

Pike Lake – Curly-leaf Pondweed Project

Year 2 Report of Curly-leaf Pondweed Surveys for Pike Lake & the Turtle River between Rice and Pike Lakes

This report is a product of a WDNR Aquatic Invasive Species Grant (Early Detection & Response) awarded to:

Sponsoring Association:
Rice Lake Association, Inc.
Robert Kary
2843 W Great Northern Trails Rd
Mercer, WI 54547

On behalf of:
Pike Lake Association
(Contact: Amanda Kraus)

Submitted to:
Wisconsin Department of Natural Resources
Attention: Madeline Mathes
Email: madeline.mathes@wisconsin.gov

Prepared by:
White Water Associates, Inc.
Dean Premo, Ph.D., Angie Stine, B.S., and Kent Premo, M.S.
429 River Lane, P.O. Box 27
Amasa, Michigan 49903
Phone: (906) 822-7889; E-mail: dean.premo@white-water-associates.com

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Introduction

The recent discovery of the aquatic invasive species (AIS) curly-leaf pondweed (*Potamogeton crispus*) in Pike Lake and the Turtle River (upstream of Pike Lake) motivated a group of Pike Lake stakeholders to organize around managing this aquatic nuisance plant. The group sought financial assistance for this undertaking from the Wisconsin Department of Natural Resources (WDNR) in the form of an AIS grant (Early Detection & Response). As an incipient organization, the Pike Lake group was not yet eligible for the grant but their upstream neighbor, the Rice Lake Association, acted as the sponsoring organization and received the grant. White Water Associates, Inc. was engaged to conduct biological surveys as part of the funded project on both Pike Lake and the Turtle River where it flows between the more upstream Rice Lake and Pike Lake. In 2020, these surveys included (1) point-intercept aquatic plant surveys, (2) surveys for curly-leaf pondweed before and after hand-pulling conducted by volunteers, and (3) AIS surveys. The project specifies that these surveys occur at various times over a three year period (2020, 2021, and 2022). This document reports on the efforts of the second year of activities by White Water Associates, including surveys for curly-leaf pondweed before and after hand-pulling conducted by volunteers.

Study Area

Pike Lake is located near the town of Mercer in Iron County, Wisconsin. It is one of several lakes that exist along the Turtle River. The portion of the Turtle River that was subject to our efforts is located from the river outlet at the southwest end of Rice Lake downstream to the inlet at the northeastern end of Pike Lake. Exhibit 1 is a topographic map of the area that includes Rice Lake, Pike Lake and the Turtle River. Pike Lake is a drainage lake of about 184 acres in surface area and with a maximum depth of 80 feet. Water transparency (Secchi depth) is typically about 7 or 8 feet. The stretch of the Turtle River that runs between Rice Lake and Pike Lake is about 2.6 miles and is generally less than 100 feet wide. It has a distinct current, but for the most part is flat water. There are three short stretches of rapids. It is most easily navigated by small watercraft such as a canoe, although larger motorized watercraft can navigate from Pike Lake about 0.5 mile upstream to the first set of rapids and in the area just downstream of Rice Lake where the river is more lacustrine in its character.

Methods

There were two specific surveys that we conducted on Pike Lake and the Turtle River during 2021: (1) pre-treatment curly-leaf pondweed survey and (2) post-treatment curly-leaf pondweed survey. For the pre-treatment curly-leaf pondweed survey, we did a thorough coverage meander search of the Pike Lake littoral zone and the Turtle River. All locations with curly-leaf pondweed present were characterized as to size of colony and location (GPS coordinates). Where feasible on the Turtle River, we tied surveyors ribbon nearby curly-leaf pondweed locations to make the location easy to find for the volunteer plant management team. This information was transferred in a timely manner to the volunteer team. The pre-treatment survey took place on May 24 and 25, 2021. The pre hand-pulling survey data was conveyed to Iron County Land and Water Conservation Department (Zach Wilson) on May 28, 2021.

After the volunteer hand-pulling team completed a curly-leaf pondweed management bout on the Turtle River and Pike Lake, the White Water Associates team returned for the follow-up monitoring to document the efficacy of the treatment and identify areas of curly-leaf pondweed. This work was conducted on June 15 and 16, 2021. Meander search was again conducted on the river and the lake littoral zone. During this follow-up monitoring all curly-leaf pondweed sites identified during the May 2021 survey were visited. Ribbon was removed during this visit. In Pike Lake and the Turtle River below Rock Dam, the White Water Associates field team removed curly-leaf pondweed during the post-management survey. No curly-leaf pondweed plants were removed from the Upper Turtle River (immediately downstream of Rice Lake).

Results: Curly-leaf Pondweed Surveys (Pre and Post hand-pulling)

On May 28, 2021 (two days after completing the pre hand-pulling survey for curly-leaf pondweed), White Water Associates delivered the findings to Zach Wilson (Iron County Land and Water Conservation Department). Mr. Wilson coordinated the volunteers for the subsequent hand-pulling efforts to manage the curly-leaf pondweed. The deliverables package included:

- A 2-page table of all curly-leaf pondweed sites documented along with notes and other information as well as summary comments (included as Exhibit 2);
- An XLS file that repeats the tabular portion of the table with latitude and longitude
- A GPX file for use in transferring latitude/longitude data to GPS unit(s)
- Four aerial photo images of the curly-leaf pondweed locations (included with Exhibit 2).

After the volunteer team completed the hand-pulling of curly-leaf pondweed, White Water Associates conducted the post hand-pulling survey (June 15 and 16, 2021). Results of this post-hand-pulling survey (table and aerial photos) are included as Exhibit 3.

During the 2021 survey, we observed that a fair amount of new growth of curly-leaf pondweed had occurred between the pre-survey and the post survey. This resulted in finding some curly-leaf pondweed in areas that had been hand-pulled. Presumably, this had emerged after the management actions. The later growth season also resulted in novel locations of curly-leaf pondweed documented for the first time in 2021 during the June survey.

Exhibits

Exhibits 1, 2, and 3 are provided on the following pages of this report.

Exhibit 1. Pike Lake and Turtle River study area.

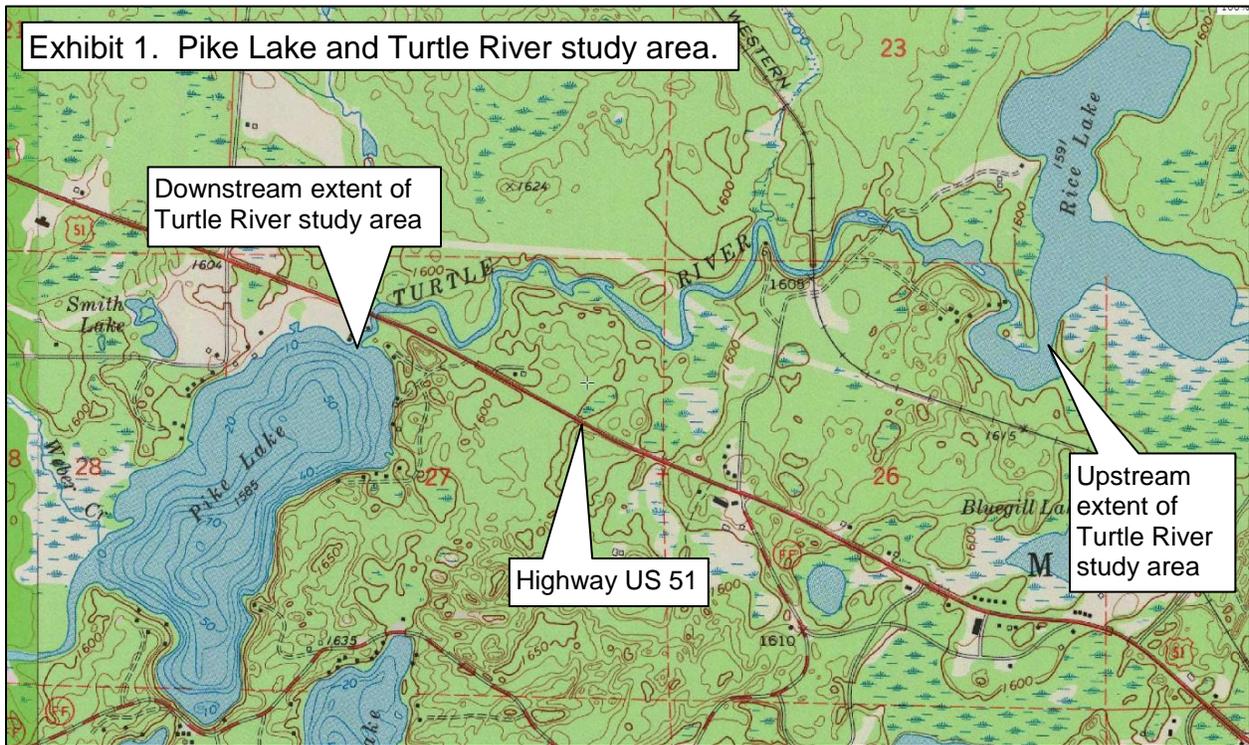


Exhibit 2. May 2021 Curly-leaf Pondweed Survey on the Turtle River and Pike Lake

Pike Lake & Turtle River Curly-leaf Pondweed Locations Documented on May 24 and 25, 2021 (source: White Water Associates)					
GPS Point	Latitude/Longitude	Rating	Location	Ribbon	Notes
218	46.17979; -90.07686	2	See lat/lon	None	
219	46.17976; -90.07687	1	See lat/lon	None	
220	46.17972; -90.07684	1	See lat/lon	None	
221	46.17967; -90.07683	1	See lat/lon	None	
222	46.17964; -90.07683	1	See lat/lon	None	
223	46.17968; -90.07675	1	See lat/lon	None	
224	46.17969; -90.07670	1	See lat/lon	None	
225	46.17953; -90.07688	1	See lat/lon	None	
226	46.17961; -90.07701	1	See lat/lon	None	
227	46.17949; -90.07710	1	See lat/lon	None	
228	46.17932; -90.07763	1	See lat/lon	None	3 CLP plants
229	46.17925; -90.07769	1	See lat/lon	None	3 CLP plants
230	46.17918; -90.07783	1	See lat/lon	None	1 CLP plant
231	46.17964; -90.07982	1	See lat/lon	None	1 CLP plant
232	46.17959; -90.07971	1	See lat/lon	None	
233	46.17919; -90.07857	1	See lat/lon	None	
234	46.17919; -90.07857	1	See lat/lon	None	
235	46.17922; -90.07855	1	See lat/lon	None	
236	46.17914; -90.07853	1	See lat/lon	None	
237	46.17937; -90.07740	1	See lat/lon	None	
238	46.17947; -90.07719	1	See lat/lon	None	

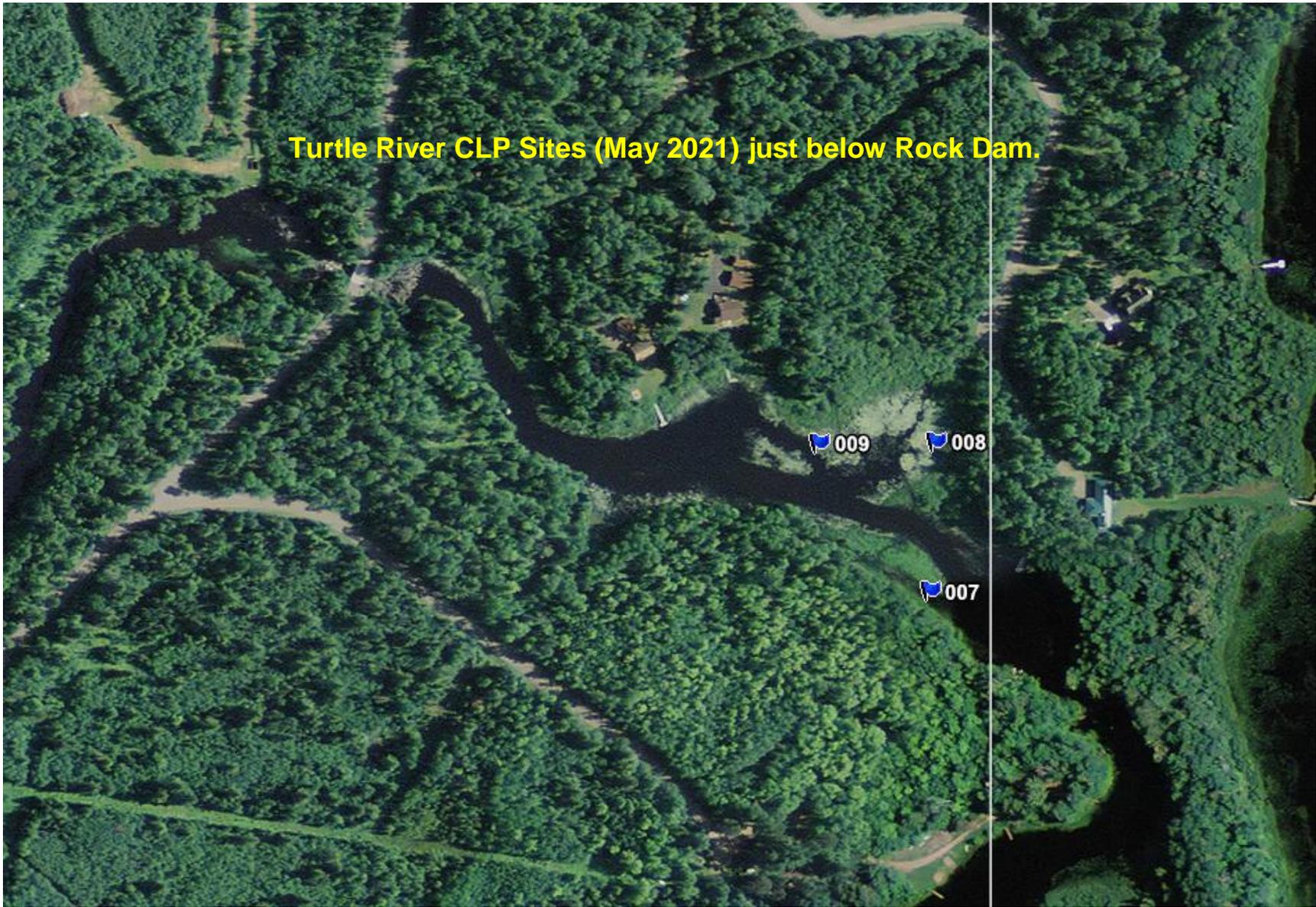
239	46.17951; -90.07709	1	See lat/lon	None	
7	46.18281; -90.08046	1	River Left	None	Left of island; check channel
8	46.18361; -90.08041	2	River Right	None	Right bank of bay small plants
9	46.18360; -90.08131	2	River Right	None	
10	46.18150; -90.09472	2	River Right	Yes	Long cluster
11	46.18136; -90.09630	3	River Right	Yes	12" long cluster a lot of plants
12	46.18148; -90.09701	3	River Left	Yes	Entrance of bend
13	46.18122; -90.09680	2	River left	None	Everywhere in shallow cove
14	46.18249; -90.09936	3	River Left	Yes	Big mat on left bank
15	46.18237; -90.09969	2	River Left	Yes	Sprinkled around
16	46.18218; -90.10009	3	River Left	None	Middle of cove sprinkled
17	46.18152; -90.10877	1	River Left	Yes	Short plants 3
Pike Lake 1 (240)	46.17078; -090.11538	2	See lat/lon	No	5 CLP plants
Pike Lake 2 (241)	46.17074; -090.11545	2	See lat/lon	No	5 CLP plants
Pike Lake 3 (242)	46.16975; -90.11943	1	See lat/lon	No	3 CLP plants; Out past dock 5 more CLP plants
Pike Lake 4 (243)	46.16981; -90.11944	2	See lat/lon	No	6 CLP plants
Pike Lake 5 (244)	46.16989; -90.11935	2	See lat/lon	No	10 CLP plants – under overhanging tree right off dock
Pike Lake 6 (244)	46.17184; -90.11988	2	See lat/lon	No	White dock – brown stairs; 5 CLP plants
Pike Lake 7 (244)	46.17190; -090.11990	2	See lat/lon	No	5 CLP plants

Rating scale: 1=1-4 CLP plants; 2=5-10 CLP plants; 3=>11 CLP plants

During the dedicated 2021 pre-handpulling CLP survey, we logged thirty-three locations for CLP on the Turtle River and seven locations on Pike Lake (the Pike Lake points, however, where located in three discrete areas). For the 33 sites on the Turtle River, we flagged 6 sites with plastic ribbon on which was written the GPS Point Number. Remaining sites were not conducive to being flagged in this manner.

For our CLP finds on the Turtle River, 23 sites had 1 to 4 rooted plants, 6 sites had 5 to 10 rooted plants, 4 sites had >11 rooted plants. On Pike Lake, one site (Pike Lake 3) had 1-4 plants and six sites had 5-10 plants.





Lower Turtle River CLP Sites (May 2021) just upstream of Pike Lake.





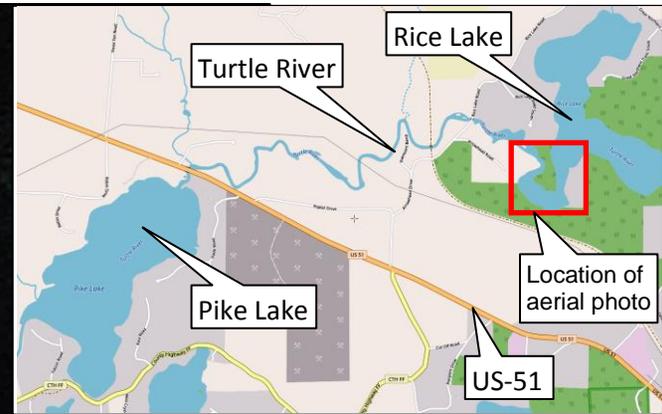
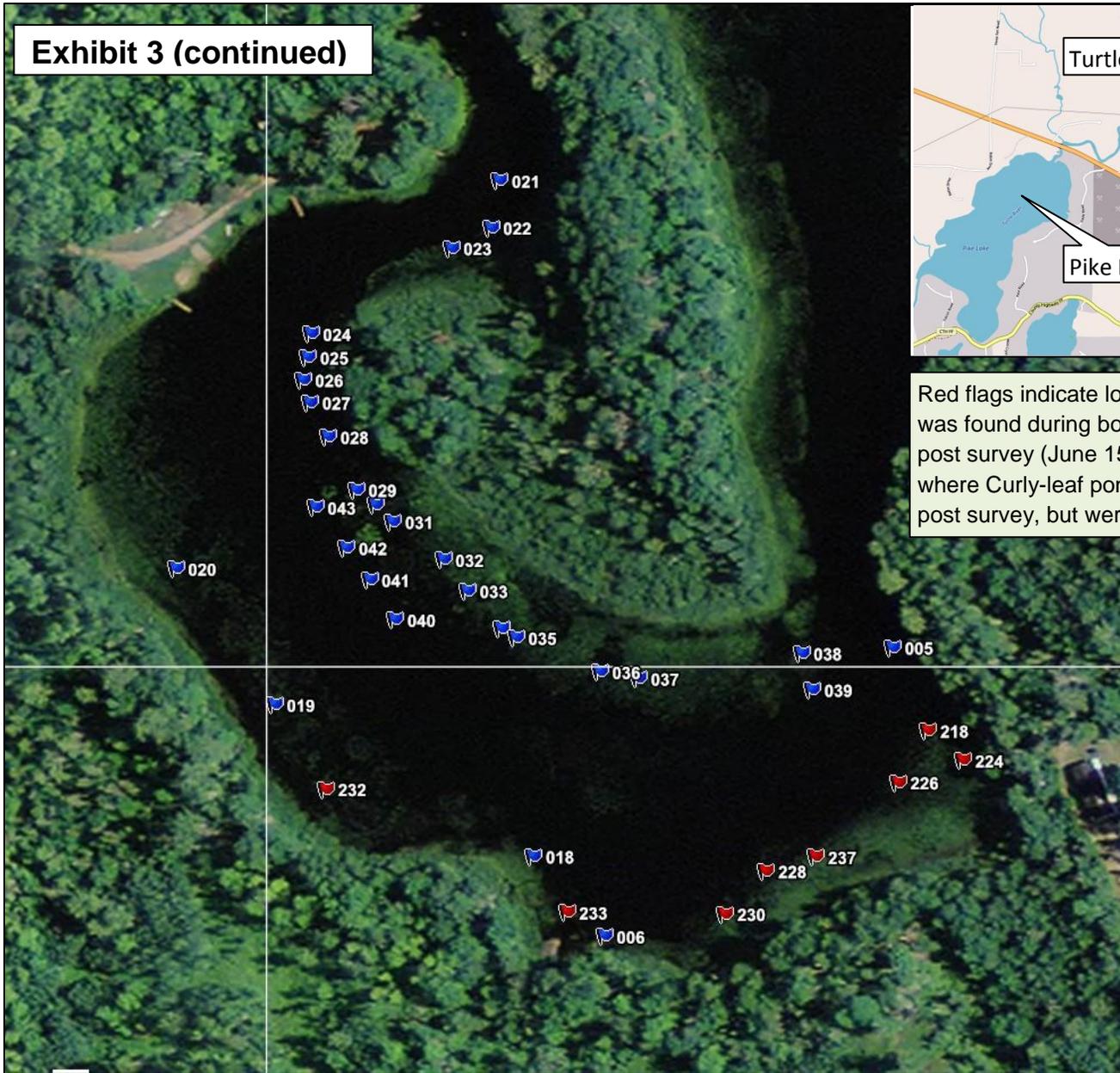
Exhibit 3. Pike Lake & Turtle River Curly-leaf Pondweed (CLP) Locations Documented on June 15 and 16, 2021				
GPS Point	Latitude/Longitude	Rating	Location	Notes
The following sites were in the upper part of the Turtle River (immediately downstream of Rice Lake)				
005	46.18006; -90.07703	3	River Right	15 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
006	46.17911; -90.0784	1	River Right	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
018	46.17937; -90.07873	1	River Right	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
019	46.17987; -90.07996	1	See lat/lon	4 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
020	46.18032; -90.08043	1	See lat/lon	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
021	46.18159; -90.07889	2	See lat/lon	10 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
022	46.18144; -90.07893	2	See lat/lon	10 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
023	46.18137; -90.07912	1	See lat/lon	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
024	46.18109; -90.07979	2	See lat/lon	10 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
025	46.18101; -90.0798	1	See lat/lon	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
026	46.18094; -90.07982	2	See lat/lon	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
027	46.18086; -90.07979	2	See lat/lon	5 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
028	46.18075; -90.0797	2	See lat/lon	5 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
029	46.18058; -90.07957	1	River Left	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
030	46.18053; -90.07948	1	River Left	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
031	46.18047; -90.0794	2	River Left	5 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
032	46.18035; -90.07916	1	River Left	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
033	46.18024; -90.07904	2	River Left	5 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
034	46.18012; -90.07889	1	River Left	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
035	46.18009; -90.07882	1	River Left	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
036	46.17998; -90.07842	1	River Left	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff

Exhibit 3. Pike Lake & Turtle River Curly-leaf Pondweed (CLP) Locations Documented on June 15 and 16, 2021

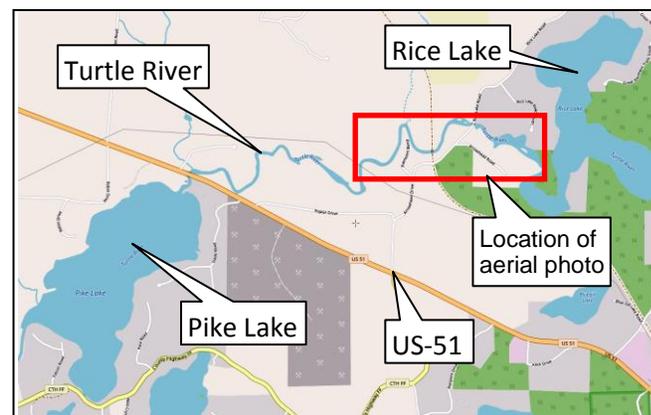
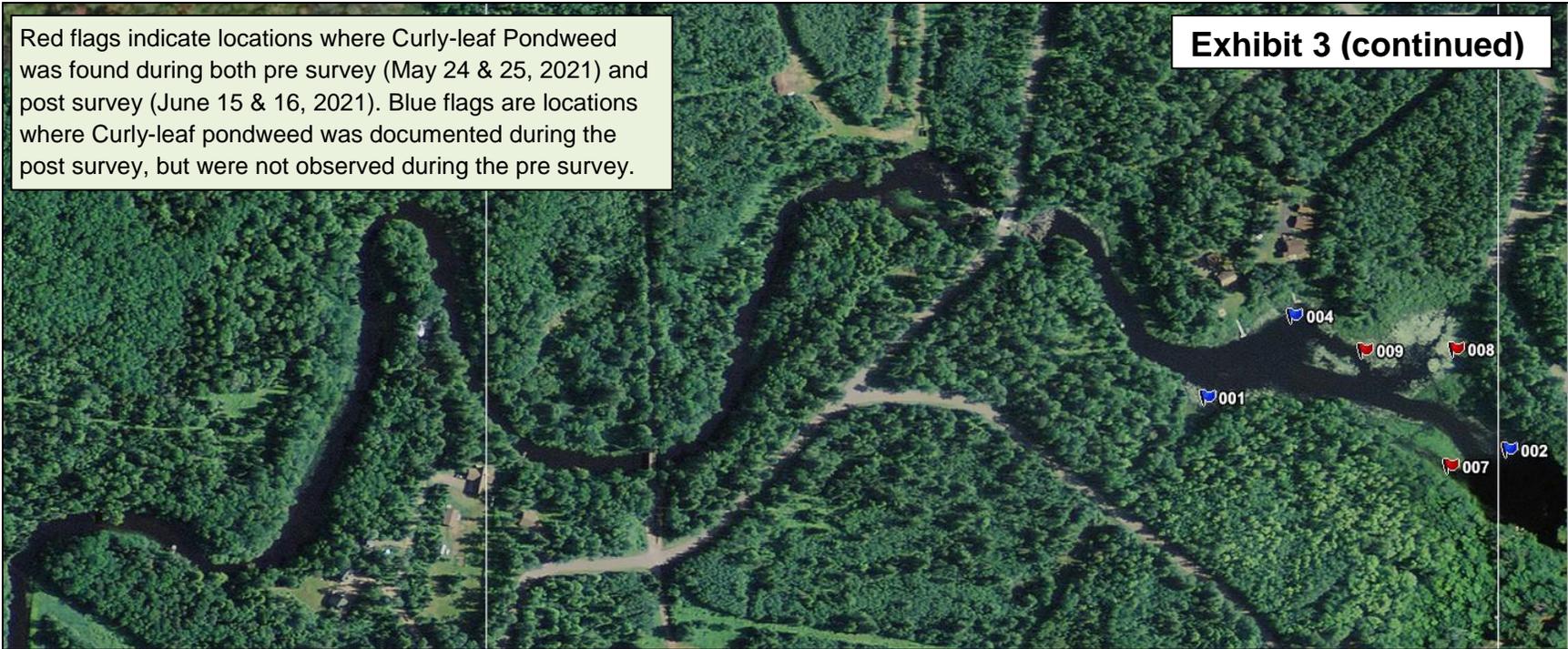
GPS Point	Latitude/Longitude	Rating	Location	Notes
037	46.17996; -90.07824	1	River Left	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
038	46.18004; -90.07747	3	River Left	3 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
039	46.17992; -90.07741	2	See lat/lon	3 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
040	46.18015; -90.07939	3	See lat/lon	10 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
041	46.18028; -90.07951	2	See lat/lon	5 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
042	46.18039; -90.07962	1	See lat/lon	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
043	46.18052; -90.07976	1	See lat/lon	3 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
218	46.17979; -90.07686	3	River Right	15 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
224	46.17969; -90.0767	3	River Right	50 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
226	46.17961; -90.07701	3	River Right	15 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
237	46.17937; -90.0774	1	River Right	5 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
228	46.17932; -90.07763	3	River Right	20 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
230	46.17918; -90.07783	1	River Right	2 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
233	46.17919; -90.07857	1	River Right	3 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
232	46.17959; -90.07971	1	See lat/lon	2 plants; Site documented in the pre-survey; No CLP plants pulled by WWA staff
005	46.18006; -90.07703	3	River Right	15 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
006	46.17911; -90.0784	1	River Right	2 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
018	46.17937; -90.07873	1	River Right	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff
019	46.17987; -90.07996	1	See lat/lon	4 plants; New Site (found in post survey); No CLP plants pulled by WWA staff
020	46.18032; -90.08043	1	See lat/lon	1 plant; New Site (found in post survey); No CLP plants pulled by WWA staff

Exhibit 3. Pike Lake & Turtle River Curly-leaf Pondweed (CLP) Locations Documented on June 15 and 16, 2021				
GPS Point	Latitude/Longitude	Rating	Location	Notes
The following sites were in the the Turtle River between Rock Dam and Pike Lake				
011	46.18136; -90.0963	2	River Right	10 CLP plants pulled by WWA staff; site documented in the pre-survey
012	46.18148; -90.09701	3	River Left	30-40 CLP plants pulled by WWA staff; site documented in the pre-survey
015	46.18237; -90.09969	3	River Left	30 CLP plants pulled by WWA staff; site documented in the pre-survey
016	46.18218; -90.10009	3	River Left	40-50 CLP plants pulled by WWA staff; site documented in the pre-survey
007	46.18281; -90.08046	1	River Left	50-70 CLP plants pulled by WWA staff; site documented in the pre-survey
008	46.18361; -90.08041	3	River Right	40 CLP plants, no plants pulled by WWA staff; site documented in the pre-survey
009	46.1836; -90.08131	3	River Right	13 CLP plants pulled by WWA staff; site documented in the pre-survey
017	46.18152; -90.10877	1	River Left	4 CLP plants pulled by WWA staff; site documented in the pre-survey
001	46.18328; -90.08287	2	River Left	10 CLP plants, none pulled by WWA staff; new site found in post-survey
002	46.18292; -90.07989	2	River Right	No rooted CLP, but fragments on tree in water; new site found in post-survey
004	46.18384; -90.082	1	River Right	3 CLP in 5 ft depth, none pulled by WWA staff; new site found in post-survey
The following sites were in the the Turtle River between Rock Dam and Pike Lake				
242	46.16975; -90.1194	2	---	6-8 CLP plants pulled by WWA staff; Site documented in the pre-survey
243	46.16981; -90.1194	2	---	10 CLP plants pulled by WWA staff; Site documented in the pre-survey
244	46.16989; -90.1194	3	---	20 CLP plants pulled by WWA staff; Site documented in the pre-survey
001	46.16928; -90.1193	2	---	7-10 CLP plants pulled by WWA staff; New Site (found in post survey)
002	46.17429; -90.1215	3	---	30 CLP plants pulled by WWA staff; New Site (found in post survey)
003	46.17439; -90.1213	1	---	4 CLP plants pulled by WWA staff; New Site (found in post survey)

Exhibit 3 (continued)



Red flags indicate locations where Curly-leaf Pondweed was found during both pre survey (May 24 & 25, 2021) and post survey (June 15 & 16, 2021). Blue flags are locations where Curly-leaf pondweed was documented during the post survey, but were not observed during the pre survey.



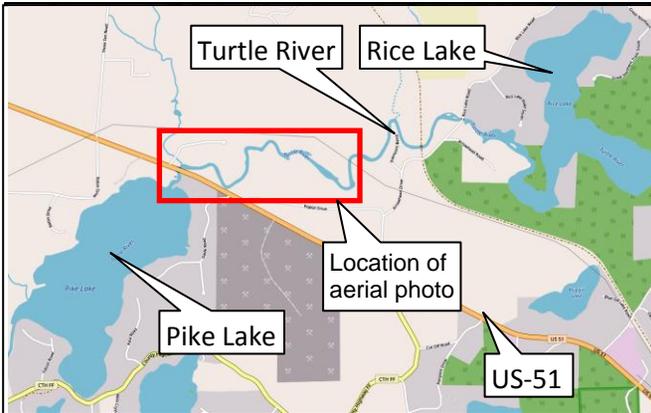


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Red flags indicate locations where Curly-leaf Pondweed was found during both pre survey (May 24 & 25, 2021) and post survey (June 15 & 16, 2021). Blue flags are locations where Curly-leaf pondweed was documented during the post survey, but were not observed during the pre survey.

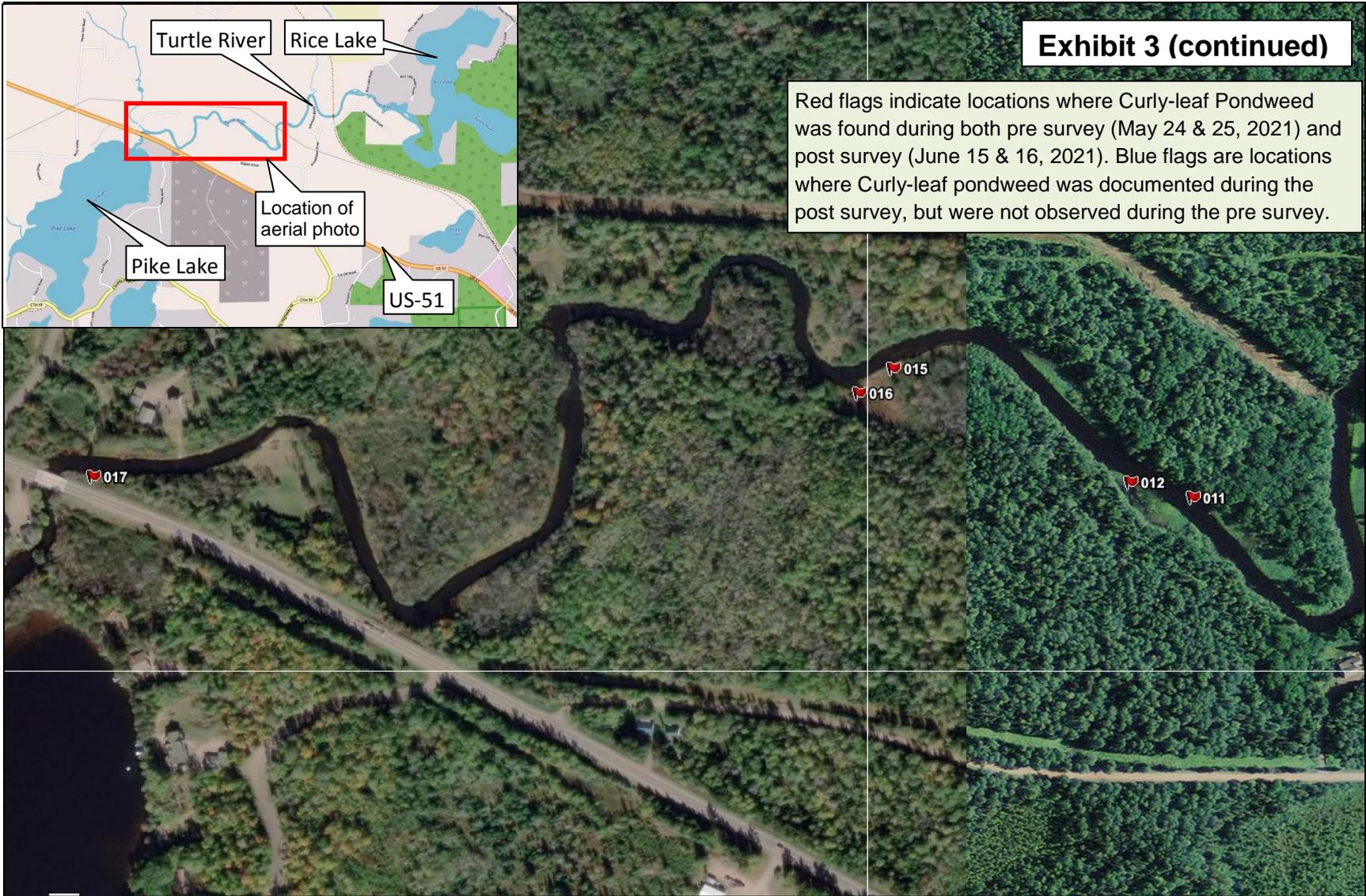
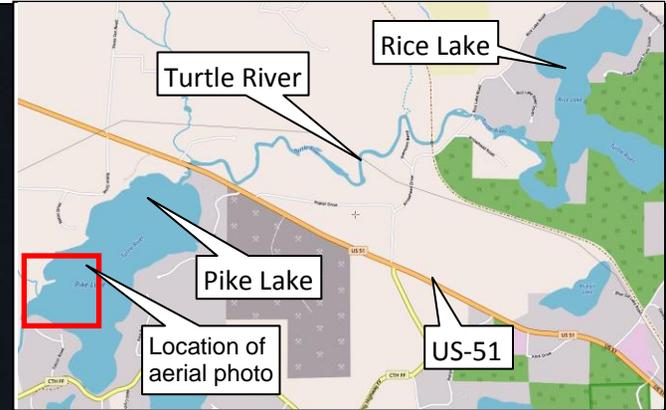
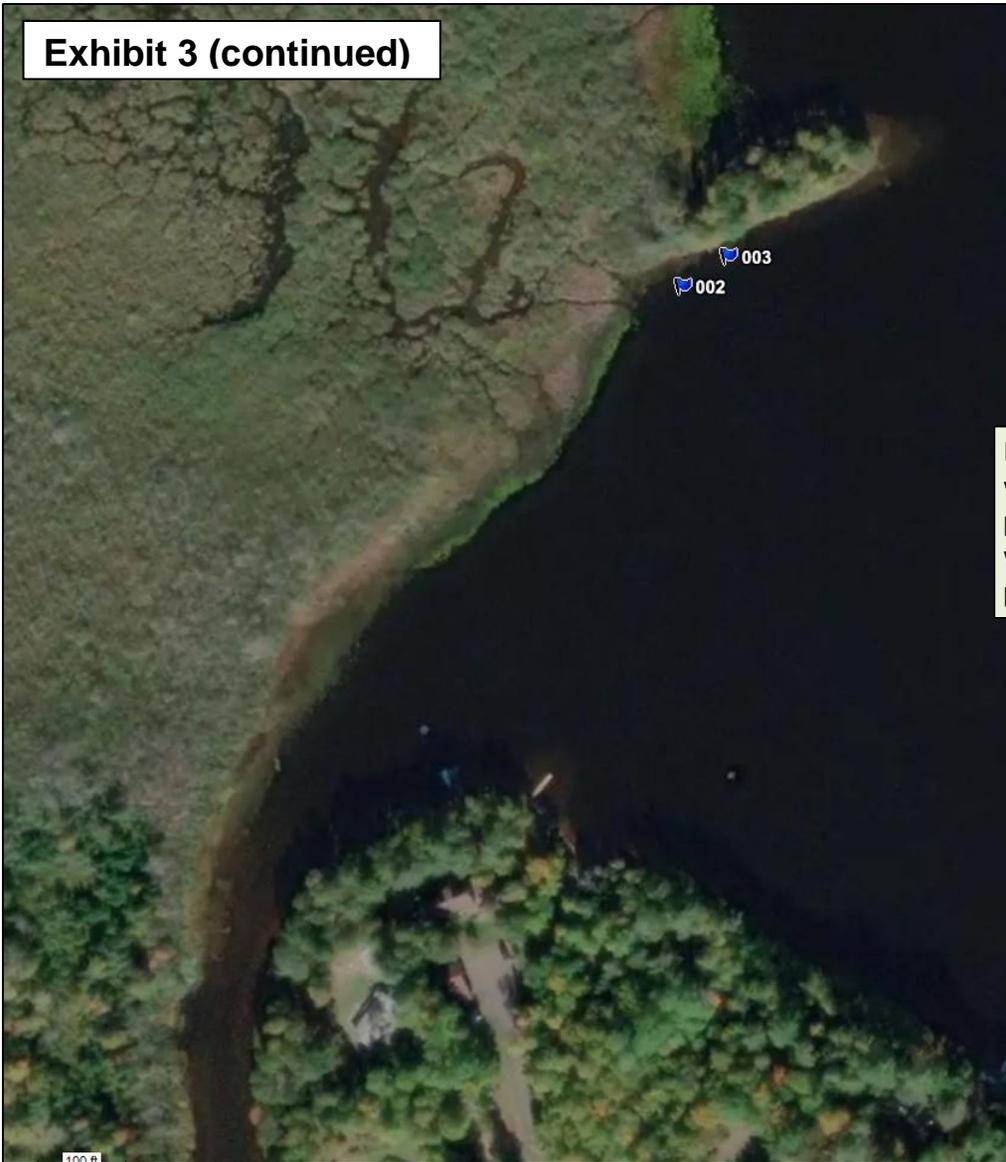


Exhibit 3 (continued)



Red flags indicate locations where Curly-leaf Pondweed was found during both pre survey (May 24 & 25, 2021) and post survey (June 15 & 16, 2021). Blue flags are locations where Curly-leaf pondweed was documented during the post survey, but were not observed during the pre survey.

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Exhibit 3 (last page)

