

Progress toward water quality improvement: Macrophytes. AMP 2010 Annual Report.
(Assessment Measure)

AMENDED CONSENT JUDGMENT GOAL

Expansion of the areal coverage and increase in diversity of macrophyte community, where number of species and biomass in the littoral zone (6m water depth) are comparable to other regional lakes. Increase percent cover of littoral zone to optimal levels (40% – 60%) for largemouth bass habitat, to achieve desired use of the lake for warmwater fish reproduction.

Hypotheses to be tested:	Status:
Metro improvements and watershed phosphorus load reductions indirectly result in increased areal coverage of macrophytes in littoral zone of Onondaga Lake.	<ul style="list-style-type: none"> Metro improvements to reduce nutrient loading were implemented in 2004 (BAF) and 2005 (HRFS) Areal coverage in the littoral zone has increased between 2000 and 2010
Metro improvements and watershed phosphorus load reductions indirectly result in increased number of macrophyte species in Onondaga Lake.	<ul style="list-style-type: none"> The number of macrophyte species has increased from 5 in 1991 to 23 in 2010

Current Conditions with Historical Comparison

Community Composition (Lakewide)	Year	Number of species present	Dominant species by relative % cover
	1991:	5	<i>no data</i>
	2000:	10	Sago pondweed (52%) Common waterweed (26%)
	2005:	17	Common waterweed (62%) Coontail (19%)
	2010	23	Coontail (30%) Common waterweed (23%) Water stargrass (17%)
<i>1991 data from John Madsen, Army Corps of Engineers, 1996</i>			
Biomass (Lakewide average)	1991:	<i>no data</i>	
	2000:	16 g/m ² dry weight	
	2005:	51 g/m ² dry weight	
	2010:	40 g/m ² dry weight	
Species Richness (Transect average)	1991:	1.3 species per transect (Madsen et al 1996)	
	2000:	3.6 species per transect	
	2005:	5.6 species per transect	
	2010:	6.8 species per transect	
Percent of Subplots with Macrophytes	1991:	13% (Madsen et al 1996)	
	2000:	61%	
	2005:	74%	
	2010:	83%	
Percent Cover in littoral zone (Lakewide average)	1991:	<i>no data</i>	2005: 26%
	2000:	18%	2010: 65%
Aerial Photographs (Percent indicates percent coverage of littoral zone. Aerial photographs were obtained in June prior to 2006, and in August since 2006.)	2000:	85 acres (11%)	2006: 183 acres (24%)*
	2001:	134 acres (17%)	2007: 210 acres (27%)*
	2002:	142 acres (18%)	2008: 314 acres (40%)*
	2003:	267 acres (34%)	2009: 382 acres (50%)*
	2004:	No data	2010: 409 acres (54%)
	2005:	378 acres (49%)	
Factors affecting macrophyte community	<ul style="list-style-type: none"> Sediment texture (oncolites are nutrient-poor and unstable), light penetration, salinity, zebra mussels 		

Library Reference 2.2.4

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(Assessment Measure) *(continued)*.

Monitoring and Assessment Program

Lake Monitoring

- Survey species composition, percent cover, and biomass every 5 years, from 2000 to 2010.
- Annual aerial photographs of littoral zone to estimate acres of macrophytes.

Metrics to track over time

- Number of species (richness)
 - Percent cover
 - Biomass
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Tools for Decision Making

Qualitative and Quantitative Analysis

Compare to baseline survey in 2000
