

<b>Yahara Lakes Timeline, 1836 to 2010</b>	
Year	Event
1836	Territory of Wisconsin established; legislature convenes in Belmont
1836	Madison founded by former federal judge James Duane Doty, who purchased over a thousand acres of swamp and forest land on the isthmus between Lakes Mendota and Monona within the Four Lakes region, with the intention of building a city on the site.
1837	Cornerstone of state capitol laid
1838	Legislature meets in Madison
1846	Madison incorporates as a village; population 626
1848	Wisconsin statehood
1849	First Tenney Park dam installed; Lake Mendota water level raised 5 feet
1850	Federal "Swamp Acts" in 1849, 1850 and 1860 give title to 3 million acres of swamp land to Wisconsin to be "improved"
1852	First Wisconsin drainage law passed
1854	First railroad comes to Madison
1856	Madison incorporates as a city; population 6863
1865	UW-Madison student population around 300
1866	Indoor "water closet" installed at state capitol (replaces a brick privy); sewage is piped directly to Lake Monona
1870	Lake Mendota watershed under full agricultural production
1870	Residential "water closets" installed and connected to private sewers which mostly drain directly to Lake Monona
1878	Madison editorial writers note that directing sewage to lakes was leading to sewage buildup on lake shores
1880	Civic leaders realize discharging sewerage into Lake Monona is wrong (situation will not be fully addressed for 80 years)
1880	Private well testing shows 87% of private wells in Madison are contaminated by sewage
1880	Madison's population is 10,324
1881	Madison Water Utility established
1882	First blue-green algae bloom noted in Lake Mendota
1885	UW-Madison student population around 500

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1885	Madison establishes a sewer system based on 26 "districts" each of which drains into either Lake Mendota or Monona
1886	Carp introduced into Yahara Lakes
1890	Lake Monona receives majority of Madison sewerage (untreated)
1891	First drainage district law passed, allowing for creation of special-purpose districts to drain lands
1894	UW-Madison starts limnology research on Lake Mendota
1895	Two Madison landowners and the city of Monona sue Madison over raw sewage collecting along Lake Monona's shore
1899	Madison's first wastewater treatment plant operates from May 1899 until January 1901. Located near Yahara River at East Washington Ave, the plant didn't work. 600,000 gallons of raw sewage flows to Lake Monona daily
1900	Between 1900 and 1919, 800,000 acres of Wisconsin land is included in drainage districts, including in Dane County
1900	UW-Madison student population around 2,000
1901	Madison's second treatment plant, built next to first, operated until 1914. Consisted of septic tanks with cinder filters.
1908	Badfish [Creek] Drainage District organized; expanded later that year
1911	Wisconsin Supreme Court writes that a drainage district could straighten an existing stream
1912	Nine Springs Drainage District formed
1914	Burke sewage treatment plant (consisting of settling tanks & trickle filters) built; effluent discharges into Lake Monona
1915	Madison Public Health Department (MPHD) begins experimental treatment of algae blooms with copper sulfate
1915	Starkweather Drainage District formed; expanded in 1917 (site of current Dane County Regional Airport/Truax Field)
1925	MPHD begins 25 year study of Yahara chain of lakes due to massive discharge of poorly-treated sewerage
1925	MPHD begins systematic use of copper sulfate to treat Lake Monona algae blooms
1925	Wisconsin Legislature prohibits organization of new drainage districts
1926	MPHD begins using arsenic compounds to kill macrophytes (aquatic plants)

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1927	Waunakee sewage system established; discharges to Six-Mile (Waunakee) Creek, which flows to Lake Mendota
1928	First Nine-Springs treatment plant built treating 1/2 of Madison's sewerage; discharges upstream from Lake Waubesa
1930	Madison Metropolitan Sewerage District (MMSD) created by judgment of the circuit court for Dane County
1932	Spring Harbor pumping station (now #5) installed, bringing Middleton & Shorewood Hills sewerage to MMSD
1934	WI Conservation Department (predecessor to the DNR) begins carp removal program on all four lakes
1935	Wisconsin Legislature required colleges, normal schools and high schools to teach conservation education
1936	Expanded MMSD Nine Springs treatment plant treats all Madison sewage; Burke plant not operated
1936	Copper sulfate treatment of algal blooms expands to Lake Waubesa & Lake Kegonsa
19??	Two communities sewage treatment plants discharge effluents into Lake Mendota
1942	Burke sewage treatment plant operated by US government until 1946
1945	Role of Madison sewerage on water quality in lower lakes (Monona, Waubesa & Kegonsa) conclusively proved
1946	Burke sewage treatment plant reverts to MMSD control
1947	Algal blooms in Lake Mendota brings focus to nutrient sources feeding Lake Mendota
1949	MPHD monitoring study (begun in 1925) ends
1949	State law passed prohibiting effluent discharge to Madison lakes
1950	Burke sewage treatment plant rented by Oscar Meyer as effluent pretreatment; operated until 1979
1954	Whole-lake spraying of copper sulfate to control algae blooms ends, due to environmental concerns
1958	All MMSD wastewater discharges diverted into Badfish Creek, downstream of the four Yahara lakes
1963	Pumping Station #9 installed, bringing McFarland & surrounding township's sewerage to MMSD

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1964	Arsenic treatments to control aquatic plants (begun in 1926) ends
1967	DNR begins limited monitoring on Lake Monona
1969	DNR ends carp removal program begun in 1934
1971	Wastewater effluents from upstream communities connected to MMSD, ending effluent discharge into Lake Mendota
1972	Creation of the Federal "Clean Water Act"
1973	DNR begins limited monitoring on Lakes Waubesa & Kegonsa
1974	MMSD begins to haul sludge from storage lagoons to farmers (precursor to the Metrogro program)
1976	USGS begins watershed monitoring program on storm sewers & major tributaries
1976	DNR begins limited, regular sampling of all four Yahara lakes; ends in 1994
1977	President Jimmy Carter signs executive order declaring protection of wetlands as official U.S. policy and ended all direct federal assistance for wetland conversion
1979	Oscar Meyer ceases operation of Burke sewerage treatment plant; property abandoned & sold
1980	Metrogro biosolids reuse program implemented
1986	Advanced secondary nitrification process and UV disinfection process placed in service
1987	Bio-manipulation project begun (large predators (muskie, bass, etc) populations encouraged to reduce planktivorous fish)
1988	Dane County Board creates Lakes & Watershed Commission (LWC)
1989	Wisconsin Legislature defines the LWC's special powers, composition, duties and organization
1990	MMSD sludge storage lagoons placed on the Superfund List due to discovery of PCBs
1991	MMSD commissions gas utilization facilities for co-generation of power and hot water using digester gas
1994	Commissioning of Metrogro Storage Tanks, use of sludge storage lagoons discontinued
1994	Three-year inventory phase of Lake Mendota priority Watershed Project begun
1994	DNR limnological sampling of Yahara lakes ends (transition to NTL-LTER)

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1995	Northern Temperate Lakes - Long Term Ecological Research (NTL-LTER) begins on Lakes Mendota & Monona
1996	Verona Pumping Station is constructed, Verona's Waste Water Treatment Plant is abandoned
1996	Biological nutrient removal process for phosphorus removal implemented
1997	Lake Mendota Priority Watershed Project begins; goal is to reduce P-loading by 50%
1998	Badger Mill Creek effluent return implemented
2000	US Census gives Madison's population as 208,054
2001	Sludge storage lagoon PCB remediation work completed
2002	Purchase of Upper Yahara River treatment plant site.
2004	Certification of Biosolids Environmental Management System
2006	USGS monitoring data indicates that from 1990-2006, 48% of total P-loading occurs between January and March
2006	USGS monitoring data indicates that from 1990-2006, 28% of total P-loading occurs between April and June
2008	Lake Mendota Priority Watershed Project ends; 50% P reduction goal was not met
2008	Yahara CLEAN MOU signed between DNR, DATCP, Dane County, & City of Madison
2010	Yahara CLEAN final report presented to DNR & DATCP Secretaries, Dane County Executive, & Madison's Mayor
Sources:	Lathrop, R.C. 2007. Perspectives on the eutrophication of the Yahara lakes. Lake and Reserv. Manage. 23:345–365
	Madison Metro Sewerage District website, <a href="http://www.madsewer.org/History.htm">http://www.madsewer.org/History.htm</a> Accessed 13 July 2010
	Mollenhoff, David V., Madison, a history of the formative years. University of Wisconsin Press, 2003
	Various wikipedia.org articles, accessed 13 July 2010
	Personal communication with Seth McClure, Wisconsin State Drainage Engineer, DATCP