

WATER QUALITY EVALUATION OF WILLOW LAKE WITH MANAGEMENT PLANNING & LAKE IMPROVEMENT RECOMMENDATIONS IN KALAMAZOO, MICHIGAN

Contact: **Mr. Richard Donovan**
 Parkview Hills Community Association
 3217 Greenleaf Blvd.
 Kalamazoo, MI 49008

Project Costs: **\$23,000**

Project Completion: **2000**

The Parkview Hills Community Association (PHCA) authorized KIESER & ASSOCIATES (K&A) to initiate a one-year study of the waterways within the Parkview Hills community, with particular emphasis on Willow Lake. Parkview Hills is located in Kalamazoo, Michigan. Several lakes are in close proximity to this community. A generalized watershed evaluation was undertaken by K&A to evaluate current water quality conditions and investigate potential upstream influences to Willow Lake, the community's centerpiece, as well as possible impacts to downstream waterways.

The study consisted of the following components:

- Seasonal collection of water quality samples from Willow Lake
- Selected sampling of other PHCA area lakes
- Sediment sampling of Willow Lake and thickness mapping
- Pollutant loading estimates for the PHCA lakes
- Evaluation of stormwater issues and management options
- Management plan recommendations for the PHCA area as they relate to water quality
- Recommendations for improving aesthetic qualities of the Cherry Creek/Willow Lake system

K&A efforts largely concentrated on Willow Lake given its prominence within the Parkview Hills Community, and the association's desire to maintain its aesthetic qualities as an open body of water. Water quality and aesthetic concerns had been expressed with regards to sediment accumulations in Willow Lake, aquatic plant growths, nuisance water fowl populations, and impacts of stormwater inputs from PHCA drains and upstream areas. Significant project findings relevant to Parkview Hills Community Association's interests in Willow Lake and Cherry Creek include the following:

- Good water quality was noted in the lake based on seasonal sampling. Cherry Creek appeared to be impacted by street runoff, however, pollutants appear to be largely retained in this section of the system and not transported to Willow Lake.
- Storm water inputs to Willow Lake were minimal based on a single wet weather event. Current storm water management practices appear to be effective. Measures could be taken to optimize those structural BMPs currently in place with enhanced maintenance and tracking.
- Willow Lake and Cherry Creek are largely isolated from upstream lake systems. While they are part of a larger lake system, during periods of low water levels, they contributed minimally to the Parkview Hills waters.
- Outflow from Willow Lake is exceeding the 50 gallons per minute requirement to maintain a minimum flow at the Willow Lake outlet. Flows measured in the seasonal sampling events greatly exceeded this requirement.
- As evidenced by low TSS and phosphorus levels in the lake, the BMPs currently utilized by the Parkview Hills Community are effective and should be continued.
- Shallow water depths, not nutrient enrichment, are the probable cause of excessive aquatic plant growth in Willow Lake. Average water depth is approximately 3.5 feet, therefore in-lake management options would be the best approach to improve aesthetics in Willow Lake.

Based on these findings, K&A suggested the association focus on in-lake controls to manage aquatic vegetation. Additional improvements could be seen by the decrease or elimination of closely mown grass areas on the Willow Creek shoreline and stabilization of eroding trail systems along lakeshore areas. K&A suggests the creation or update of a Willow Lake maintenance program to guide these efforts.