



**Wisconsin River Power Company**  
(owners of the Petenwell & Castle Rock Hydroelectric Plants)  
P.O. Box 19001  
Green Bay, WI 54307-9001

October 22, 2021

Electronically Filed

Ms. Cheryl Laatsch  
Wisconsin Department of Natural Resources  
PO Box 7921  
Madison, WI 53707-7921

Dear Ms. Laatsch:

**SUBJECT: Invasive Species Monitoring Plan – Purple Loosestrife and Eurasian Watermilfoil Report**

<u>Hydro</u>	<u>FERC Project No.</u>	<u>NATDAM No.</u>	<u>License Article</u>
Petenwell	1984	WI00740	408
Castle Rock	1984	WI00724	408

In accordance with the Federal Energy Regulatory Commission (FERC) Order Revising Order Approving Purple Loosestrife and Eurasian Watermilfoil Monitoring issued on July 13, 2005 and the Order Amending Purple Loosestrife Control Measures issued on July 9, 2009 (Plan) for the Petenwell and Castle Rock Hydroelectric Projects, Wisconsin River Power Company (WRPCO) is to provide monitoring reports of the purple loosestrife (PL) and Eurasian watermilfoil (EWM) surveys to the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish & Wildlife Service (FWS) by October 31, each year a survey has been completed.

2021 Purple Loosestrife Survey Results

PL surveys were completed on August 3 - 4, 2021. Eighteen colonies of PL were identified on the Petenwell Hydroelectric Project and sixteen colonies on the Castle Rock Hydroelectric Project. Nineteen small to medium colonies between both reservoirs were completely hand pulled and disposed of offsite. Appendix A includes the 2021 PL survey results.

In 2021, WPS released approximately 4,000 *Galerucella* beetles on Castle Rock to supplement the existing beetle populations. *Galerucella* beetle herbivory was observed on fifty-nine percent of the total colonies of PL on both reservoirs. In 2022, WPS will release a minimum of 4,000 beetles in at least two separate locations.

A review of the data collected over the past thirteen years shows that the number of colonies has ranged between fourteen and forty-three. The percentage of colonies with beetle herbivory has ranged from fifty-two to ninety-one percent. A copy of this summary is included in Appendix B. WPS will complete the next PL survey in 2022.

2020 Eurasian Watermilfoil Survey Results

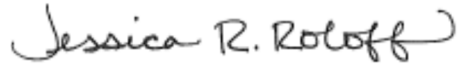
Surveys for EMW were completed between August 3 – 4, 2021. EWM was identified at one transect sample in relatively low abundance, transect location 3C. Appendix C includes the 2021 EWM survey

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results. The next EWM survey is scheduled for 2024.

Please provide any comments you may have regarding this report within 30 days. Should you have any questions relative to this material, please do not hesitate to contact me at (920) 433-5558 or email at [Jessica.Roloff@wecenergygroup.com](mailto:Jessica.Roloff@wecenergygroup.com).

Sincerely,



Jes Roloff  
Environmental Consultant  
Wisconsin Public Service  
2830 S. Ashland Avenue  
Green Bay, WI 54304

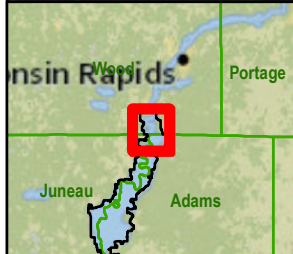
JRR / ace

Enc: Appendix A – 2021 Purple Loosestrife Survey Results (11 pages)  
Appendix B – Thirteen Year Purple Loosestrife Summary (2 pages)  
Appendix C – 2021 Eurasian Watermilfoil Survey Results (4 pages)

Cc: Mr. Nick Utrup, FWS

**APPENDIX A**

**2021 PURPLE LOOSESTRIFE SURVEY RESULTS**



**WRPCO Petenwell--North  
Hydroelectric Project  
Purple Loosestrife  
Survey 2021**

Project Boundary

**Purple Loosestrife**

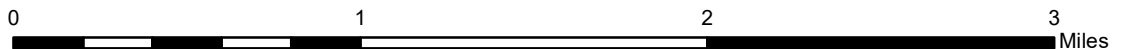
Small

Small; Pulled All Plants

Medium

Medium; Pulled All Plants

Beetle Release Site



10/7/2021





## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Petenwell Hydroelectric Project

Beetle Release Date: June 22, 2021

Petenwell Inspection date: August 4, 2021

General Plant Vigor						
Colony ID #	<u>Colony Size</u> S 0-5 M 6-50 L >50	<u>Plant Height</u> 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	<u>Plant Flowering</u> 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	<u>Beetle Herbivory</u> 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	<u>Total Plant Vigor</u> 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
1	No Longer Able To Identify					
2	M 6-50	2	1	1	4	
3	No Longer Able To Identify					
4	No Longer Able To Identify					
5	No Longer Able To Identify					
6	No Longer Able To Identify					
7	No Longer Able To Identify					
8	No Longer Able To Identify					
9	M 6-50	2	1	1	4	
10	No Longer Able To Identify					
11	No Longer Able To Identify					
12	M 6-50	3	1	1	5	
13	No Longer Able To Identify					
14	No Longer Able To Identify					
15	No Longer Able To Identify					

## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Petenwell Hydroelectric Project

Beetle Release Date: June 22, 2021

Petenwell Inspection date: August 4, 2021

General Plant Vigor						
Colony ID #	<u>Colony Size</u> S 0-5 M 6-50 L >50	<u>Plant Height</u> 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	<u>Plant Flowering</u> 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	<u>Beetle Herbivory</u> 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	<u>Total Plant Vigor</u> 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
16						No Longer Able To Identify
17						No Longer Able To Identify
18						No Longer Able To Identify
19						No Longer Able to Identify
20						No Longer Able To Identify
21						No Longer Able to Identify
22						No Longer Able to Identify
23						No Longer Able To Identify
24						No Longer Able to Identify
25						No Longer Able to Identify
26						No Longer Able to Identify
27						No Longer Able to Identify
28						No Longer Able to Identify
29						No Longer Able to Identify
30						No Longer Able to Identify

## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Petenwell Hydroelectric Project

Beetle Release Date: June 22, 2021

Petenwell Inspection date: August 4, 2021

General Plant Vigor						
Colony ID #	<u>Colony Size</u> S 0-5 M 6-50 L >50	<u>Plant Height</u> 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	<u>Plant Flowering</u> 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	<u>Beetle Herbivory</u> 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	<u>Total Plant Vigor</u> 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
31						No Longer Able to Identify
32						No Longer Able to Identify
33						No Longer Able To Identify
34						No Longer Able to Identify
35						No Longer Able To Identify
36						No Longer Able to Identify
37						No Longer Able to Identify
38						No Longer Able to Identify
39						No Longer Able To Identify
40						No Longer Able to Identify
41						No Longer Able to Identify
42						No Longer Able To Identify
43	S 0-5	3	3	4	10	Returned. Pulled all plants.
44						No Longer Able To Identify



## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Petenwell Hydroelectric Project

Beetle Release Date: June 22, 2021

Petenwell Inspection date: August 4, 2021

General Plant Vigor						
Colony ID #	<u>Colony Size</u> S 0-5 M 6-50 L >50	<u>Plant Height</u> 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	<u>Plant Flowering</u> 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	<u>Beetle Herbivory</u> 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	<u>Total Plant Vigor</u> 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
45	M 6-50	4	3	4	11	Pulled 1/2 of the plants.
46	No Longer Able To Identify					
47	No Longer Able To Identify					
48	S 0-5	3	4	5	12	Pulled all plants.
49	S 0-5	3	2	4	9	Pulled all plants.
50	M 6-50	4	3	4	11	NEW.
51	S 0-5	3	3	4	10	NEW. Pulled all plants.
52	S 0-5	3	3	4	10	NEW. Pulled all plants.
53	M 6-50	3	3	4	10	NEW. Pulled all plants.
54	S 0-5	3	3	4	10	NEW. Pulled all plants.
55	S 0-5	4	3	5	12	NEW. Pulled all plants.
56	S 0-5	4	3	4	11	NEW. Pulled all plants.
57	S 0-5	3	3	5	11	NEW. Growing in fallen trees w/i aquatic plant mat
58	S 0-5	3	3	4	10	NEW. Pulled all plants.
59	M 6-50	4	3	4	11	NEW.

## 2021 Purple Loosestrife Survey Form

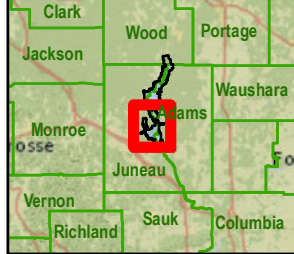
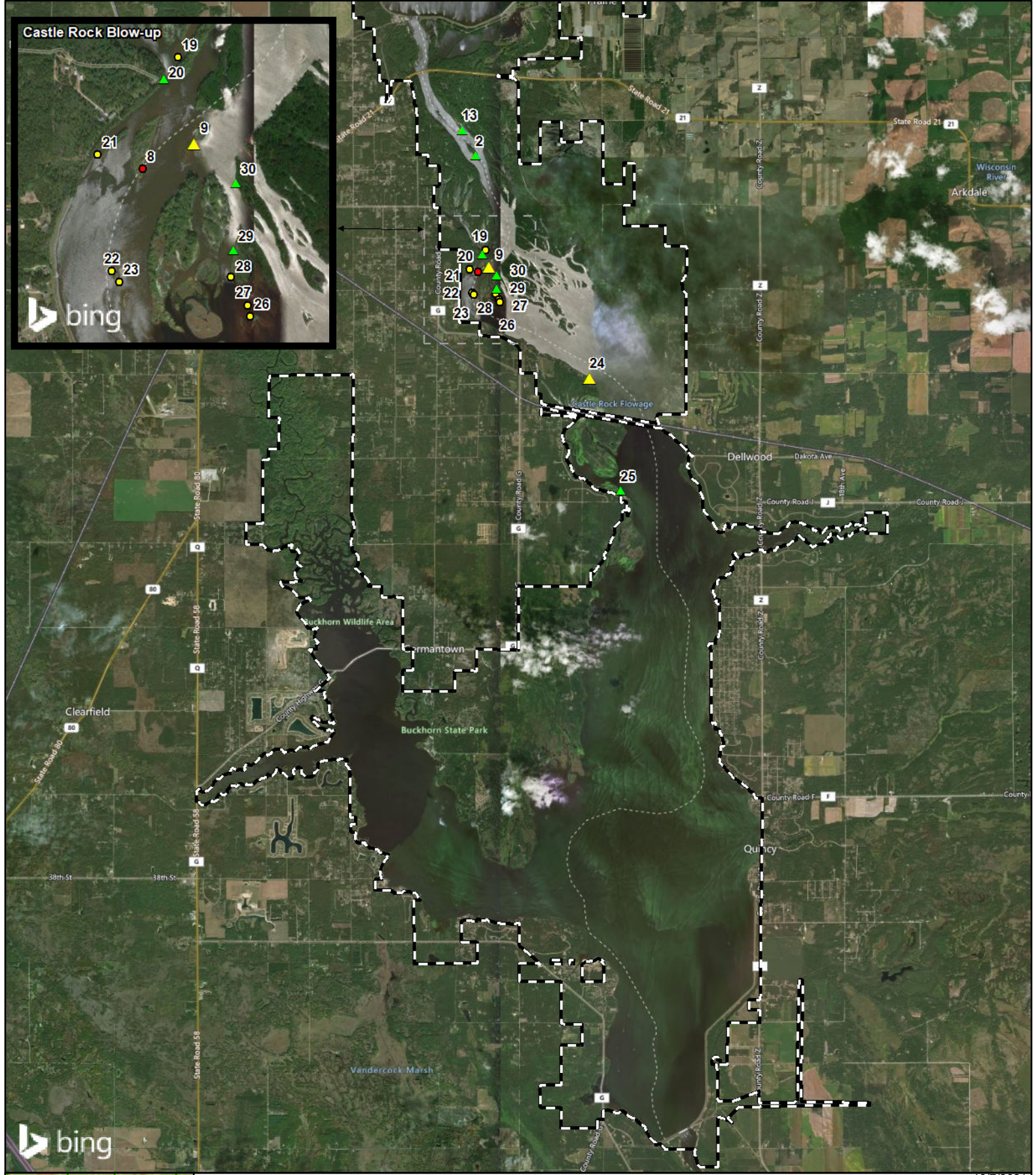
Hydroelectric project: Petenwell Hydroelectric Project

Beetle Release Date: June 22, 2021

Petenwell Inspection date: August 4, 2021

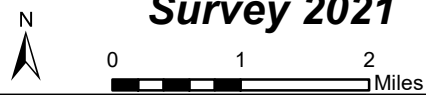
General Plant Vigor						
<u>Colony ID #</u>	<u>Colony Size</u>	<u>Plant Height</u>	<u>Plant Flowering</u>	<u>Beetle Herbivory</u>	<u>Total Plant Vigor</u>	<u>Notes</u>
		4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	
60	S 0-5	2	3	5	10	NEW. Pulled all plants.





**WRPCO Castle Rock  
Hydroelectric Project  
Purple Loosestrife  
Survey 2021**

- Project Boundary
- Medium
- Medium; Pulled All Plants
- Small; Pulled All Plants
- Large



10/7/2021



## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Castle Rock Hydroelectric Project

Castle Rock Inspection date: August 3, 2021

General Plant Vigor						
Colony ID #	Colony Size S 0-5 M 6-50 L >50	Plant Height 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	Plant Flowering 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	Beetle Herbivory 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	Total Plant Vigor 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
1	No Longer Able To Identify					
2	S 0-5	3	3	4	10	Pulled all plants.
3	No Longer Able To Identify					
4	No Longer Able To Identify					
5	No Longer Able To Identify					
6	No Longer Able To Identify					
7	No Longer Able To Identify					
8	L >50	2	2	2	6	
9	M 6-50	3	2	5	10	Pulled all plants.
10	No Longer Able To Identify					
11	No Longer Able To Identify					
12	No Longer Able To Identify					
13	S 0-5	3	1	5	9	Pulled all plants.
14	No Longer Able To Identify					
15	No Longer Able To Identify					
16	No Longer Able To Identify					



## 2021 Purple Loosestrife Survey Form

Hydroelectric project: Castle Rock Hydroelectric Project

Castle Rock Inspection date: August 3, 2021

General Plant Vigor						
Colony ID #	Colony Size S 0-5 M 6-50 L >50	Plant Height 4 = >4ft 3 = 2-4ft 2 = 1-2ft 1 = <1ft	Plant Flowering 4 = 100% of plants 3 = 51-99% of plants 2 = 26-50% of plants 1 = <25% of plants	Beetle Herbivory 5 = 0% feeding 4 = 1 - 25% feeding 3 = 26-50% feeding 2 = 51-75% feeding 1 = >76% feeding	Total Plant Vigor 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
17	No Longer Able To Identify					
18	No Longer Able To Identify					
19	S 0-5	2	3	4	9	NEW.
20	S 0-5	2	3	5	10	NEW. Pulled all plants.
21	M 6-50	3	3	4	10	NEW.
22	M 6-50	3	4	5	12	NEW.
23	M 6-50	3	3	5	11	NEW.
24	M 6-50	3	2	4	9	NEW. Pulled all plants.
25	S 0-5	4	4	5	13	NEW. Pulled all plants.
26	M 6-50	3	3	5	11	NEW.
27	M 6-50	3	3	5	11	NEW.
28	M 6-50	3	3	4	10	NEW.
29	S 0-5	2	1	5	8	NEW. Pulled all plants.
30	S 0-5	2	3	5	10	NEW. Pulled all plants.

**APPENDIX B**

**THIRTEEN YEAR PURPLE LOOSESTRIFE SUMMARY**

Petenwell & Castle Rock Hydroelectric Projects 2009 - 2021 Purple Loosestrife Summary

Year	Total Number of Colonies	Number of Small Colonies (0-5 Plants)	Number of Medium Colonies (6 - 50 Plants)	Number of Large Colonies (51+ plants)	Number of Colonies With Beetle Herbivory	Percentage of Total Colonies With Beetle Herbivory	Beetles Released
2009	25	6	6	13	18	72%	8,000
2010	22	5	9	8	20	91%	8,000
2011	23	13	4	6	14	61%	2,000
2012	17	4	10	3	15	88%	2,000
2013	20	6	11	3	14	70%	2,000
2014	18	3	12	2	15	83%	16,000
2015	22	9	10	3	16	73%	8,000
2016	18	5	8	5	12	67%	10,000
2017	28	17	7	4	24	86%	4,000
2018	43	26	12	5	28	65%	8,000
2019	33	18	11	4	17	52%	8,000
2020	14	5	8	1	9	64%	4,000
2021	34	18	15	1	20	59%	4,000

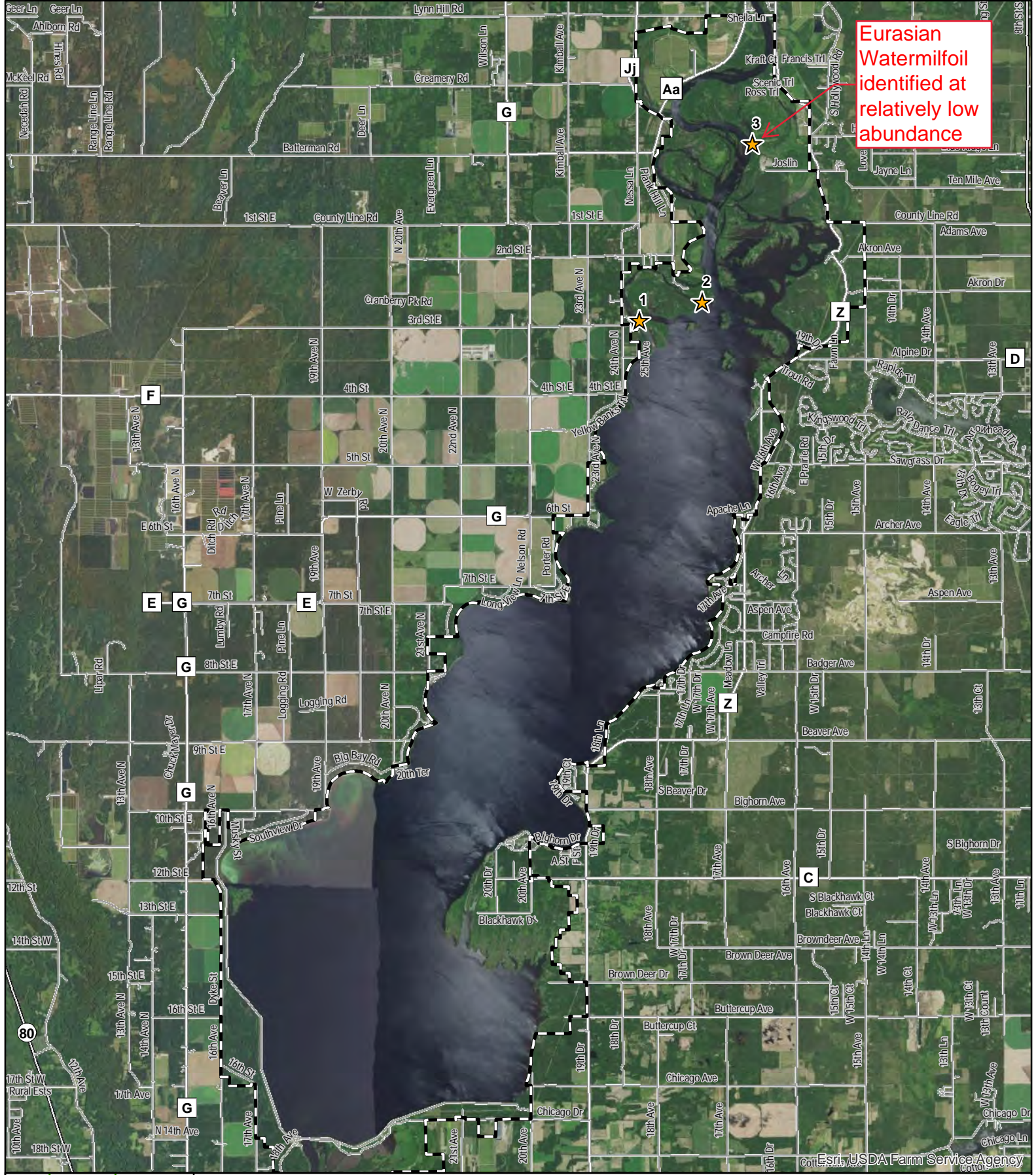
13 Year Average	24.4	10.4	9.5	4.5	17.1	71.6%
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## **APPENDIX C**

### **2021 EURASIAN WATERMILFOIL SURVEY RESULTS**

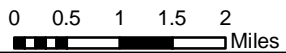
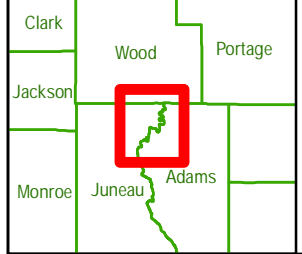






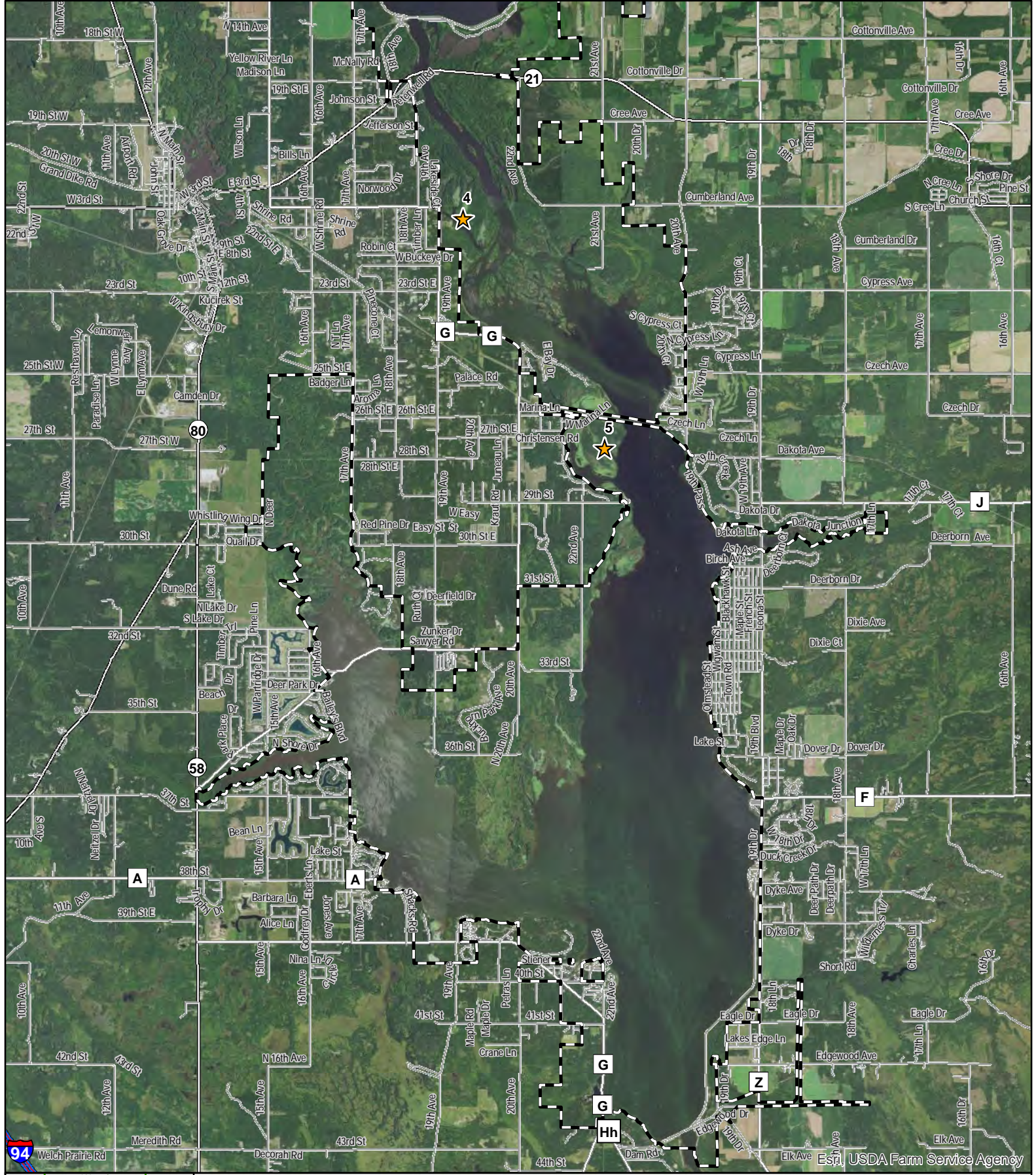
Eurasian Watermilfoil identified at relatively low abundance

**WRPCO Petenwell  
Hydroelectric Project  
Eurasian Watermilfoil Survey-2021**

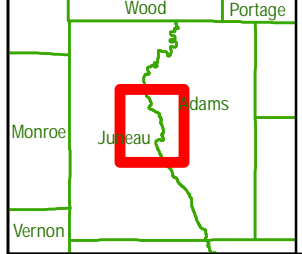


- Project Boundary
- Transect Point





**WRPCO Castle Rock  
Hydroelectric Project  
Eurasian Watermilfoil Survey-2021**



- Project Boundary
- Transect Point

