<50%
2≥50%	2≥50%	2≥50%	2≥50%

Transect #	Depth	GPS point	Latitude	Longitude	Quad 1	Quad 2	Quad 3	Quad 4	Rating	Within 25'
1	1.5	OFUP TS01A	N44°52.7195'	W088°09.4319'	0	0	0	0	0	
	5	OFUP TS01B	N44°52.7343'	W088°09.4323'	0	0	0	0	0	*
	10	OFUP TS01C	N44°52.7684'	W088°09.4185'	0	0	0	0	0	*
2	1.5	OFUP TS02A	N44°52.6616'	W088°09.2612'	0	0	0	0	0	
	5	OFUP TS02B	N44°52.7357'	W088°09.2024'	0	0	0	0	0	#
	10	OFUP TS02C	N44°52.7716'	W088°09.1844'	0	0	0	0	0	
3	1.5	OFUP TS03A	N44°52.6085'	W088°09.1567'	0	1	0	0	1	#
	5	OFUP TS03B	N44°52.6269'	W088°09.1521'	0	0	0	0	0	#
	10	OFUP TS03C	N44°52.6540'	W088°09.1324'	0	0	0	0	0	#
4	5	OFUP TS03D	N44°52.6842'	W088°09.1117'	1	2	2	1	6	#
	10	OFUP TS03E	N44°52.7166'	W088°09.0910'	0	0	0	0	0	
	1.5	OFUP TS04A	N44°52.5970'	W088°09.0412'	0	0	1	1	2	
5	5	OFUP TS04B	N44°52.6102'	W088°09.0244'	0	1	0	1	2	#
	10	OFUP TS04C	N44°52.6183'	W088°08.9994'	0	0	0	0	0	#
	1.5	OFUP TS05A	N44°52.8430'	W088°09.0258'	0	0	0	0	0	#
6	5	OFUP TS05B	N44°52.8408'	W088°09.0274'	0	0	0	0	0	#
	10	OFUP TS05C	N44°52.8383'	W088°09.0359'	0	0	0	0	0	
	1.5	OFUP TS06A	N44°52.8919'	W088°09.2443'	0	1	1	0	2	#
7	5	OFUP TS06B	N44°52.8890'	W088°09.2434'	0	0	0	0	0	#
	10	OFUP TS06C	N44°52.8808'	W088°09.2402'	0	0	0	0	0	#
	(a) 1.5	OFUP TS07A	N44°52.8467'	W088°09.4100'	0	0	0	0	0	
8	(a) 5	OFUP TS07B	N44°52.8433'	W088°09.4100'	0	0	0	0	0	
	(a) 10	OFUP TS07C	N44°52.8400'	W088°09.4083'	0	0	0	0	0	
	1.5	OFUP TS08A	N44°52.7965'	W088°09.6999'	0	0	0	0	0	#
8	5	OFUP TS08B	N44°52.7952'	W088°09.6999'	0	0	0	0	0	#
	10	OFUP TS08C	N44°52.7887'	W088°09.6960'	0	0	0	0	0	

(a) = offset of ~75ft east from original transect due to willow tree fallen in water - latitude and longitude reflect offset

APPENDIX C

Curly Leaf Pondweed – GPS Locations from the 2012 Survey

During the August 2012 Eurasian Watermilfoil/ Purple Loosestrife Survey conducted at the Oconto Falls Upper Hydroelectric Project, the survey crew visually identified Curly Leaf Pondweed (CLP) at the following GPS locations. CLP was not observed during transect rake sampling for EWM at the project.

<u>Waypoint Name</u>	<u>GPS Lat/Lon</u>
OFUP EW03-A	N44 52 59.8 W88 12 07.4
OFUP CP007	N44 53 14.6 W88 10 35.5

Document Content(s)

13147163.tif.....1-33