

# Water Quality Summary

## Designated Uses

The Grand Lake Watershed currently has five designated uses that are threatened:

- Warm and Cold Water Fisheries
- Aquatic Life and Wildlife
- Recreation Total/Partial Body Contact
- Navigation
- Public Water Supply

Two designated uses, agricultural water supply and industrial water supply, were determined not threatened at this time. The following provides a Water Quality Summary for the five threatened designated uses.

### Warm and Cold Water Fisheries

None of the streams or creeks in the Grand Lake Watershed are designated coldwater trout streams. However, the Grand Lake Pike Marsh is a fertile spawning ground for the pike population. The watershed's warm water fisheries produce abundant pan fish, and walleye, pike and a few perch may be found in several tributaries and outlets. Unfortunately, increased sediment, nutrients, bacteria, oil/grease, and heavy metals have threatened this use. Sediments were identified as having the most harmful effect on the fisheries. An over abundance of sediments in lakes and streams may block fish gills, destroy essential spawning habitat and reduce the amount of light available for healthy plant growth. Public access sites are identified as being the most significant sources of sediment, however land development, road/stream crossings and streambank erosion were also found to contribute significant amounts of sediment to the river system.

Nutrients ranked second as the pollutant most challenging to the health of the watershed's fisheries. Wastewater, residential lawns and waterfowl were deemed the most significant sources of nutrients and bacteria. Heavy metals/organic compounds are also considered a threat to the watershed's warm water fisheries.

### Indigenous Aquatic and Wildlife

Sediment, heavy metals/organic compounds, and pesticides/herbicides are currently threatening aquatic life and habitat. Sediment affects aquatic life in the same way it affects fisheries; by clogging gills and decreasing spawning habitats. Heavy metals/organic compounds such as oil, grease and other toxic substances, as well as herbicides and pesticides can affect the life cycles of aquatic species by decreasing immunity and reproductive viability and, in high enough concentrations, cause death.

Sources of sediment include road/stream crossings, streambank erosion, stormwater runoff, land development practices and lake and river access sites. Sources of heavy metals/organic compounds include stormwater runoff, sites of environmental contamination and road/stream crossings. Common pollutants such as vehicle fluids (antifreeze, oil, grease, gasoline), pesticides,

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fertilizers, cleaners and paint products can be carried directly to the lake via storm drains, or can be washed into the lake across well-manicured lawns.

### Recreation Total/Partial Body Contact

Recreation was perceived as threatened by increased bacteria in the Grand Lake Watershed. High levels of bacteria can make swimming, canoeing, fishing and other activities, where individuals come in contact with the water, harmful. Although this has not been documented in the watershed in recent years, preventive measures need to be established to protect this designated use. The sources for bacteria include septic systems, waterfowl and stormwater discharge.

Improperly sited, designed, or maintained septic systems around the lake can allow bacteria to enter the waterways. Increased riparian development requires additional septic systems to be constructed. Also, many seasonal homes are being converted into year-round residences and the size or condition of the septic system may not be adequate to serve the increased use. Proper function of septic systems is imperative to reducing the amount of bacteria entering the water bodies.

### Navigation

Sedimentation and invasive species have both been found to be detrimental to navigational use in the Grand Lake Watershed. Sedimentation is the process of "filling in" of a lake or stream with particles of matter such as sand and gravel. An increased rate of sedimentation is currently threatening navigation in areas of the watershed. Known sources of sediment include road/stream crossings, streambank erosion, and stormwater runoff. Other sources include land development practices and lake and river access sites.

Sedimentation at road/stream crossings is often a result of short culverts, steep embankments, sand and gravel surfaces and inadequate diversion outlet. Public access sites located at road stream crossings need to have adequate measures in place in order to prevent erosion from foot traffic.

Streambank erosion, another factor in the sedimentation process, may be caused by human impact, lack of vegetation along the bank and natural hydrologic conditions. Additionally, inadequate stormwater management can lead to the discharge of sediments into the water bodies. Various harmful pollutants including heavy metals, toxic substances and pesticides, which threaten other designated uses, are often attached to sediment particles.

One of the definitions of pollution, according to the American Heritage Dictionary of the English Language is "to make less suitable for an activity, especially by the introduction of unwanted factors". Invasive species, a category not generally considered a pollutant, certainly fit this description. Certain non-native species, such as Eurasian Watermilfoil and Hydrilla can make navigation difficult, or even impossible. Once introduced to a water body these species can spread rapidly, forming dense mats of vegetation that not only hamper navigation, but deprive native aquatic plants and animals access to sunlight. As the plant matter dies and sinks to the bottom of a lake it decomposes and in the process depletes the oxygen supply, further degrading habitat for native species. Other invasive aquatic species, such as zebra mussels, spiny water flea, and round goby, compete with native species for food and habitat, and degrade the water bodies for recreational activities such as fishing and swimming.

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### Public Water Supply

The Environmental Protection Agency (EPA) is a federal agency that works closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. The Department of Environmental Quality (DEQ) has primary enforcement authority in Michigan for the Federal Safe Drinking Water Act under the Michigan Safe Drinking Water Act. The DEQ has regulatory oversight for all public water supplies including approximately 1,500 community and 11,000 non-community water supplies. The program also regulates drinking water well drilling for approximately 25,000 new domestic wells drilled each year. Michigan has over 1.12 million households served by private wells, more than any other state. In addition to its regulatory activities, the DEQ investigates drinking water well contamination, and oversees remedial activities at sites of groundwater contamination affecting drinking water wells.

Information concerning water systems in Michigan is maintained by the MIDEQ, and can be found on the EPA's *Safe Drinking Water Information Site*. The records at this site go back to 1993. For violations prior to 1993, interested parties may contact the operators of the water system in question, contact the State of Michigan, or file a Freedom of Information Act (FOIA) request.

### **Drinking Water Quality in the Grand Lake Watershed**

Water quality data for the Grand Lake Watershed was analyzed and is briefly summarized below. Although many of the wells listed in the summary are actually located outside the watershed, data from these sites were included to provide an overview of the regions public water supply.

The EPA divides drinking water wells into four classes:

#### Private Wells

If drinking water comes from a private well, the owner is responsible for the water's safety. The EPA rules do not apply to private wells, but the agency *recommends* that well owners have their water tested annually. For a list of certified commercial laboratories that test drinking water contact the State Certification Officer at:

Department of Environmental Quality  
3423 N. Martin Luther King B  
P.O. Box 30195  
Lansing, MI 48909  
(517) 335-8812

The majority of residents in the Grand Lake Watershed receive their water from private wells. All of these wells receive their water supply from ground water aquifers.

#### Community Water Systems

Community water systems serve the population year-round, such as in private residences or businesses. There is only one community water system active in the Grand Lake Watershed, the Presque Isle Harbor Water Company in Presque Isle Township. This water system is, as with all of the community water systems in the watershed, supplied by groundwater. The Presque Isle Harbor Water Company supplies drinking water for 488 people, and has had no significant monitoring, reporting or health-based violations.

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### Non-Transient Non-Community Water Systems

Non-transient water systems serve the same population, but not year-round (for example, schools that have their own water system). There are four such water systems located in the watershed, serving a combined population of 230. None of the non-transient, non-community water systems in the watershed have received health violation notices within the last ten years.

### Transient Non-Community Water Systems

Transient non-community water systems are systems that do not consistently serve the same population. Rest stops, campgrounds, gas stations, motels and convenience type stores not hooked into a community water supply would be included in this category. Most of the wells in the watershed that are not considered private wells fall into this group. Twenty-three such wells are found in the watershed, and all are supplied by ground water. Thousands of people use water from the transient non-community water systems of the watershed region each year. Four of these water systems were cited within the last ten years for the presence of coli form bacteria; two systems were cited two or more times during this period, for a total of eight violations. In all instances, compliance to the Safe Drinking Water Act was achieved in a timely manner.