Mississippi Valley Conservation

State of the Lake Environment Report 2006

Sharbot Lake

Watershed Watch

“THE RIBBON OF LIFE”
Where the Land Meets the Water

Water quality is affected by many things: erosion and runoff from clearing of shorelines, the use of artificial fertilizers and leachate from sewage disposal systems resulting in too many nutrients reaching the lake. Phosphorus is the key nutrient of concern, too many nutrients can cause weed and algae growth and threatens fish habitat by reducing oxygen levels.

The shallow waters and first 10 metres of shore land form a "Ribbon of Life" around our lakes. This ribbon - where the land meets the water - is where much of the lake life is born, raised and fed. Many landowners, unaware of the importance of this area, have cleared the shorelines of native vegetation and replaced it with lawns, non-native ornamental vegetation, retaining walls and boathouses. This has had a negative affect on fish and wildlife habitat and water quality. Natural vegetation retained or restored along the shoreline helps prevent erosion and improves water quality by binding nutrients before they can enter the lake.

Mississippi Valley Conservation has long recognized the recreational and aesthetic value of lakes within the watershed and is committed to maintaining and protecting water quality and fish habitat. Mississippi Valley Conservation has joined together with volunteer Lake Stewards throughout the watershed to take steps to protect and restore water quality by launching the *Watershed Watch* program in 1998. *Watershed Watch* is an environmental monitoring and awareness program. The objectives of the program are to collect reliable environmental data to document current water quality conditions and use the data as an essential educational tool to encourage residents to adopt sound stewardship practices aimed at preserving and protecting water quality. Together we will encourage and assist shoreline residents, both seasonal and permanent, to become personal stewards of their lake by taking an active role in restoring and enhancing their shoreline to maintain water quality and a healthy lake environment.

Recreational water quality is generally expressed in terms of how clear the water appears. Water clarity is influenced by the amount of phytoplankton or microscopic algae present in the water; **chlorophyll a** is the green pigment in the phytoplankton. Water clarity is measured with a **Secchi Disc**, a 20 cm black and white disk attached to a measured line and lowered into the lake until it is no longer visible. The amount of nutrients entering the lake, in particular **phosphorus**, influences the amount of algae growing in the lake. Water clarity decreases with elevated concentrations of algae and therefore Secchi disc values are less. After the spring warming period there is a continuous supply of algae in the surface waters of the lake to the deep water areas where it decomposes and uses up the natural supply of oxygen. In severe circumstances this may eliminate habitat for fish species which require the cold, deep water portions to survive. Through *Watershed Watch* forty-two base lakes in the watershed will be monitored for these key water quality indicators; **total phosphorus, chlorophyll a, dissolved oxygen and temperature profiles and water clarity.**

SHARBOT LAKE

Sharbot Lake is located in the Township of Central Frontenac; the developed hamlet of Sharbot Lake is located on a peninsula separating the lake into two basins; East, a warm water basin and West, a cold water basin. Sharbot Lake Provincial Park is located on the West basin of the lake, providing an access point to the lake. At last count in 1995 there were approximately 221 cottages, 44 houses, 7 (55) resorts and 185 Provincial Park campsites on the lake.

Sharbot Lake Facts

	EAST BASIN	WEST BASIN
Elevation:	195m. above sea level	194.51m. above sea level
Shoreline Perimetre:	44.3 Km	31.4 Km
Maximum Depth	31.1m.	31.0m.
Fisheries Include	Northern Pike Small/Largemouth Bass	Lake Trout

Members of the Lake Association have volunteered their time to provide water quality testing through the Ministry of Environment (MOE) Self Help Program since 1975. This data is extremely valuable, and provides a general picture of water quality conditions over the past 31 years. Comprehensive testing in 2001 and 2006 through Mississippi Valley Conservation's (MVC) *Watershed Watch Program* provides for a comparison between water quality conditions as they exist now, to results obtained 31 years ago through the MOE Recreational Lakes Program.

In general the water quality in Sharbot Lake is good. There is one sampling station at the deepest point in the East basin and three sampling stations in the West basin all of which are indicated on the map included in this report. The stations were sampled seven times in 2006

thanks to a very generous donation by Canadian Waste Management Inc. Graphs will follow that show water clarity, as measured by Secchi Disc. The 2006 mean for Sharbot Lake is 4.9 metres indicating that Sharbot Lake is a moderately enriched (some nutrients) or mesotrophic lake.

Directly related to water clarity is the amount of nutrients, in particular phosphorus, entering the lake. The Provincial Water Quality Objective for Total Phosphorus for Sharbot Lake is 20 micrograms/litre (*ug*/L) in the East basin (warm water) and 10 micrograms/Litre (*ug*/L) in the West basin (cold water).
The mean for euphotic zone (penetration of light) for 2006 in the East basin (warm water) is 6.3*ug*/L, while the bottom sample is 36.1*ug*/L indicating high levels of nutrients at the bottom of the East basin.
The mean for the euphotic zone (penetration of light) for 2006 in the West basin (cold water) is 6.0*ug*/L, while the bottom sample is 10.43*ug*/L, slightly over the provincial objective.

Chlorophyll a is a measure of the algal density in the lake. The mean chlorophyll a densities is 3.2 micrograms/litre indicating, a moderate algal density for Sharbot Lake in 2006.

It is not all good news, plants and animals are a direct reflection of their environment. The most critical time of year for conducting dissolved oxygen and temperature profiles is after August 31. Profiles are generally conducted at this time of year and at the deepest point in the lake. Aquatic vegetation and algae that has grown over the summer, has died off and settled on the bottom, using the available oxygen necessary to sustain aquatic life in the lower portion of the lake or the hypolimnion.

The dissolved oxygen and temperature data, measured at the deepest point in the East basin, indicate oxygen concentrations in the deep water portion are poor by mid September. Warm water fish species, such as Large and Smallmouth Bass, are squeezed into the upper nine metres of the lake by late summer.
The dissolved oxygen and temperature data, measured at the deepest point in the West basin, indicate oxygen concentrations in the deep water portion are also poor by mid September. At station 06-03 there is no useable habitat for the cold water species such as Lake Trout. Although profiles do show improvement by October residents and users of Sharbot Lake can still not afford to be complacent. Every effort should be made to reduce nutrient loading into the lake from land use activities.

Sharbot Lake was also tested for invasive species in 2006, in particular, for zebra mussels and spiny water flea, in partnership with the Ontario Federation of Anglers and Hunters. Sharbot Lake did not have spiny water flea present in the samples collected however; zebra mussel veligers (larvae) were detected. Residents and property owners need to ensure that all access points to the lake have posted signs indicating the presence of zebra mussels and the precautions they can take to avoid the spread of invasive species to other lakes.

There are helpful tips throughout this report that will encourage you to reduce your impact on Sharbot Lake. Contact MVC for more information on how you can become a good lake steward for your lake. We all have a responsibility to preserve this precious natural resource for future generations

How Does Sharbot Lake Measure Up?

1975 – 2006 WATER QUALITY RESULTS – EAST BASIN – Warm Water

Sample Year Mean	Secchi Disc Depth (Metres)	Total Phosphorus Euphotic Zone (Micrograms/litre)	Total Phosphorus 1 Metre off Bottom (Micrograms/litre)	Chlorophyll a Composite (Micrograms/litre)
**1975	4.5	29.3	19.0	3.5
1978	2.7			2.0
1979	3.1			2.0
1980	3.6			3.2
*1981	4.0			2.2
1982	3.7			1.7
1983	4.3			2.3
1991	4.6			1.9
1992	4.6			2.8
1993	4.1			2.7
1994	4.0			2.6
1995	4.4			2.6
*2001	4.5	6.0	15.5	2.1
2006	6.5	6.3	36.14	1.9
N	14	3	3	14
Mean	4.2	13.9	23.5	2.4
Standard Deviation	0.876933	13.3665	11.02286	0.528371

*Mean based on less than 6 measurements **Includes Recreational Lakes Program Data
Chlorophyll a data prior to 1985 has been adjusted to reflect new lab procedures
in filtering resulting in an increase in chl.a concentrations by 35%

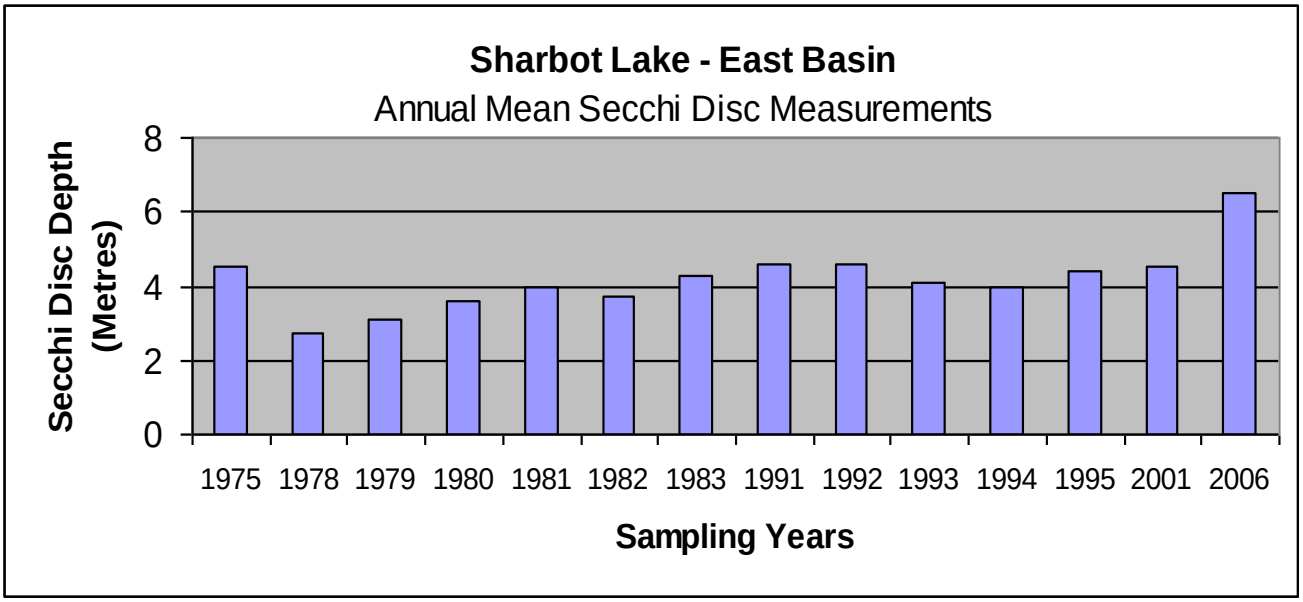
1975 – 2006 WATER QUALITY RESULTS – WEST BASIN – Cold Water

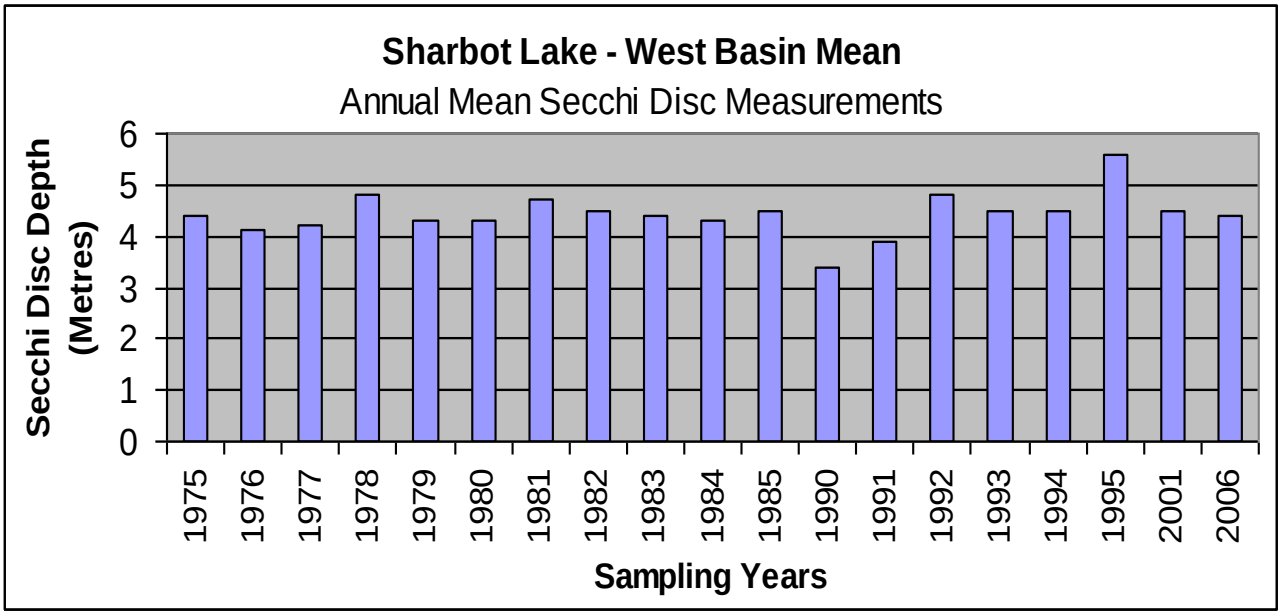
Sample Year Mean	Secchi Disc Depth (Metres)	Total Phosphorus Euphotic Zone (Micrograms/litre)	Total Phosphorus 1 Metre off Bottom (Micrograms/litre)	Chlorophyll a Composite (Micrograms/litre)
**1975	4.4	16.3	13.0	2.77
1976	4.1			2.03
1977	4.2			1.69
1978	4.8			1.96
1979	4.3	12.6	10.7	2.16
1980	4.3			2.43
*1981	4.7			2.16
1982	4.5			1.82
1983	4.4			1.82
1984	4.3			2.63
1985	4.5			1.82
1990	3.4			2.30
1991	3.9			1.60
1992	4.8			3.90
1993	4.5			2.10
1994	4.5			2.90
1995	5.6			2.42
*2001	4.5	6.4	9.0	2.35
2006	4.4	6.0	10.4	3.56
N	19	4	4	19
Mean	4.4	10.3	10.8	2.3
Standard Deviation	0.42797	4.9995833	1.6580611	0.608501

*Mean based on less than 6 measurements **Includes Recreational Lakes Program Data
Chlorophyll a data prior to 1985 has been adjusted to reflect new lab procedures
in filtering resulting in an increase in chl.a concentrations by 35%

The higher the Secchi Disc reading, the clearer your lake is!

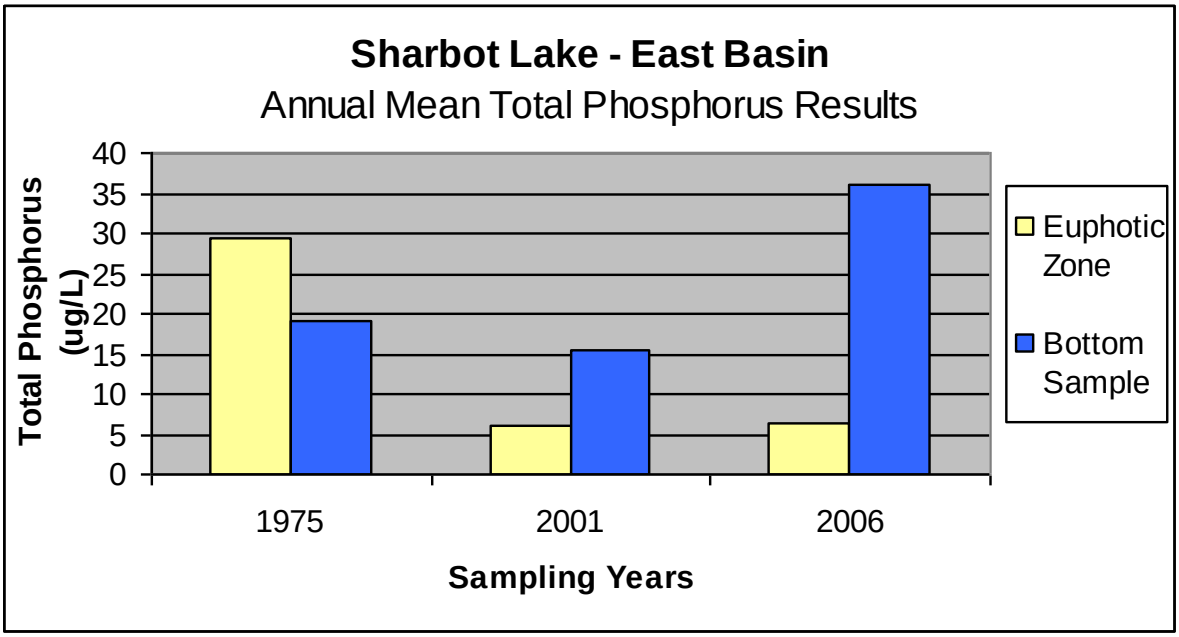
INTERPRETING YOUR SECCHI DISC RESULTS	
Secchi Reading	**Lake Nutrient Status**
Over 5 metres	Oligotrophic - unenriched, few nutrients
3.0 to 4.9 metres	Mesotrophic – moderately enriched, some nutrients
Less than 2.9 metres	Eutrophic – enriched, higher levels of nutrients

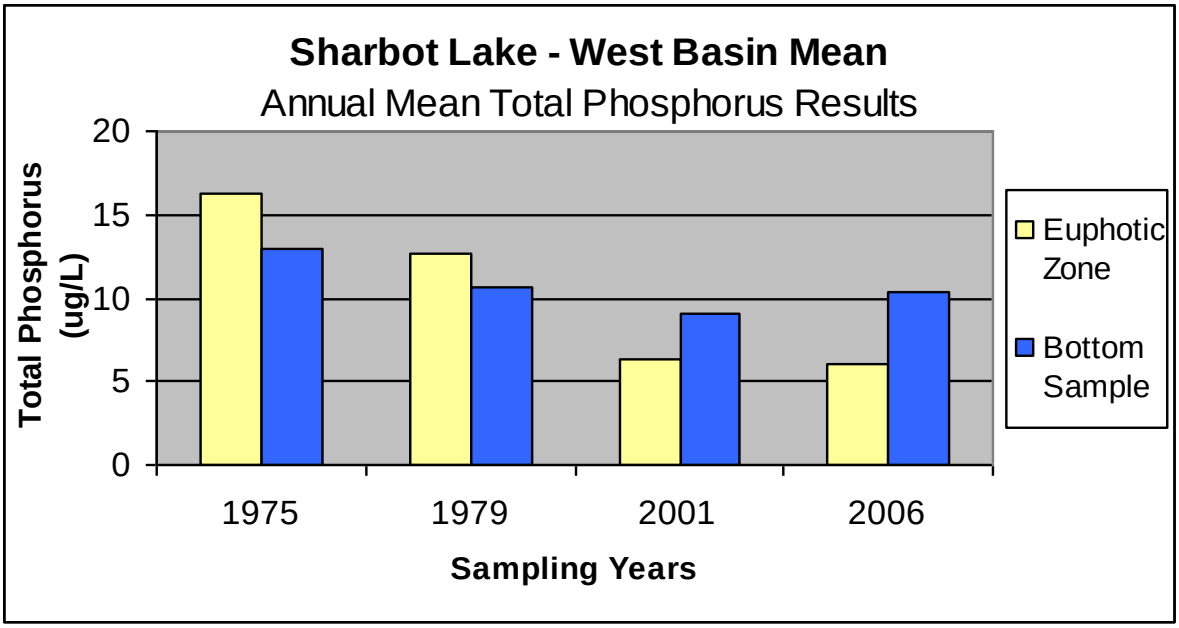




The lower the phosphorus reading, the clearer your lake is!

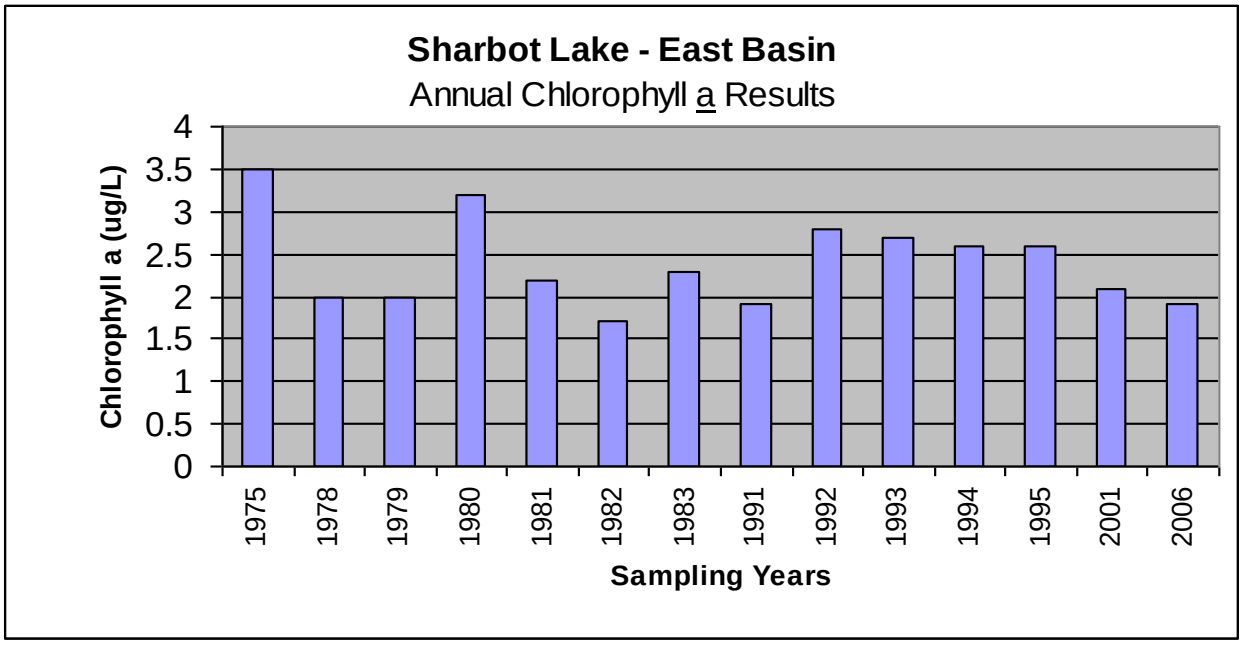
Nutrient Loading and How to Interpret the Water Quality Result : If the Total Phosphorus Reading is… Your Lake is…	
10 ug/L or less	Oligotrophic - unenriched, few nutrients
11 to 20 ug/L	Mesotrophic – moderately enriched, some nutrients
21 ug/L or more	Eutrophic – enriched, higher levels of nutrients

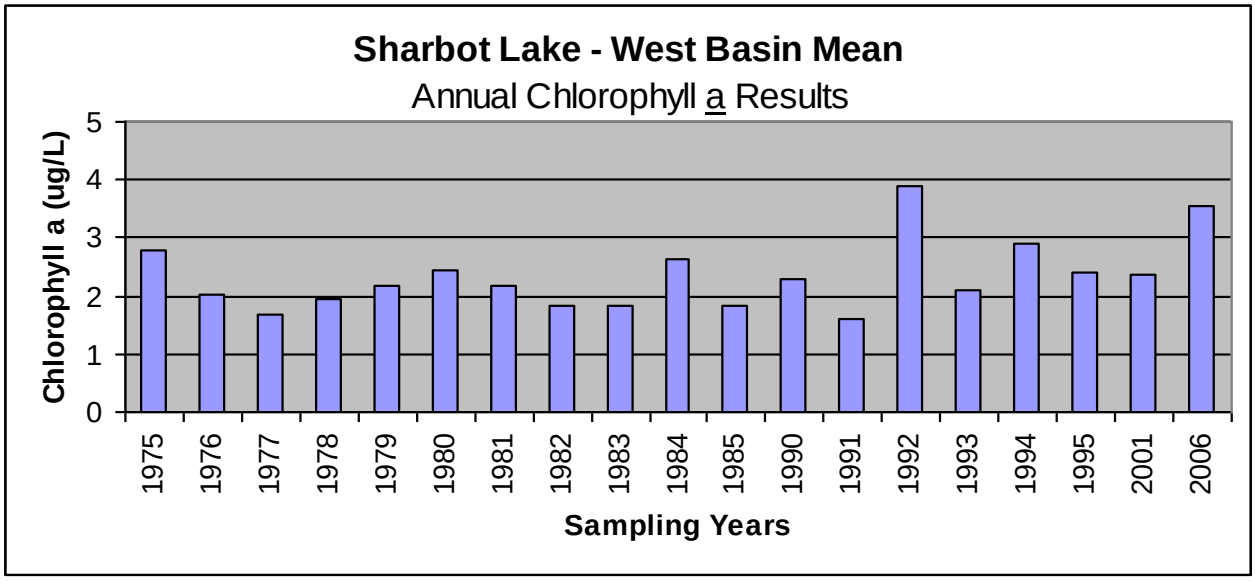




The lower the Chlorophyll a density, the clearer your lake is!

Nutrient Loading and How to Interpret the Water Quality Result :	
If the Chlorophyll a density is…	Your Lake is…
Up to 2 ug/L (low algal density)	Oligotrophic - unenriched, few nutrients
2 – 4 ug/L (moderate algal density)	Mesotrophic – moderately enriched, some nutrients
More than 4 ug/L (high algal density)	Eutrophic – enriched, higher levels of nutrients





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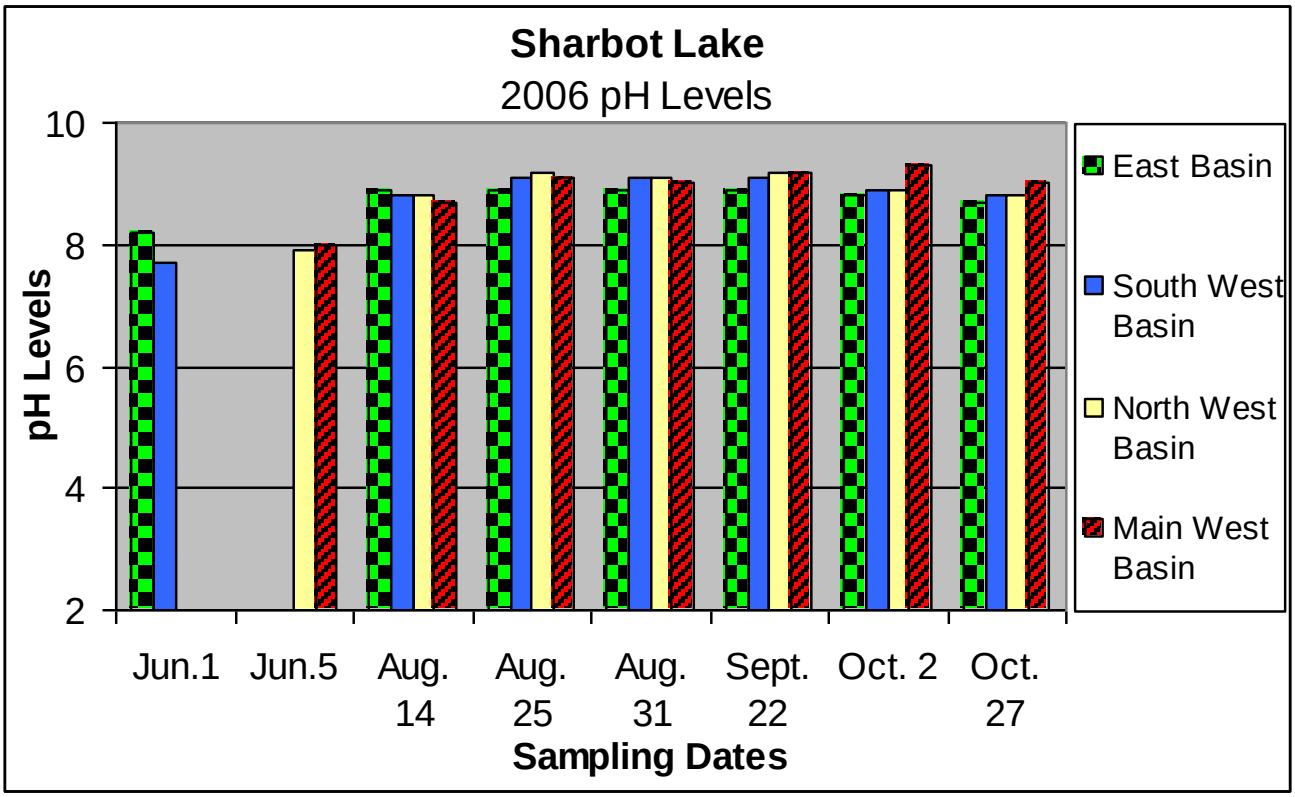
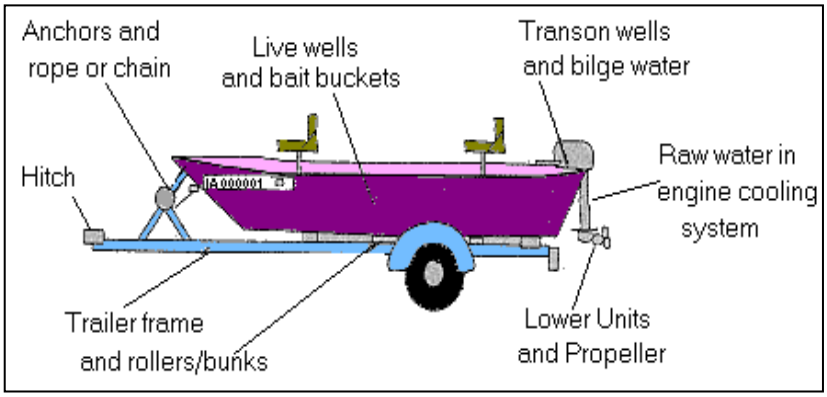
Lakes with pH levels of 7.3 or higher are vulnerable to zebra mussel invasives!



MVC and OFAH need your help to Stop the Invasion!

Check & clean your boat every time you change water bodies



Working with Lake Associations, we hope to improve signage at public launching areas to identify lakes where zebra mussels and spiny water fleas are already present. We hope to focus on an ambitious educational campaign to help reduce their spread to lakes where they are not yet present.

For more information call MVC at (613)259-2421, or

the Invading Species Hotline 1-800-563-7711.

FIVE EASY STEPS TO IMPROVE WATER QUALITY

1. Build at least 30 metres away from the shoreline.
2. Keep your lot well treed and preserve or replant native vegetation along the shoreline.
3. Pump out your septic tank every three to five years.
4. Reduce water use and use phosphate free soaps and detergents.
5. Keep the size of your lawn to a minimum; do not use fertilizers, herbicides or pesticides.

LOW PHOSPHORUS LIFESTYLE	Amount of Phosphorus (grams)	HIGH PHOSPHORUS LIFESTYLE	Amount of Phosphorus (grams)
Human waste	535	Human waste	535
No dishwasher	0	Dishwasher using powdered detergent once per day	650
No fertilizer	0	Lawn fertilized once/year	1960
Trees not cut down	20	Lot cleared of trees	30
Uses phosphate-free products	20	Uses products with phosphate	180
TOTAL	**575 grams**	**TOTAL**	**3355 grams**

For more information on lakes in the Mississippi Valley Watershed, visit MVC online at

www.mvc.on.c

SHARBOT LAKE – EAST BASIN * Warm Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-736-01 MVC Station # 06-06

Date: June 1, 2006

Depth: 29 Metres

Euphotic Zone (Penetration of Light) = 9 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	20.3	9.0	91	
1.0	20.3	10.5	112	
2.0	20.3	10.4	111	Epilimnion
3.0	20.1	9.6	101	
4.0	20.1	8.9	95	
5.0	16.0	9.3	90	
6.0	14.6	9.0	85	
7.0	13.1	9.0	82	Thermocline
8.0	11.6	8.3	73	
9.0	10.5	8.1	70	
10.0	9.8	7.8	66	
11.0	9.1	7.7	65	
12.0	8.4	7.5	62	
13.0	8.1	7.4	60	
14.0	8.0	7.3	59	
15.0	7.8	7.2	58	Hypolimnion
16.0	7.6	7.2	58	
17.0	7.3	7.2	57	
18.0	7.2	6.9	55	
19.0	7.0	6.7	53	
20.0	6.8	6.5	52	
21.0	6.7	6.2	50	
22.0	6.5	5.8	45	
23.0	6.5	5.4	42	
24.0	6.5	5.3	41	
25.0	6.0	5.0	39	
26.0	5.9	4.7	36	
27.0	5.7	4.6	35	
28.0	5.7	4.3	33	
29.0	Bottom	Bottom	Bottom	

Warm Water Fish Habitat (Bass, Walleye, Pike, Perch) = Dissolved Oxygen greater than 4 mg/L at less than 25 Degrees Celsius

SHARBOT LAKE – EAST BASIN * Warm Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-736-01 MVC Station # 06-06

Date: August 25, 2006

Depth: 30 Metres

Euphotic Zone (Penetration of Light) = 10 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.7	10.0	107	
1.0	21.7	7.9	85	
2.0	21.7	7.8	85	
3.0	21.7	7.7	84	Epilimnion
4.0	21.7	7.7	84	
5.0	21.7	7.7	84	
6.0	21.6	7.7	84	
7.0	21.6	7.6	82	
8.0	18.2	5.0	50	
9.0	13.4	2.1	18	Thermocline
10.0	11.3	1.8	15	
11.0	10.1	0.8	6	
12.0	9.8	0.7	6	
13.0	9.4	0.8	6	
14.0	8.9	0.8	6	
15.0	8.6	0.9	7	
16.0	8.3	1.0	8	
17.0	8.0	1.0	8	
18.0	7.6	0.9	7	Hypolimnion
19.0	7.4	0.8	6	
20.0	7.3	0.7	5	
21.0	7.2	0.5	4	
22.0	7.1	0.4	3	
23.0	7.0	0.4	3	
24.0	7.0	0.3	2	
25.0	7.0	0.3	2	
26.0	6.9	0.3	2	
27.0	6.9	0.4	3	
28.0	6.9	0.5	3	
29.0	6.9	0.5	3	
30.0	Bottom	Bottom	Bottom	

Warm Water Fish Habitat (Bass, Walleye, Pike, Perch) = Dissolved Oxygen greater than 4 mg/L at less than 25 Degrees Celsius

SHARBOT LAKE – EAST BASIN * Warm Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-736-01 MVC Station # 06-06
Date: September 22, 2006
Depth: 29 Metres
Euphotic Zone (Penetration of Light) = 12 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	17.2	9.6	95	
1.0	17.2	9.6	95	
2.0	17.1	9.5	95	
3.0	17.1	9.6	95	
4.0	17.0	9.6	95	Epilimnion
5.0	17.0	9.6	95	
6.0	17.0	9.5	94	
7.0	17.0	9.6	95	
8.0	17.0	9.5	94	
9.0	16.8	9.3	91	
10.0	14.7	3.2	29	
11.0	11.7	1.7	14	Thermocline
12.0	10.0	1.4	11	
13.0	9.5	1.2	9	
14.0	8.9	1.1	8	
15.0	8.5	1.0	7	
16.0	8.3	0.9	7	
17.0	8.1	0.8	6	
18.0	7.7	0.8	6	
19.0	7.5	0.8	6	Hypolimnion
20.0	7.3	0.8	6	
21.0	7.2	0.7	5	
22.0	7.0	0.7	5	
23.0	7.0	0.7	5	
24.0	6.9	0.6	4	
25.0	6.9	0.7	5	
26.0	6.9	0.6	4	
27.0	6.9	0.6	4	
28.0	6.9	0.5	3	
29.0	Bottom	Bottom	Bottom	

Warm Water Fish Habitat (Bass, Walleye, Pike, Perch) = Dissolved Oxygen greater than 4 mg/L at less than 25 Degrees Celsius

SHARBOT LAKE – EAST BASIN * Warm Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-736-01 MVC Station # 06-06

Date: October 27, 2006

Depth: 30 Metres

Euphotic Zone (Penetration of Light) = 11 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	9.6	11.3	97	
1.0	9.6	11.7	100	
2.0	9.4	11.5	98	
3.0	9.4	11.4	97	
4.0	9.4	11.4	97	
5.0	9.4	11.4	97	
6.0	9.3	11.5	98	
7.0	9.3	11.5	98	
8.0	9.3	11.4	97	
9.0	9.3	11.3	96	
10.0	9.2	11.3	96	
11.0	9.2	11.3	96	Epilimnion
12.0	9.2	11.4	97	
13.0	9.2	11.4	97	
14.0	9.1	11.4	97	
15.0	9.0	11.4	96	
16.0	8.9	11.6	98	
17.0	8.9	11.6	98	
18.0	8.5	11.6	97	
19.0	7.9	6.5	94	
20.0	7.8	6.3	56	
21.0	7.8	4.3	34	
22.0	7.4	1.5	12	
23.0	7.2	1.0	8	
24.0	7.0	0.8	6	
25.0	7.0	0.7	6	
26.0	6.9	0.7	6	
27.0	6.9	0.6	5	
28.0	6.9	0.6	5	
29.0	6.9	0.5	4	
30.0	Bottom	Bottom	Bottom	

Warm Water Fish Habitat (Bass, Walleye, Pike, Perch) = Dissolved Oxygen greater than 4 mg/L at less than 25 Degrees Celsius

SHARBOT LAKE – SOUTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-745-01 MVC Station # 06-03

Date: June 1, 2006

Depth: 13 Metres

Euphotic Zone (Penetration of Light) = 8 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.1	9.1	98	Epilimnion
1.0	21.4	9.8	105	
2.0	20.3	9.8	104	
3.0	18.7	10.2	105	Thermocline – 1
4.0	14.6	11.1	106	
5.0	14.1	9.4	88	
6.0	13.1	9.2	84	
7.0	12.1	8.4	75	Thermocline - 2
8.0	11.1	8.0	70	
9.0	11.0	7.4	64	
10.0	9.2	7.3	63	
11.0	8.9	5.2	5.0	Hypolimnion
12.0	8.2	4.8	4.7	
13.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – SOUTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-745-01 MVC Station # 06-03

Date: August 25, 2006

Depth: 14 Metres

Euphotic Zone (Penetration of Light) = 10 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.7	8.0	87	
1.0	21.7	8.0	87	
2.0	21.7	8.0	87	Epilimnion
3.0	21.7	8.0	87	
4.0	21.7	8.0	87	
5.0	21.6	7.9	85	
6.0	18.9	7.6	78	
7.0	15.1	4.5	42	
8.0	13.0	4.0	35	Thermocline
9.0	11.9	1.8	14	
10.0	10.5	1.4	12	
11.0	10.1	1.0	8	
12.0	9.9	0.8	6	Hypolimnion
13.0	9.9	0.6	5	
14.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – SOUTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-745-01 MVC Station # 06-03

Date: September 22, 2006

Depth: 11 Metres

Euphotic Zone (Penetration of Light) = 8 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	17.1	9.5	95	
1.0	17.1	9.4	94	
2.0	17.0	9.5	95	
3.0	17.0	9.5	95	Epilimnion
4.0	16.9	9.6	95	
5.0	16.9	9.6	95	
6.0	16.9	9.4	92	
7.0	16.8	9.0	88	
8.0	14.5	3.2	29	
9.0	12.6	1.5	13	Thermocline

10.0 11.0	10.1 Bottom	1.3 Bottom	11 Bottom	

SHARBOT LAKE – SOUTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-745-01 MVC Station # 06-03

Date: October 27, 2006

Depth: 10 Metres

Euphotic Zone (Penetration of Light) = 7 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	9.0	12.0	100	
1.0	8.9	11.8	99	
2.0	8.8	11.8	99	
3.0	8.8	11.8	99	Epilimnion
4.0	8.7	11.7	98	
5.0	8.7	11.7	98	
6.0	8.7	11.7	98	
7.0	8.7	11.5	96	
8.0	8.7	11.5	96	
9.0	8.7	11.3	95	
10.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

How to protect or restore a shoreline depends on the conditions of the site and the energy and resources of the owner.

There are four main strategies to choose from:

1.) **PRESERVATION –** When purchasing lakefront property, a natural shoreline is retained and access to the lake is designed to avoid shoreline damage.

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2.) **NATURALIZATION –** Degraded shorelines are left alone to return to their natural state.

3.) **ENHANCEMENT –** Native species are planted non-native species are removed.

4.) **RESTORATION –** Cleared areas are planted with native species.

SHARBOT LAKE – NORTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-744-01 MVC Station # 06-04

Date: June 5, 2006

Depth: 27 Metres

Euphotic Zone (Penetration of Light) = 11 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	20.9	11.0	117	Epilimnion
1.0	20.2	11.7	125	
2.0	19.7	11.9	125	
3.0	19.5	11.4	120	
4.0	17.5	11.5	116	
5.0	15.7	11.6	113	
6.0	13.7	11.9	110	Thermocline
7.0	12.4	11.6	105	
8.0	10.8	11.6	102	
9.0	9.5	10.5	90	
10.0	8.4	10.8	90	
11.0	7.7	10.5	86	Hypolimnion
12.0	7.4	10.6	86	
13.0	7.3	10.5	85	
14.0	7.0	10.4	83	
15.0	6.7	10.1	79	
16.0	6.6	10.0	78	
17.0	6.6	9.8	77	
18.0	6.5	9.6	75	
19.0	6.5	9.3	72	
20.0	6.4	9.2	72	
21.0	6.4	8.9	70	
22.0	6.4	8.8	68	
23.0	6.4	8.7	68	
24.0	6.4	8.5	67	
25.0	6.4	8.4	65	
26.0	6.4	8.5	66	
27.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – NORTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-744-01 MVC Station # 06-04

Date: August 25, 2006

Depth: 30 Metres

Euphotic Zone (Penetration of Light) = 9 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.6	8.3	91	
1.0	21.6	8.2	90	
2.0	21.6	8.1	89	Epilimnion
3.0	21.6	8.1	89	
4.0	21.5	8.2	90	
5.0	21.5	8.2	90	
6.0	21.5	8.1	89	
7.0	21.4	8.1	89	
8.0	13.8	7.6	70	
9.0	10.5	7.4	64	Thermocline
10.0	9.1	6.0	50	
11.0	8.5	5.5	44	
12.0	8.4	4.8	39	
13.0	7.7	4.6	36	
14.0	7.6	4.2	33	
15.0	7.4	4.0	32	
16.0	7.2	3.7	29	Hypolimnion
17.0	6.9	3.6	28	
18.0	7.0	2.9	23	
19.0	7.2	3.0	24	
20.0	7.1	3.0	24	
21.0	7.0	3.0	24	
22.0	7.1	2.8	22	
23.0	6.9	2.0	15	
24.0	7.1	2.2	17	
25.0	7.1	2.6	20	
26.0	7.0	2.7	21	
27.0	7.0	2.8	22	
28.0	6.9	2.7	21	
29.0	6.8	2.4	18	
30.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – NORTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-744-01 MVC Station # 06-04

Date: September 22, 2006

Depth: 27 Metres

Euphotic Zone (Penetration of Light) = 8 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	17.0	9.8	97	
1.0	16.9	9.9	98	
2.0	16.8	9.9	98	
3.0	16.8	10.0	98	Epilimnion
4.0	16.7	10.0	98	
5.0	16.7	10.1	99	
6.0	16.6	10.0	98	
7.0	16.6	9.9	97	
8.0	16.6	9.9	97	
9.0	14.1	7.5	70	
10.0	10.0	7.1	60	Thermocline
11.0	8.6	5.1	41	
12.0	8.0	4.6	37	
13.0	7.6	3.7	29	
14.0	7.2	3.5	27	
15.0	7.0	2.8	22	
16.0	6.8	2.6	19	Hypolimnion
17.0	6.7	2.2	16	
18.0	6.7	2.0	15	
19.0	6.6	1.8	13	
20.0	6.6	1.6	12	
21.0	6.6	1.6	12	
22.0	6.5	1.4	10	
23.0	6.5	1.2	9	
24.0	6.5	1.2	9	
25.0	6.5	1.1	8	
26.0	6.5	1.0	8	
27.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – NORTH WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-744-01 MVC Station # 06-04

Date: October 27, 2006

Depth: 23 Metres

Euphotic Zone (Penetration of Light) = 9 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	9.1	12.0	101	
1.0	9.1	11.5	98	
2.0	9.1	11.4	97	
3.0	9.1	11.4	97	
4.0	9.1	11.3	96	
5.0	9.1	11.3	96	
6.0	9.1	11.3	96	
7.0	9.1	11.3	96	
8.0	9.1	11.3	96	Epilimnion
9.0	9.1	11.3	96	
10.0	9.1	11.3	96	
11.0	9.1	11.2	95	
12.0	9.1	11.2	95	
13.0	8.9	11.1	93	
14.0	8.2	5.2	42	
15.0	7.3	1.5	12	
16.0	7.2	1.2	9	
17.0	7.1	1.0	8	
18.0	7.0	0.8	6	
19.0	7.0	0.7	5	
20.0	7.0	0.6	4	
21.0	7.0	0.6	4	
22.0	6.9	0.5	3	
23.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – MAIN WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-725-01 MVC Station # 06-05

Date: June 5, 2006

Depth: 27 Metres

Euphotic Zone (Penetration of Light) = 10 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.8	11.6	127	Epilimnion
1.0	19.6	12.6	133	
2.0	19.2	12.0	125	Thermocline - 1
3.0	18.9	11.9	122	
4.0	18.1	11.5	117	
5.0	14.7	11.5	109	
6.0	13.5	11.5	107	
7.0	11.8	11.0	98	Thermocline - 2
8.0	10.7	10.8	94	
9.0	9.5	10.5	90	
10.0	8.2	10.5	87	
11.0	7.7	10.3	84	
12.0	7.3	10.2	82	
13.0	7.1	10.2	82	
14.0	6.9	10.2	81	
15.0	6.5	9.9	77	Hypolimnion
16.0	6.3	9.9	77	
17.0	6.1	9.7	75	
18.0	6.0	9.4	73	
19.0	5.9	9.1	70	
20.0	5.8	9.0	69	
21.0	5.7	8.9	68	
22.0	5.6	8.7	66	
23.0	5.6	8.5	65	
24.0	5.5	8.1	62	
25.0	5.4	7.7	59	
26.0	5.4	7.5	57	
27.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – MAIN WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-725-01 MVC Station # 06-05

Date: August 25, 2006

Depth: 31 Metres

Euphotic Zone (Penetration of Light) = 8 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	21.4	8.0	86	
1.0	21.4	8.1	88	
2.0	21.4	8.2	90	Epilimnion
3.0	21.4	8.1	88	
4.0	21.4	8.1	88	
5.0	21.4	8.1	88	
6.0	19.3	7.4	76	
7.0	16.8	7.4	72	Thermocline
8.0	13.0	7.4	67	
9.0	10.5	7.1	63	
10.0	9.1	6.3	53	
11.0	8.3	5.7	46	
12.0	7.7	5.4	43	
13.0	7.1	5.1	40	
14.0	6.6	5.0	39	
15.0	6.3	4.8	37	
16.0	6.2	4.7	36	
17.0	6.0	4.1	31	
18.0	5.8	4.0	31	Hypolimnion
19.0	5.8	3.9	30	
20.0	5.7	3.4	26	
21.0	5.6	3.3	25	
22.0	5.5	2.9	22	
23.0	5.4	2.7	20	
24.0	5.4	2.6	19	
25.0	5.4	2.5	18	
26.0	5.4	2.3	17	
27.0	5.3	2.1	15	
28.0	5.3	2.0	15	
29.0	5.3	1.8	13	
30.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – MAIN WEST BASIN * Cold Water

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-725-01 MVC Station # 06-05

Date: September 22, 2006

Depth: 29 Metres

Euphotic Zone (Penetration of Light) = 10 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	17.2	9.3	95	
1.0	17.1	9.3	95	
2.0	17.0	9.3	95	
3.0	17.0	9.3	95	Epilimnion
4.0	17.0	9.3	95	
5.0	17.0	9.4	96	
6.0	17.0	9.4	96	
7.0	17.0	9.4	96	
8.0	15.5	9.0	89	
9.0	13.0	7.1	66	Thermocline
10.0	10.2	6.1	53	
11.0	8.6	5.2	43	
12.0	7.8	5.0	41	
13.0	7.2	4.7	38	
14.0	6.7	4.5	36	
15.0	6.4	4.2	33	
16.0	6.1	4.3	33	
17.0	6.0	4.0	30	Hypolimnion
18.0	5.9	3.7	28	
19.0	5.8	3.3	25	
20.0	5.7	3.0	23	
21.0	5.7	2.8	21	
22.0	5.5	2.7	20	
23.0	5.4	2.4	17	
24.0	5.3	2.1	15	
25.0	5.3	1.8	13	
26.0	5.3	1.6	12	
27.0	5.2	1.4	10	
28.0	5.2	1.2	8	
29.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

SHARBOT LAKE – MAIN WEST BASIN

DISSOVED OXYGEN / TEMPERATURE PROFILE

MOE Rec. Lks. Station # 18-3430-725-01 MVC Station # 06-05

Date: October 27, 2006

Depth: 31 Metres

Euphotic Zone (Penetration of Light) = 10 Metres

Depth (Metres)	Temperature (Degrees Celsius)	Dissolved Oxygen (Milligrams/Litre)	Percent % Saturation	Thermal Stratification
0.1	9.1	11.0	93	
1.0	9.1	11.1	94	
2.0	9.1	11.2	95	
3.0	9.1	11.2	95	Epilimnion
4.0	9.1	11.2	95	
5.0	9.1	11.2	95	
6.0	9.1	11.2	95	
7.0	9.1	11.2	95	
8.0	9.1	11.2	95	
9.0	9.1	11.1	94	
10.0	9.1	11.1	94	
11.0	9.1	11.1	94	
12.0	9.1	11.1	94	
13.0	9.1	11.1	94	
14.0	8.8	11.0	92	
15.0	6.7	2.9	22	Thermocline
16.0	6.3	2.7	21	
17.0	6.2	2.4	18	
18.0	6.0	2.2	16	
19.0	5.9	1.9	14	
20.0	5.7	1.8	13	
21.0	5.6	1.5	11	Hypolimnion
22.0	5.6	1.3	9	
23.0	5.5	1.1	8	
24.0	5.5	1.0	7	
25.0	5.5	0.9	7	
26.0	5.4	0.8	5	
27.0	5.4	0.6	4	
28.0	5.3	0.6	4	
29.0	5.3	0.5	3	
30.0	5.3	0.4	3	
31.0	Bottom	Bottom	Bottom	

Optimal Habitat for Cold Water Fisheries =
greater than 6 mg/L DO at less than 10 degrees Celsius

Vital Habitat for Cold Water Fisheries =
greater than 4 mg/L DO at less than 15.5 degrees Celsius

Mississippi Valley Conservation

*The **Watershed Watch program** was made possible thanks to the generous support of the Ministry of Environment, Lake Associations, area Stewardship Councils, the Lake Stewardship Network and concerned citizens. A special thanks to **Canadian Waste Management Inc**. who continue to support the Watershed Watch program with a generous donation. Thank you!*

For more information regarding *Watershed Watch* or for advice on how you can help protect and enhance your lake environment, contact Susan Lee, Watershed Monitoring Supervisor at Mississippi Valley Conservation. (613) 259-2421 or slee@mvc.on.ca

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