# A

# APPENDIX A

## Public Participation Materials


## Presentation Outline

- Onterra, LLC
- Why Create a Management Plan?
- Elements of a Lake Management Planning Project
  - Data & Information
  - Planning Process

Onterra, LLC

## Onterra, LLC

- Founded in 2005
- Staff
  - Three full-time ecologists
  - Two part-time ecologists
  - Two interns
- Services
  - Science and planning
- Philosophy
  - Promote realistic planning
  - Assist, not direct

Onterra, LLC

## Why create a lake management plan?

- To create a better understanding of lake's positive and negative attributes.
- To discover ways to minimize the negative attributes and maximize the positive attributes.
- To foster realistic expectations and dispel myths.
- To create a snapshot of the lake for future reference and planning.

Onterra, LLC

## *Elements of an Effective Lake Management Planning Project*

**Data and Information Gathering**

*Environmental & Sociological*

**Planning Process**

*Brings it all together*

Onterra, LLC

## *Data and information gathering*

- Study Components
  - Water Quality Analysis
  - Watershed Assessment
  - Aquatic Plant Surveys
  - Fisheries Data Integration
  - Stakeholder Survey

Onterra, LLC

## *Water Quality Analysis*

- General water chemistry (current & historic)
- Nutrient analysis
  - Lake trophic state (Eutrophication)
  - Limiting plant nutrient
- Supporting data for watershed modeling
- Internal Nutrient Load Modeling
  - Thanks Marlene & Glenn Rezek!

Onterra, LLC

## *Watershed Assessment*

- Delineation of drainage basin
- Modeling
  - Land cover
  - Phosphorus loading
  - Scenario development

## *Aquatic Plant Surveys*

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Curly-leaf pondweed survey
  - Point-intercept survey
  - Plant community mapping
  - Volunteer survey findings

Onterra, LLC

## Non-native Aquatic Plants

### Curly-leaf Pondweed


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## Non-native Aquatic Plants

### Eurasian Water Milfoil

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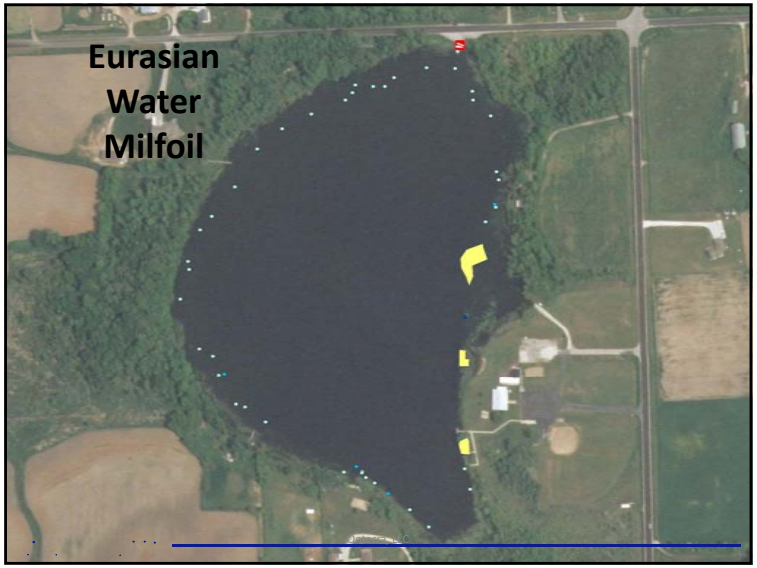
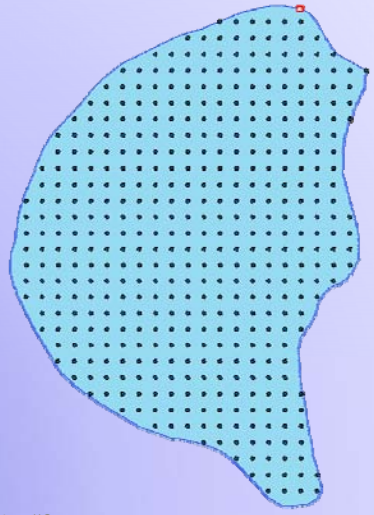


**Harpt Lake**
17-meter resolution
446 points
**Completed by Onterra 2009**



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## *Fisheries Data Integration*

- No fish sampling completed
- Assemble data from WDNR, USGS, USFWS, & GLIFWC
- Fish survey results summaries (if available)
- Use information in planning as applicable

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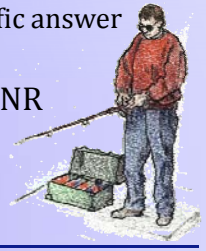
## *Stakeholder Survey*

- Standard survey used as base
  - Planning committee develops additional questions and options
  - Must not lead respondent to specific answer through a "loaded" question
- Survey must be approved by WDNR



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## *Planning Process*

### *Planning Committee Meetings*

Study Results (including a stakeholder survey)
Conclusions & Initial Recommendations
Management Goals
Management Actions
  Timeframe
  Facilitator(s)

↓

***Implementation Plan***

Onterra, LLC

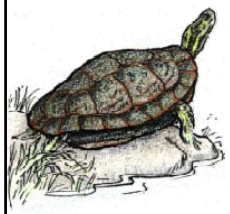

## Presentation Outline

- Lake Management Planning Project Overview
- Study Results
  - Water Quality
  - Watershed
  - Aquatic Plants
  - Miscellaneous Findings
- "Big Picture"
- Goals and Actions Discussion

2

## Study and Plan Goals

- Collect & Analyze Data
- Construct Long-Term & Useable Plan



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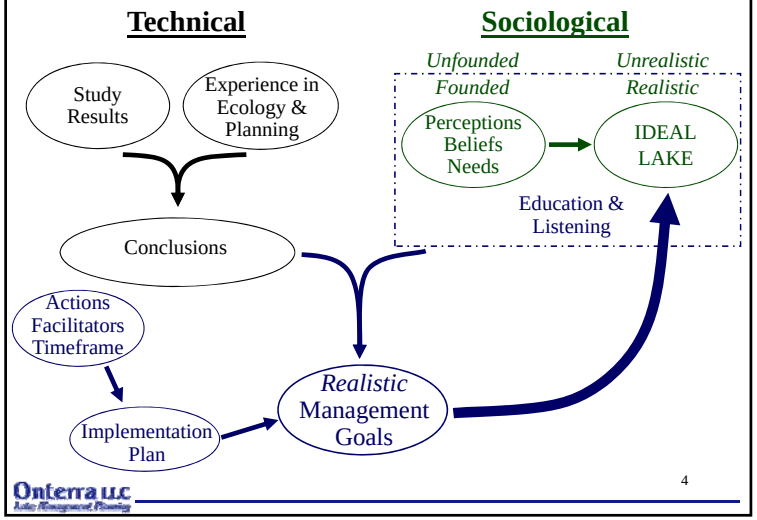


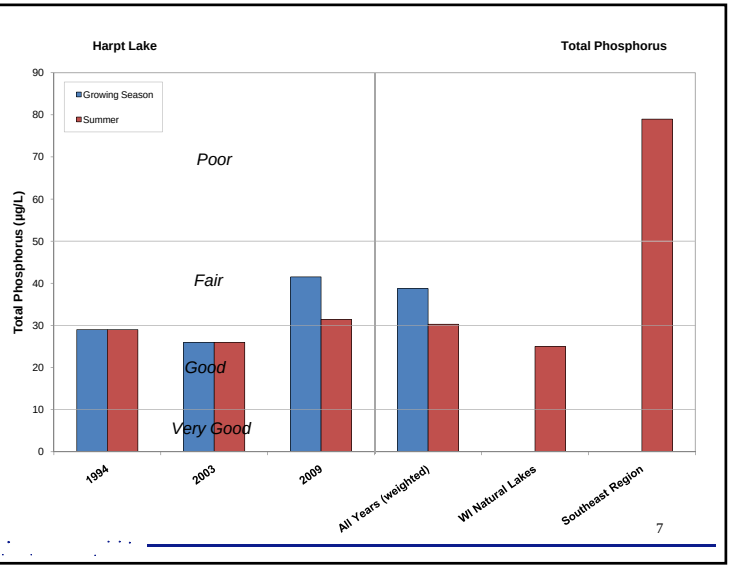

4

## Water Quality

- ↑ Phosphorus (Limiting Plant Nutrient)
- ↑ Chlorophyll-*a* (Algal Abundance)
- ↓ Water Clarity (Secchi Disk)

## *Lillie Mason Regions*


6

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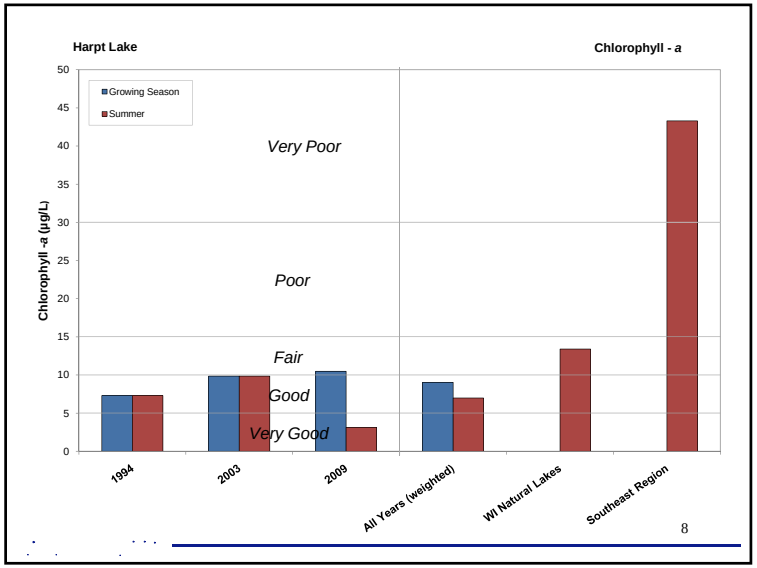


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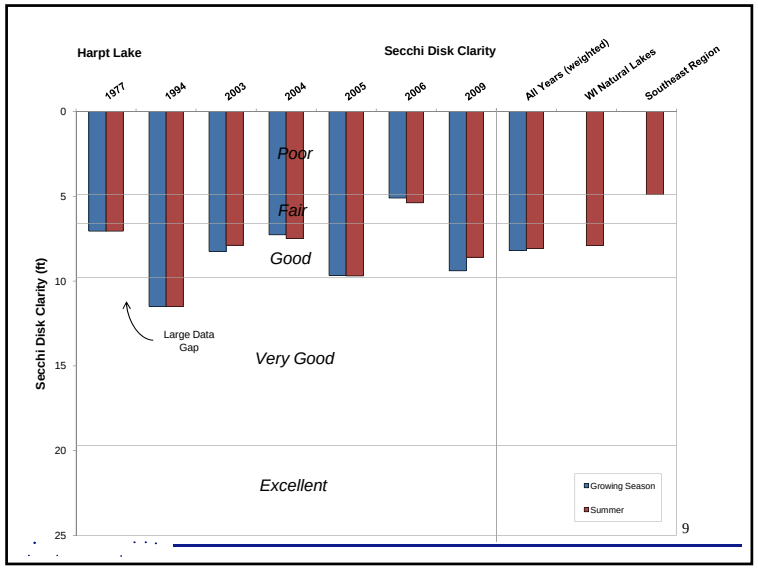
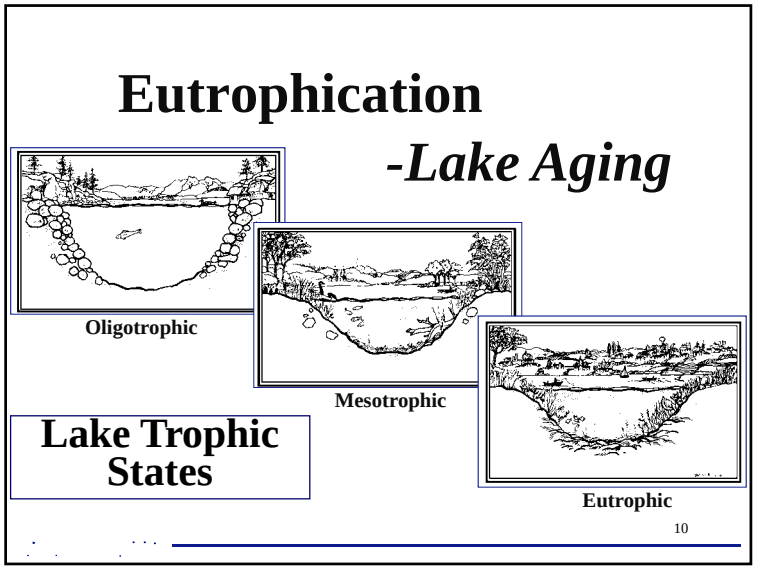
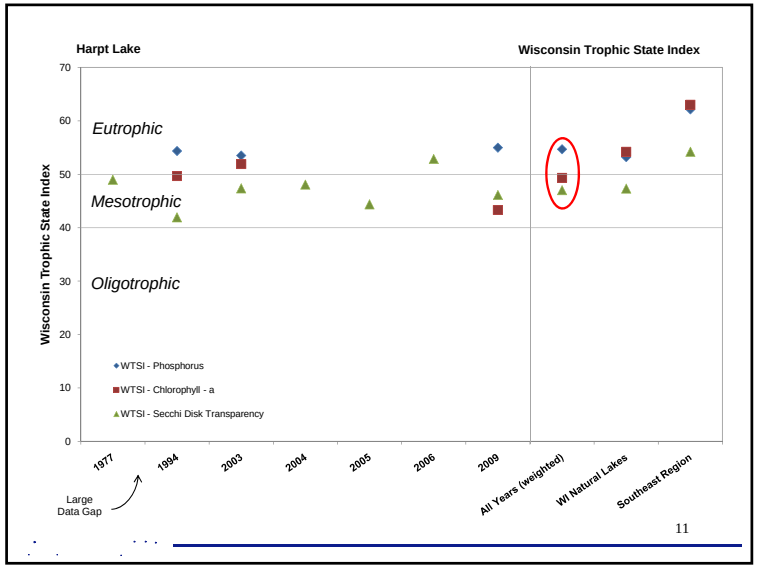
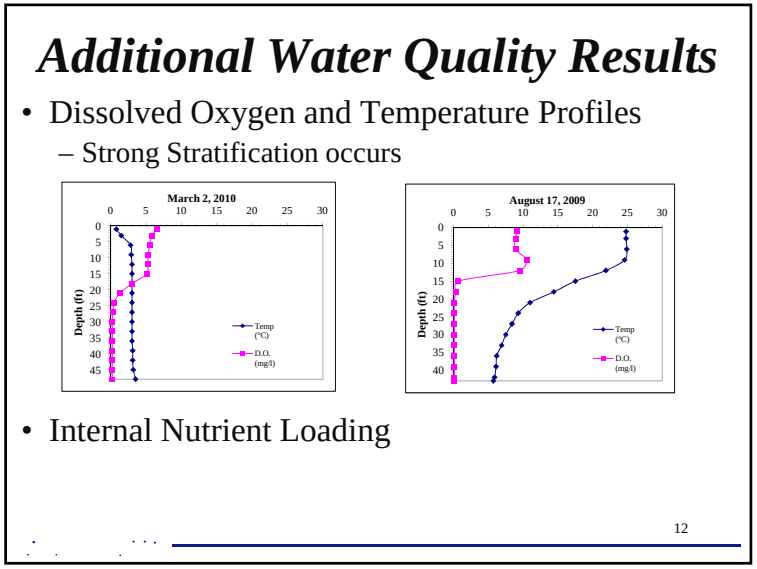
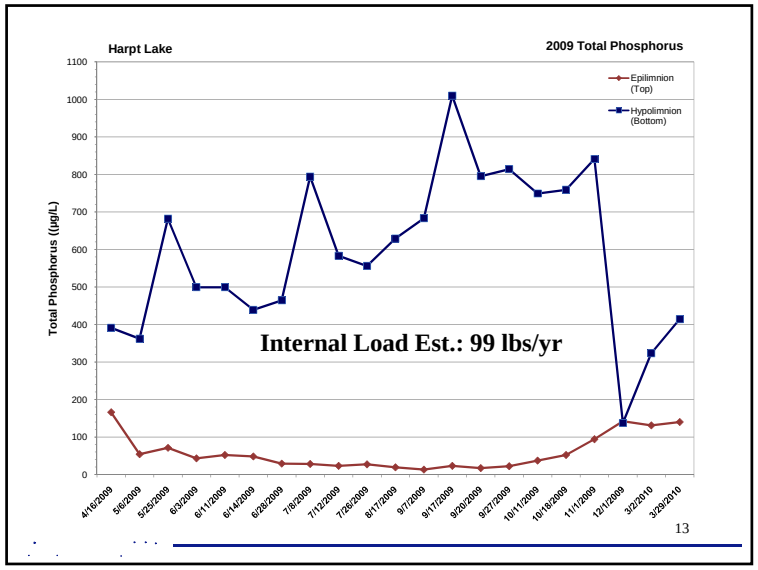

Harpt Lake
Secchi Disk Clarity
1977
1994
2003
2004
2005
2006
2009
All Years (weighted)
WI Natural Lakes
Southeast Region
Secchi Disk Clarity (ft)
0
5
10
15
20
25
Poor
Fair
Good
Very Good
Excellent
Large Data Gap
Growing Season
Summer
9


Eutrophication
-Lake Aging
Oligotrophic
Mesotrophic
Eutrophic
Lake Trophic States
10


Harpt Lake
Wisconsin Trophic State Index
Wisconsin Trophic State Index
0
10
20
30
40
50
60
70
Eutrophic
Mesotrophic
Oligotrophic
WTSI - Phosphorus
WTSI - Chlorophyll - a
WTSI - Secchi Disk Transparency
1977
1994
2003
2004
2005
2006
2009
All Years (weighted)
WI Natural Lakes
Southeast Region
Large Data Gap
11

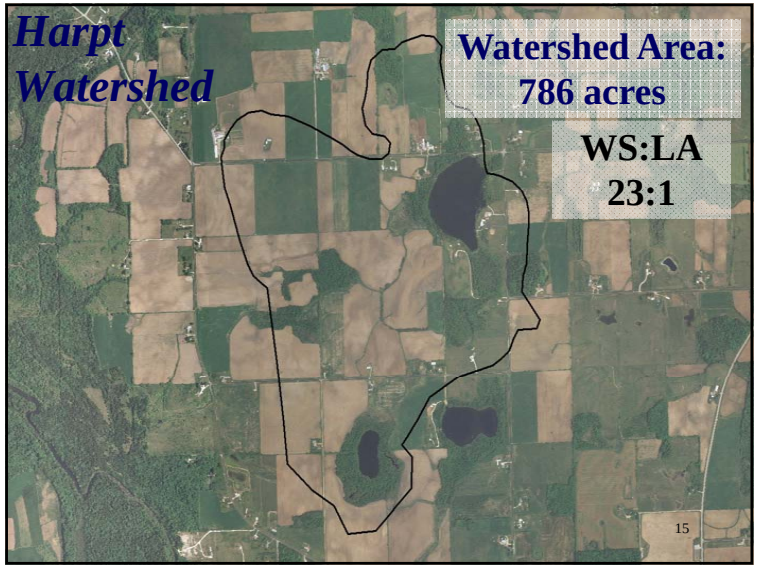

Additional Water Quality Results
• Dissolved Oxygen and Temperature Profiles
– Strong Stratification occurs
March 2, 2010
August 17, 2009
Depth (ft)
Temp (°C)
D.O. (mg/l)
• Internal Nutrient Loading
12

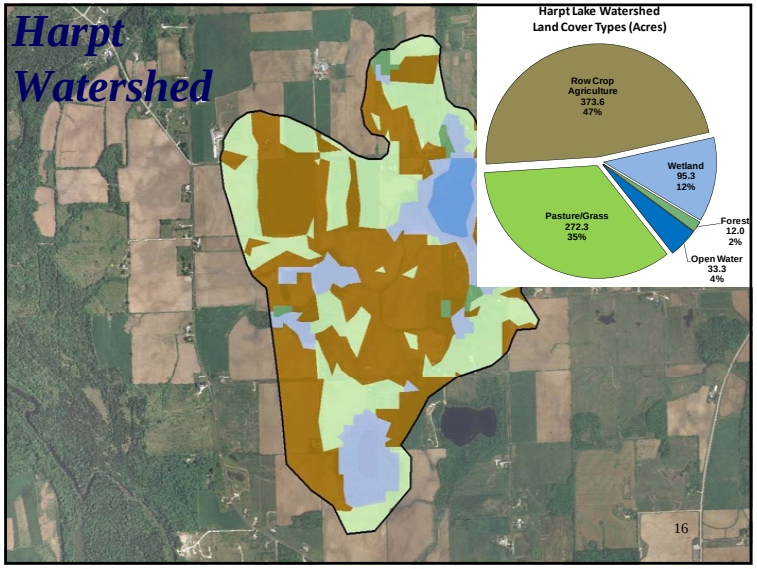



## *Additional Water Quality Results*

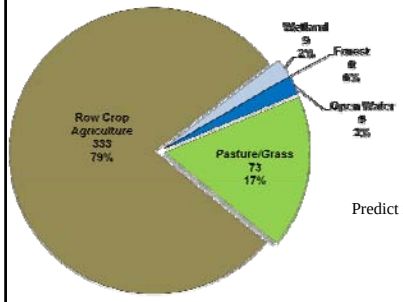
- Limiting Nutrient
  - Nitrogen:Phosphorus = 32:1(Phosphorus limited)
- Alkalinity (buffer capacity)
  - 144 ppm $CaCO_3$ – Summer 2009
  - Nonsensitive to acid rain

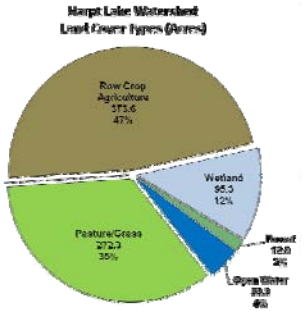
14



## Harpt Watershed




Watershed Modeling

Model phosphorus load from watershed

Predict in-lake phosphorus concentration (accuracy check)

Total Load: 423 lbs

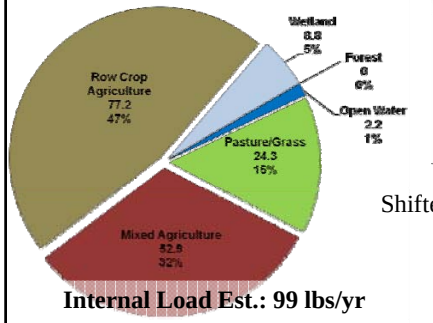
Much too high

In-lake estimate: 84 µg/L

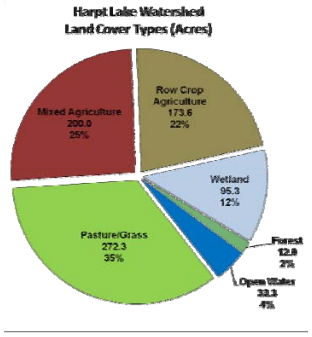
Actual: 50.4 µg/L



## Harpt Watershed (adjusted)




**Internal Load Est.: 99 lbs/yr**




Shifted Row Crop Ag to Mixed Ag

Total Load: 264lbs

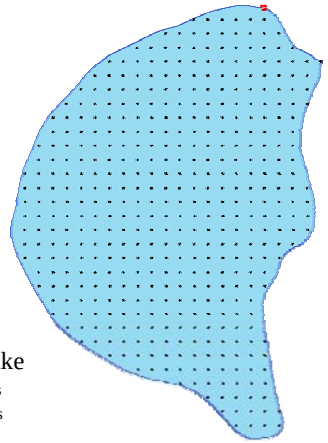
Close to Actual

In-lake estimate: 53 µg/L

Actual: 50.4 µg/L



## Point-Intercept Survey



Harpt Lake

17-meters

446 points



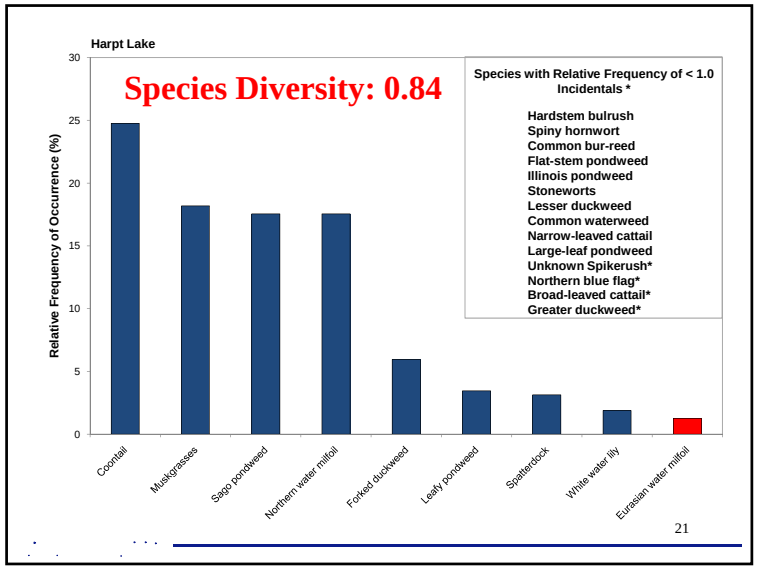
## Species List

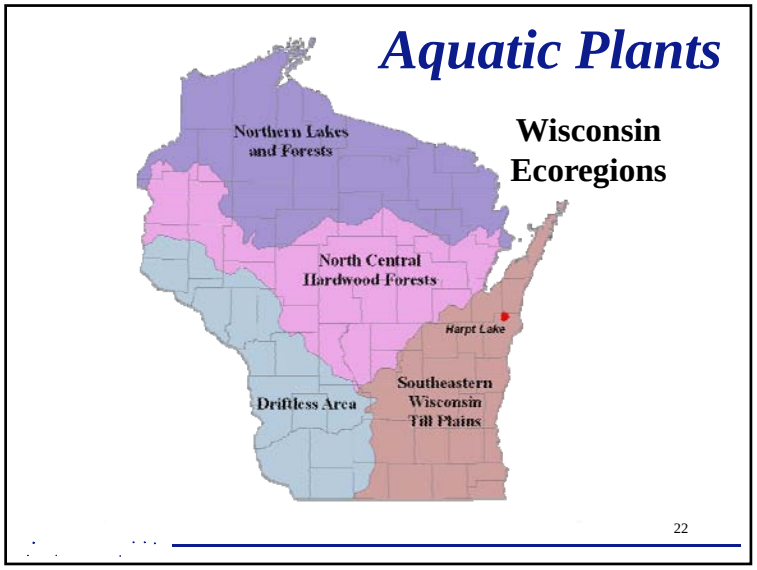
- 22 Total Species
  - 1 Non-native

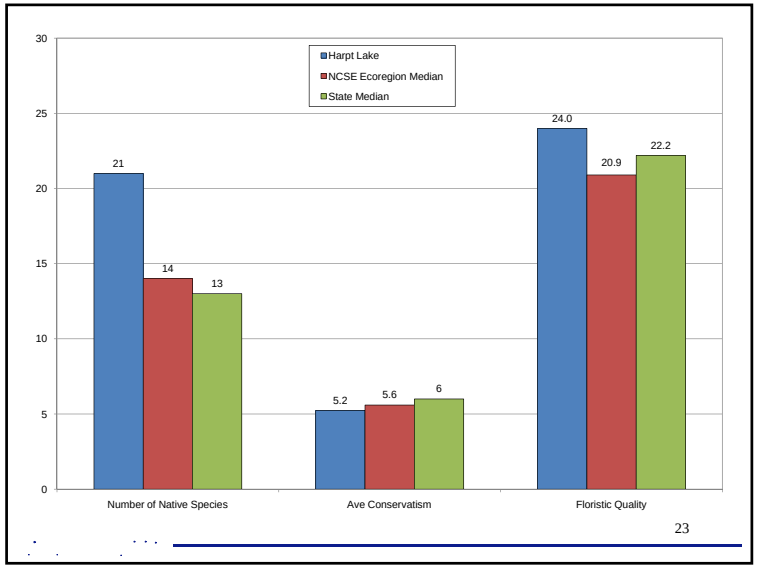
Harpt Lake

| Life Form | Scientific Name | Common Name | Coefficient of Conservatism (c) |
|---|---|---|---|
| Emergent | *Iris versicolor* | Northern blue flag | 5 |
| | *Schoenoplectus acutus* | Hardstem bulrush | 5 |
| | *Typha latifolia* | Broad-leaved cattail | 1 |
| | *Typha angustifolia* | Narrow-leaved cattail | 1 |
| FL | *Nymphaea odorata* | White water lily | 6 |
| | *Nuphar variegata* | Spatterdock | 6 |
| FL/E | *Sparganium eurycarpum* | Common bur-reed | 5 |
| Submergent | *Ceratophyllum echinatum* | Spiny hornwort | 10 |
| | *Chara sp.* | Muskgrasses | 7 |
| | *Ceratophyllum demersum* | Coontail | 3 |
| | *Elodea canadensis* | Common waterweed | 3 |
| | *Myriophyllum spicatum* | Eurasian water milfoil | Exotic |
| | *Myriophyllum sibiricum* | Northern water milfoil | 7 |
| | *Nitella sp.* | Stoneworts | 7 |
| | *Potamogeton amplifolius* | Large-leaf pondweed | 7 |
| | *Potamogeton illinoensis* | Illinois pondweed | 6 |
| | *Potamogeton zosteriformis* | Flat-stem pondweed | 6 |
| | *Potamogeton foliosus* | Leafy pondweed | 6 |
| | *Stuckenia pectinata* | Sago pondweed | 3 |
| FF | *Lemna minor* | Lesser duckweed | 5 |
| | *Lemna trisulca* | Forked duckweed | 6 |
| | *Spirodela polyrhiza* | Greater duckweed | 5 |

FL = Floating Leaf
FL/E = Floating Leaf and Emergent
FF = Free Floating


Harpt Lake
Species Diversity: 0.84
Species with Relative Frequency of < 1.0
Incidentals *
Hardstem bulrush
Spiny hornwort
Common bur-reed
Flat-stem pondweed
Illinois pondweed
Stoneworts
Lesser duckweed
Common waterweed
Narrow-leaved cattail
Large-leaf pondweed
Unknown Spikerush*
Northern blue flag*
Broad-leaved cattail*
Greater duckweed*
Relative Frequency of Occurrence (%)
30
25
20
15
10
5
0
Coontail
Muskgrasses
Sago pondweed
Northern water milfoil
Forked duckweed
Leafy pondweed
Spatterdock
White water lily
Eurasian water milfoil
21


Aquatic Plants
Wisconsin
Ecoregions
Northern Lakes
and Forests
North Central
Hardwood Forests
Harpt Lake
Driftless Area
Southeastern
Wisconsin
Till Plains
22


Harpt Lake
NCSE Ecoregion Median
State Median
30
25
20
15
10
5
0
21
14
13
5.2
5.6
6
24.0
20.9
22.2
Number of Native Species
Ave Conservatism
Floristic Quality
23


EWM Survey Results
(July 2009)
Dominant
Single Plants
Clump of Plants
Small Plant Colony
24

## *Aquatic Plant Community Mapping*

- Mapped Communities
  - Floating-leaf
  - Emergent
- Important Indicators
  - Vulnerable to ecosystem changes
    - Loss of species
    - Expansion or recession

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## *Additional Results*

- *Dreissena* mussel monitoring
  - Results not back yet
- Fisheries Data Summary
  - Only stocking data available
  - Compilation nearly complete
  - Analysis will be completed for report
- Stakeholder Survey
  - Pending

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## Conclusions

- Water quality is *somewhat good*
  - Water quality is better than most Southeaster Wisconsin Lakes
  - Water quality analysis did not include measurement of filamentous algae which is abundant in lake.
- Watershed is primarily in agriculture.
  - Modeling of external phosphorus load is unclear.
  - Possible influencers of actual external load:
    - Wetlands surrounding lake?
    - Nutrient plans & existing waterway buffers?
  - Possibilities for improvement?
    - Some may be possible

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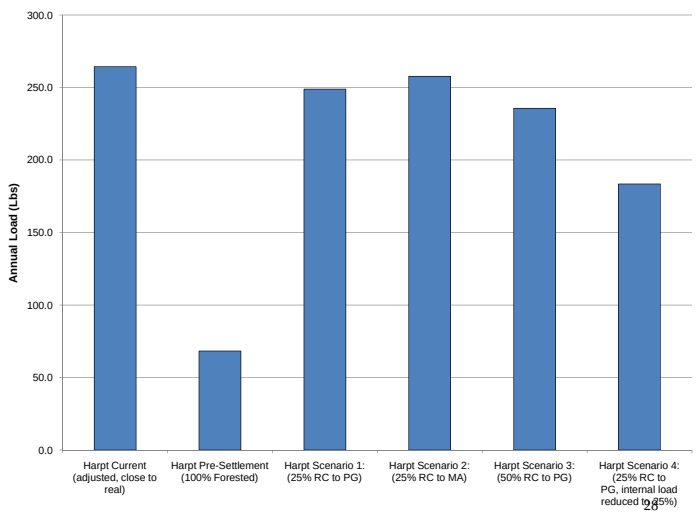


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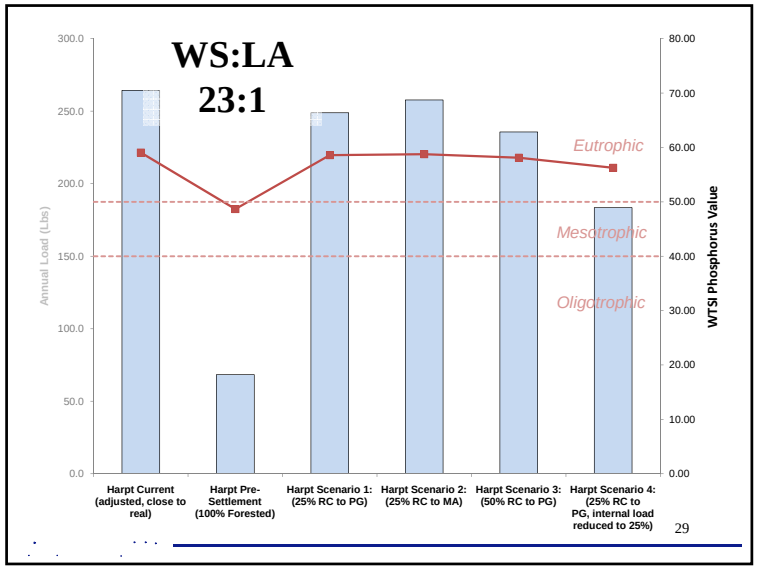


## Conclusions

- Aquatic plant community healthy
  - Relatively high number of species for such a small lake
  - Species present are indicative of a disturbed system
  - Eurasian water milfoil population threatens ecosystem health, but is not out of control at this point
    - Control now would prevent future issues

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# B

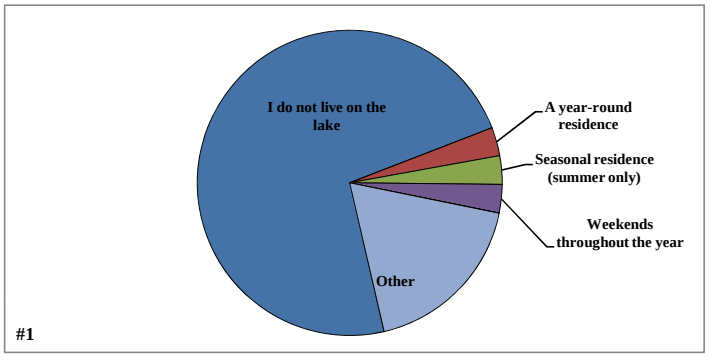
# APPENDIX B

## Stakeholder Survey Response Charts and Comments

| | |
|---|---|
| Returned Surveys | 38 |
| Sent Surveys | 108 |
| **Response Rate (%)** | 35.2 |

**#1 What type of property do you own on Harpt Lake?**

| | **Total** | *%* |
|---|---|---|
| I do not live on the lake | 24 | *72.7* |
| A year-round residence | 1 | *3.0* |
| Seasonal residence (summer only) | 1 | *3.0* |
| Weekends throughout the year | 1 | *3.0* |
| Rental property | 0 | *0.0* |
| Undeveloped | 0 | *0.0* |
| Other | 6 | *18.2* |
| | 33 | *100.0* |

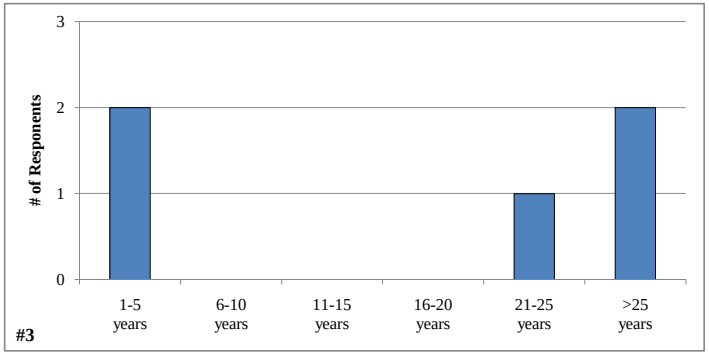



**#2 If you are not a year-round resident, how many days each year is your property used by you or others?**

| | |
|---|---|
| Answered Question | 7 |
| Average | 116.1 |
| Standard deviation | 170.8 |

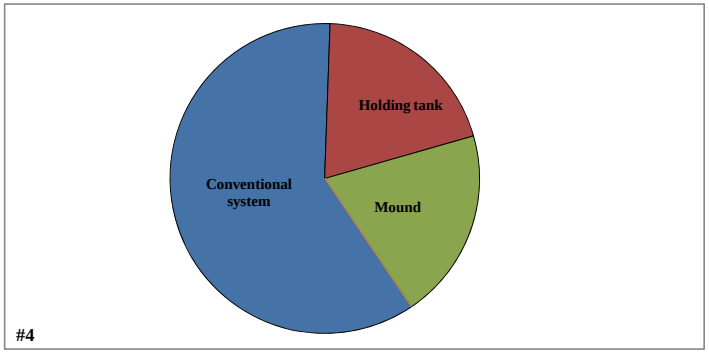
**#3 How long have you owned your property on Harpt Lake?**

| | **Total** | *%* |
|---|---|---|
| 1-5 years | 2 | *40.0* |
| 6-10 years | 0 | *0.0* |
| 11-15 years | 0 | *0.0* |
| 16-20 years | 0 | *0.0* |
| 21-25 years | 1 | *20.0* |
| >25 years | 2 | *40.0* |
| | 5 | *100.0* |



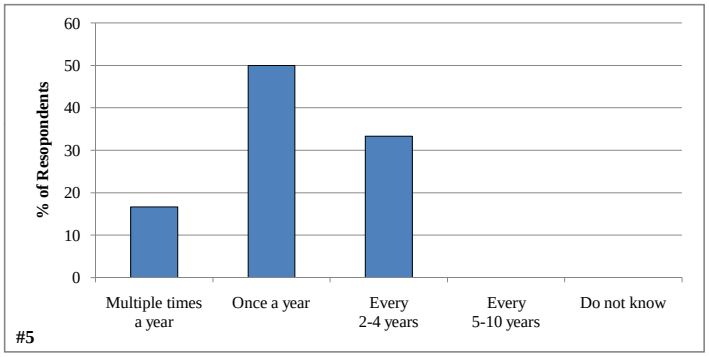
**#4 What type of septic system does your property utilize?**

| | Total | % |
|---|---|---|
| Conventional system | 3 | *60.0* |
| Holding tank | 1 | *20.0* |
| Mound | 1 | *20.0* |
| Advanced treatment system | 0 | *0.0* |
| Municipal sewer | 0 | *0.0* |
| Do not know | 0 | *0.0* |
| | 5 | *100.0* |



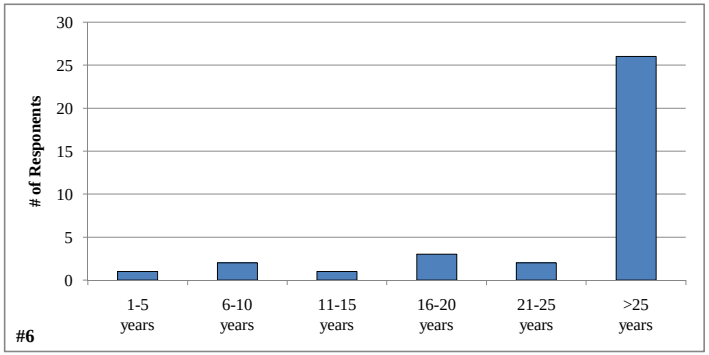

**#5 How often is the septic tank on your property pumped?**

| | Total | % |
|---|---|---|
| Multiple times a year | 1 | *16.7* |
| Once a year | 3 | *50.0* |
| Every 2-4 years | 2 | *33.3* |
| Every 5-10 years | 0 | *0.0* |
| Do not know | 0 | *0.0* |
| | 6 | *100.0* |



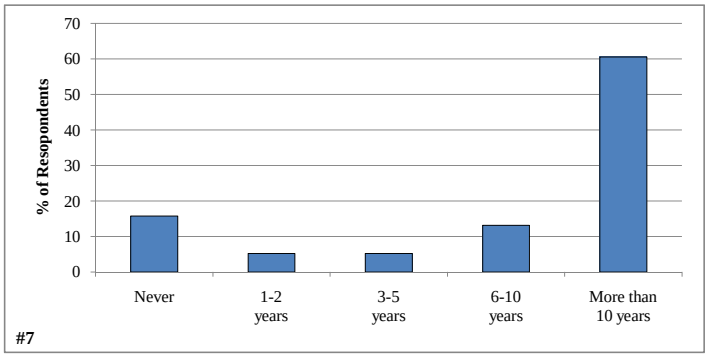

**#6 How many years ago did you first visit Harpt Lake?**

| | Total | % |
|---|---|---|
| 1-5 years | 1 | *2.9* |
| 6-10 years | 2 | *5.7* |
| 11-15 years | 1 | *2.9* |
| 16-20 years | 3 | *8.6* |
| 21-25 years | 2 | *5.7* |
| >25 years | 26 | *74.3* |
| | 35 | *100.0* |



**#7 For how many years have you fished Harpt Lake?**

| | Total | % |
|---|---|---|
| Never | 6 | *15.8* |
| 1-2 years | 2 | *5.3* |
| 3-5 years | 2 | *5.3* |
| 6-10 years | 5 | *13.2* |
| More than 10 years | 23 | *60.5* |
| | 38 | *100.0* |

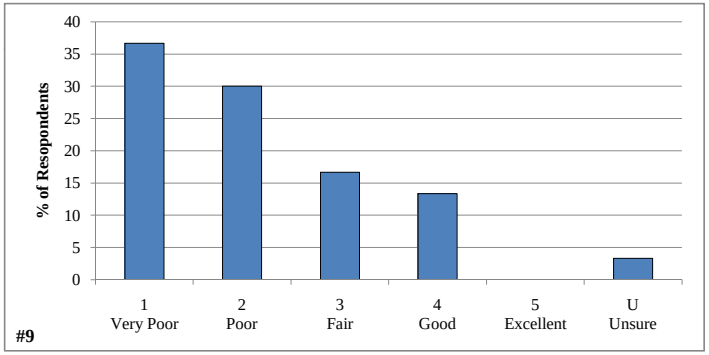



**#8 Have you personally fished on Harpt Lake in the past 3 years?**

| | Total | % |
|---|---|---|
| Yes | 24 | *75.0* |
| No | 8 | *25.0* |
| | 32 | *100.0* |

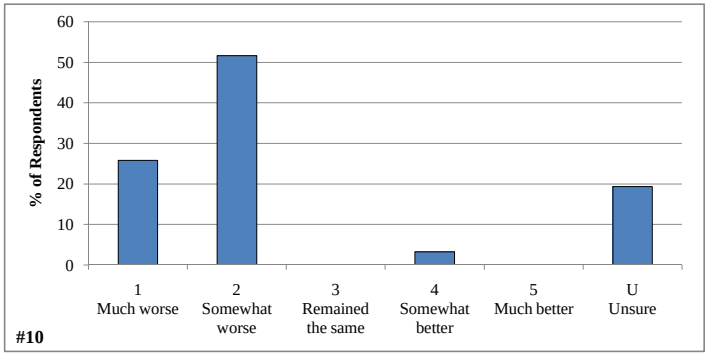
**#9 How would you describe the current quality of fishing on Harpt Lake?**

| | Total | % |
|---|---|---|
| 1 - Very Poor | 11 | *36.7* |
| 2 - Poor | 9 | *30.0* |
| 3 - Fair | 5 | *16.7* |
| 4 - Good | 4 | *13.3* |
| 5 - Excellent | 0 | *0.0* |
| U - Unsure | 1 | *3.3* |
| | 30 | *100.0* |



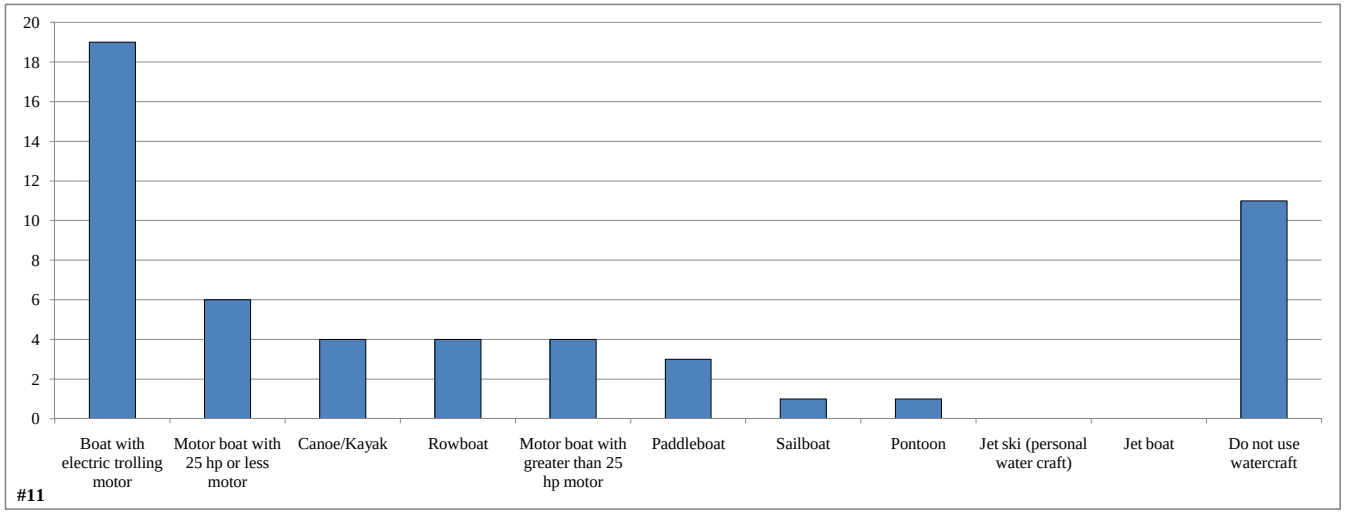

**#10 How has the quality of fishing changed on Harpt Lake since you have started fishing the lake?**

| | Total | % |
|---|---|---|
| 1 - Much worse | 8 | *25.8* |
| 2 - Somewhat worse | 16 | *51.6* |
| 3 - Remained the Same | 0 | *0.0* |
| 4 - Somewhat better | 1 | *3.2* |
| 5 - Much better | 0 | *0.0* |
| U - Unsure | 6 | *19.4* |
| | 31 | *100.0* |



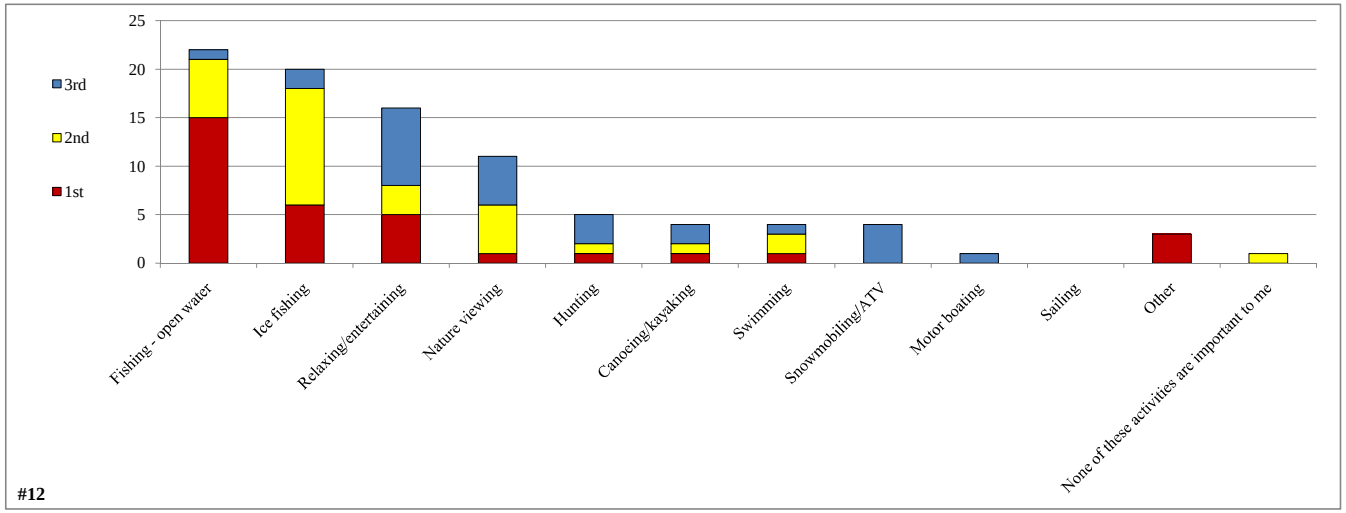
**#11 What types of watercraft have you used on the lake?**

| | Total |
|---|---|
| Boat with electric trolling motor | 19 |
| Motor boat with 25 hp or less motor | 6 |
| Canoe/Kayak | 4 |
| Rowboat | 4 |
| Motor boat with greater than 25 hp motor | 4 |
| Paddleboat | 3 |
| Sailboat | 1 |
| Pontoon | 1 |
| Jet ski (personal water craft) | 0 |
| Jet boat | 0 |
| Do not use watercraft | 11 |
| | 53 |



**#12 Please rank up to three activities that are important reasons for owning your property on or near the lake.**

| | 1st | 2nd | 3rd | *% ranked* |
|---|---|---|---|---|
| Fishing - open water | 15 | 6 | 1 | *24.2* |
| Ice fishing | 6 | 12 | 2 | *22.0* |
| Relaxing/entertaining | 5 | 3 | 8 | *17.6* |
| Nature viewing | 1 | 5 | 5 | *12.1* |
| Hunting | 1 | 1 | 3 | *5.5* |
| Canoeing/kayaking | 1 | 1 | 2 | *4.4* |
| Swimming | 1 | 2 | 1 | *4.4* |
| Snowmobiling/ATV | 0 | 0 | 4 | *4.4* |
| Motor boating | 0 | 0 | 1 | *1.1* |
| Sailing | 0 | 0 | 0 | *0.0* |
| Other | 3 | 0 | 0 | *3.3* |
| None of these activities are important to me | 0 | 1 | 0 | *1.1* |
| | 33 | 31 | 27 | *100.0* |

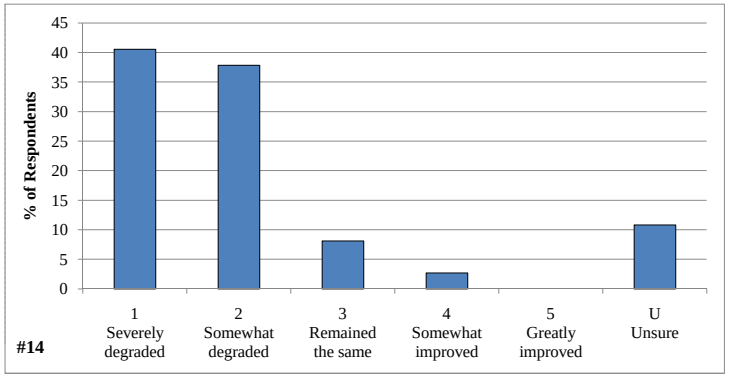


**#13 How would you describe the current water quality of Harpt Lake?**

| | Total | % |
|---|---|---|
| 1 - Poor | 14 | *37.8* |
| 2 - Fair | 14 | *37.8* |
| 3 - Unsure | 1 | *2.7* |
| 4 - Good | 5 | *13.5* |
| 5 - Excellent | 0 | *0.0* |
| U - Unsure | 3 | *8.1* |
| | 37 | *100.0* |


**#14 How has the water quality changed in Harpt Lake since you obtained your property?**

| | Total | % |
|---|---|---|
| 1 - Severely degraded | 15 | *40.5* |
| 2 - Somewhat degraded | 14 | *37.8* |
| 3 - Remained the same | 3 | *8.1* |
| 4 - Somewhat improved | 1 | *2.7* |
| 5 - Greatly improved | 0 | *0.0* |
| U - Unsure | 4 | *10.8* |
| | 37 | *100.0* |




**#15 Have you ever heard of aquatic invasive species?**

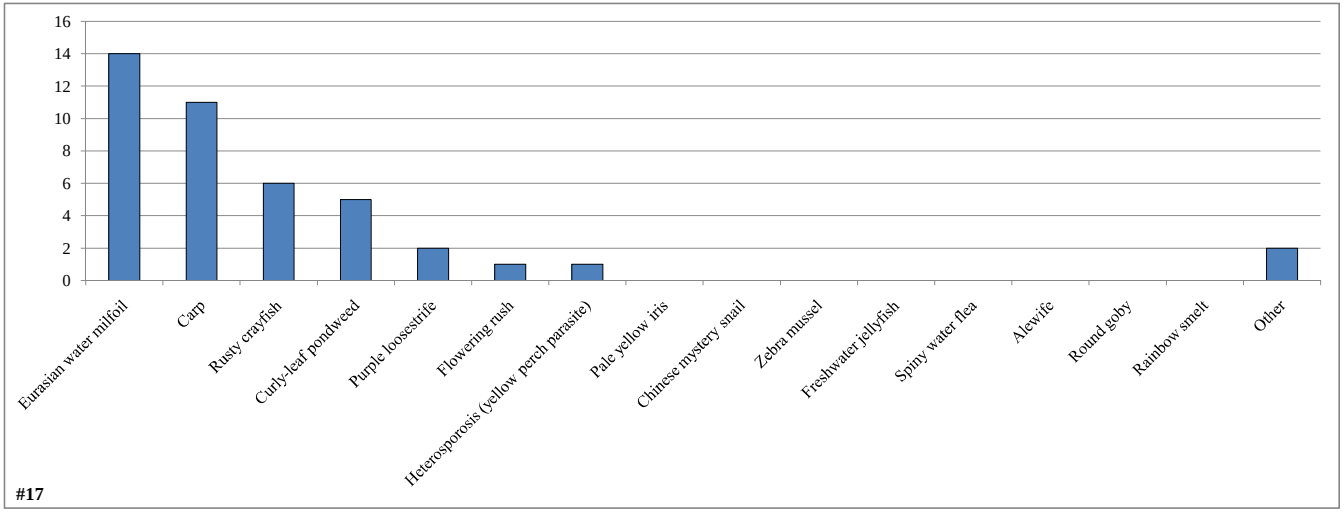
| | Total | % |
|---|---|---|
| Yes | 30 | *81.1* |
| No | 7 | *18.9* |
| | 37 | *100.0* |

**#16 Are you aware of aquatic invasive species in Harpt Lake?**

| | Total | % |
|---|---|---|
| Yes | 19 | *57.6* |
| No | 14 | *42.4* |
| | 33 | *100.0* |

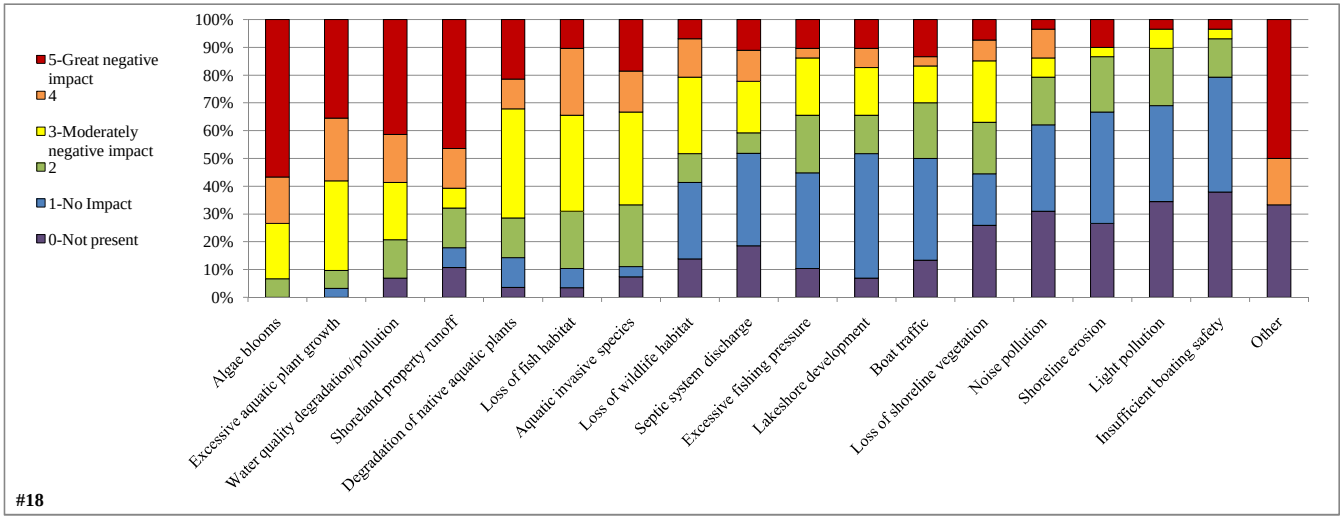
**#17 Which aquatic invasive species are you aware of in Harpt Lake?**

| | Total |
|---|---|
| Eurasian water milfoil | 14 |
| Carp | 11 |
| Rusty crayfish | 6 |
| Curly-leaf pondweed | 5 |
| Purple loosestrife | 2 |
| Flowering rush | 1 |
| Heterosporosis (yellow perch parasite) | 1 |
| Pale yellow iris | 0 |
| Chinese mystery snail | 0 |
| Zebra mussel | 0 |
| Freshwater jellyfish | 0 |
| Spiny water flea | 0 |
| Alewife | 0 |
| Round goby | 0 |
| Rainbow smelt | 0 |
| Other | 2 |



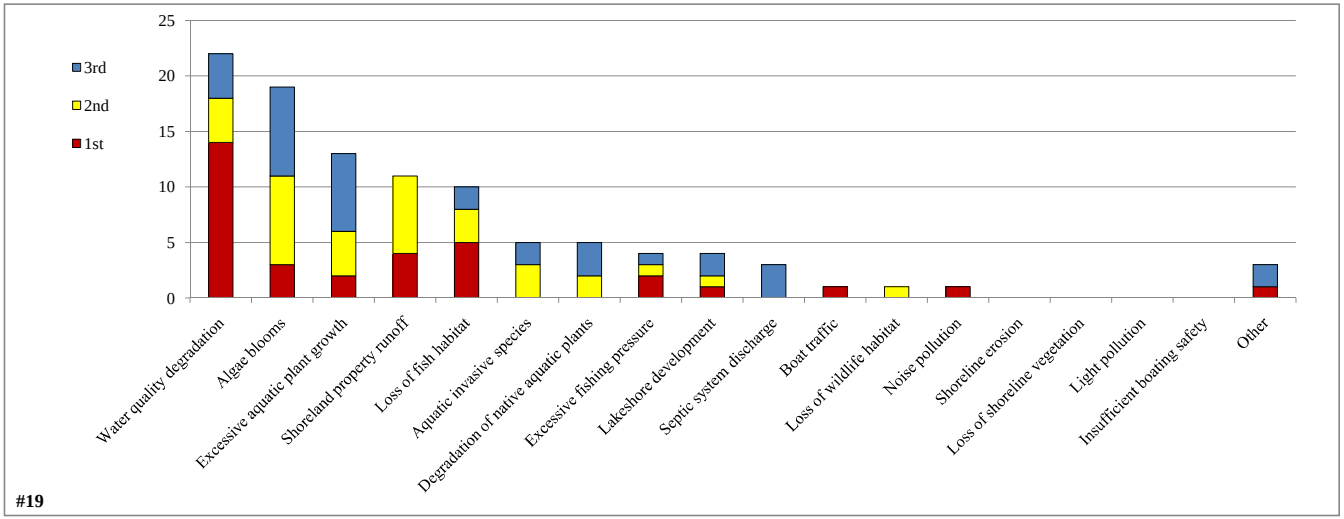
**#18 To what level do you believe each of the following factors may be negatively impacting Harpt Lake?**

| | 0-Not present | 1-No Impact | 2 | 3-Moderately negative impact | 4 | 5-Great negative impact | *Total* | *Average* |
|---|---|---|---|---|---|---|---|---|
| Algae blooms | 0 | 0 | 2 | 6 | 5 | 17 | *30* | *4.2* |
| Excessive aquatic plant growth | 0 | 1 | 2 | 10 | 7 | 11 | *31* | *3.8* |
| Water quality degradation/pollution | 2 | 0 | 4 | 6 | 5 | 12 | *27* | *3.7* |
| Shoreland property runoff | 3 | 2 | 4 | 2 | 4 | 13 | *25* | *3.5* |
| Degradation of native aquatic plants | 1 | 3 | 4 | 11 | 3 | 6 | *27* | *3.1* |
| Loss of fish habitat | 1 | 2 | 6 | 10 | 7 | 3 | *28* | *3.0* |
| Aquatic invasive species | 2 | 1 | 6 | 9 | 4 | 5 | *25* | *3.0* |
| Loss of wildlife habitat | 4 | 8 | 3 | 8 | 4 | 2 | *25* | *2.2* |
| Septic system discharge | 5 | 9 | 2 | 5 | 3 | 3 | *22* | *2.0* |
| Excessive fishing pressure | 3 | 10 | 6 | 6 | 1 | 3 | *26* | *2.0* |
| Lakeshore development | 2 | 13 | 4 | 5 | 2 | 3 | *27* | *2.0* |
| Boat traffic | 4 | 11 | 6 | 4 | 1 | 4 | *26* | *2.0* |
| Loss of shoreline vegetation | 7 | 5 | 5 | 6 | 2 | 2 | *20* | *1.9* |
| Noise pollution | 9 | 9 | 5 | 2 | 3 | 1 | *20* | *1.4* |
| Shoreline erosion | 8 | 12 | 6 | 1 | 0 | 3 | *22* | *1.4* |
| Light pollution | 10 | 10 | 6 | 2 | 0 | 1 | *19* | *1.1* |
| Insufficient boating safety | 11 | 12 | 4 | 1 | 0 | 1 | *18* | *1.0* |
| Other | 2 | 0 | 0 | 0 | 1 | 3 | *4* | *3.2* |



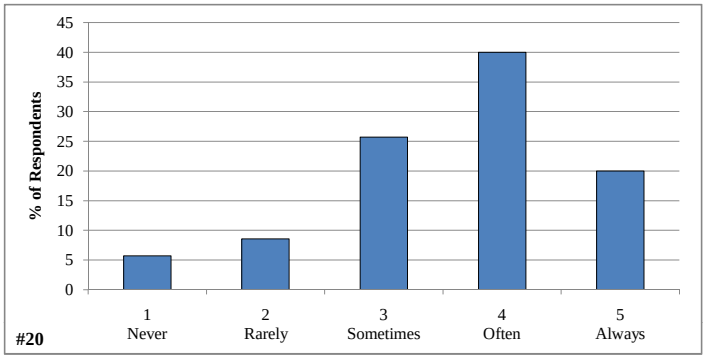
**#19 From the list below, please rank your top three concerns regarding Harpt Lake.**

| | 1st | 2nd | 3rd | *% Ranked* |
|---|---|---|---|---|
| Water quality degradation | 14 | 4 | 4 | *21.6* |
| Algae blooms | 3 | 8 | 8 | *18.6* |
| Excessive aquatic plant growth | 2 | 4 | 7 | *12.7* |
| Shoreland property runoff | 4 | 7 | 0 | *10.8* |
| Loss of fish habitat | 5 | 3 | 2 | *9.8* |
| Aquatic invasive species | 0 | 3 | 2 | *4.9* |
| Degradation of native aquatic plants | 0 | 2 | 3 | *4.9* |
| Excessive fishing pressure | 2 | 1 | 1 | *3.9* |
| Lakeshore development | 1 | 1 | 2 | *3.9* |
| Septic system discharge | 0 | 0 | 3 | *2.9* |
| Boat traffic | 1 | 0 | 0 | *1.0* |
| Loss of wildlife habitat | 0 | 1 | 0 | *1.0* |
| Noise pollution | 1 | 0 | 0 | *1.0* |
| Shoreline erosion | 0 | 0 | 0 | *0.0* |
| Loss of shoreline vegetation | 0 | 0 | 0 | *0.0* |
| Light pollution | 0 | 0 | 0 | *0.0* |
| Insufficient boating safety | 0 | 0 | 0 | *0.0* |
| Other | 1 | 0 | 2 | *2.9* |
| | 34 | 34 | 34 | *100.0* |



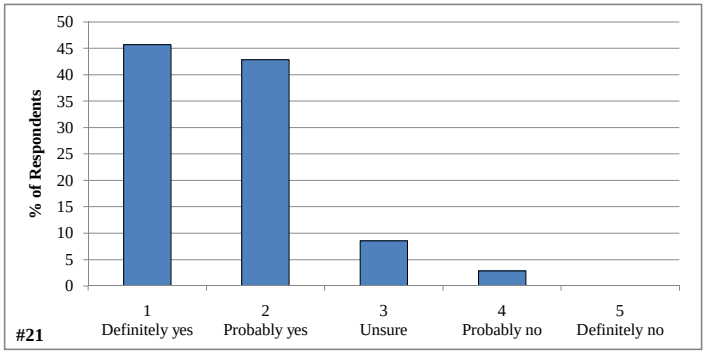
**#20 During open water season how often does aquatic plant growth, including algae, negatively impact your enjoyment of Harpt Lake?**

| | Total | % |
|---|---|---|
| 1 - Never | 2 | *5.7* |
| 2 - Rarely | 3 | *8.6* |
| 3 - Sometimes | 9 | *25.7* |
| 4 - Often | 14 | *40.0* |
| 5 - Always | 7 | *20.0* |
| | 35 | *100.0* |



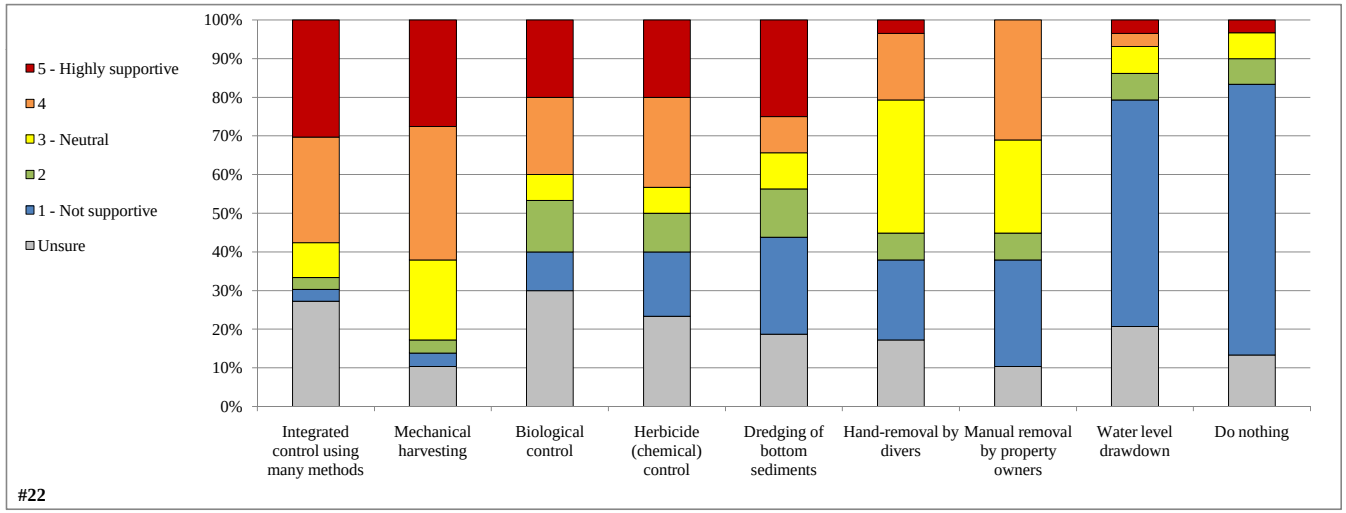

**#21 Considering your answer to the question above, do you believe aquatic plant control is needed on Harpt Lake?**

| | Total | % |
|---|---|---|
| 1 - Definitely yes | 16 | *45.7* |
| 2 - Probably yes | 15 | *42.9* |
| 3 - Unsure | 3 | *8.6* |
| 4 - Probably no | 1 | *2.9* |
| 5 - Definitely no | 0 | *0.0* |
| | 35 | *100.0* |



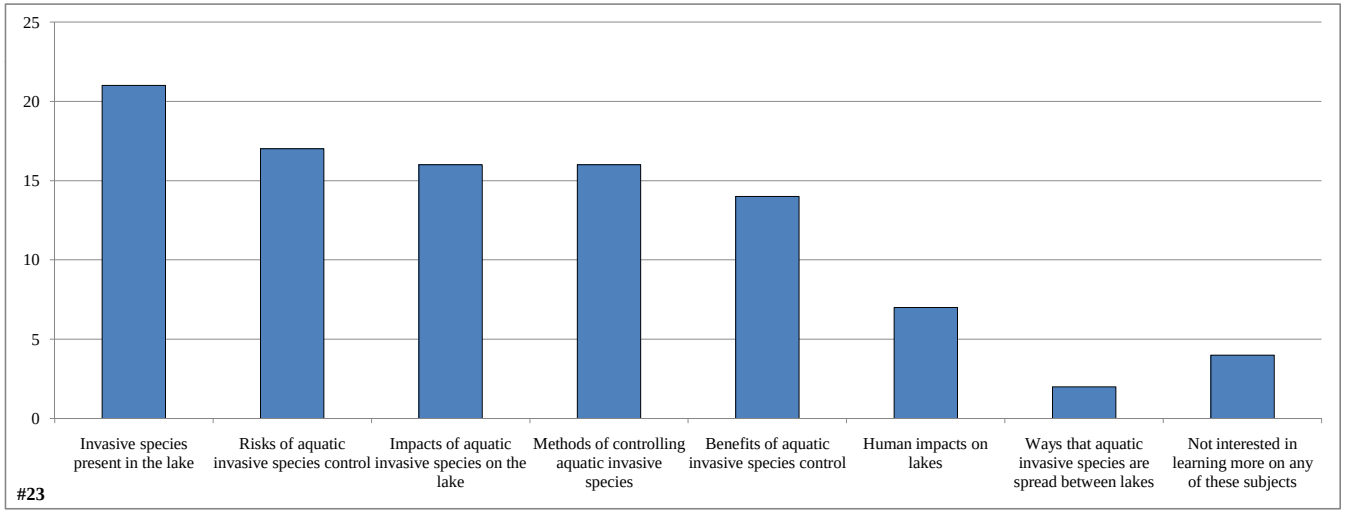
**#22 What is your level of support for the responsible use of the following techniques on the lake?**

| | 1 - Not supportive | 2 | 3 - Neutral | 4 | 5 - Highly supportive | Unsure | Total | Average |
|---|---|---|---|---|---|---|---|---|
| Integrated control using many methods | 1 | 1 | 3 | 9 | 10 | 9 | *24* | *4.1* |
| Mechanical harvesting | 1 | 1 | 6 | 10 | 8 | 3 | *26* | *3.9* |
| Biological control | 3 | 4 | 2 | 6 | 6 | 9 | *21* | *3.4* |
| Herbicide (chemical) control | 5 | 3 | 2 | 7 | 6 | 7 | *23* | *3.3* |
| Dredging of bottom sediments | 8 | 4 | 3 | 3 | 8 | 6 | *26* | *3.0* |
| Hand-removal by divers | 6 | 2 | 10 | 5 | 1 | 5 | *24* | *2.7* |
| Manual removal by property owners | 8 | 2 | 7 | 9 | 0 | 3 | *26* | *2.7* |
| Water level drawdown | 17 | 2 | 2 | 1 | 1 | 6 | *23* | *1.6* |
| Do nothing | 21 | 2 | 2 | 0 | 1 | 4 | *26* | *1.4* |



**#23 Which of these subjects would you like to learn more about?**

| | Total |
|---|---|
| Invasive species present in the lake | 21 |
| Risks of aquatic invasive species control | 17 |
| Impacts of aquatic invasive species on the lake | 16 |
| Methods of controlling aquatic invasive species | 16 |
| Benefits of aquatic invasive species control | 14 |
| Human impacts on lakes | 7 |
| Ways that aquatic invasive species are spread between lakes | 2 |
| Not interested in learning more on any of these subjects | 4 |



**#24 Before receiving this mailing, have you ever heard of the Larrabee Sportsman's Club?**

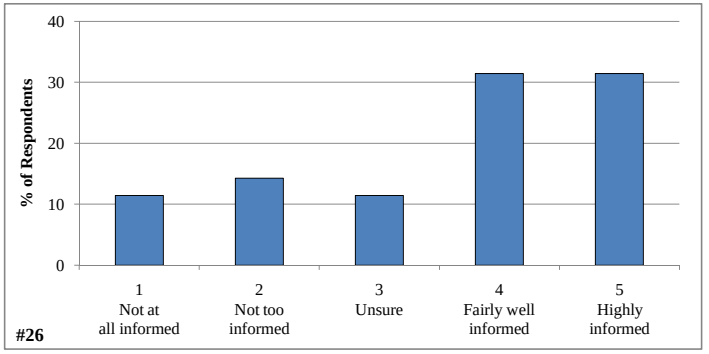
| | Total | % |
|---|---|---|
| Yes | 35 | *100.0* |
| No | 0 | *0.0* |
| | 35 | *100.0* |

**#25 What is your membership status with the Larrabee Sportsman's Club?**

| | Total | % |
|---|---|---|
| Current member | 26 | *74.3* |
| Former member | 2 | *5.7* |
| Never been a member | 7 | *20.0* |
| | 35 | *100.0* |

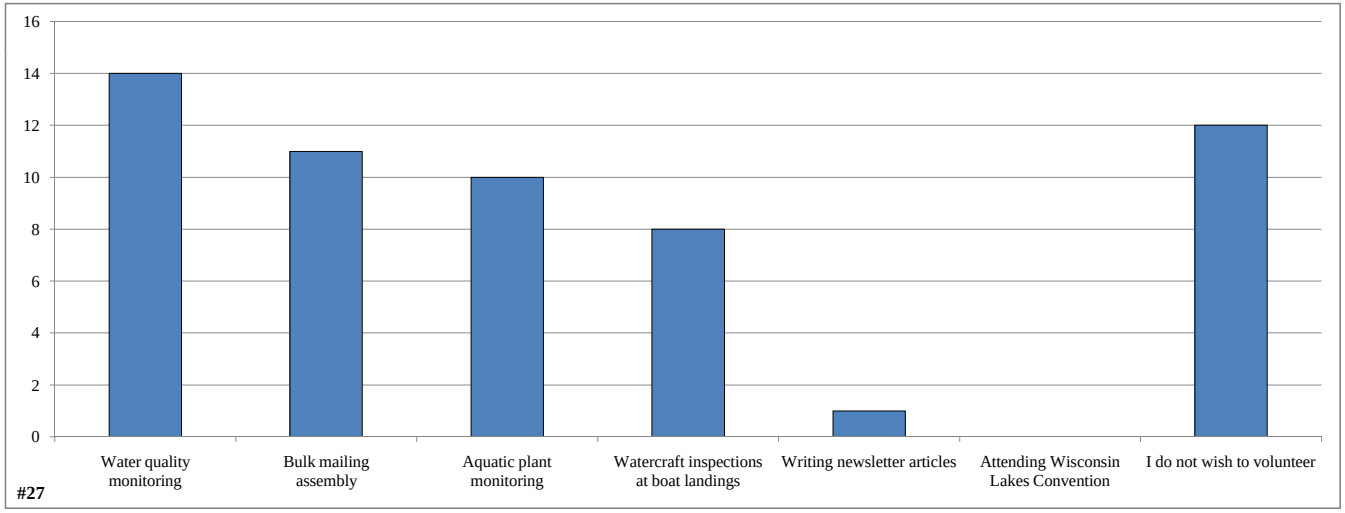
**#26 How informed has the Larrabee Sportsman's Club kept you regarding issues with the lake and its management?**

| | Total | % |
|---|---|---|
| 1 - Not at all informed | 4 | *11.4* |
| 2 - Not too informed | 5 | *14.3* |
| 3 - Unsure | 4 | *11.4* |
| 4 - Fairly well informed | 11 | *31.4* |
| 5 - Highly informed | 11 | *31.4* |
| | 35 | *100.0* |



**#27 Please circle the activities you would be willing to participate in if the Larrabee Sportsman's Club requires additional assistance.**

| | Total |
|---|---|
| Water quality monitoring | 14 |
| Bulk mailing assembly | 11 |
| Aquatic plant monitoring | 10 |
| Watercraft inspections at boat landings | 8 |
| Writing newsletter articles | 1 |
| Attending Wisconsin Lakes Convention | 0 |
| I do not wish to volunteer | 12 |
| | 56 |



| Survey Number | 1f Comment | 12k Comment | 17p Comment | 18r Comment | 19r Comment | Other Comments (and Question 28) |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | Contact renters of land surrounding lake property to not allow liquid manure to be spread on fields in winter so it runs off into the lake, pollutes our water and our fish |
| 5 | | | | | | |
| 6 | | | | | | Q#4 - Porta-Potty |
| 7 | | | | | | The club is doing a great job for the lake. One thing that should be looked at is the farm on the north side of the lake. I'm sure there is runoff from the farm into the woods on the east side of farm. That woods is low land and with the pipe going under the road I'm sure it moves right into the lake. The club should look into it and maybe the farmer will work with the club to help stop runoff or take out the pipe under the road so it can't come into the lake. |
| 8 | club member | | | | nature | I think fishing is good, nice size of fish now. Nature is taking its course. Check all waterways for runoff. |
| 9 | | | | Agricultural runoff | ag runoff | My only concern would be, before any remedial action is done to the lake itself, that the root cause of what has put lake into its current condition be found, and corrected. |
| 10 | | | | | | |
| 11 | | | | | | I personally believe the biggest concern is the algae growth on the lake. Tuma Lake right next door has water clarity that I have not seen at Harpt Lake since I was very young and I'm 60 years old. I wonder why Harpt Lake blooms algae when Tuma does not. There are farm fields around both lakes. If the algae problem is caused by manure runoff or fertilizer runoff why doesn't it happen at Tuma Lake? Thats a tough question, I wonder if anybody has the answer? Thank you for trying to find the answer and trying to solve it! |
| 12 | bar | | | | | Committee know what they are doing. I'll go with whatever they do. |
| 13 | play cards at bar | | | | | I go along with anything the committee decides. |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | hobby farm | | | | I am not too familiar with issues affecting Harpt Lake. I rarely fish it anymore as it appears to be overfished!! We need lower fish limits and more catch and release fishing. No fun to go fishing if you rarely catch anything. |
| 17 | | | | DNR so called care | | I see nothing wrong with cleaning weeds and muck on lake shore and providing sand beach. The fact is I believe it would greatly improve the quality of Harpts lake. Maybe even put an aerator on the lake to provide more oxygen to the water. |
| 18 | Don't own property on Harpt Lake. Have nothing to do with the lake. | | | | | |
| 19 | | | Golden shiners. Way too much algae bloom. | | | Water clarity in the lake is very bad. I think spawning area for fish species in the lake are very poor. Something has to be done to address these conditions. Every fisherman is complaining about the conditions. |
| 20 | | | | | | |
| 21 | | | | Shut down the Sportsman club and stop bands so families can again visit. Eliminate biker trash. | | Its really a shame to have the once beautiful lake there but unusable - same for Tuma Lake. |
| 22 | | | | | | |
| 23 | | farming | | | | Q#20- Don't use the lake. Q#22b- too expensive. Q#22c- Q#23- I'm only interested on how it will affect my farming practices. |
| 24 | | don't own on Harpt Lake | | | | I think the number of geese negatively impacts the lake as well. This is an issue I'd also like to see addressed. |
| 25 | | | | | | We live near the lake, but not on the lake. We do not fish or boat on the lake but we do enjoy a beer from time to time at the Sportsmans club. |

| Survey Number | 1f Comment | 12k Comment | 17p Comment | 18r Comment | 19r Comment | Other Comments (and Question 28) |
|---|---|---|---|---|---|---|
| 26 | | | Golden Shiner | Presence of motorcycle clientel discourages use of lake by sportsman. Motorcycle club serves no purpose to (Gibson?) and provides no benefit. | motorcycle club | The first time I visited Harpt Lake was as a teenager in the sixties. The water quality was good. The atmosphere was more family and sportsman oriented. Since that time I have spent time fishing year round and watched the quality of the lake deteriorate. I believe most is due to runoff from farms and development. Tuma Lake is located only 1 mile south of Harpt Lake and does not experience near the issues of water quality of Harpt Lake and is a much smaller lake. I live on Harpt Lake Road and watch hundreds of motorcycles travel to and from the lake every summer on the weekends from Memorial Day to Labor Day. I personally believe that their presence deters sportsmen and families from going to the lake and enjoying it. The motorcycle clientel are not from the area and serve no benefit or contribution to the area by taxes or other means. |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | I feel that back in the 1980's I could catch some real dandy perch thru the ice each winter and that has been going downhill each year since. I don't fish very regular on the open water for the past 10 years or so, because of all the weeds almost 50 yards out from shore, and that protects most of the panfish from being caught, and water clarity is so very poor. |
| 30 | | | | RE: #28 | | I'm 73 years old, and fished, hunted and trapped in the area as a youngster. I had a bicycle hidden on the shore and transported fish home for my mother to prepare (on my bike) . I'm truly upset about the lake which once was, the best in the area. As a club, please stay involved, I'm retired and on a fixed income so I cannot offer financial support. I still remain active in my sports, but not on Harpts Lake. Take care and hope this situation improves for future generations. Thank You! |
| 31 | | | | | | |
| 32 | | | | | | |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | | | | | | Years ago this lake was great for walleye and panfish, now you have to fish 100 to 150 feet off the shore because of plants. Its turning into more of a marsh than a lake, I like bringing my kids to the lake to fish but they get disgusted because all they get is snagged. |
| 36 | | | | outboard motors | | |
| 38 | | | | | | |
| 39 | | | | | | |
| 40 | | | | | | |
| 41 | | | | | | |
| 42 | | | | | | |
| 43 | | | | | | |
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| 50 | | | | | | |

# C

# APPENDIX C

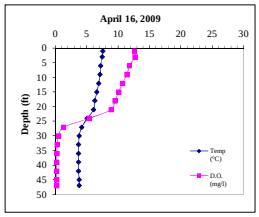
## Water Quality Data

**Harpt**

**Date:** 04-16-09
**Time:** 9:30
**Weather:** Sunny, 45 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 48.7
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 45.0
**Secchi Depth (ft):** 4.1

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 7.6 | 12.6 | 6.8 | 379 |
| 3.0 | 7.5 | 12.7 | 7.4 | 379 |
| 6.0 | 7.2 | 11.8 | 6.9 | 380 |
| 9.0 | 7.1 | 11.4 | 6.7 | 381 |
| 12.0 | 6.9 | 10.7 | 6.6 | 389 |
| 15.0 | 6.6 | 10.1 | 6.4 | 383 |
| 18.0 | 6.3 | 9.5 | 6.4 | 385 |
| 21.0 | 6.1 | 8.9 | 6.4 | 384 |
| 24.0 | 5.1 | 5.4 | 6.3 | 393 |
| 27.0 | 4.2 | 1.3 | 6.1 | 406 |
| 30.0 | 3.8 | 0.5 | 6.2 | 416 |
| 33.0 | 3.7 | 0.3 | 6.3 | 425 |
| 36.0 | 3.7 | 0.2 | 6.4 | 434 |
| 39.0 | 3.7 | 0.2 | 6.5 | 435 |
| 42.0 | 3.7 | 0.2 | 6.6 | 437 |
| 45.0 | 3.8 | 0.2 | 6.6 | 441 |
| 47.0 | 3.8 | 0.2 | 6.6 | 444 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 166.000 | 391.000 |
| Dissolved P (µg/L) | 23.000 | 343.000 |
| Chl a (µg/L) | 25.80 | NA |
| TKN (µg/L | 2010.00 | 3380.00 |
| NO3+NO2-N (µg/L) | ND | 243.000 |
| NH3-N (µg/L) | 122.000 | 217.000 |
| Total N (µg/L) | 2010.00 | 3380.00 |
| Lab Cond. (µS/cm) | 387 | 448 |
| Lab pH | 8.16 | 7.51 |
| Alkal (mg/l CaCO3) | 148 | 173 |
| Total Susp Sol (mg/l) | 5 | 2 |
| Calcium (mg/l) | 40.9 | NA |

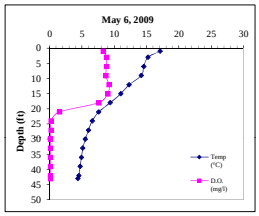
Data collected by Tim Hoyamn (Onterra)

**Harpt**

**Date:** 05-06-09
**Time:** NA
**Weather:** Breezy, Clear, 65°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 43.8
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 13.1

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 17.1 | 8.3 | | |
| 3.0 | 15.2 | 8.8 | | |
| 6.0 | 14.6 | 8.8 | | |
| 9.0 | 14.2 | 8.7 | | |
| 12.0 | 12.3 | 9.2 | | |
| 15.0 | 11.0 | 9 | | |
| 18.0 | 9.4 | 7.6 | | |
| 21.0 | 7.6 | 1.5 | | |
| 24.0 | 6.6 | 0.2 | | |
| 27.0 | 6.0 | 0.2 | | |
| 30.0 | 5.5 | 0.1 | | |
| 33.0 | 5.1 | 0.1 | | |
| 36.0 | 4.9 | 0.1 | | |
| 39.0 | 4.7 | 0.1 | | |
| 42.0 | 4.5 | 0.1 | | |
| 43.0 | 4.4 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 54.000 | 362.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

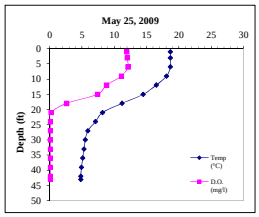
Data collected by: Tim and Marlene (Harpt Lake Association) training session

**Harpt**

**Date:** 05-25-09
**Time:** NA
**Weather:** Windy, Sunny, 67°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 41.2
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 7.5

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 18.7 | 11.9 | | |
| 3.0 | 18.7 | 12 | | |
| 6.0 | 18.7 | 12.1 | | |
| 9.0 | 18.1 | 11.1 | | |
| 12.0 | 16.5 | 8.8 | | |
| 15.0 | 14.5 | 7.4 | | |
| 18.0 | 11.2 | 2.6 | | |
| 21.0 | 8.2 | 0.2 | | |
| 24.0 | 7.1 | 0.1 | | |
| 27.0 | 5.9 | 0.1 | | |
| 30.0 | 5.5 | 0.1 | | |
| 33.0 | 5.3 | 0.1 | | |
| 36.0 | 5.1 | 0.1 | | |
| 39.0 | 4.9 | 0.1 | | |
| 42.0 | 4.8 | 0.1 | | |
| 43.0 | 4.8 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 71.000 | 682.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

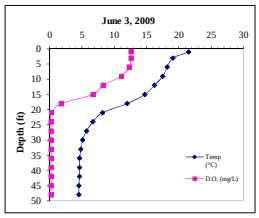
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 06-03-09
**Time:** 3:00
**Weather:** 63°F, Full Sun, ligth breeze
**Ent:** BTB **Verf:**

**Max Depth (ft):** 49.3
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 47.0
**Secchi Depth (ft):** 5.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 21.5 | 12.6 | 8.6 | 382 |
| 3.0 | 19.1 | 12.6 | 8.8 | 381 |
| 6.0 | 18.2 | 12.3 | 8.7 | 382 |
| 9.0 | 17.5 | 11.1 | 8.4 | 384 |
| 12.0 | 16.2 | 8.3 | 8.1 | 389 |
| 15.0 | 14.7 | 6.7 | 7.8 | 390 |
| 18.0 | 12.0 | 1.8 | 7.3 | 394 |
| 21.0 | 8.2 | 0.3 | 7.2 | 402 |
| 24.0 | 6.7 | 0.2 | 7.4 | 407 |
| 27.0 | 5.7 | 0.2 | 7.3 | 415 |
| 30.0 | 5.1 | 0.2 | 7.3 | 422 |
| 33.0 | 4.8 | 0.2 | 7.2 | 428 |
| 36.0 | 4.6 | 0.2 | 7.2 | 430 |
| 39.0 | 4.6 | 0.2 | 7.2 | 431 |
| 42.0 | 4.6 | 0.2 | 7.2 | 431 |
| 45.0 | 4.5 | 0.2 | 7.2 | 431 |
| 48.0 | 4.5 | 0.2 | 7.2 | 435 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 43.000 | 499.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

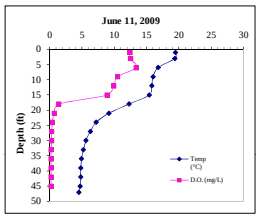
Data collected by: BTB, DAC, TWH (Onterra)

**Harpt**

**Date:** 06-11-09
**Time:** 2:45
**Weather:** Sunny, Light breeze, 68°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 49.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 47.0
**Secchi Depth (ft):** 3.5

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 19.5 | 12.4 | 8.5 | 377 |
| 3.0 | 19.4 | 12.5 | 8.4 | 377 |
| 6.0 | 16.8 | 13.4 | 8.4 | 373 |
| 9.0 | 16.0 | 10.5 | 8.2 | 379 |
| 12.0 | 15.8 | 9.9 | 8.2 | 388 |
| 15.0 | 15.4 | 8.9 | 8.0 | 387 |
| 18.0 | 12.3 | 1.4 | 7.2 | 393 |
| 21.0 | 9.2 | 0.7 | 7.1 | 398 |
| 24.0 | 7.2 | 0.4 | 7.0 | 404 |
| 27.0 | 6.3 | 0.3 | 7.0 | 413 |
| 30.0 | 5.6 | 0.3 | 7.1 | 419 |
| 33.0 | 5.2 | 0.2 | 7.1 | 425 |
| 36.0 | 4.9 | 0.2 | 7.1 | 426 |
| 39.0 | 4.8 | 0.2 | 7.1 | 429 |
| 42.0 | 4.8 | 0.2 | 7.1 | 430 |
| 45.0 | 4.7 | 0.2 | 7.1 | 432 |
| 47.0 | 4.5 | 0.2 | 7.1 | 434 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 52.000 | 499.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | 11.500 | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | 5.000 | NA |
| Calcium (mg/l) | NA | NA |

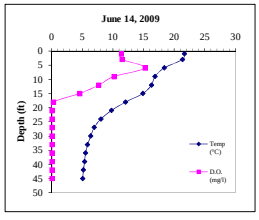
Data collected by: BTB (Onterra)

**Harpt**

**Date:** 06-14-09
**Time:** NA
**Weather:** Partly sunny
**Ent:** BTB **Verf:**

**Max Depth (ft):** 42.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 5.6

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 21.7 | 11.4 | | |
| 3.0 | 21.4 | 11.5 | | |
| 6.0 | 18.4 | 15.3 | | |
| 9.0 | 16.9 | 10.2 | | |
| 12.0 | 16.3 | 7.7 | | |
| 15.0 | 14.9 | 4.6 | | |
| 18.0 | 12.1 | 0.3 | | |
| 21.0 | 9.8 | 0.1 | | |
| 24.0 | 8.1 | 0.1 | | |
| 27.0 | 7.0 | 0.1 | | |
| 30.0 | 6.4 | 0.1 | | |
| 33.0 | 5.9 | 0.1 | | |
| 36.0 | 5.6 | 0.1 | | |
| 39.0 | 5.4 | 0.1 | | |
| 42.0 | 5.2 | 0.1 | | |
| 45.0 | 5.1 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 48.000 | 439.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

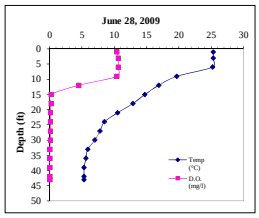
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 06-28-09
**Time:** NA
**Weather:** sunny, windy, 67°F
**Ent:** **Verf:**

**Max Depth (ft):** 43.6
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 7.2

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 25.3 | 10.4 | | |
| 3.0 | 25.3 | 10.6 | | |
| 6.0 | 25.2 | 10.6 | | |
| 9.0 | 19.7 | 10.4 | | |
| 12.0 | 16.9 | 4.5 | | |
| 15.0 | 14.7 | 0.2 | | |
| 18.0 | 12.9 | 0.2 | | |
| 21.0 | 10.5 | 0.1 | | |
| 24.0 | 8.5 | 0.1 | | |
| 27.0 | 7.8 | 0.1 | | |
| 30.0 | 7.0 | 0.1 | | |
| 33.0 | 5.9 | 0.0 | | |
| 36.0 | 5.6 | 0.0 | | |
| 39.0 | 5.3 | 0.0 | | |
| 42.0 | 5.3 | 0.0 | | |
| 43.0 | 5.3 | 0.0 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 29.000 | 464.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

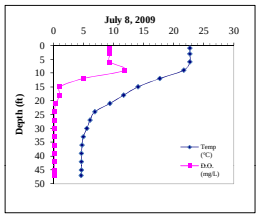
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 07-08-09
**Time:** 9:30
**Weather:** 65°F, hazy, light breeze
**Ent:** BTB **Verf:**

**Max Depth (ft):** 48.7
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 47.0
**Secchi Depth (ft):** 9.4

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 22.7 | 9.4 | 8.8 | 374.0 |
| 3.0 | 22.7 | 9.4 | 8.9 | 374.0 |
| 6.0 | 22.7 | 9.4 | 8.9 | 374.0 |
| 9.0 | 21.7 | 11.9 | 8.9 | 370.0 |
| 12.0 | 17.7 | 5.0 | 8.1 | 393.0 |
| 15.0 | 14.1 | 1.1 | 7.6 | 397.0 |
| 18.0 | 11.7 | 1.1 | 7.4 | 400.0 |
| 21.0 | 9.4 | 0.4 | 7.3 | 411.0 |
| 24.0 | 6.9 | 0.2 | 7.3 | 416.0 |
| 27.0 | 6.1 | 0.2 | 7.3 | 425.0 |
| 30.0 | 5.6 | 0.2 | 4.3 | 428.0 |
| 33.0 | 5.0 | 0.2 | 7.2 | 434.0 |
| 36.0 | 4.8 | 0.2 | 7.2 | 436.0 |
| 39.0 | 4.7 | 0.2 | 7.2 | 442.0 |
| 42.0 | 4.7 | 0.2 | 7.1 | 448.0 |
| 45.0 | 4.7 | 0.2 | 7.1 | 454.0 |
| 47.0 | 4.6 | 0.2 | 7.1 | 457.0 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 28.00 | 794.00 |
| Dissolved P (µg/L) | ND | 726.000 |
| Chl a (µg/L) | 3.13 | NA |
| TKN (µg/L | 1330.00 | 5400.00 |
| NO3+NO2-N (µg/L) | ND | ND |
| NH3-N (µg/L) | 20.000 | 3840.000 |
| Total N (µg/L) | 1330.00 | 5400.00 |
| Lab Cond. (µS/cm) | 473 | 469 |
| Lab pH | 8.90 | 7.37 |
| Alkal (mg/l CaCO3) | 141 | 183 |
| Total Susp Sol (mg/l) | ND | 4 |
| Calcium (mg/l) | NA | NA |

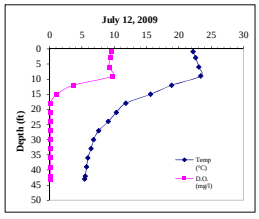
Data collected by: BTB (Onterra)

**Harpt**

**Date:** 07-12-09
**Time:** NA
**Weather:** Clear, little wind, 75.7°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 42.2
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 13.8

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 22.2 | 9.5 | | |
| 3.0 | 22.6 | 9.4 | | |
| 6.0 | 23.1 | 9.2 | | |
| 9.0 | 23.4 | 9.7 | | |
| 12.0 | 18.9 | 3.7 | | |
| 15.0 | 15.6 | 1.1 | | |
| 18.0 | 11.8 | 0.1 | | |
| 21.0 | 10.3 | 0.1 | | |
| 24.0 | 9.1 | 0.1 | | |
| 27.0 | 7.6 | 0.1 | | |
| 30.0 | 6.8 | 0.1 | | |
| 33.0 | 6.4 | 0.1 | | |
| 36.0 | 5.9 | 0.1 | | |
| 39.0 | 5.7 | 0.1 | | |
| 42.0 | 5.5 | 0.1 | | |
| 43.0 | 5.4 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 23.000 | 583.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

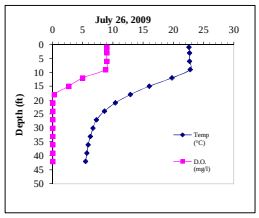
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 07-26-09
**Time:** NA
**Weather:** windy, overcast, 66°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 42.8
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 11.2

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 22.6 | 9.0 | | |
| 3.0 | 22.7 | 9.0 | | |
| 6.0 | 22.7 | 9.0 | | |
| 9.0 | 22.8 | 8.8 | | |
| 12.0 | 19.8 | 5.0 | | |
| 15.0 | 16.0 | 2.7 | | |
| 18.0 | 12.9 | 0.3 | | |
| 21.0 | 10.4 | 0.1 | | |
| 24.0 | 8.6 | 0.1 | | |
| 27.0 | 7.3 | 0.1 | | |
| 30.0 | 6.7 | 0.1 | | |
| 33.0 | 6.3 | 0.1 | | |
| 36.0 | 5.9 | 0.1 | | |
| 39.0 | 5.7 | 0.1 | | |
| 42.0 | 5.5 | 0.1 | | |
| 43.0 | 5.4 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 27.00 | 556.00 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

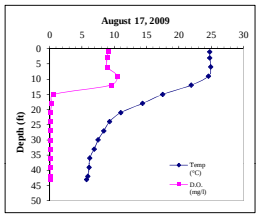
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 08-17-09
**Time:** NA
**Weather:** cloudy, 81 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 43.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 13.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 24.8 | 9.1 | | |
| 3.0 | 24.8 | 8.9 | | |
| 6.0 | 24.9 | 8.9 | | |
| 9.0 | 24.6 | 10.5 | | |
| 12.0 | 21.9 | 9.5 | | |
| 15.0 | 17.5 | 0.6 | | |
| 18.0 | 14.4 | 0.3 | | |
| 21.0 | 11.0 | 0.1 | | |
| 24.0 | 9.3 | 0.1 | | |
| 27.0 | 8.4 | 0.1 | | |
| 30.0 | 7.5 | 0.1 | | |
| 33.0 | 6.9 | 0.1 | | |
| 36.0 | 6.2 | 0.1 | | |
| 39.0 | 6.1 | 0.1 | | |
| 42.0 | 5.9 | 0.1 | | |
| 43.0 | 5.7 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 19.000 | 629.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

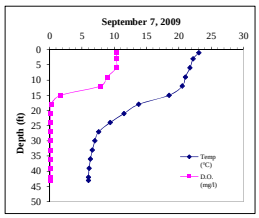
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 09-07-09
**Time:** NA
**Weather:** Sunny, 78°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 40.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 11.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 23.1 | 10.3 | | |
| 3.0 | 22.2 | 10.3 | | |
| 6.0 | 21.7 | 10.3 | | |
| 9.0 | 21.0 | 8.9 | | |
| 12.0 | 20.5 | 7.9 | | |
| 15.0 | 18.5 | 1.7 | | |
| 18.0 | 13.8 | 0.2 | | |
| 21.0 | 11.5 | 0.1 | | |
| 24.0 | 9.4 | 0.1 | | |
| 27.0 | 7.6 | 0.1 | | |
| 30.0 | 7.0 | 0.1 | | |
| 33.0 | 6.6 | 0.1 | | |
| 36.0 | 6.3 | 0.1 | | |
| 39.0 | 6.1 | 0.1 | | |
| 42.0 | 6.0 | 0.1 | | |
| 43.0 | 6.0 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 13.000 | 683.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

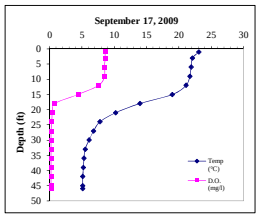
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 09-17-09
**Time:** 2:30
**Weather:** Sunny, breezy, 76°F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 48.5
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 46.0
**Secchi Depth (ft):** 12.6

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 23.1 | 8.6 | 8.8 | 369.0 |
| 3.0 | 22.1 | 8.6 | 8.8 | 369.0 |
| 6.0 | 21.9 | 8.5 | 8.8 | 368.0 |
| 9.0 | 21.7 | 8.5 | 8.8 | 368.0 |
| 12.0 | 21.1 | 7.6 | 8.6 | 371.0 |
| 15.0 | 19.0 | 4.4 | 8.0 | 383.0 |
| 18.0 | 14.0 | 0.8 | 7.5 | 407.0 |
| 21.0 | 10.2 | 0.4 | 7.3 | 420.0 |
| 24.0 | 7.8 | 0.3 | 7.2 | 430.0 |
| 27.0 | 6.8 | 0.2 | 7.3 | 438.0 |
| 30.0 | 6.1 | 0.2 | 7.3 | 442.0 |
| 33.0 | 5.5 | 0.2 | 7.2 | 451.0 |
| 36.0 | 5.3 | 0.2 | 7.2 | 456.0 |
| 39.0 | 5.2 | 0.2 | 7.2 | 459.0 |
| 42.0 | 5.1 | 0.2 | 7.1 | 462.0 |
| 45.0 | 5.1 | 0.2 | 7.1 | 467.0 |
| 46.0 | 5.1 | 0.2 | 7.1 | 467.0 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 23.000 | 1010.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | 2.550 | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | ND | 4.000 |
| Calcium (mg/l) | NA | NA |

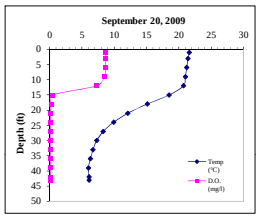
Data collected by: BTB (Onterra)

**Harpt**

**Date:** 09-20-09
**Time:** NA
**Weather:** Sunny, little windy, 70.5 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 43.2
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 13.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 21.6 | 8.7 | | |
| 3.0 | 21.4 | 8.7 | | |
| 6.0 | 21.2 | 8.6 | | |
| 9.0 | 21.0 | 8.5 | | |
| 12.0 | 20.7 | 7.3 | | |
| 15.0 | 18.5 | 0.4 | | |
| 18.0 | 15.1 | 0.2 | | |
| 21.0 | 12.1 | 0.1 | | |
| 24.0 | 9.9 | 0.1 | | |
| 27.0 | 8.3 | 0.1 | | |
| 30.0 | 7.3 | 0.1 | | |
| 33.0 | 6.7 | 0.1 | | |
| 36.0 | 6.3 | 0.1 | | |
| 39.0 | 6.0 | 0.1 | | |
| 42.0 | 6.1 | 0.1 | | |
| 43.0 | 6.1 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 17.000 | 795.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

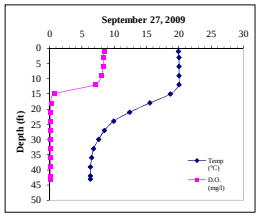
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 09-27-09
**Time:** NA
**Weather:** Cloudy, 67.5 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 40.8
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 11.2

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 19.9 | 8.4 | | |
| 3.0 | 20.0 | 8.3 | | |
| 6.0 | 20.0 | 8.3 | | |
| 9.0 | 20.0 | 8.0 | | |
| 12.0 | 20.0 | 7.0 | | |
| 15.0 | 18.7 | 0.7 | | |
| 18.0 | 15.5 | 0.2 | | |
| 21.0 | 12.4 | 0.1 | | |
| 24.0 | 9.9 | 0.1 | | |
| 27.0 | 8.5 | 0.1 | | |
| 30.0 | 7.6 | 0.1 | | |
| 33.0 | 6.8 | 0.1 | | |
| 36.0 | 6.5 | 0.1 | | |
| 39.0 | 6.3 | 0.1 | | |
| 42.0 | 6.3 | 0.1 | | |
| 43.0 | 6.3 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 22.000 | 814.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

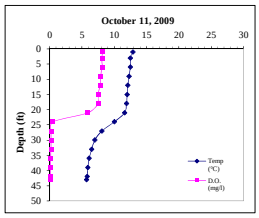
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 10-11-09
**Time:** NA
**Weather:** Sunny, 43 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 43.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 9.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 12.9 | 8.2 | | |
| 3.0 | 12.5 | 8.1 | | |
| 6.0 | 12.5 | 8.1 | | |
| 9.0 | 12.3 | 7.9 | | |
| 12.0 | 12.1 | 7.8 | | |
| 15.0 | 12.0 | 7.5 | | |
| 18.0 | 11.9 | 7.5 | | |
| 21.0 | 11.6 | 5.9 | | |
| 24.0 | 10.0 | 0.5 | | |
| 27.0 | 8.1 | 0.2 | | |
| 30.0 | 7.0 | 0.2 | | |
| 33.0 | 6.5 | 0.2 | | |
| 36.0 | 6.1 | 0.1 | | |
| 39.0 | 5.9 | 0.1 | | |
| 42.0 | 5.8 | 0.1 | | |
| 43.0 | 5.7 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 37.000 | 749.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

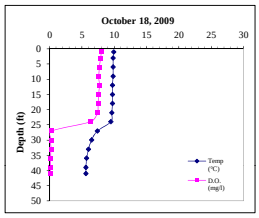
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 10-18-09
**Time:** NA
**Weather:** cloudy, 46.3 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 41.4
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 7.2

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 9.9 | 8.0 | | |
| 3.0 | 9.8 | 7.9 | | |
| 6.0 | 9.8 | 7.7 | | |
| 9.0 | 9.8 | 7.6 | | |
| 12.0 | 9.7 | 7.7 | | |
| 15.0 | 9.7 | 7.6 | | |
| 18.0 | 9.7 | 7.5 | | |
| 21.0 | 9.6 | 7.4 | | |
| 24.0 | 9.5 | 6.3 | | |
| 27.0 | 7.4 | 0.3 | | |
| 30.0 | 6.5 | 0.2 | | |
| 33.0 | 6.0 | 0.2 | | |
| 36.0 | 5.7 | 0.1 | | |
| 39.0 | 5.6 | 0.1 | | |
| 41.0 | 5.6 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 52.000 | 759.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

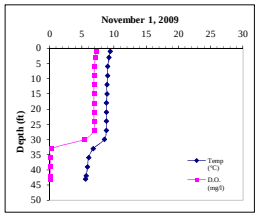
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 11-01-09
**Time:** NA
**Weather:** partly cloudy, windy, 48 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 45.0
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 40.0
**Secchi Depth (ft):** 12.8

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 9.4 | 7.3 | | |
| 3.0 | 9.2 | 7.1 | | |
| 6.0 | 9.0 | 7.0 | | |
| 9.0 | 9.0 | 6.9 | | |
| 12.0 | 8.9 | 6.9 | | |
| 15.0 | 8.9 | 6.9 | | |
| 18.0 | 8.8 | 6.9 | | |
| 21.0 | 8.8 | 6.9 | | |
| 24.0 | 8.8 | 6.9 | | |
| 27.0 | 8.8 | 6.9 | | |
| 30.0 | 8.5 | 5.4 | | |
| 33.0 | 6.8 | 0.3 | | |
| 36.0 | 6.1 | 0.2 | | |
| 39.0 | 5.9 | 0.2 | | |
| 42.0 | 5.7 | 0.1 | | |
| 43.0 | 5.6 | 0.1 | | |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 94.000 | 841.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

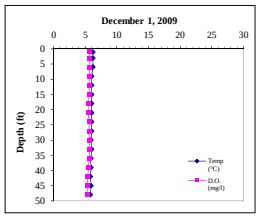
Data collected by: Tim and Marlene (Harpt Lake Association)

**Harpt**

**Date:** 12-01-09
**Time:** NA
**Weather:** 50% sun, 45 °F
**Ent:** BTB **Verf:**

**Max Depth (ft):** 48.4
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 46.0
**Secchi Depth (ft):** 9.9

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 6.2 | 5.7 | 7.5 | 391.0 |
| 3.0 | 6.2 | 5.7 | 7.5 | 391.0 |
| 6.0 | 6.2 | 5.7 | 7.6 | 391.0 |
| 9.0 | 6.0 | 5.6 | 7.6 | 391.0 |
| 12.0 | 6.0 | 5.6 | 7.6 | 391.0 |
| 15.0 | 6.0 | 5.6 | 7.6 | 391.0 |
| 18.0 | 6.0 | 5.5 | 7.6 | 391.0 |
| 21.0 | 6.0 | 5.5 | 7.6 | 391.0 |
| 24.0 | 6.0 | 5.6 | 7.6 | 391.0 |
| 27.0 | 6.0 | 5.6 | 7.6 | 391.0 |
| 30.0 | 5.9 | 5.6 | 7.6 | 391.0 |
| 33.0 | 6.0 | 5.7 | 7.6 | 391.0 |
| 36.0 | 5.9 | 5.6 | 7.6 | 391.0 |
| 39.0 | 5.9 | 5.5 | 7.6 | 391.0 |
| 42.0 | 5.8 | 5.4 | 7.7 | 392.0 |
| 45.0 | 5.9 | 5.3 | 7.7 | 391.0 |
| 48.0 | 5.8 | 5.3 | 7.7 | 392.0 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 142.000 | 137.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | 7.200 | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

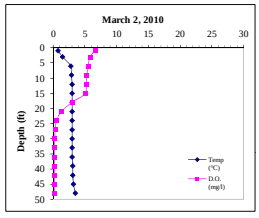
Data collected by: TAH and EJH (Onterra)

**Harpt**

**Date:** 03-02-10
**Time:** 3:55
**Weather:** 100% sun, 35 °F, calm
**Ent:** BTB **Verf:**

**Max Depth (ft):** 49.1
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 47.0
**Secchi Depth (ft):** 9.9

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 0.8 | 6.6 | 7.3 | 408.0 |
| 3.0 | 1.5 | 5.8 | 7.3 | 410.0 |
| 6.0 | 2.8 | 5.5 | 7.3 | 407.0 |
| 9.0 | 2.9 | 5.3 | 7.3 | 408.0 |
| 12.0 | 3.0 | 5.2 | 7.4 | 408.0 |
| 15.0 | 3.0 | 5.1 | 7.4 | 409.0 |
| 18.0 | 3.0 | 3.0 | 7.3 | 411.0 |
| 21.0 | 3.0 | 1.3 | 7.2 | 415.0 |
| 24.0 | 3.0 | 0.5 | 7.3 | 418.0 |
| 27.0 | 3.0 | 0.3 | 7.2 | 423.0 |
| 30.0 | 3.0 | 0.2 | 7.2 | 425.0 |
| 33.0 | 3.0 | 0.2 | 7.2 | 427.0 |
| 36.0 | 3.0 | 0.2 | 7.2 | 434.0 |
| 39.0 | 3.1 | 0.2 | 7.2 | 443.0 |
| 42.0 | 3.1 | 0.2 | 7.2 | 450.0 |
| 45.0 | 3.2 | 0.2 | 7.2 | 461.0 |
| 48.0 | 3.5 | 0.2 | 7.0 | 522.0 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 131.000 | 323.000 |
| Dissolved P (µg/L) | 105.000 | 272.000 |
| Chl a (µg/L) | NA | |
| TKN (µg/L | 1930.000 | 3640.000 |
| NO3+NO2-N (µg/L) | 338.000 | 1260.000 |
| NH3-N (µg/L) | 504.000 | 1590.000 |
| Total N (µg/L) | 2268.000 | 4900.000 |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | ND | 3.000 |
| Calcium (mg/l) | NA | NA |

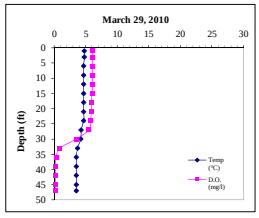
Data collected by: BTB and DAC (Onterra)
Ice Depth: 1.1 ft

**Harpt**

**Date:** 03-29-10
**Time:** 10:15
**Weather:** 90% clouds, 33°F, light breeze
**Ent:** BTB **Verf:**

**Max Depth (ft):** 49.4
**HLS Depth (ft):** 3.0
**HLB Depth (ft):** 47.0
**Secchi Depth (ft):** 6.0

| Depth (ft) | Temp (°C) | D.O. (mg/l) | pH | Sp. Cond (µS/cm) |
|---|---|---|---|---|
| 1.0 | 4.8 | 6.1 | 6.9 | 393.0 |
| 3.0 | 4.8 | 6.1 | 7.0 | 393.0 |
| 6.0 | 4.7 | 6.1 | 7.1 | 394.0 |
| 9.0 | 4.7 | 6.1 | 7.1 | 394.0 |
| 12.0 | 4.7 | 6.1 | 7.2 | 394.0 |
| 15.0 | 4.7 | 6.0 | 7.2 | 394.0 |
| 18.0 | 4.7 | 5.9 | 7.2 | 394.0 |
| 21.0 | 4.7 | 5.9 | 7.2 | 394.0 |
| 24.0 | 4.7 | 5.8 | 7.2 | 394.0 |
| 27.0 | 4.3 | 5.5 | 7.2 | 397.0 |
| 30.0 | 4.2 | 3.5 | 7.1 | 409.0 |
| 33.0 | 3.7 | 0.9 | 7.0 | 428.0 |
| 36.0 | 3.5 | 0.3 | 7.0 | 437.0 |
| 39.0 | 3.5 | 0.2 | 7.0 | 448.0 |
| 42.0 | 3.5 | 0.2 | 7.0 | 460.0 |
| 45.0 | 3.5 | 0.2 | 7.0 | 471.0 |
| 47.0 | 3.5 | 0.2 | 7.0 | 472.0 |




| Parameter | HLS | HLB |
|---|---|---|
| Total P (µg/L) | 140.000 | 414.000 |
| Dissolved P (µg/L) | NA | NA |
| Chl a (µg/L) | NA | NA |
| TKN (µg/L | NA | NA |
| NO3+NO2-N (µg/L) | NA | NA |
| NH3-N (µg/L) | NA | NA |
| Total N (µg/L) | NA | NA |
| Lab Cond. (µS/cm) | NA | NA |
| Lab pH | NA | NA |
| Alkal (mg/l CaCO3) | NA | NA |
| Total Susp Sol (mg/l) | NA | NA |
| Calcium (mg/l) | NA | NA |

Data collected by BTB and DAC (Onterra)

## Water Quality Data

| 2009 | Surface | | Bottom | |
|---|---|---|---|---|
| Parameter | Count | Mean | Count | Mean |
| Secchi Depth (feet) | 21 | 9.3 | NA | NA |
| Total P (µg/L) | 19 | 59.3 | 19 | 587.6 |
| Dissolved P (µg/L) | 2 | 23.0 | 3 | 447.0 |
| Chl a (µg/L) | 4 | 9.7 | NA | NA |
| TKN (µg/L | 3 | 1670.0 | 3 | 4140.0 |
| NO3+NO2-N (µg/L) | 3 | ND | 3 | 751.5 |
| NH3-N (µg/L) | 3 | 71.0 | 3 | 1882.3 |
| Total N (µg/L) | 3 | 1670.0 | 3 | 4560.0 |
| Lab Cond. (µS/cm) | 2 | 430.0 | 2 | 458.5 |
| Lab pH | 2 | 8.5 | 2 | 7.4 |
| Alkal (mg/l CaCO3) | 2 | 144.5 | 2 | 178.0 |
| Total Susp Sol (mg/l) | 4 | 5.0 | 4 | 3.3 |
| Calcium (µg/L) | 1 | 40.9 | NA | NA |

| Wisconsin Trophic State Index (WTSI) | | | | |
|---|---|---|---|---|
| Year | | TP | Chla | SD |
| 1977 | | | | 48.97 |
| 1994 | | 54.35 | 49.67 | 41.93 |
| 2003 | | 53.50 | 51.92 | 47.37 |
| 2004 | | | | 48.08 |
| 2005 | | | | 44.37 |
| 2006 | | | | 52.87 |
| 2009 | | 55.58 | 49.69 | 46.12 |
| All Years (weighted) | | 55.13 | 50.10 | 47.02 |
| WI Natural Lakes | | 53.19 | 54.23 | 47.33 |
| Southeast Region | | 62.15 | 63.02 | 54.22 |

## Morphological / Geographical Data

| Parameter | |
|---|---|
| Acreage | 31.4 |
| Volume (acre-feet) | 623.9 |
| Perimeter (miles) | 0.95 |
| Shoreland Development | |
| Maximum Depth (feet) | 54 |
| County | Manitowoc County |
| WBIC | 84600 |
| Lillie Mason Region(1983) | Southeast Region |
| Nichols Ecoregion(1999) | |

## Watershed Data

| WiLMS Class | Acreage | kg/yr | lbs/yr |
|---|---|---|---|
| Forest | 12.0 | 0.0 | 0.0 |
| Open Water | 33.3 | 1.0 | 2.2 |
| Pasture/Grass | 272.3 | 11.0 | 24.0 |
| Row Crops | 173.6 | 35.0 | 77.2 |
| Mixed Agr | 200.0 | 24.0 | 52.9 |
| Wetland | 95.3 | 4.0 | 8.8 |
| Internal Loading | | 45.0 | 90.0 |
| Watershed to Lake Area | 23:1 | | |

| | Secchi (feet) | | | | Chlorophyll a (µg/L) | | | | Phosphorus (µg/L) | | | | Phosphorus (µg/L) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Growing Season | | Summer | | Growing Season | | Summer | | Growing Season | | | | Spring Turnover | | Fall Turnover | |
| Year | Count | Mean | Count | Mean | Count | Mean | Count | Mean | Count | Mean | Count | Mean | Count | Mean | Count | Mean |
| 1977 | 2 | 7.05 | 2 | 7.05 | | | | | | | | | | | | |
| 1994 | 3 | 11.49 | 3 | 11.49 | 3 | 7.30 | 3 | 7.30 | 3 | 29 | 3 | 29 | | | | |
| 2003 | 18 | 8.24 | 14 | 7.88 | 1 | 9.85 | 1 | 9.85 | 1 | 26 | 1 | 26 | | | | |
| 2004 | 15 | 7.27 | 8 | 7.50 | | | | | | | | | | | | |
| 2005 | 12 | 9.67 | 10 | 9.70 | | | | | | | | | | | | |
| 2006 | 10 | 5.1 | 8 | 5.38 | | | | | | | | | | | | |
| 2009 | 16 | 9.39 | 8 | 8.59 | 4 | 10.75 | 2 | 7.32 | 16 | 42.19 | 8 | 34.00 | | | | |
| All Years (weighted) | | 8.2 | | 8.1 | | 9.3 | | 7.7 | | 39.4 | | 32.1 | | | | |
| WI Natural Lakes | | | | 7.9 | | | | 13.4 | | | | 25 | | | | |
| Southeast Region | | | | 4.9 | | | | 43.3 | | | | 79 | | | | |

# D

# APPENDIX D

## Watershed Analysis WiLMS Results

**Date: 6/11/2010 Scenario: Harpt Lake New Adjusted**

Lake Id: Harpt Lake
Watershed Id: 0

**Hydrologic and Morphometric Data**

Tributary Drainage Area: 753.2 acre
Total Unit Runoff: 7.60 in.
Annual Runoff Volume: 477.0 acre-ft
Lake Surface Area <As>: 33.3 acre
Lake Volume <V>: 644.1 acre-ft
Lake Mean Depth <z>: 19.3 ft
Precipitation - Evaporation: 3.2 in.
Hydraulic Loading: 485.9 acre-ft/year
Areal Water Load <qs>: 14.6 ft/year
Lake Flushing Rate <p>: 0.75 1/year
Water Residence Time: 1.33 year
Observed spring overturn total phosphorus (SPO): 166.0 mg/m^3
Observed growing season mean phosphorus (GSM): 50.4 mg/m^3
% NPS Change: 0%
% PS Change: 0%

**NON-POINT SOURCE DATA**

| Land Use | Acre | Low | Most Likely | High | Loading % | Low | Most Likely | High |
|---|---|---|---|---|---|---|---|---|
| | (ac) | Loading (kg/ha-year) | | | | Loading (kg/year) | | |
| Row Crop AG | 173.6 | 0.50 | 0.50 | 3.00 | 29.1 | 35 | 35 | 211 |
| Mixed AG | 200.0 | 0.30 | 0.30 | 1.40 | 20.1 | 24 | 24 | 113 |
| Pasture/Grass | 272.3 | 0.10 | 0.10 | 0.50 | 9.1 | 11 | 11 | 55 |
| HD Urban (1/8 Ac) | 0.0 | 1.00 | 1.00 | 2.00 | 0.0 | 0 | 0 | 0 |
| MD Urban (1/4 Ac) | 0.0 | 0.30 | 0.30 | 0.80 | 0.0 | 0 | 0 | 0 |
| Rural Res (>1 Ac) | 0.0 | 0.05 | 0.05 | 0.25 | 0.0 | 0 | 0 | 0 |
| Wetlands | 95.3 | 0.10 | 0.10 | 0.10 | 3.2 | 4 | 4 | 4 |
| Forest | 12.0 | 0.05 | 0.05 | 0.18 | 0.2 | 0 | 0 | 1 |
| Lake Surface | 33.3 | 0.10 | 0.10 | 1.00 | 1.1 | 1 | 1 | 13 |

**POINT SOURCE DATA**

| Point Sources | Water Load (m^3/year) | Low (kg/year) | Most Likely (kg/year) | High (kg/year) | Loading % |
|---|---|---|---|---|---|
| Internal Load Estimate | 0.0 | 34.0 | 45.0 | 60.0 | 37.2 |

**SEPTIC TANK DATA**

| Description | | Low | Most Likely | High | Loading % |
|---|---|---|---|---|---|
| Septic Tank Output (kg/capita-year) | | 0.30 | 0.50 | 0.80 | |
| # capita-years | 0.0 | | | | |
| % Phosphorus Retained by Soil | | 98.0 | 90.0 | 80.0 | |
| Septic Tank Loading (kg/year) | | 0.00 | 0.00 | 0.00 | 0.0 |

**TOTALS DATA**

| Description | Low | Most Likely | High | Loading % |
|---|---|---|---|---|
| Total Loading (lb) | 242.2 | 266.5 | 1008.4 | 100.0 |
| Total Loading (kg) | 109.9 | 120.9 | 457.4 | 100.0 |
| Areal Loading (lb/ac-year) | 7.27 | 8.00 | 30.28 | |
| Areal Loading (mg/m^2-year) | 815.35 | 896.98 | 3394.11 | |
| Total PS Loading (lb) | 75.0 | 99.2 | 132.3 | 37.2 |
| Total PS Loading (kg) | 34.0 | 45.0 | 60.0 | 37.2 |
| Total NPS Loading (lb) | 164.3 | 164.3 | 846.4 | 62.8 |
| Total NPS Loading (kg) | 74.5 | 74.5 | 383.9 | 62.8 |

## Phosphorus Prediction and Uncertainty Analysis Module

Date: 6/11/2010  Scenario: Harpt Lake New Adjusted
Observed spring overturn total phosphorus (SPO): 166.0 mg/m^3
Observed growing season mean phosphorus (GSM): 50.4 mg/m^3
Back calculation for SPO total phosphorus: 0.0 mg/m^3
Back calculation GSM phosphorus: 0.0 mg/m^3
% Confidence Range: 70%
Nurenberg Model Input - Est. Gross Int. Loading: 0 kg

| Lake Phosphorus Model | Low Total P (mg/m^3) | Most Likely Total P (mg/m^3) | High Total P (mg/m^3) | Predicted -Observed (mg/m^3) | % Dif. |
|---|---|---|---|---|---|
| Walker, 1987 Reservoir | 47 | 52 | 195 | 2 | 4 |
| Canfield-Bachmann, 1981 Natural Lake | 60 | 64 | 154 | 14 | 28 |
| Canfield-Bachmann, 1981 Artificial Lake | 49 | 52 | 103 | 2 | 4 |
| Rechow, 1979 General | 48 | 53 | 200 | 3 | 6 |
| Rechow, 1977 Anoxic | 135 | 149 | 563 | 99 | 196 |
| Rechow, 1977 water load<50m/year | 70 | 77 | 293 | 27 | 54 |
| Rechow, 1977 water load>50m/year | N/A | N/A | N/A | N/A | N/A |
| Walker, 1977 General | 95 | 104 | 394 | -62 | -37 |
| Vollenweider, 1982 Combined OECD | 59 | 64 | 191 | -44 | -41 |
| Dillon-Rigler-Kirchner | 52 | 57 | 216 | -109 | -66 |
| Vollenweider, 1982 Shallow Lake/Res. | 51 | 55 | 179 | -53 | -49 |
| Larsen-Mercier, 1976 | 85 | 94 | 355 | -72 | -43 |
| Nurnberg, 1984 Oxic | 61 | 67 | 253 | 17 | 34 |

| Lake Phosphorus Model | Confidence Lower Bound | Confidence Upper Bound | Parameter Fit? | Back Calculation (kg/year) | Model Type |
|---|---|---|---|---|---|
| Walker, 1987 Reservoir | 37 | 141 | FIT | 0 | GSM |
| Canfield-Bachmann, 1981 Natural Lake | 20 | 184 | FIT | 1 | GSM |
| Canfield-Bachmann, 1981 Artificial Lake | 16 | 150 | FIT | 1 | GSM |
| Rechow, 1979 General | 36 | 145 | FIT | 0 | GSM |
| Rechow, 1977 Anoxic | 109 | 406 | FIT | 0 | GSM |
| Rechow, 1977 water load<50m/year | 53 | 212 | P | 0 | GSM |
| Rechow, 1977 water load>50m/year | N/A | N/A | N/A | N/A | N/A |
| Walker, 1977 General | 62 | 291 | FIT | 0 | SPO |
| Vollenweider, 1982 Combined OECD | 36 | 153 | FIT | 0 | ANN |
| Dillon-Rigler-Kirchner | 41 | 156 | P | 0 | SPO |
| Vollenweider, 1982 Shallow Lake/Res. | 32 | 138 | FIT | 0 | ANN |
| Larsen-Mercier, 1976 | 71 | 255 | P Pin | 0 | SPO |
| Nurnberg, 1984 Oxic | 42 | 185 | P | 0 | ANN |

E

# APPENDIX E

## Aquatic Plant Survey Data

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 44.29633104 | -87.73628189 | | | | Onshore | | | | | | | | | | | | | | | | | | | | |
| 2 | 44.29617811 | -87.73628776 | 3 | M | P | | | 1 | 3 | | | | | 1 | | | | | | | | | | | | |
| 3 | 44.29602518 | -87.73629364 | 6 | M | P | | | 1 | 1 | | | | | 1 | | | | | | | | | | | 3 | |
| 4 | 44.29587224 | -87.73629952 | 3 | M | P | | | 1 | 2 | | | | | 1 | | | | | | | | | | | 1 | |
| 5 | 44.29571931 | -87.7363054 | 6 | M | P | | | 1 | | | | | | | | | | | | | | | | | 2 | |
| 6 | 44.29556638 | -87.73631128 | 3 | M | P | | | 1 | | 1 | | | 1 | | | | | | 1 | | | | | | 1 | |
| 7 | 44.29541345 | -87.73631716 | 2 | M | P | | | 1 | | | | | | | | | | | | | | | | | 1 | |
| 8 | 44.29663268 | -87.73605719 | 3 | M | P | | | | | 3 | | | | | | | | | | | | | | | 1 | |
| 9 | 44.29647975 | -87.73606307 | 3 | M | P | | | 1 | | 2 | | | | 1 | | | | | | | | | | | | |
| 10 | 44.29632682 | -87.73606895 | 6 | M | P | | | 1 | | | | | | | | | | | | | | | | | 1 | |
| 11 | 44.29617389 | -87.73607483 | 10 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 12 | 44.29602095 | -87.73608071 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 13 | 44.29586802 | -87.73608659 | 11 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 14 | 44.29571509 | -87.73609247 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 15 | 44.29556216 | -87.73609835 | 10 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 16 | 44.29540922 | -87.73610422 | 4 | M | P | | | 1 | | | | | | 1 | | | | | | | | | | | 2 | |
| 17 | 44.29525629 | -87.7361101 | 4 | M | P | | | 2 | | | | | | 1 | | | | | | | | | | | 1 | |
| 18 | 44.29510336 | -87.73611598 | 2 | M | P | | | 1 | | | | | | 1 | | | | | 1 | | | | | | 1 | |
| 19 | 44.29693432 | -87.7358325 | 2 | M | P | | | 1 | | | | 1 | | 1 | | | | | | | | | | | | |
| 20 | 44.29678139 | -87.73583838 | 4 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | | |
| 21 | 44.29662846 | -87.73584426 | 6 | M | P | | | 1 | | | | | | 3 | | | | | | | | | | | 1 | |
| 22 | 44.29647553 | -87.73585014 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 23 | 44.29632259 | -87.73585602 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 24 | 44.29616966 | -87.73586189 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 25 | 44.29601673 | -87.73586777 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 26 | 44.2958638 | -87.73587365 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 27 | 44.29571087 | -87.73587953 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 28 | 44.29555793 | -87.73588541 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 29 | 44.295405 | -87.73589129 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 30 | 44.29525207 | -87.73589717 | 10 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 31 | 44.29509914 | -87.73590305 | 5 | M | P | | | 1 | | | | | | 1 | 1 | 1 | | | | | | | | | | |
| 32 | 44.29494621 | -87.73590893 | 4 | M | P | | | 1 | | | | | | | | | | | 1 | | | | | | | |
| 33 | 44.29479327 | -87.73591481 | 1 | M | P | | | 1 | | | | | 1 | | | 1 | | | 1 | | 1 | | | | | |
| 34 | 44.29708303 | -87.73561368 | 6 | M | P | | | 1 | | 2 | | | | | | | | | | | | | | | | |
| 35 | 44.2969301 | -87.73561956 | 9 | M | P | | | 1 | | | | | | 1 | | | | | | | | | | | 1 | |
| 36 | 44.29677717 | -87.73562544 | 9 | M | P | | | 1 | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | 44.29662424 | -87.73563132 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 38 | 44.2964713 | -87.7356372 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 39 | 44.29631837 | -87.73564308 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 40 | 44.29616544 | -87.73564896 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 41 | 44.29601251 | -87.73565484 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 42 | 44.29585958 | -87.73566072 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 43 | 44.29570664 | -87.7356666 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 44 | 44.29555371 | -87.73567248 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 45 | 44.29540078 | -87.73567836 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 46 | 44.29524785 | -87.73568424 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 47 | 44.29509492 | -87.73569012 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 48 | 44.29494198 | -87.735696 | 8 | M | P | | | 1 | | | | | | 1 | | | | | | | | | | | 1 | |
| 49 | 44.29478905 | -87.73570188 | 6 | M | P | | | 1 | | | | | | 1 | | 1 | | | | | | | | | | |
| 50 | 44.29463612 | -87.73570776 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 51 | 44.29723174 | -87.73539486 | 4 | M | P | | | | | 3 | | | | | | | | | | | | | | | | |
| 52 | 44.29707881 | -87.73540074 | 6 | M | P | | | 1 | | 1 | | | | 1 | | | | | | | | | | | | |
| 53 | 44.29692588 | -87.73540662 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 54 | 44.29677294 | -87.7354125 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 55 | 44.29662001 | -87.73541838 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 56 | 44.29646708 | -87.73542426 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 57 | 44.29631415 | -87.73543014 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 58 | 44.29616122 | -87.73543603 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 59 | 44.29600828 | -87.73544191 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 60 | 44.29585535 | -87.73544779 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 61 | 44.29570242 | -87.73545367 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 62 | 44.29554949 | -87.73545955 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 63 | 44.29539656 | -87.73546543 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 64 | 44.29524362 | -87.73547131 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 65 | 44.29509069 | -87.73547719 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 66 | 44.29493776 | -87.73548307 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 67 | 44.29478483 | -87.73548895 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 68 | 44.2946319 | -87.73549483 | 5 | M | P | | | | | | | | | | | 1 | | | | | | | | | | |
| 69 | 44.29447896 | -87.73550071 | 2 | M | P | | | 1 | | | | | | 3 | | 1 | | | | | 1 | | | | 1 | |
| 70 | 44.29738045 | -87.73517604 | 3 | M | P | | | 1 | | 1 | | | | 1 | | | 1 | | | | | | | | 1 | |
| 71 | 44.29722752 | -87.73518192 | 5 | M | P | | | 2 | | 2 | | | | 1 | | | | | | | | | | | | |
| 72 | 44.29707458 | -87.7351878 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | 44.29692165 | -87.73519368 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 74 | 44.29676872 | -87.73519957 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 75 | 44.29661579 | -87.73520545 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 76 | 44.29646286 | -87.73521133 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 77 | 44.29630992 | -87.73521721 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 78 | 44.29615699 | -87.73522309 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 79 | 44.29600406 | -87.73522897 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 80 | 44.29585113 | -87.73523485 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 81 | 44.2956982 | -87.73524073 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 82 | 44.29554526 | -87.73524661 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 83 | 44.29539233 | -87.7352525 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 84 | 44.2952394 | -87.73525838 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 85 | 44.29508647 | -87.73526426 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 86 | 44.29493354 | -87.73527014 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 87 | 44.29478061 | -87.73527602 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 88 | 44.29462767 | -87.7352819 | 3 | M | P | | | | | | | | | | | 1 | | | 3 | | | | | | | |
| 89 | 44.29447474 | -87.73528778 | 3 | M | P | | | 1 | | 3 | | | 1 | 1 | | 1 | | | | | | | | | | |
| 90 | 44.29752916 | -87.73495722 | 3 | M | P | | | | | | | | 1 | | | | V | | 1 | | | | | | 1 | |
| 91 | 44.29737622 | -87.7349631 | 8 | M | P | | | 1 | | | | | | | | | | | | | | | | | | |
| 92 | 44.29722329 | -87.73496898 | 11 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 93 | 44.29707036 | -87.73497487 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 94 | 44.29691743 | -87.73498075 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 95 | 44.2967645 | -87.73498663 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 96 | 44.29661156 | -87.73499251 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 97 | 44.29645863 | -87.73499839 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 98 | 44.2963057 | -87.73500427 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 99 | 44.29615277 | -87.73501016 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 100 | 44.29599984 | -87.73501604 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 101 | 44.2958469 | -87.73502192 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 102 | 44.29569397 | -87.7350278 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 103 | 44.29554104 | -87.73503368 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 104 | 44.29538811 | -87.73503956 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 105 | 44.29523518 | -87.73504545 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 106 | 44.29508225 | -87.73505133 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 107 | 44.29492931 | -87.73505721 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 108 | 44.29477638 | -87.73506309 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109 | 44.29462345 | -87.73506897 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 110 | 44.29447052 | -87.73507485 | 7 | M | P | | | 1 | | | | | | 2 | | 1 | | | | | | | | | 1 | |
| 111 | 44.29431759 | -87.73508073 | 1 | M | P | | | 1 | | | | | | | | | 1 | | 1 | | | | | | 1 | |
| 112 | 44.29752493 | -87.73474428 | 4 | M | P | | | | | 1 | | | 1 | 1 | | | V | | | | | | | | 1 | |
| 113 | 44.297372 | -87.73475016 | 8 | M | P | | | 1 | | | | | | 1 | | | | | | | | | | | 1 | |
| 114 | 44.29721907 | -87.73475604 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 115 | 44.29706614 | -87.73476193 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 116 | 44.2969132 | -87.73476781 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 117 | 44.29676027 | -87.73477369 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 118 | 44.29660734 | -87.73477957 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 119 | 44.29645441 | -87.73478546 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 120 | 44.29630148 | -87.73479134 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 121 | 44.29614854 | -87.73479722 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 122 | 44.29599561 | -87.7348031 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 123 | 44.29584268 | -87.73480899 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 124 | 44.29568975 | -87.73481487 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 125 | 44.29553682 | -87.73482075 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 126 | 44.29538388 | -87.73482663 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 127 | 44.29523095 | -87.73483251 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 128 | 44.29507802 | -87.7348384 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 129 | 44.29492509 | -87.73484428 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 130 | 44.29477216 | -87.73485016 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 131 | 44.29461922 | -87.73485604 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 132 | 44.29446629 | -87.73486192 | 8 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 133 | 44.29431336 | -87.73486781 | 7 | M | P | | | 1 | | | | | | 1 | | | | | | | | | | | 1 | |
| 134 | 44.29767364 | -87.73452546 | 3 | M | P | | | | | 1 | | | | | | | V | | | | | | | | 1 | |
| 135 | 44.29752071 | -87.73453134 | 6 | M | P | | | | | 1 | | | | | | | | | | | | | | | | |
| 136 | 44.29736777 | -87.73453722 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 137 | 44.29721484 | -87.73454311 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 138 | 44.29706191 | -87.73454899 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 139 | 44.29690898 | -87.73455487 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 140 | 44.29675605 | -87.73456076 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 141 | 44.29660311 | -87.73456664 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 142 | 44.29645018 | -87.73457252 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 143 | 44.29629725 | -87.7345784 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 144 | 44.29614432 | -87.73458429 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 145 | 44.29599139 | -87.73459017 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 146 | 44.29583846 | -87.73459605 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 147 | 44.29568552 | -87.73460194 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 148 | 44.29553259 | -87.73460782 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 149 | 44.29537966 | -87.7346137 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 150 | 44.29522673 | -87.73461958 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 151 | 44.2950738 | -87.73462547 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 152 | 44.29492086 | -87.73463135 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 153 | 44.29476793 | -87.73463723 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 154 | 44.294615 | -87.73464311 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 155 | 44.29446207 | -87.73464899 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 156 | 44.29430914 | -87.73465488 | 7 | M | P | | | 1 | | | | | | | | 1 | | | | | | | | | | |
| 157 | 44.2941562 | -87.73466076 | 2 | M | P | | | 1 | | 1 | | | 1 | | | | | | 1 | | | | 1 | | 1 | |
| 158 | 44.29766941 | -87.73431252 | 3 | M | P | | | 1 | | 3 | | | | | | | V | | | | | | | | | |
| 159 | 44.29751648 | -87.7343184 | 9 | M | P | | | | | | | | | | 1 | | | | | | | | | | | |
| 160 | 44.29736355 | -87.73432428 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 161 | 44.29721062 | -87.73433017 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 162 | 44.29705768 | -87.73433605 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 163 | 44.29690475 | -87.73434194 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 164 | 44.29675182 | -87.73434782 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 165 | 44.29659889 | -87.7343537 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 166 | 44.29644596 | -87.73435959 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 167 | 44.29629303 | -87.73436547 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 168 | 44.29614009 | -87.73437135 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 169 | 44.29598716 | -87.73437724 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 170 | 44.29583423 | -87.73438312 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 171 | 44.2956813 | -87.734389 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 172 | 44.29552837 | -87.73439489 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 173 | 44.29537543 | -87.73440077 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 174 | 44.2952225 | -87.73440665 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 175 | 44.29506957 | -87.73441253 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 176 | 44.29491664 | -87.73441842 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 177 | 44.29476371 | -87.7344243 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 178 | 44.29461078 | -87.73443018 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 179 | 44.29445784 | -87.73443607 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 180 | 44.29430491 | -87.73444195 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 181 | 44.29415198 | -87.73444783 | 5 | M | P | | | 1 | | | | | | 2 | | | 1 | | | | | | | | 1 | |
| 182 | 44.29781812 | -87.73409369 | 3 | M | P | | | 1 | | 1 | | | 1 | | | | V | | | | | | | | | |
| 183 | 44.29766519 | -87.73409958 | 5 | M | P | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 184 | 44.29751225 | -87.73410546 | 9 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 185 | 44.29735932 | -87.73411135 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 186 | 44.29720639 | -87.73411723 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 187 | 44.29705346 | -87.73412311 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 188 | 44.29690053 | -87.734129 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 189 | 44.2967476 | -87.73413488 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 190 | 44.29659466 | -87.73414077 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 191 | 44.29644173 | -87.73414665 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 192 | 44.2962888 | -87.73415253 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 193 | 44.29613587 | -87.73415842 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 194 | 44.29598294 | -87.7341643 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 195 | 44.29583 | -87.73417019 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 196 | 44.29567707 | -87.73417607 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 197 | 44.29552414 | -87.73418195 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 198 | 44.29537121 | -87.73418784 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 199 | 44.29521828 | -87.73419372 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 200 | 44.29506535 | -87.7341996 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 201 | 44.29491241 | -87.73420549 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 202 | 44.29475948 | -87.73421137 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 203 | 44.29460655 | -87.73421725 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 204 | 44.29445362 | -87.73422314 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 205 | 44.29430069 | -87.73422902 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 206 | 44.29414775 | -87.7342349 | | M | P | | | 1 | | | | | | 1 | | | | | | 1 | | | | | 1 | |
| 207 | 44.29781389 | -87.73388075 | 4 | M | P | | V | 2 | | | | | | 1 | | | | | | | | | | | 1 | |
| 208 | 44.29766096 | -87.73388664 | 4 | M | P | | | | | | | | | | | | | | | | | | | | V | |
| 209 | 44.29750803 | -87.73389252 | 12 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 210 | 44.2973551 | -87.73389841 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 211 | 44.29720216 | -87.73390429 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 212 | 44.29704923 | -87.73391018 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 213 | 44.2968963 | -87.73391606 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 214 | 44.29674337 | -87.73392195 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 215 | 44.29659044 | -87.73392783 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 216 | 44.29643751 | -87.73393371 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 217 | 44.29628457 | -87.7339396 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 218 | 44.29613164 | -87.73394548 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 219 | 44.29597871 | -87.73395137 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 220 | 44.29582578 | -87.73395725 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 221 | 44.29567285 | -87.73396314 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 222 | 44.29551991 | -87.73396902 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 223 | 44.29536698 | -87.73397491 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 224 | 44.29521405 | -87.73398079 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 225 | 44.29506112 | -87.73398667 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 226 | 44.29490819 | -87.73399256 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 227 | 44.29475526 | -87.73399844 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 228 | 44.29460232 | -87.73400433 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 229 | 44.29444939 | -87.73401021 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 230 | 44.29429646 | -87.73401609 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 231 | 44.29414353 | -87.73402198 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 232 | 44.2939906 | -87.73402786 | 1 | M | P | | | | | 1 | 1 | | | | | 1 | | | 1 | | | 1 | | | 1 | 1 |
| 233 | 44.2979626 | -87.73366193 | 2 | M | P | | | 1 | | 1 | | 1 | 1 | 1 | | | V | | | | | | | | | |
| 234 | 44.29780967 | -87.73366781 | 4 | M | P | | | 1 | | 2 | | | 1 | | | | | | | | | | | | | |
| 235 | 44.29765673 | -87.7336737 | 11 | | P | | | | | | | | 1 | | | | | | | | | | | | | |
| 236 | 44.2975038 | -87.73367958 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 237 | 44.29735087 | -87.73368547 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 238 | 44.29719794 | -87.73369135 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 239 | 44.29704501 | -87.73369724 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 240 | 44.29689207 | -87.73370312 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 241 | 44.29673914 | -87.73370901 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 242 | 44.29658621 | -87.73371489 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 243 | 44.29643328 | -87.73372078 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 244 | 44.29628035 | -87.73372666 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 245 | 44.29612742 | -87.73373255 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 246 | 44.29597448 | -87.73373843 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 247 | 44.29582155 | -87.73374432 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 248 | 44.29566862 | -87.7337502 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 249 | 44.29551569 | -87.73375609 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 250 | 44.29536276 | -87.73376197 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 251 | 44.29520982 | -87.73376786 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 252 | 44.29505689 | -87.73377374 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 253 | 44.29490396 | -87.73377963 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 254 | 44.29475103 | -87.73378551 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 255 | 44.2945981 | -87.7337914 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 256 | 44.29444517 | -87.73379728 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 257 | 44.29429223 | -87.73380317 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 258 | 44.2941393 | -87.73380905 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 259 | 44.29398637 | -87.73381493 | 7 | M | P | | | 1 | | | | | | 1 | | | 1 | | | | | | | | 1 | |
| 260 | 44.29795837 | -87.73344899 | 3 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | | |
| 261 | 44.29780544 | -87.73345487 | 4 | M | P | | | | | 1 | | | 1 | | | | | | | | | | | | | |
| 262 | 44.29765251 | -87.73346076 | 12 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 263 | 44.29749957 | -87.73346664 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 264 | 44.29734664 | -87.73347253 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 265 | 44.29719371 | -87.73347842 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 266 | 44.29704078 | -87.7334843 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 267 | 44.29688785 | -87.73349019 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 268 | 44.29673492 | -87.73349607 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 269 | 44.29658198 | -87.73350196 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 270 | 44.29642905 | -87.73350784 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 271 | 44.29627612 | -87.73351373 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 272 | 44.29612319 | -87.73351962 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 273 | 44.29597026 | -87.7335255 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 274 | 44.29581733 | -87.73353139 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 275 | 44.29566439 | -87.73353727 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 276 | 44.29551146 | -87.73354316 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 277 | 44.29535853 | -87.73354904 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 278 | 44.2952056 | -87.73355493 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 279 | 44.29505267 | -87.73356081 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 280 | 44.29489973 | -87.7335667 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 281 | 44.2947468 | -87.73357258 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 282 | 44.29459387 | -87.73357847 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 283 | 44.29444094 | -87.73358435 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 284 | 44.29428801 | -87.73359024 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 285 | 44.29413508 | -87.73359612 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 286 | 44.29398214 | -87.73360201 | 6 | M | P | | | 1 | | | | | | | | | | | | | | | | | 1 | |
| 287 | 44.29382921 | -87.73360789 | 3 | M | P | | | 1 | | 3 | | | | | | | 1 | | | | | | | | 1 | |
| 288 | 44.29795414 | -87.73323604 | 3 | M | P | | | | | 3 | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 289 | 44.29780121 | -87.73324193 | 8 | M | P | | | 1 | | 1 | | | 1 | | | | | | | | | | | | | |
| 290 | 44.29764828 | -87.73324782 | 14 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 291 | 44.29749535 | -87.7332537 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 292 | 44.29734242 | -87.73325959 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 293 | 44.29718948 | -87.73326548 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 294 | 44.29703655 | -87.73327136 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 295 | 44.29688362 | -87.73327725 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 296 | 44.29673069 | -87.73328314 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 297 | 44.29657776 | -87.73328902 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 298 | 44.29642483 | -87.73329491 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 299 | 44.29627189 | -87.73330079 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 300 | 44.29611896 | -87.73330668 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 301 | 44.29596603 | -87.73331257 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 302 | 44.2958131 | -87.73331845 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 303 | 44.29566017 | -87.73332434 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 304 | 44.29550723 | -87.73333022 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 305 | 44.2953543 | -87.73333611 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 306 | 44.29520137 | -87.733342 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 307 | 44.29504844 | -87.73334788 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 308 | 44.29489551 | -87.73335377 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 309 | 44.29474258 | -87.73335965 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 310 | 44.29458964 | -87.73336554 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 311 | 44.29443671 | -87.73337143 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 312 | 44.29428378 | -87.73337731 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 313 | 44.29413085 | -87.7333832 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 314 | 44.29397792 | -87.73338908 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 315 | 44.29382499 | -87.73339497 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 316 | 44.29367205 | -87.73340085 | 3 | M | P | | | 1 | | 3 | | | | 1 | | V | | | 1 | | | | | | 1 | |
| 317 | 44.29794991 | -87.7330231 | 4 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | | |
| 318 | 44.29779698 | -87.73302899 | 11 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 319 | 44.29764405 | -87.73303488 | 18 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 320 | 44.29749112 | -87.73304077 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 321 | 44.29733819 | -87.73304665 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 322 | 44.29718526 | -87.73305254 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 323 | 44.29703232 | -87.73305843 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 324 | 44.29687939 | -87.73306431 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 325 | 44.29672646 | -87.7330702 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 326 | 44.29657353 | -87.73307609 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 327 | 44.2964206 | -87.73308197 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 328 | 44.29626767 | -87.73308786 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 329 | 44.29611473 | -87.73309375 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 330 | 44.2959618 | -87.73309963 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 331 | 44.29580887 | -87.73310552 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 332 | 44.29565594 | -87.73311141 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 333 | 44.29550301 | -87.73311729 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 334 | 44.29535008 | -87.73312318 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 335 | 44.29519714 | -87.73312907 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 336 | 44.29504421 | -87.73313495 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 337 | 44.29489128 | -87.73314084 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 338 | 44.29473835 | -87.73314672 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 339 | 44.29458542 | -87.73315261 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 340 | 44.29443248 | -87.7331585 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 341 | 44.29427955 | -87.73316438 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 342 | 44.29412662 | -87.73317027 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 343 | 44.29397369 | -87.73317616 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 344 | 44.29382076 | -87.73318204 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 345 | 44.29366783 | -87.73318793 | 5 | M | P | | | | | | | | | 1 | | | | | | | | | | | | |
| 346 | 44.29351489 | -87.73319381 | 4 | M | P | | | | | 3 | | | | | | | | | | | | | | | | |
| 347 | 44.29794569 | -87.73281016 | 4 | M | P | | | | | 3 | | | | | | | | | | | | | | | 1 | |
| 348 | 44.29779275 | -87.73281605 | 7 | M | P | | | | | | | | | 1 | | | | | | | | | | | 1 | |
| 349 | 44.29763982 | -87.73282194 | 15 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 350 | 44.29748689 | -87.73282783 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 351 | 44.29733396 | -87.73283371 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 352 | 44.29718103 | -87.7328396 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 353 | 44.2970281 | -87.73284549 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 354 | 44.29687516 | -87.73285138 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 355 | 44.29672223 | -87.73285726 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 356 | 44.2965693 | -87.73286315 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 357 | 44.29641637 | -87.73286904 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 358 | 44.29626344 | -87.73287493 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 359 | 44.29611051 | -87.73288081 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 360 | 44.29595757 | -87.7328867 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 361 | 44.29580464 | -87.73289259 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 362 | 44.29565171 | -87.73289847 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 363 | 44.29549878 | -87.73290436 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 364 | 44.29534585 | -87.73291025 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 365 | 44.29519292 | -87.73291613 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 366 | 44.29503998 | -87.73292202 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 367 | 44.29488705 | -87.73292791 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 368 | 44.29473412 | -87.7329338 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 369 | 44.29458119 | -87.73293968 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 370 | 44.29442826 | -87.73294557 | | | | Too Deep | | | | | | | | | | | | | | | | | 1 | | | |
| 371 | 44.29427533 | -87.73295146 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 372 | 44.29412239 | -87.73295734 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 373 | 44.29396946 | -87.73296323 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 374 | 44.29381653 | -87.73296912 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 375 | 44.2936636 | -87.732975 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 376 | 44.29351067 | -87.73298089 | 4 | M | P | | | | | | | | | | | | V | | | | | | | | | |
| 377 | 44.29794146 | -87.73259722 | 4 | M | P | | | 1 | | 1 | | | | | | | | | | | | | | | | |
| 378 | 44.29778853 | -87.73260311 | 5 | M | P | | | 1 | | 1 | | | | | | | | | | | | | | | 1 | |
| 379 | 44.29763559 | -87.732609 | 10 | | R | | | | | | | | 1 | | | | | | | | | | | | | |
| 380 | 44.29748266 | -87.73261489 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 381 | 44.29732973 | -87.73262078 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 382 | 44.2971768 | -87.73262666 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 383 | 44.29702387 | -87.73263255 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 384 | 44.29687094 | -87.73263844 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 385 | 44.296718 | -87.73264433 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 386 | 44.29656507 | -87.73265022 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 387 | 44.29641214 | -87.7326561 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 388 | 44.29625921 | -87.73266199 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 389 | 44.29610628 | -87.73266788 | 8 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 390 | 44.29595335 | -87.73267377 | 4 | M | P | | | | | | | | | | | | | 1 | | | | | | | 1 | |
| 391 | 44.29580041 | -87.73267965 | 6 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 392 | 44.29564748 | -87.73268554 | 5 | M | P | | | 1 | | | | | 1 | 1 | | | | | | | | | | | 1 | |
| 393 | 44.29549455 | -87.73269143 | 9 | M | P | | | | | | | | | 1 | | | | | | | | | | | 1 | |
| 394 | 44.29534162 | -87.73269732 | 7 | M | P | | 1 | | | | 1 | | 1 | | | | | | | | | | | | | |
| 395 | 44.29518869 | -87.7327032 | 5 | M | P | | 1 | 1 | | | | | | 1 | | | | | | | | | | | | |
| 396 | 44.29503576 | -87.73270909 | 3 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | 1 | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 397 | 44.29442403 | -87.73273264 | 1 | M | P | | V | | | | | | | 1 | | | | | | | | 1 | | | | |
| 398 | 44.2942711 | -87.73273853 | 1 | M | P | | | 1 | | 1 | | | | | | | V | | | | | 1 | | | | |
| 399 | 44.29411817 | -87.73274442 | 4 | M | P | | | | | | | | | 1 | | | | | | | | | | | | |
| 400 | 44.29396523 | -87.7327503 | | | | Too Deep | | | | | | | | | | | | | | | | | | | | |
| 401 | 44.2938123 | -87.73275619 | 10 | | R | | | 1 | | | | | | | | | | | | | | | | | | |
| 402 | 44.29365937 | -87.73276208 | 8 | M | P | | | 2 | | | | | | | | | | | | | | | | | 1 | |
| 403 | 44.29350644 | -87.73276796 | 2 | M | P | | | 1 | | | | | | | | | | | | | | | | | 1 | |
| 404 | 44.2977843 | -87.73239017 | 3 | M | P | | | 1 | | 1 | | | | | | | V | | | | | | | | | |
| 405 | 44.29763136 | -87.73239606 | 3 | M | P | | | | | 2 | | | | 1 | | | | | | 1 | | | | | 1 | |
| 406 | 44.29747843 | -87.73240195 | 6 | M | P | | | | | 2 | | | | 2 | | | | | | | | | | | | |
| 407 | 44.2973255 | -87.73240784 | 8 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 408 | 44.29717257 | -87.73241373 | 9 | M | P | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 409 | 44.29701964 | -87.73241961 | 9 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 410 | 44.29686671 | -87.7324255 | 11 | | R | | | | | | | | | | | | | | | | | | | | | |
| 411 | 44.29671378 | -87.73243139 | 11 | | R | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 412 | 44.29656084 | -87.73243728 | 10 | | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 413 | 44.29640791 | -87.73244317 | 7 | M | P | No Vegetation | | | | | | | | | | | | | | | | | | | | |
| 414 | 44.29625498 | -87.73244906 | 7 | M | P | | V | | | | | | | 1 | | | | | | | | | | | 1 | |
| 415 | 44.29610205 | -87.73245494 | 5 | M | P | | 1 | 1 | | | | | | | | | | | | | | | | | 1 | |
| 416 | 44.29594912 | -87.73246083 | 6 | M | P | | | 1 | | 1 | | | | 1 | | | | | | | | | | | 1 | |
| 417 | 44.29579619 | -87.73246672 | 4 | M | P | | | 2 | | | | | | 2 | | | | | | | | | | | | |
| 418 | 44.29564325 | -87.73247261 | 5 | M | P | | | | | 3 | | | | 1 | | | | | | | | | | | 1 | |
| 419 | 44.29549032 | -87.7324785 | 3 | M | P | | | | | 1 | | | | 1 | | | | | | | | | | | 1 | |
| 420 | 44.29533739 | -87.73248439 | 2 | M | P | | | 1 | | 1 | | | | | | | | | | | | | | | | |
| 421 | 44.29365514 | -87.73254915 | 2 | M | P | | | | | | | | | 1 | | | V | | | | | | | | 1 | |
| 422 | 44.29350221 | -87.73255504 | 2 | M | P | | | 1 | | | | | | | | | V | | | | | | | | | |
| 423 | 44.29762714 | -87.73218312 | 3 | M | P | | | 1 | | 1 | | | 1 | 1 | | | | | | V | | | | | 1 | |
| 424 | 44.2974742 | -87.73218901 | 5 | M | P | | | 2 | | 1 | | | | | | | | | | | | | | | 1 | |
| 425 | 44.29732127 | -87.7321949 | 6 | M | P | | | 1 | | 2 | | | | | | | | | | | | | | | 1 | |
| 426 | 44.29716834 | -87.73220079 | 7 | M | P | | | 1 | | 2 | | | | | | | | | | | | | | | | |
| 427 | 44.29701541 | -87.73220668 | 7 | M | P | | | | | 1 | | | | | | | | | | | | | | | | |
| 428 | 44.29686248 | -87.73221257 | 7 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | | |
| 429 | 44.29670955 | -87.73221845 | 5 | M | P | | 1 | 1 | | 1 | | | | 1 | | | | | | | | | | | 1 | |
| 430 | 44.29655661 | -87.73222434 | 2 | M | P | | | 1 | | 3 | | | 1 | 1 | | | | | | | | | | | | |
| 431 | 44.29640368 | -87.73223023 | 3 | M | P | | | | | 2 | | | | 1 | | | | | | | | | | | | |
| 432 | 44.29625075 | -87.73223612 | 4 | M | P | | | 1 | | 3 | | | | 1 | | | | | | | | | | | | |

| Point Number | Latitude (Decimal Degrees | Longitude (Decimal Degrees) | Depth (ft) | Sediment type (M=muck, S=Sand, R=Rock) | Rope (R); Pole (P); Visual (V) | Notes | Myriophyllum spicatum | Ceratophyllum demersum | Ceratophyllum echinatum | Chara sp. | Elodea canadensis | Lemna minor | Lemna trisulca | Myriophyllum sibiricum | Nitella sp. | Nuphar variegata | Nymphaea odorata | Potamogeton amplifolius | Potamogeton foliosus | Potamogeton illinoensis | Potamogeton zosteriformis | Schoenoplectus acutus | Sparganium eurycarpum | Spirodela polyrhiza | Stuckenia pectinata | Typha angustifolia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 44.29609782 | -87.73224201 | | | | Unreachable | | | | | | | | | | | | | | | | | | | | |
| 434 | 44.29594489 | -87.7322479 | 4 | M | P | | | | | 3 | | | | | | | | | | | | | | | | |
| 435 | 44.29579196 | -87.73225379 | 4 | M | P | | | | | 1 | | | | 1 | | | | | | | | | | | 1 | |
| 436 | 44.29563902 | -87.73225968 | 3 | M | P | | | 1 | | | | | | | | | | | | | | | | | | |
| 437 | 44.29548609 | -87.73226557 | 2 | M | P | | | 1 | | | | | 1 | | | | | | | | | | | | | |
| 438 | 44.29746997 | -87.73197607 | 3 | M | P | | | 1 | | | | | | | | | 1 | | | | | | | | | |
| 439 | 44.29731704 | -87.73198196 | 3 | M | P | | | | | 1 | | | | 1 | | | | | | | | | | | | |
| 440 | 44.29716411 | -87.73198785 | 3 | M | P | | | 1 | | 1 | | | | | | | V | | | | | | | | | |
| 441 | 44.29701118 | -87.73199374 | 3 | M | P | | | 1 | | 2 | | | 1 | | | | | | | | | | | | | |
| 442 | 44.29609359 | -87.73202908 | 2 | M | P | | | | | 1 | | | | | | | | | | | | | | | | |
| 443 | 44.29594066 | -87.73203497 | 3 | M | P | | | 1 | | 3 | | V | | 1 | | | | | | | | | | | | |
| 444 | 44.29578773 | -87.73204086 | 4 | M | P | | | 1 | | | | | | | | | V | | | | | | | | 1 | |
| 445 | 44.29563479 | -87.73204674 | 3 | M | P | | | | | | | | | | | | | | 1 | | | | | | | |
| 446 | 44.29746574 | -87.73176313 | 2 | M | P | | | 1 | | | | V | | | | | V | | | | | | | V | 1 | |

F

# APPENDIX F

## 2004 WDNR Fisheries Memorandum

# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: April 20, 2004 FILE REF: [Click **here** and type file ref.]

TO: Harpts lake File

FROM: Steve Hogler

SUBJECT: October 28, 2003 Electrofishing Survey

Harpts Lake is a 31 acre, 49 foot deep lake located 7 miles northwest of Two Rivers. On the night of October 28, 2003 it was electroshocked as part of Tier II baseline lakes monitoring. A single circuit of the lake was shocked at 140 volts pulsed DC current and 3.5 amps of current. Total effort was 46 minutes to cover the 4,765 feet of shoreline. All fish were netted, identified and either measured to the nearest millimeter or counted. A subsample of fish had a scale removed for aging.

257 individual fish were netted that represented seven different species of fish. Largemouth bass dominated the catch followed by bluegill and black crappie (Table 1). Other captured species included yellow perch, walleye, yellow bullhead and golden shiner.

The water at the time of the survey was judged to be turbid due to planktonic algae.

**Largemouth Bass**

A total of 188 largemouth bass were captured during the survey. CPE was 243.3 bass per hour or 208.3 per mile of shoreline shocked. The bass ranged in length from 78 mm to 552 mm and averaged 214 mm in length (Table 2). Less than 5% of the captured bass were greater than the size limit (14") although many were greater than 260 mm (10"). When compared to State averages for length at age, bass in Harpts Lake appear to be growing slower than State averages at each age (Table 3).

From the scale samples, nine age classes of bass were noted, with age 3+ and 4+ the most common age classes. Age classes 1+, 2+ and 5+ were also common. Very few bass were greater than age 5+ and young-of-year fish were captured in low number.

**Walleye**

Walleye are stocked into Harpts Lake by DNR on an alternate year basis and the local sports club regularly stocks in years the DNR does not. During the survey, three walleye were netted and landed (Table 1). The landed fish were 206 mm, 219 mm and 385 mm in length. It is likely the small walleye were from the 2003 stocking and the larger walleye from the 2001 stocking event. It appears that walleye are not surviving well in Harpts Lake.

**Bluegill**

45 bluegill were captured during the survey that ranged in length from 59 mm to 201 mm with an average length of 128 mm (Table 4). CPE for bluegill was 58.7 per hour or 49.9 per mile shocked. Most bluegill were less than 160 mm in length (73.4 %) and only one was greater than 200 mm in length. When compared to State average for length at age, bluegill in Harpts Lake

are slightly larger then the State average at each age (Table 3). The small size of the bluegill in the lake is likely due to angler harvest of larger bluegill.

From the scale samples, five age classes of bluegill were noted, with younger fish, age 1+ and 2+ the dominant age classes (Table 4). Few bluegill were greater than age 3+.

**Black Crappie**
A total of 14 black crappie were captured during the survey. They ranged in length from 137 mm to 168 mm and had an average length of 146 mm (Table 1).

## Summary

Largemouth bass was the dominant fish captured in Harpts Lake during our survey. Survival and overall size was good, although the growth rate was less than State averages. Few of the bass captured were over 14” although several were much larger which is an indication that angler harvest may be impacting the bass population in the lake by harvesting bass at the size limit.

Walleye survival appears to be poor, with very few walleye caught despite nearly annual stocking by the DNR and sports clubs.

Panfish were small, but growth suggests that angler harvest may be responsible for the distribution of bluegill length.

Water quality may be an issue on Harpts Lake because of the turbidity noted during the survey.

**Table 1. Length frequency of fish captured on Harpts Lake during the October, 2003 survey.**

| Length (mm) | Largemouth Bass | Walleye | Bluegill | Black Crappie | Yellow Perch | Yellow Bullhead | Golden Shiner |
|---|---|---|---|---|---|---|---|
| 50 | | | 1 | | | | |
| 60 | | | 2 | | | | |
| 70 | 1 | | 4 | | | | |
| 80 | 3 | | 2 | | | | |
| 90 | 1 | | 3 | | | | |
| 100 | | | | | | | |
| 110 | 2 | | 3 | | | | |
| 120 | 3 | | 2 | | | | 1 |
| 130 | 28 | | 4 | 3 | | | |
| 140 | 25 | | 5 | 3 | | | 1 |
| 150 | 10 | | 7 | 4 | | | |
| 160 | 4 | | 5 | 4 | | | |
| 170 | 3 | | 3 | | | | 1 |
| 180 | 4 | | 2 | | | | |
| 190 | 9 | | 1 | | 1 | | |
| 200 | 14 | 1 | 1 | | | | |
| 210 | 12 | 1 | | | | 1 | |
| 220 | 5 | | | | 1 | | |
| 230 | 3 | | | | | | |
| 240 | 4 | | | | | | |
| 250 | 2 | | | | | | |
| 260 | | | | | | | |
| 270 | 4 | | | | | 1 | |
| 280 | 1 | | | | | | |
| 290 | 6 | | | | | | |
| 300 | 3 | | | | | | |
| 310 | 4 | | | | | | |
| 320 | 9 | | | | | | |
| 330 | 9 | | | | | | |
| 340 | 5 | | | | | | |
| 350 | 4 | | | | | | |
| 360 | 3 | | | | | | |
| 370 | 3 | | | | | | |
| 380 | | 1 | | | | | |
| 390 | | | | | | | |
| 400 | | | | | | | |
| 410 | | | | | | | |
| 420 | | | | | | | |
| 430 | | | | | | | |
| 440 | | | | | | | |
| 450 | | | | | | | |
| 460 | | | | | | | |
| 470 | | | | | | | |
| 480 | 1 | | | | | | |
| 490 | 1 | | | | | | |
| 500 | 1 | | | | | | |
| 510 | | | | | | | |
| 520 | 1 | | | | | | |
| 530 | | | | | | | |
| 540 | | | | | | | |
| 550 | | | | | | | |
| **Total** | 188 | 3 | 45 | 14 | 2 | 2 | 3 |
| **Average Length** | 219 | 263 | 128 | 146 | 205 | 240 | 143 |
| **S.D.** | 89.4 | 101.2 | 39.3 | 11.5 | 21.2 | 42.4 | 25.2 |
| **Min.** | 78 | 206 | 59 | 137 | 192 | 215 | 125 |
| **Max.** | 522 | 385 | 201 | 168 | 227 | 280 | 172 |

**Table 2. Largemouth bass length frequency and the distribution of age by length as determined by scales. Samples were collected in October 2003 thereby age is designated as age in years to the last annuli and the current year of growth as +.**

| Length | Total | Age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| (mm) | Number | 0+ | 1+ | 2+ | 3+ | 4+ | 5+ | 6+ | 7+ | 8+ |
| 50 | | | | | | | | | | |
| 60 | | | | | | | | | | |
| 70 | 1 | 1 | | | | | | | | |
| 80 | 3 | 3 | | | | | | | | |
| 90 | 1 | 1 | | | | | | | | |
| 100 | | | | | | | | | | |
| 110 | 2 | | 2 | | | | | | | |
| 120 | 3 | | 3 | | | | | | | |
| 130 | 28 | | 8 | | | | | | | |
| 140 | 25 | | 5 | | | | | | | |
| 150 | 10 | | 3 | 2 | | | | | | |
| 160 | 4 | | | 4 | | | | | | |
| 170 | 3 | | | 3 | | | | | | |
| 180 | 4 | | | 4 | | | | | | |
| 190 | 9 | | | 4 | 2 | | | | | |
| 200 | 14 | | | 4 | 2 | | | | | |
| 210 | 12 | | | 1 | 5 | | | | | |
| 220 | 5 | | | | 5 | | | | | |
| 230 | 3 | | | | 3 | | | | | |
| 240 | 4 | | | | 4 | | | | | |
| 250 | 2 | | | | 2 | | | | | |
| 260 | | | | | | | | | | |
| 270 | 4 | | | | 1 | 3 | | | | |
| 280 | 1 | | | | | 1 | | | | |
| 290 | 6 | | | | | 4 | 1 | | | |
| 300 | 3 | | | | | 3 | | | | |
| 310 | 4 | | | | | 4 | | | | |
| 320 | 9 | | | | | 5 | 3 | | | |
| 330 | 9 | | | | | 4 | 4 | | | |
| 340 | 5 | | | | | | 5 | | | |
| 350 | 4 | | | | | | 4 | | | |
| 360 | 3 | | | | | | 1 | 2 | | |
| 370 | 3 | | | | | | 2 | 1 | | |
| 380 | | | | | | | | | | |
| 390 | | | | | | | | | | |
| 400 | | | | | | | | | | |
| 410 | | | | | | | | | | |
| 420 | | | | | | | | | | |
| 430 | | | | | | | | | | |
| 440 | | | | | | | | | | |
| 450 | | | | | | | | | | |
| 460 | | | | | | | | | | |
| 470 | | | | | | | | | | |
| 480 | 1 | | | | | | | | 1 | |
| 490 | 1 | | | | | | | | 1 | |
| 500 | 1 | | | | | | | | | 1 |
| 510 | | | | | | | | | | |
| 520 | 1 | | | | | | | | | 1 |
| 530 | | | | | | | | | | |
| 540 | | | | | | | | | | |
| 550 | | | | | | | | | | |
| **Total** | 188 | 5 | 21 | 22 | 24 | 24 | 20 | 3 | 2 | 2 |
| **Average Length** | 219 | 80 | 132 | 179 | 223 | 305 | 339 | 363 | 485 | 510 |
| **S.D.** | 89.4 | 7.1 | 11.7 | 17.7 | 19.9 | 19.8 | 18.7 | 5.8 | 5.8 | 14.1 |
| **Min.** | 78 | 78 | 115 | 151 | 194 | 274 | 299 | 365 | 485 | 507 |
| **Max.** | 522 | 92 | 155 | 210 | 276 | 335 | 374 | 374 | 499 | 522 |

**Table 3. Average length at age as determined by scales for fish captured on Harpts Lake. Scales were collected from fish late in October and it is assumed that little growth occurred after scale collection, therefore fish aged at 1+ will be compared to age 2 fish and so forth in this table.**

| Species | AGE 1 | AGE 2 | AGE 3 | AGE 4 | AGE 5 | AGE 6 | AGE 7 |
|---|---|---|---|---|---|---|---|
| Bluegill | 67 | 124 | 156 | 185 | 188 | | |
| (State Average) | (64) | 97) | (122) | (147) | (167) | (183) | (196) |
| Largemouth Bass | 80 | 132 | 179 | 223 | 305 | 339 | 363 |
| (State Average) | (97) | (165) | (229) | (290) | (338) | (384) | (414) |

**Table 4. Bluegill length frequency and the distribution of age by length as determined by scales. Samples were collected in October 2003 thereby age is designated as age in years to the last annuli and the current year of growth as +.**

| Length | Total | Age | | | | |
|---|---|---|---|---|---|---|
| (mm) | Number | 0+ | 1+ | 2+ | 3+ | 4+ |
| 50 | 1 | 1 | | | | |
| 60 | 2 | 2 | | | | |
| 70 | 4 | 2 | | | | |
| 80 | 2 | | 1 | | | |
| 90 | 3 | 1 | 1 | | | |
| 100 | | | | | | |
| 110 | 3 | | 3 | | | |
| 120 | 2 | | 2 | | | |
| 130 | 4 | | 4 | | | |
| 140 | 5 | | 3 | 2 | | |
| 150 | 7 | | 1 | 3 | | |
| 160 | 5 | | 1 | 4 | | |
| 170 | 3 | | | 2 | 1 | |
| 180 | 2 | | | | 1 | 1 |
| 190 | 1 | | | | 1 | |
| 200 | 1 | | | | 1 | |
| **Total** | 45 | 6 | 16 | 11 | 4 | 1 |
| **Average Length** | 128 | 67 | 124 | 156 | 185 | 180 |
| **S.D.** | 39.3 | 13.7 | 21 | 10.4 | 12.9 | |
| **Min.** | 59 | 59 | 89 | 142 | 177 | |
| **Max.** | 201 | 91 | 160 | 176 | 201 | |