



# Manitowish CLP Removal Report 2017

PO Box 1134 Minocqua, WI 54548



# Manitowish CLP Removal Summary 2017

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**Summary:** On June 14th, 15th, and 16th, Aquatic Plant Management LLC (APM) Conducted hand removal services of Curly Leaf Pondweed (CLP) on Rest Lake and Spider Lake in Manitowish Waters, WI. Our divers spent a combined total of 78 hours on the water and were able to successfully remove 13.4 cubic feet of CLP from the lake. Using the GPS coordinates provided by Onterra LLC, we worked our way across the 2017 hand-harvest sites, systematically line-swimming in search of CLP occurrences. On June 14th, we worked mainly on the two small plant colonies located in the northern part of Rest Lake. On June 15th, we returned to the small plant colonies, targeting any low-lying CLP occurrences, as well as several single plants located nearby. On June 16th, we targeted the single plants located in the Spider/Island Lake channel, but we encountered a higher-than-expected number of CLP plants.

**Dive Conditions:** Conditions on 6/14/16 were ideal for CLP hand-harvesting. Overcast skies with mild winds persisted throughout the day. Both the air and water temperatures were recorded at 70 degrees. Conditions on 6/15/17 were also ideal, with clear skies and mild winds. The air temperature was recorded at 80 degrees, while the water temperature was recorded at 71 degrees.. A secchi disk reading on both days indicated water visibility was roughly 7 feet. Conditions on 6/16/17 were ideal for CLP hand-harvesting, with clear skies and high winds. The air temperature was recorded at 76 degrees, while the water temperature was recorded at 74 degrees. A secchi disk reading indicated water visibility was roughly 10 feet.

**Recommendations:** While we were able to remove all visible CLP from the 2017 control area on Rest Lake, we were only able to target the Spider/Island Lake channel area on 6/16/17. Due to this fact, it is suggested that either a volunteer effort or professional hand-harvesting be undertaken to target the remaining single plants in Spider Lake and Stone Lake . Continued monitoring and management efforts are paramount to reducing current CLP levels and preventing its spread to other areas of the Manitowish Chain of Lakes.

# Detailed Diving Activities

Date	Dive Location	Latitude	Longitude	Time Underwater (Hrs)	Estimated CLP Removed Cubic Feet	CLP Density Rating	Comments
6/14/17	Small plant colony	46.15144	89.87761	1.00	2	12	Located and removed a large number of CLP plants
6/14/17	Small plant colony	46.15144	89.87761	1.00	1	5	Located and removed a large number of CLP plants
6/14/17	Small plant colony	46.15144	89.87761	0.67	0.75	1	Located and removed several CLP plants
6/14/17	Small plant colony	46.15146	89.87748	0.83	1.5	7	Located and removed a large number of CLP plants
6/14/17	Small plant colony	46.15146	89.87748	0.58	0.25	2	Located and removed several relatively short CLP plants
6/14/17	Clumps	46.1518	89.87746	0.50	1.5	7	Located and removed a large number of CLP plants

<b>CLP Density Rating</b>	0	1	2	3	4	5	6	7	8	9	10
<b>Plants per 5 Square Yards</b>	0	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20

# Detailed Diving Activities

Date	Dive Location	Latitude	Longitude	Time Underwater (Hrs)	Estimated CLP Removed Cubic Feet	CLP Density Rating	Comments
6/15/17	Small Plant Colony	46.15147	89.8775	1.00	0.25	2	Located and removed several short CLP plants
6/15/17	Small Plant Colony	46.15147	89.8775	0.75	0.25	2	Located and removed several short CLP plants
6/15/17	Single	46.15163	89.87645	0.33	0.1	1	Located and removed two CLP plants
6/15/17	Single	46.15184	89.87653	0.17	0.25	3	Located and removed six CLP plants
6/15/17	Single	46.1516	89.87762	0.33	0.25	3	Located and removed six CLP plants
6/15/17	Clumps	46.15181	89.87747	1.17	0.25	1	Located and removed remaining short CLP plants
6/15/17	Small Plant Colony	46.15148	89.87749	1.00	0.1	1	Located and removed remaining short CLP plants
6/15/17	Small Plant Colony	46.15144	89.87761	0.75	0.1	1	Located and removed remaining short CLP plants
6/15/17	Small Plant Colony	46.15144	89.87761	0.50	0	0	Unable to locate any CLP plants

<b>CLP Density Rating</b>	0	1	2	3	4	5	6	7	8	9	10
<b>Plants per 5 Square Yards</b>	0	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20



# Detailed Diving Activities

Date	Dive Location	Latitude	Longitude	Time Underwater (Hrs)	Estimated CLP Removed Cubic Feet	CLP Density Rating	Comments
6/16/17	Scattered Single Plants	46.12526	89.81276	1.08	2	7	Located and removed a large number of relatively short CLP plants growing amongst the scattered single plants
6/16/17	Scattered Single Plants	46.12518	89.81317	0.75	1.5	6	Located and removed a large number of relatively short CLP plants growing amongst the scattered single plants
6/16/17	Scattered Single Plants	46.12518	89.81317	0.83	0.25	1	Located and removed remaining short CLP plants
6/16/17	Scattered Single Plants	46.12509	89.81339	0.75	1	4	Located and removed a low number of relatively short CLP plants growing amongst the scattered single plants
6/16/17	Single Plant	46.12453	89.81313	0.33	0.1	1	Located and removed two CLP plants

<b>CLP Density Rating</b>	0	1	2	3	4	5	6	7	8	9	10
<b>Plants per 5 Square Yards</b>	0	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20

# CLP Pictures



# CLP Pictures

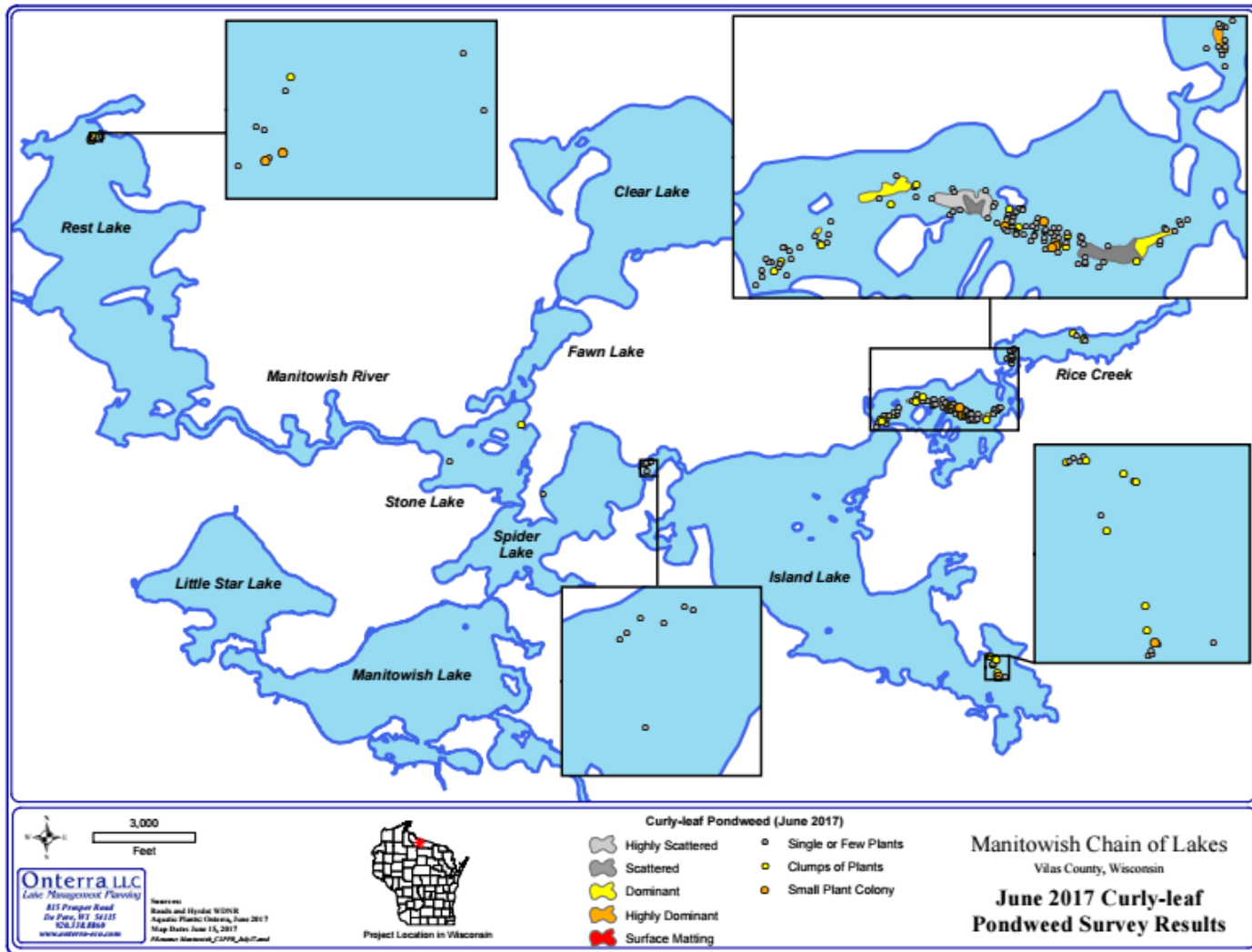


# CLP Pictures





# Map Created by Onterra LLC



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