

# 10 LAKE OF THE ISLES

## HISTORY

Historically a wetland complex, Lake of the Isles was named for its four enclosed islands. The Minneapolis Park and Recreation Board (MPRB) acquired the lake and surrounding property in 1886 through purchase, donation and condemnation. The property originally consisted of 100 acres of water, 67 acres of wetland and 33 acres of land. In 1884, one of the four islands (closest to the south shore) was removed by the Chicago, Milwaukee and Saint Paul Railway and tracks were laid on fill between Calhoun and Isles. Dredging of approximately half a million cubic yards of material, between 1889 and 1911, drastically changed the look of the lake with the elimination of a second island and an increase in lake area to 120 acres. Fill was used to create parkland on the final 80 acres. Some of the other modifications included deepening of the north arm, to a uniform depth, and construction of shoreline along the once marshy, east side of the lake. The connection of Isles to Calhoun was completed in 1911 and was celebrated by citywide festivities.

Lake of the Isles (Figure 10A) is part of the Chain of Lakes Regional Park which received over 5.7 million visitors in 2005 and was the most visited park in Minnesota (Metropolitan Council, 2006). Table 10A shows the Lake of the Isles morphometric data. Figure 10B shows the Lake of the Isles bathymetric map.



Figure 10A. Lake of the Isles.

Table 10A. Lake of the Isles morphometric data. \* Littoral area defined as less than 15 feet deep

Surface Area (acres)	Mean Depth (m)	Maximum Depth (m)	Littoral Area*	Volume (m <sup>3</sup> )	Watershed Area (acres)	Watershed: Lake Area (ratio)	Residence Time (years)
103	2.7	9.4	89%	1.11x10 <sup>6</sup>	735	7.1	0.6

Lake of the Isles is a polymictic lake, occasionally stratifying and mixing throughout the summer months. Dense stands of macrophytes can provide stabilization for zones of thermal stratification in some areas. The lake was part of the Clean Water Partnership project for the Chain of Lakes and was the focus of multiple restoration activities including grit chambers

(1994, 1997, 1999) for stormwater sediment removal, constructed wetland detention ponds for further treatment of incoming stormwater and a whole lake alum treatment (1997) to limit the internal loading of phosphorus. Recent restoration efforts are described at the end of this section in Water Quality Projects.

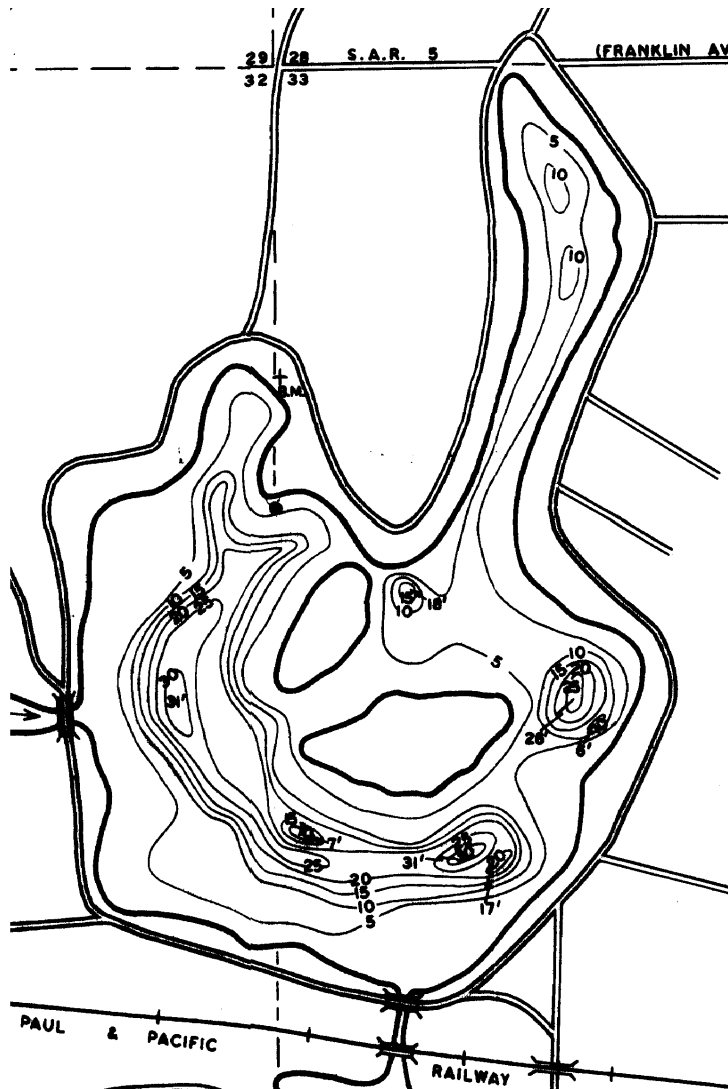


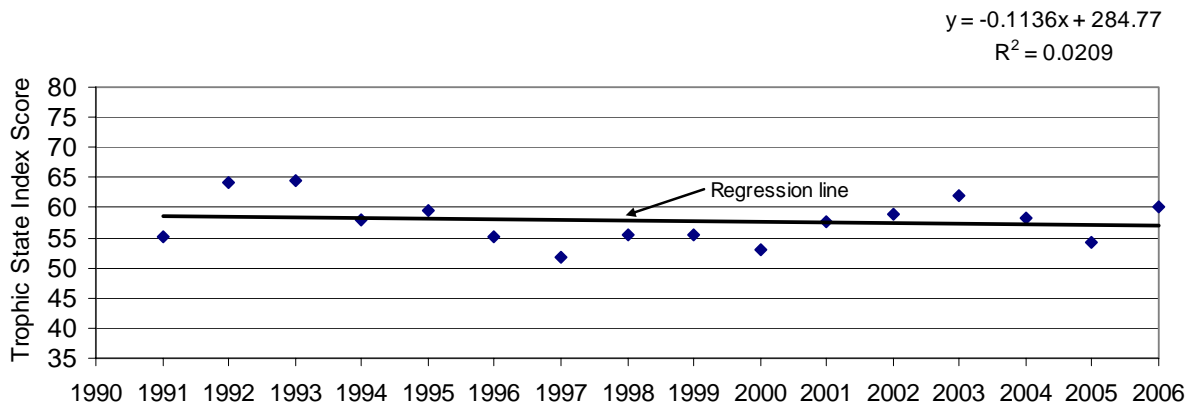
Figure 10B. Bathymetric map of Lake of the Isles. Map courtesy of the Minnesota Department of Natural Resources (MDNR).

## LAKE LEVEL

See Lake Calhoun, Section 4.

## WATER QUALITY TRENDS (TSI)

Figure 10C shows that the Lake of the Isles linear regression slope is flat. A detailed explanation of TSI can be found in Section 1.



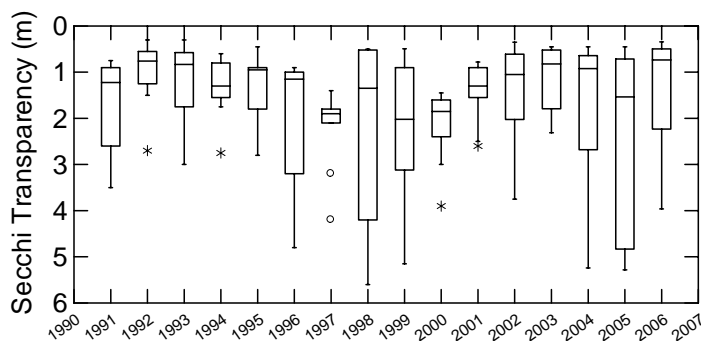
**Figure 10C. Lake of the Isles TSI scores and regression analysis.**

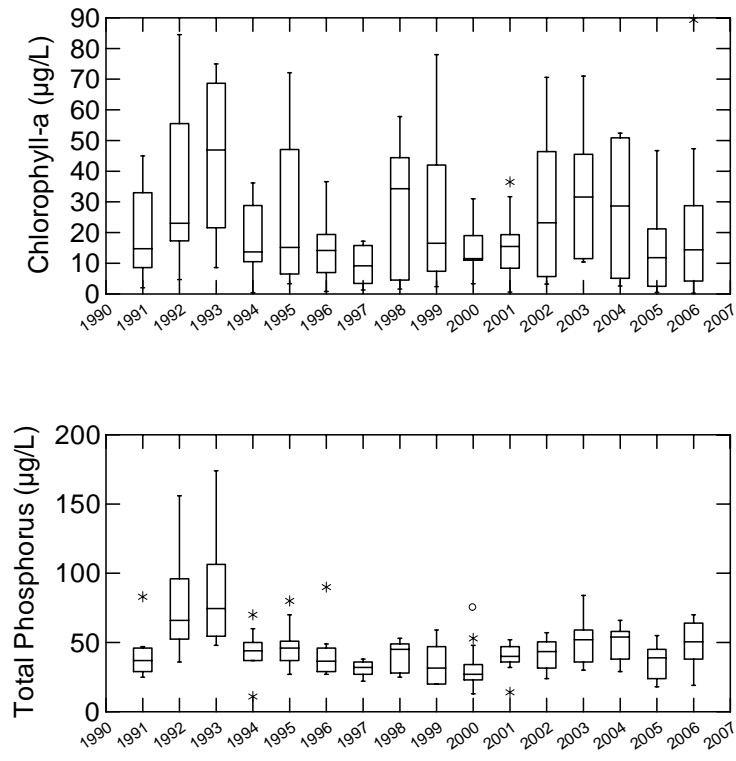
The water quality trend in Lake of the Isles continued to weaken in 2006. The alum treatment in 1997 coincides with the lowest/best TSI score. Currently, Lake of the Isles has a TSI score that is average for this ecoregion (based on calculations from the Minnesota Pollution Control Agency, using the Minnesota Lake Water Quality Data Base Summary, 2004).

## BOX AND WHISKER PLOTS

The box and whisker plots show the scatter within the years data set for the Secchi, chlorophyll-*a* and total phosphorus in more detail. Long-term lake monitoring is necessary to evaluate the seasonal and year-to-year variations seen in each lake and predict trends. A detailed explanation of box and whisker plots can be found in Section 1. Figure 10E shows the box and whisker plots of Lake of the Isles TSI data.

Upstream Clean Water Partnership project improvements, installed between 1994 and 1997, are noticeable in the total phosphorus box plot (Figure 10D). Water quality appears to have stabilized with total phosphorus in the range of ~50µg/L. These levels are consistent with the shallow nature of the lake.

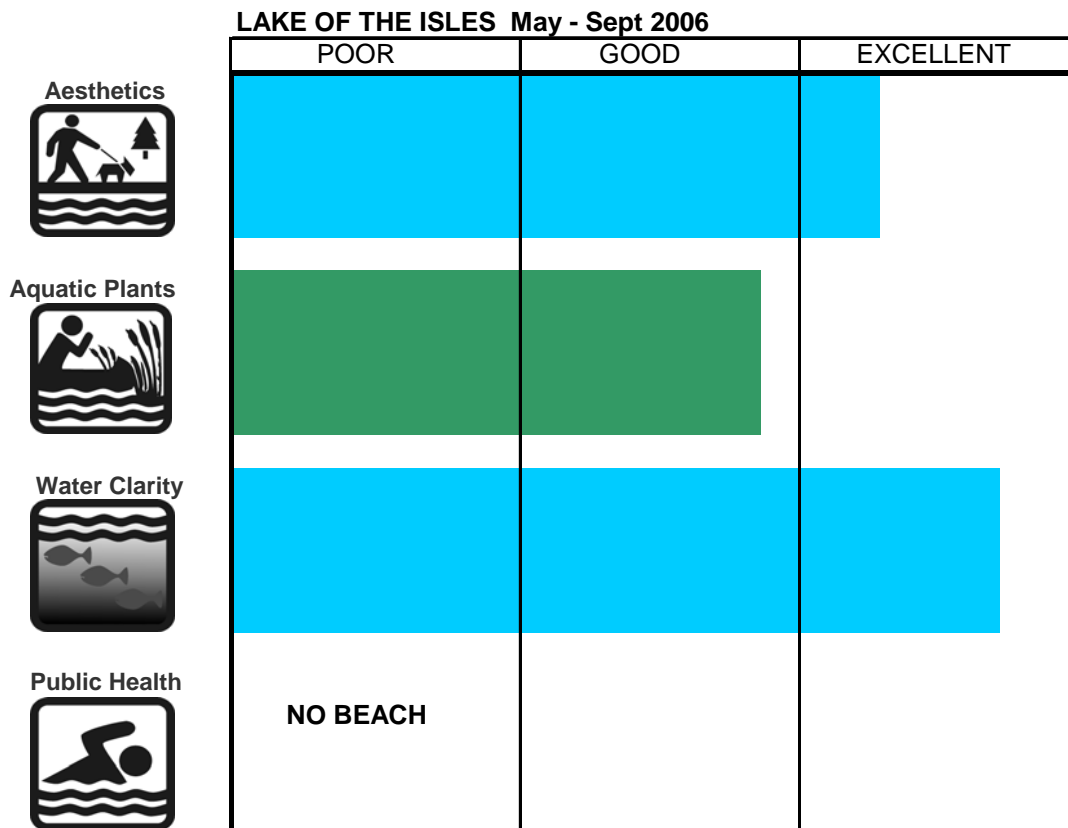




**Figure 10D. Lake of the Isles box and whisker plots of TSI data.**

## LAKE AESTHETIC AND USER RECREATION INDEX (LAURI)

The LAURI for Lake of the Isles is shown in Figure 10E. Lake of the Isles scored “good” in aquatic plants and “excellent” in water clarity and aquatic plants. Since Lake of the Isles does not have a swimming beach, no score was calculated for public health. For more details on LAURI see Section 1.



**Figure 10E. The LAURI for Lake of the Isles in 2006.**

## WINTER ICE COVER

Ice came off Lake of the Isles on April 6, 2006, which was two days later than average. Ice fully covered the lake on January 2, 2007, which was the latest date of ice on ever recorded for Lake of the Isles. See Section 1 for details on winter ice cover records and Section 18 for a comparison with other lakes.

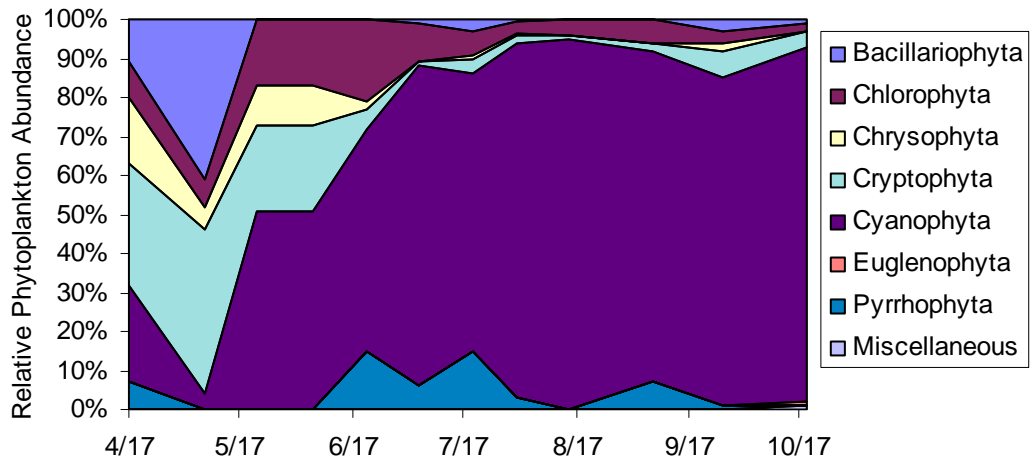
## EXOTIC AQUATIC PLANT MANAGEMENT

The MDNR requires a permit to remove or control Eurasian watermilfoil. These permits limit the area from which milfoil can be harvested to protect fish habitat. The permits issued to the MPRB allowed for harvesting primarily in swimming areas, boat launches and in shallow areas where recreational access was necessary. The permitted area on Lake of the Isles was 48.5 acres, which is 47% of the total lake surface area. See Section 1 for details on aquatic plants.

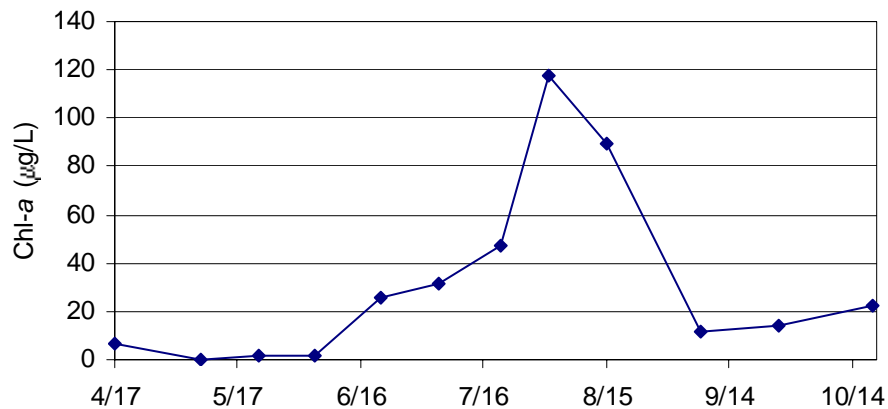
## PHYTOPLANKTON AND ZOOPLANKTON

Phytoplankton and zooplankton are the microscopic plant and animal life that form the basic food web of lake ecology. The greenness of a lake is measured by chlorophyll-*a* (chl-*a*) as an expression of the phytoplankton present. Figures 10F and 10G show the phytoplankton and

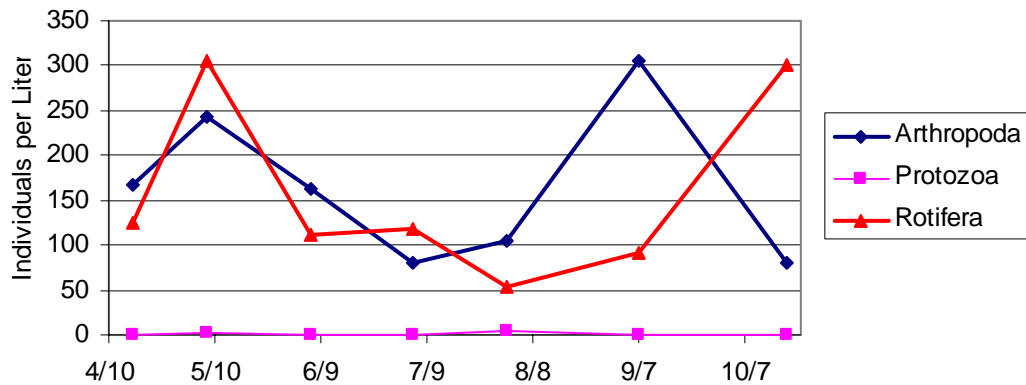
chlorophyll-*a* data. The relative abundance is in reference to the total community (% in each division). Throughout the majority of the 2006 season, cyanophyta (blue-green algae) dominated, except April-May when cryptophyta (cryptomonads) and Bacillariophyta (diatoms) also were abundant. The highest chl-*a* concentration was recorded in August. Cyanobacteria (blue-green algae) were the most abundant phytoplankton division at this time. Lake of the Isles had several zooplankton peaks in 2006 (Figure 10 H). Arthropods and rotifers each peaked during the spring clear water phase, with rotifers more abundant. Later, arthropods and rotifers peaked again in September and October, respectively.



**Figure 10F. Lake of the Isles relative phytoplankton abundance for the 2006 sampling season.**



**Figure 10G. Lake of the Isles 2006 chlorophyll-*a* data.**



**Figure 10H. Lake of the Isles 2006 zooplankton distribution.**

## FISH STOCKING

Additional information and a definition of fry, fingerling, yearling and adult fish can be found in Section 1.

Lake of the Isles was stocked by MDNR in:  
 2000 with 300 fingerling Tiger Muskellunge  
 2004 with 300 fingerling Tiger Muskellunge

## WATER QUALITY PROJECTS

The Lake of the Isles Renovation Plan was developed to combat the deterioration of the shoreline due to flooding and to improve water quality. The emphasis was on shoreline stabilization, wetland enhancement and restoration, path reconstruction, upland plant restoration, and the raising of passive recreation areas.

The shoreline on the south side of Kenilworth Lagoon was stabilized, and the shoreline from 26<sup>th</sup> street to the Kenilworth Bridge was restored in 2006. Previously, a new wetland/flood storage area was created east of the Off-Leash Recreation Area on the south side of the lake. In 2002, work began to replace the WPA-era retaining wall at Evergreen Point and to stabilize the shoreline on the north side of Kenilworth Lagoon and the east shore, along with construction of new pedestrian and bike paths and the planting of trees. The retaining wall and shoreline work was completed in fall 2003.

The west bay and north arm of the lake have the highest concentrations of peat and were, therefore, the sites of the most significant settling. To restore the park's historic aesthetic, necessitated by the park's listing on the National Register of Historic Places, these sections have been filled in. The cost of removing the original peat, however unsuitable as fill, and replacing it with a more desirable alternative is prohibitive. To minimize future settling in these areas, the fill was compressed by a layer of heavier material. When the compression had been maximized, the excess material was removed, and the paths were constructed. Land around the north arm was raised above the 100-year flood elevation in 2005.

Finally, when all other project components have been completed, Lake of the Isles Parkway will be repaved. More information can be found at:  
<http://www.minneapolisparcs.org/default.asp?PageID=658>