



Wisconsin Public Service Corporation
P.O. Box 19001
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www.wisconsinpublicservice.com

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, Eurasian Watermilfoil, and Zebra Mussel Monitoring Report

<u>Hydro</u>	<u>FERC Project No.</u>	<u>NATDAM No.</u>	<u>License Article</u>
Alexander	1979	WI00748	406

In accordance with the Federal Energy Regulatory Commission (FERC) Order Approving the Invasive Species Monitoring Plan issued March 4, 2005 and the Order Amending Purple Loosestrife Control Measures in Approved Monitoring Plan issued July 9, 2009 for the Alexander Hydroelectric Project (Project), Wisconsin Public Service (WPS) is to provide monitoring reports of the purple loosestrife (PL), Eurasian watermilfoil (EWM), and zebra mussel (ZM) 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

A PL survey was completed on July 29 – 30, 2021. Fifty-three colonies of PL were identified at the Project; Twenty-four were small or medium colonies that were completely hand pulled and disposed of offsite. Appendix A includes the 2021 PL survey results.

In 2021, WPS released approximately 6,000 *Galerucella* beetles in two different locations to supplement the existing beetle populations. *Galerucella* beetle herbivory was observed on forty-nine percent of the total colonies of PL; compared to twenty-two percent in 2020.

A review of the data collected over the past thirteen years shows that the number of colonies has ranged between nineteen and fifty-five. The percentage of colonies with beetle herbivory has ranged from twenty-two to eighty-one percent. A copy of this summary is included in Appendix B.

WPS will continue monitoring for PL and releasing a minimum of 6,000 beetles in at least two separate locations as a biological control method in an attempt to establish healthy beetle populations throughout the Project. WPS will complete the next PL survey in 2022, in conjunction with the EWM survey.

2021 Eurasian Watermilfoil Survey Results

An EWM survey was completed on July 29 – 30, 2021. EWM was not observed at the transect points during this survey or any previous surveys. Appendix C includes the 2021 EWM transect survey

Ms. Cheryl Laatsch
October 22, 2021
Page 2 of 2

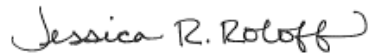
results. WPS will complete the next EWM survey in 2022, in conjunction with the PL survey.

2021 Zebra Mussel Sampling Results

Monthly inspections for the presence of ZM were conducted during the months of May through September 2021. ZMs were not observed during any of the monthly substrate inspections. Appendix D includes the 2021 ZM monthly substrate sampling results.

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.

Sincerely,



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

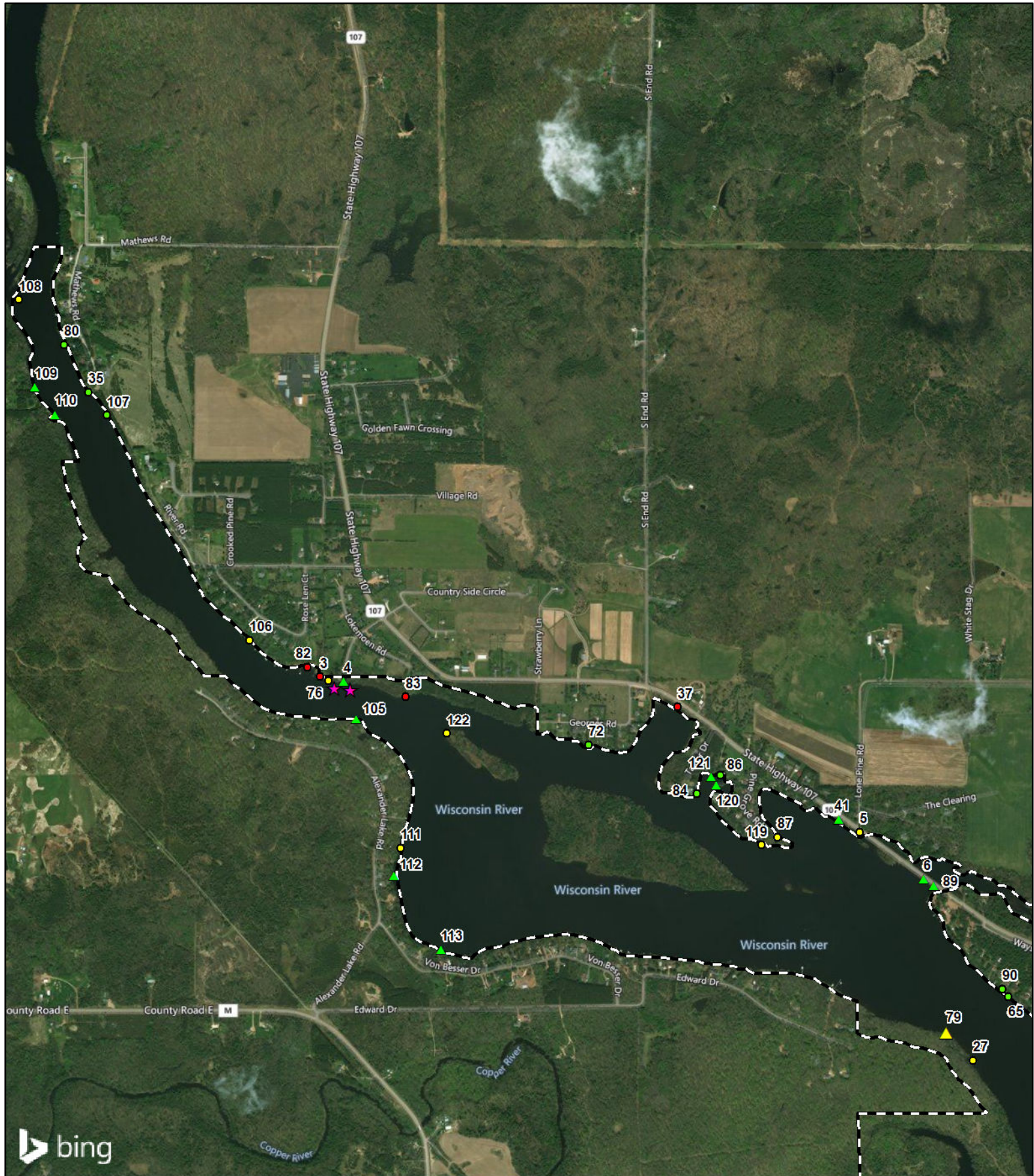
JRR / ace

Enc: Appendix A – 2021 Purple Loosestrife Survey Results (11 pages)
Appendix B – Thirteen Year Purple Loosestrife Summary (2 pages)
Appendix C – 2021 Eurasian Water Milfoil Survey Results (4 pages)
Appendix D – 2021 Zebra Mussel Monthly Substrate Sampling Results (2 pages)

Cc: Mr. Nick Utrup, FWS

APPENDIX A

2021 PURPLE LOOSESTRIFE SURVEY RESULTS



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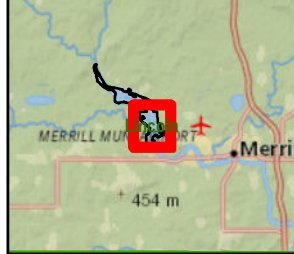
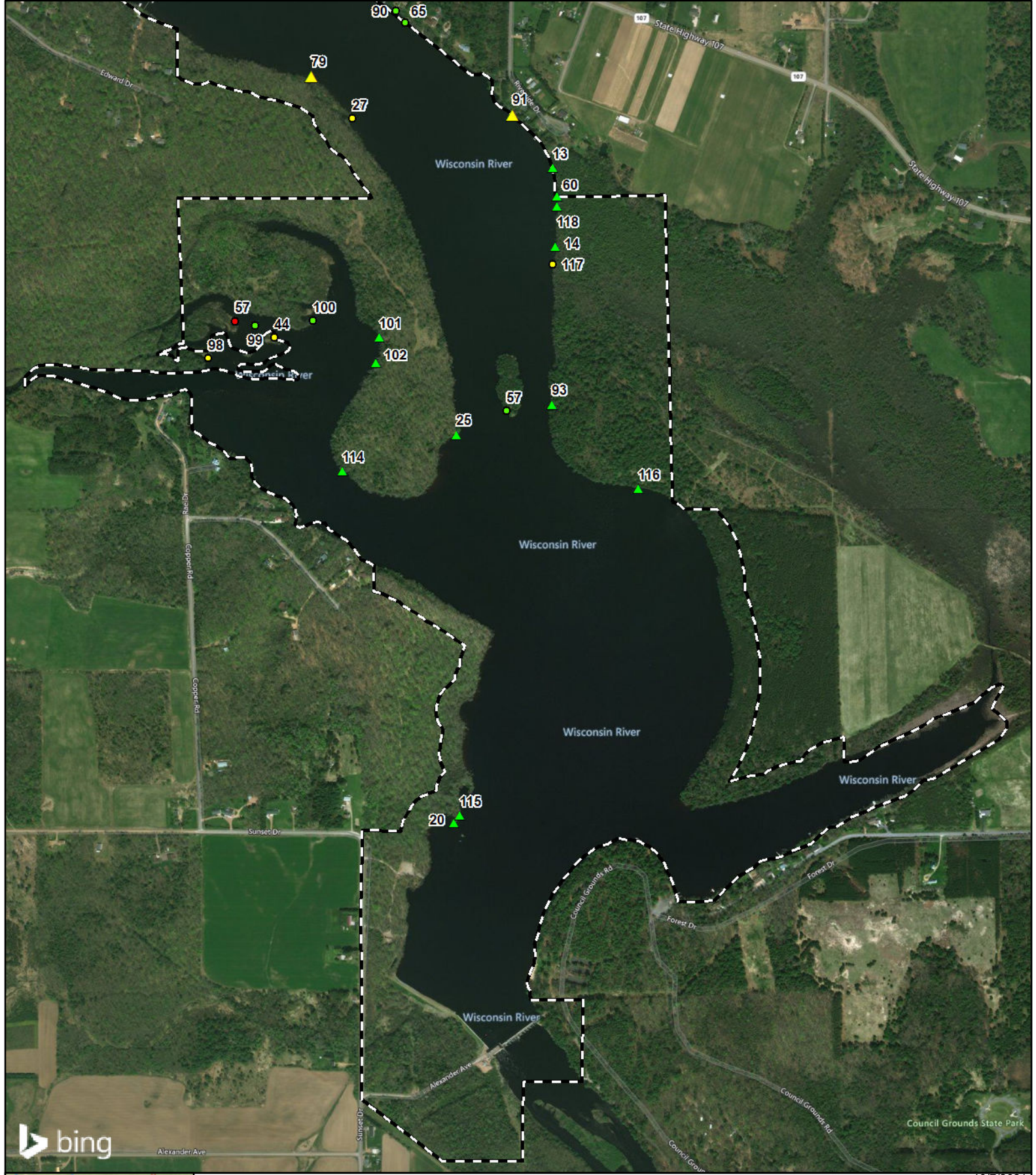
10/7/2021



WPS Alexander-North Hydroelectric Project Purple Loosestrife Survey 2021



- Project Boundary
- Purple Loosestrife**
- Medium
- Medium; Pulled All Plants
- Small
- Large
- Small; Pulled All Plants
- Beetle Release Site



**WPS Alexander-South
Hydroelectric Project
Purple Loosestrife
Survey 2021**

Project Boundary

Purple Loosestrife

- Small
- Small; Pulled All Plants

Medium

Medium; Pulled All Plants

Large



0

1

Miles

10/7/2021

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
		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		
1		Outside of FERC Boundary				
2		No Longer Able To Identify				
3	L >50	3	2	2	7	
4	S 0-5	3	1	2	6	Pulled all plants.
5	M 6-50	3	3	2	8	Picked the majority, a few left as they were in poison ivy.
6	S 0-5	3	4	3	10	Pulled all plants.
7		No Longer Able To Identify				
8		No Longer Able To Identify				
9		No Longer Able To Identify				
10		No Longer Able To Identify				
11		No Longer Able To Identify				
12		No Longer Able To Identify				
13	S 0-5	3	3	4	10	Pulled all plants.
14	S 0-5	4	4	5	13	Pulled all plants.
15		No Longer Able To Identify				
16		No Longer Able To Identify				
17		No Longer Able To Identify				

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size	General Plant Vigor			Total Plant Vigor	Notes
		Plant Height	Plant Flowering	Beetle Herbivory		
	S 0-5 M 6-50 L >50	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	
18	No Longer Able To Identify					
19	No Longer Able To Identify					
20	S 0-5	3	3	5	11	Pulled all plants.
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	S 0-5	3	3	5	11	Pulled all plants.
26	No Longer Able To Identify					
27	M 6-50	3	3	4	10	
28	No Longer Able To Identify					
29	No Longer Able To Identify					
30	No Longer Able To Identify					
31	No Longer Able To Identify					
32	No Longer Able To Identify					
33	No Longer Able To Identify					
34	No Longer Able To Identify					

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size	General Plant Vigor			Total Plant Vigor	Notes
		Plant Height	Plant Flowering	Beetle Herbivory		
		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	
35	S 0-5	3	4	5	12	Private property.
36	No Longer Able To Identify					
37	L >50	4	4	5	13	
38	No Longer Able To Identify					
39	No Longer Able To Identify					
40	No Longer Able To Identify					
41	S 0-5	3	4	5	12	Pulled all plants.
42	No Longer Able To Identify					
43	No Longer Able To Identify					
44	M 6-50	3	3	4	10	
45	Combined with Colony #23					
46	No Longer Able To Identify					
47	No Longer Able To Identify					
48	No Longer Able To Identify					
49	No Longer Able To Identify					
50	No Longer Able To Identify					
51	No Longer Able To Identify					

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size	General Plant Vigor			Total Plant Vigor	Notes
		Plant Height	Plant Flowering	Beetle Herbivory		
	S 0-5 M 6-50 L >50	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	
52		No Longer Able To Identify				
53		No Longer Able To Identify				
54		No Longer Able To Identify				
55		No Longer Able To Identify				
56		No Longer Able To Identify				
57	L >50	3	4	4	11	
58	S 0-5	4	4	5	13	Pl came back. Did not pick, dogs running around & no people.
59		No Longer Able To Identify				
60	S 0-5	3	3	4	10	Pulled all plants.
61		No Longer Able To Identify				
62		No Longer Able To Identify				
63		No Longer Able To Identify				
64		No Longer Able To Identify				
65	S 0-5	3	4	5	12	Private property.
66		No Longer Able To Identify				
67		No Longer Able To Identify				
68		No Longer Able To Identify				

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size	General Plant Vigor			Total Plant Vigor	Notes
		Plant Height	Plant Flowering	Beetle Herbivory		
		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	
69		No Longer Able To Identify				
70		No Longer Able To Identify				
71		No Longer Able To Identify				
72	S 0-5	3	4	5	12	Private property.
73		No Longer Able To Identify				
74		No Longer Able To Identify				
75		No Longer Able To Identify				
76	M 6-50	3	2	2	7	
77		No Longer Able To Identify				
78		No Longer Able To Identify				
79	M 6-50	3	3	3	9	Pulled all plants.
80	S 0-5	4	4	5	13	Private property.
81		No Longer Able To Identify				
82	L >50	3	2	2	7	
83	L >50	3	4	5	12	
84	S 0-5	3	4	3	10	Private property.

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size	General Plant Vigor			Total Plant Vigor	Notes
		Plant Height	Plant Flowering	Beetle Herbivory		
	S 0-5 M 6-50 L >50	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	
85	No Longer Able To Identify					
86	S 0-5	3	4	5	12	Private property.
87	M 6-50	3	4	5	12	
88	No Longer Able To Identify					
89	S 0-5	3	3	4	10	Pulled all plants.
90	S 0-5	3	3	5	11	Private property.
91	M 6-50	3	3	5	11	Pulled most plants.
92	No Longer Able To Identify					
93	M 6-50	3	3	4	10	Pulled all plants.
94	No Longer Able To Identify					
95	No Longer Able To Identify					
96	No Longer Able To Identify					
97	No Longer Able To Identify					
98	M 6-50	3	4	5	12	
99	S 0-5	3	3	4	10	Inaccessible.
100	S 0-5	3	4	5	12	Inaccessible.
101	S 0-5	3	4	5	12	Pulled all plants.

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
		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		
102	S 0-5	3	4	5	12	Pulled all plants.
103	No Longer Able To Identify					
104	No Longer Able To Identify					
105	S 0-5	2	2	5	9	Pulled all plants.
106	M 6-50	3	2	3	8	NEW.
107	S 0-5	3	4	5	12	NEW. Private Property.
108	M 6-50	3	1	1	5	NEW.
109	S 0-5	4	3	4	11	NEW. Pulled all plants.
110	S 0-5	2	3	3	8	NEW. Pulled all plants.
111	M 6-50	4	3	5	12	NEW.
112	S 0-5	3	2	4	9	NEW. Pulled all plants.
113	S 0-5	3	3	5	11	NEW. Pulled all plants.
114	S 0-5	3	3	5	11	NEW. Pulled all plants.
115	S 0-5	3	3	5	11	NEW. Pulled all plants.
116	S 0-5	3	3	4	10	NEW. Pulled all plants.
117	M 6-50	3	2	5	10	NEW.
118	S 0-5	3	3	3	9	NEW. Pulled all plants.

2021 Purple Loosestrife Survey Form

Hydroelectric project: Alexander Hydroelectric Project

Beetle Release Date: June 22, 2021 Inspection date: July 29 & 30, 2021

Colony ID #	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12 = good 7-9 = fair 4-6 = poor 0-3 = very poor	Notes
		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		
119	M 6-50	3	3	3	9	NEW.
120	S 0-5	3	3	2	8	NEW. Pulled all plants.
121	S 0-5	4	3	5	12	NEW. Pulled all plants.
122	M 6-50	3	2	4	9	NEW.

APPENDIX B

THIRTEEN YEAR PURPLE LOOSESTRIFE SUMMARY

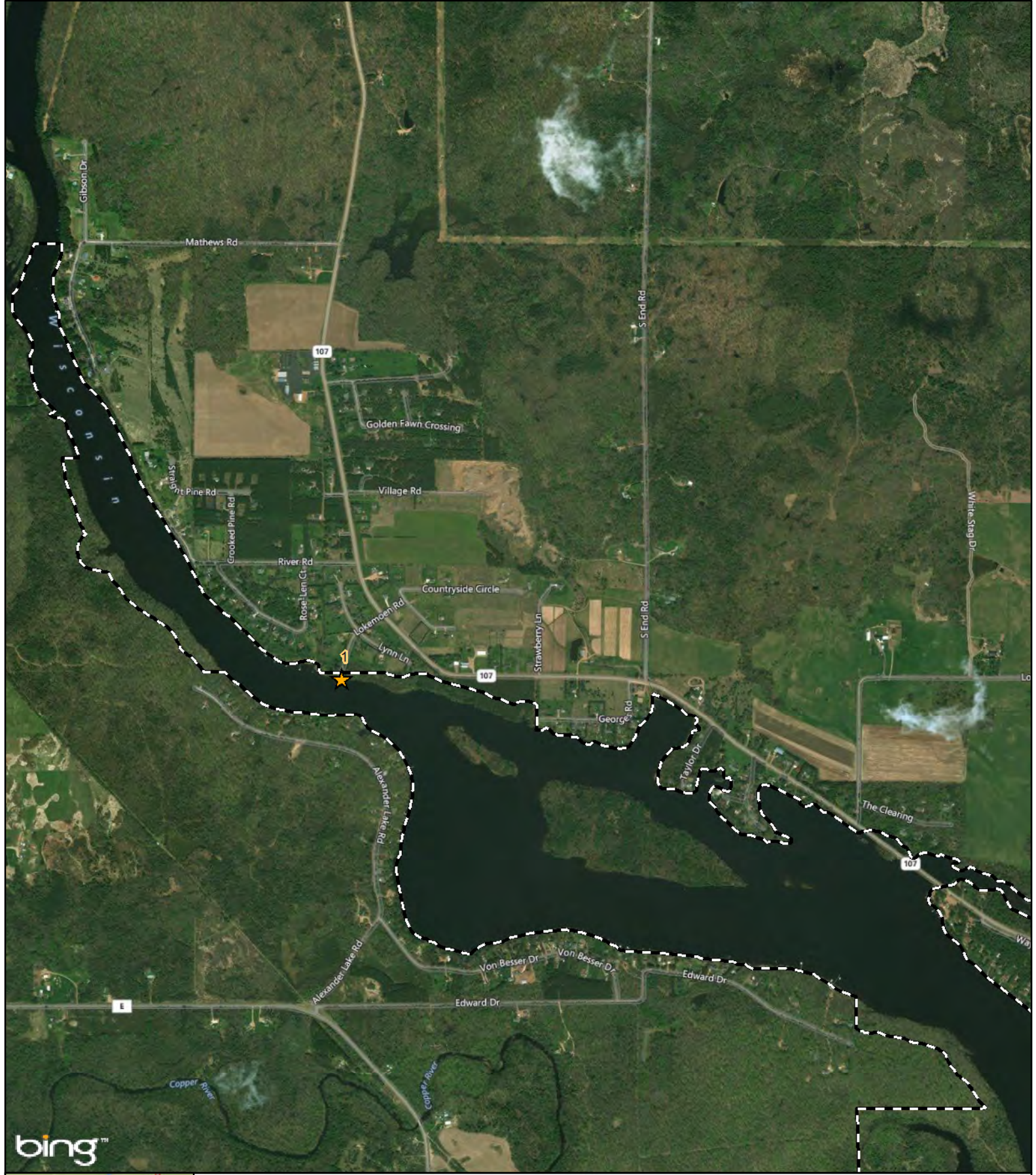
Alexander Hydroelectric Project 2009 - 2021 Summary

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	20	13	5	2	11	55%	10,000
2010	21	14	5	2	10	48%	2,000
2011	20	13	6	1	14	70%	3,000
2012	38	27	7	4	15	39%	2,000
2013	19	11	6	2	14	74%	3,000
2014	53	49	4	0	28	53%	3,000
2015	31	25	6	0	15	48%	7,000
2016	36	21	13	2	18	50%	12,000
2017	37	23	12	1	30	81%	6,000
2018	36	26	9	1	25	69%	10,000
2019	48	30	16	2	28	58%	10,000
2020	55	39	13	3	12	22%	6,000
2021	53	33	15	5	26	49%	6,000



13 Year Average	35.9	24.9	9.0	1.9	18.9	55.2%
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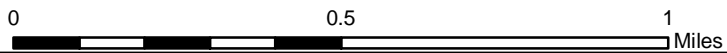
APPENDIX C

2021 EURASIAN WATERMILFOIL SURVEY RESULTS

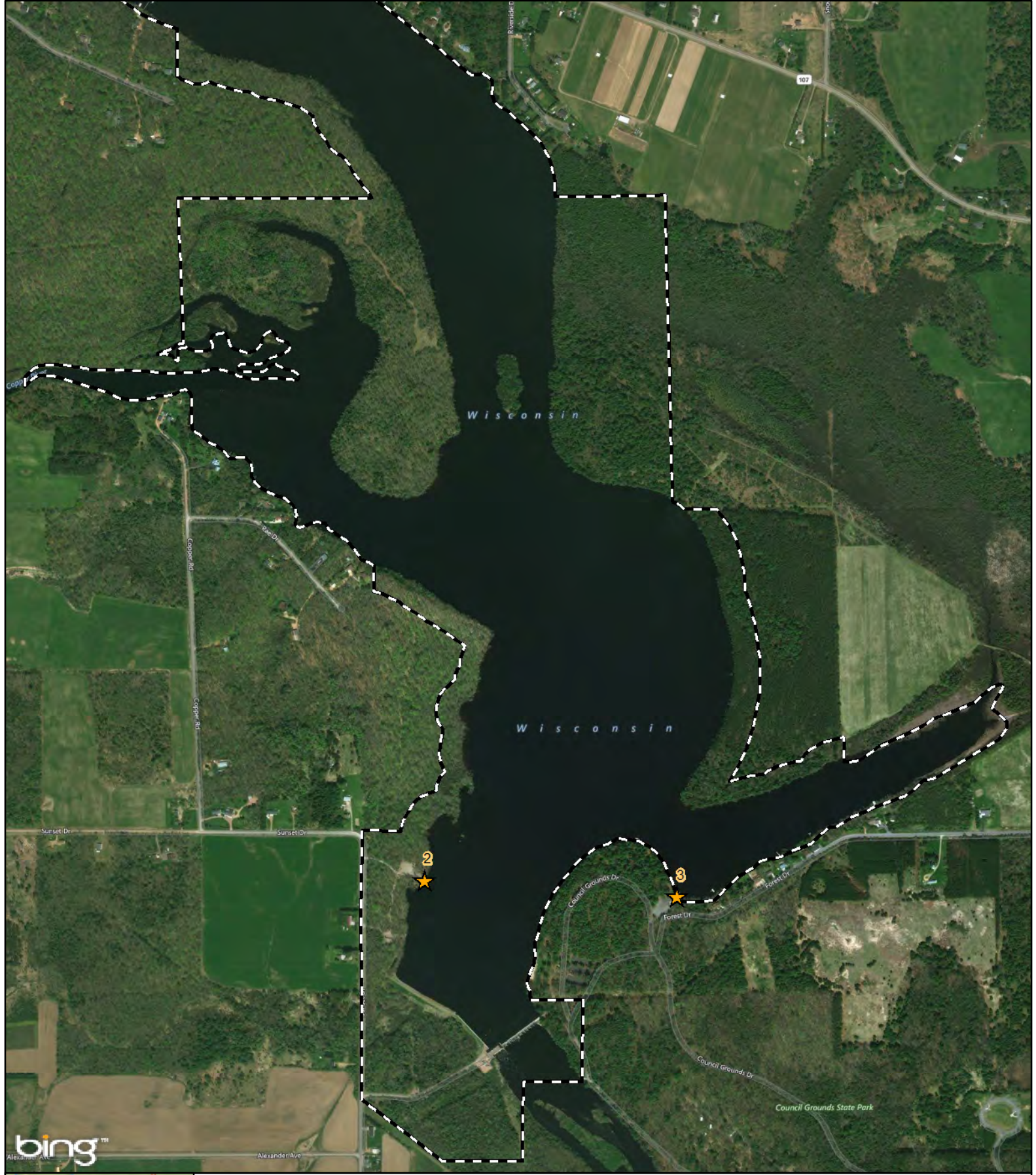


**WPS Alexander-North
Hydroelectric Project
Eurasian Watermilfoil
Survey 2021**



-  Project Boundary
-  Transect Point



9/30/2020



**WPS Alexander-South
Hydroelectric Project
Eurasian Watermilfoil
Survey 2021**

-  Project Boundary
-  Transect Point



APPENDIX D

2021 ZEBRA MUSSEL MONTHLY SUBSTRATE SAMPLING RESULTS

ZEBRA MUSSEL INSPECTION RESULTS
WESTERN HYDROELECTRIC PROJECTS

HYDRO NAME

- Grandfather Falls Merrill Tomahawk Otter Rapids
 Wausau Alexander Jersey Hat Rapids

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 6-21-21
COMMENTS/RESULTS: ok

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 8-30-21
COMMENTS/RESULTS: ok

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 9-24-21
COMMENTS/RESULTS: ok

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 7-27-21
COMMENTS/RESULTS: ok *

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 5-19-21
COMMENTS/RESULTS: ok * same as 7-27-21

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 9-30-21
COMMENTS/RESULTS: ok

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

* Operations did not enter information on this sheet, but on 7/27 completed zebra mussel monitoring from our weekly ✓ off sheet & 76