



# On-Site Lake Evaluation Record

Lake Name: Loon Lake

County: Iosco

Evaluated by: Mitch Hiler

Reviewed by: Bre Grabill

Date: 11 September 2014

Purpose of evaluation: End of Season Evaluation

## Evaluations Performed

### Aquatic Vegetation Evaluation

- Aquatic vegetation survey
- Aquatic vegetation brief check

### Vegetation evaluation methods

- Visual evaluation
- Sample collection with rake
- Sonar profiling
- GPS-mapped sample locations

- Water quality sampling
  - On-site (Temperature, DO, Secchi disk)
  - Water samples collected for  
\_\_\_\_TP, TN, ALK\_\_\_\_ analysis

- GPS data collection
  - Depth survey
  - Shoreline mapping
  - Reference point location

Other \_\_\_\_\_

## Overall Condition of Lake

- excellent (no problems or developing problems noted)
- very good (no immediate action required)
- fair (management required soon)
- poor (management needed as soon as possible)
- very poor (management action past due—IMMEDIATE response required)

## Problems Noted

- Growth of exotic plants (mark locations on map)
  - Eurasian watermilfoil
  - curlyleaf pondweed
  - other \_\_\_\_\_
- Growth of native plants
- Excessive filamentous algae growth (mark location on map)
- Poor water clarity
- Blue-green algal blooms



## **RECOMMENDATIONS**

- X Monitoring Program:
  - Continue monitoring program next season:  Yes,  No
- X Herbicide application: Continue Program Next Season
  - Need for herbicide treatments next season:  urgent,  serious,  moderate,  slight
- X Algaecide application: Continue Program Next Season
  - Need for algae treatments next season:  urgent,  serious,  moderate,  slight

## **NOTES**

Loon Lake was evaluated on 11 September 2014. At this time, a full lake AVAS Survey was performed along with collecting the end of summer water quality samples.

The Water Quality Report is attached in a separate report. The 2013 sampling showed a September Total Phosphorus reading of 47ug/L, which is considered enriched. The 2014 data show much lower levels, a Spring reading of 16ug/L and a Fall reading of 7ug/L. The Spring reading could be slightly higher (and higher than 2013 levels) because of the increased rainfall and snow from the previous winter and spring. Overall, the 2014 data look good for a lake as developed as Loon Lake. Nitrates are not a problem at this time. All the data is put together to conclude the TSI (Trophic Status Indicator) which in the Spring determined the lake to be mesotrophic (moderate nutrients, clear water and moderate productivity) and in the fall determined the lake to be meso-oligotrophic (low nutrients, high clarity, able to support a robust cold water fishery). I recommend collecting additional data in 2015. It is important to track fluctuations and trends in the water quality parameters tested.

The AVAS Surveyed showed that numerous native plants were present within the lake, including but not limited to Northern watermilfoil, Chara, Lily pads, Coontail, Elodea, and various pondweeds. Maintaining a diverse plant community is key in lake management and protecting the lake ecosystem. Although treatments were performed in 2014 for the control of exotic plants (Curlyleaf pondweed—none of which was found in the September survey) and nuisance native plants, these treatments were performed in such a way to allow for recreational and navigational use of the lake to be increased while protecting the diversity of the plant ecosystem. Slightly more diversity and density of plants were found in 2015 than 2014. Much of this fluctuation is in the amount of Wild Celery present in the lake. Nuisance native plant control is seasonal and will be required in 2015. The degree to what is required each season will fluctuate slightly with seasonal temperatures and weather as well as with changes in the plant community. Therefore, a budget for 2015 is recommended to include optional treatments for these control measures with a projected high and low end based on past requirements.

It is recommended to continue the monitoring program in 2014. Treatment efforts for algae control is recommended to continue as well. Controlling any exotic plants, included Curlyleaf pondweed is a top priority. Nuisance native plant control is recommended to improve navigation around the lake, while protecting undeveloped and offshore plant beds for the protection of Loon Lake. At no time will treatments be performed or recommended that would negatively impact the fishery and overall ecosystem of Loon Lake. Wild Celery is the most prominent native plant on the lake, showing levels that this native plant is aggressively growing. Treatments for Wild Celery should continue to help deter its nuisance presence in the water column, while still allowing it to serve as fish habitat.

Overall, Loon Lake is in very good condition and the program is recommended to continue in 2015. Please contact me with questions or concerns.

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### Standard Aquatic Vegetation Summary Sheet

| Code No | Plant Name              | Total number of AVAS's for each Density Category |    |    |   | Calculations |        |        |        | Sum of Columns 5-8 | Total No. of AVAS | Col 9 divided by Col 10 |
|---------|-------------------------|--|----|----|---|--------------|--------|--------|--------|--------------------|-------------------|-------------------------|
|         |                         | A  | B  | C  | D | A x 1        | B x 10 | C x 40 | D x 80 | 9                  | 10                | 11                      |
| 1       | Eurasian watermilfoil   | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    | 77                |                         |
| 2       | Curly leaf pondweed     | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 3       | Chara                   | 12   | 31 | 28 | 0 | 12           | 310    | 1120   | 0      | 1442               | 77                | 18.73                   |
| 4       | Thinleaf pondweed       | 2  | 2  | 1  | 0 | 2            | 20     | 40     | 0      | 62                 | 77                | 0.81                    |
| 5       | Flatstem pondweed       | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 6       | Robbins pondweed        | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 7       | Variable pondweed       | 21   | 7  | 0  | 0 | 21           | 70     | 0      | 0      | 91                 | 77                | 1.18                    |
| 8       | White stem pondweed     | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 9       | Richardsons pondweed    | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 10      | Illinois pondweed       | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 11      | Large leaf pondweed     | 15   | 24 | 0  | 0 | 15           | 240    | 0      | 0      | 255                | 77                | 3.31                    |
| 12      | American pondweed       | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 13      | Floating leaf pondweed  | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 14      | Water stargrass         | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 15      | Wild celery             | 0  | 4  | 68 | 0 | 0            | 40     | 2720   | 0      | 2760               | 77                | 35.84                   |
| 16      | Sagittaria (submersed)  | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 17      | Northern watermilfoil   | 24   | 23 | 9  | 0 | 24           | 230    | 360    | 0      | 614                | 77                | 7.97                    |
| 18      | Green watermilfoil      | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 19      | Two-leaved watermilfoil | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 20      | Coontail                | 7  | 0  | 0  | 0 | 7            | 0      | 0      | 0      | 7                  | 77                | 0.09                    |
| 21      | Elodea                  | 2  | 1  | 0  | 0 | 2            | 10     | 0      | 0      | 12                 | 77                | 0.16                    |
| 22      | Bladderwort             | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 23      | Mini Bladderwort        | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 24      | Buttercup               | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 25      | Naiad                   | 1  | 1  | 0  | 0 | 1            | 10     | 0      | 0      | 11                 | 77                | 0.14                    |
| 26      | Brittle naiad           | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 27      | Sago Pondweed           | 0  | 9  | 2  | 0 | 0            | 90     | 80     | 0      | 170                | 77                | 2.21                    |
| 28      | Cabomba                 | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 29      | Starry Stonewort        | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 30      | Water Lily              | 6  | 14 | 4  | 0 | 6            | 140    | 160    | 0      | 306                | 77                | 3.97                    |
| 31      | Spatterdock             | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 32      | Water shield            | 11   | 0  | 0  | 0 | 11           | 0      | 0      | 0      | 11                 | 77                | 0.14                    |
| 33      | Lemna minor             | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 34      | Greater duckweed        | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 35      | Watermeal               | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 36      | Arrowhead               | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 37      | Pickerelweed            | 0  | 2  | 2  | 0 | 0            | 20     | 80     | 0      | 100                | 77                | 1.30                    |
| 38      | Arrow arum              | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 39      | Cattail                 | 8  | 14 | 4  | 0 | 8            | 140    | 160    | 0      | 308                | 77                | 4.00                    |
| 40      | Bulrush                 | 22   | 21 | 26 | 0 | 22           | 210    | 1040   | 0      | 1272               | 77                | 16.52                   |
| 41      | Iris                    | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 42      | Swamp loosestrife       | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 43      | Purple loosestrife      | 8  | 3  | 0  | 0 | 8            | 30     | 0      | 0      | 38                 | 77                | 0.49                    |
| 44      | Phragmites              | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 45      | Variable leaf milfoil   | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |
| 46      |                         | 0  | 0  | 0  | 0 | 0            | 0      | 0      | 0      |                    |                   |                         |

**Total cumulative cover**

**96.87**

