SEWERS FOR LAKE COMMUNITIES:
What are the Needs, Benefits, Dangers, Organizational Requirements, and Costs?
THE DIAMOND LAKE EXPERIENCE

By William Hokanson

As lakeside population density increases and more summer cottages are converted to year-round homes, the need to protect both lake water quality and vital ground water supplies by replacing septic systems with sanitary sewers is growing, especially in southern Michigan.

Usually, the impetus for sewer installation comes from anticipated or observed declining lake water quality and increased plant growth that adversely affects recreational use, such as swimming, fishing, and boating. Another is the high cost and difficulty of replacing failing septic systems with those that meet current health standards. A less obvious but perhaps more critical need in much of southern Michigan is to protect the abundant but vulnerable ground water supply from contamination by nitrates and phosphates.

Geological studies show that a large portion of southern Michigan has a ground water table as shallow as five feet and usually not more than 100 feet below the surface. This water supply is largely unprotected by any layers of clay or other impervious material. While septic systems are generally effective for reducing bacterial contamination, they flush out such minerals as phosphorus and nitrates which eventually can damage both surface water and ground water. Once ground water is contaminated, it is practically impossible to remedy. Thus, preserving and protecting the purity of ground water is one of the most important benefits of a sanitary sewer.

Lake Water Quality Improves

Improved lake water quality is usually the chief expected benefit from sewer installation and often readily documented. Gull Lake, northeast of Kalamazoo, saw a dramatic improvement in water quality after a sewer was finally installed in 1984-1985. After serious deterioration was first identified by Michigan State’s Kellogg Biological Station, which is located there, and 10 years after a study showed that much of the problem was caused by excessive phosphate loading, two-thirds of which came from septic systems. Within a few years of sewer completion, data collected by the research station showed that the deterioration process was reversing. Water clarity more than doubled during summer months, phosphorus concentrations dropped below detectable levels, and rates of oxygen depletion in deep waters greatly decreased. Summer blooms of blue-green algae vanished. Gull Lake regained a diversity of small algae which support zooplankton, which in turn support a diverse and growing fish population. (A recent increase in algae and resulting decline in clarity has been laid to changes in the fish population. Smelt have been eating the fleas [daphnia] that had been eating the algae, according to the Gull Lake Quality Organization’s newsletter.)

Diamond Lake near Cassopolis completed sewer installation and hook-ups by the end of 1992 and is already showing significant improvement in water clarity. For example, a Secchi disc reading of 24 feet was taken in June of this year, while the best reading obtained in June of 1991, before the sewer was completed, was only nine feet, reported Susan Loux, president of the Diamond Lake Association.

Property Values Increase

Real estate professionals report that sewers increase property values and that many buyers of lakeside property prefer lakes that have sewers installed, despite the generally higher prices.

While sewers bring improved water quality and enhanced property values, they usually take a great deal of time and organizational effort to bring about, as the experience of Diamond Lake, recounted below, shows. And aside from the obvious costs, lake communities must be aware of the fact that sewer installation frequently makes many previously unbuildable lots buildable and brings increased pressure for rezoning, particularly for high density residential housing.

Development Pressure Builds

Shortly after construction began on a sewer for Klinger Lake, White Pigeon Township, and the Village of White Pigeon in 1978, there were three different rezoning requests by developers to permit construction of apartments and condominiums. As one Klinger Lake resident wrote at the time, “Ironically, it seems that the sewer system which was to help preserve our lake may turn out to be its undoing – by making high density housing possible! If we fail to stop this type of development now, it may be impossible to prevent its proliferation along other parts of lake property later.” Klinger Lake residents did succeed in opposing the zoning changes by appearing at public hearings and by circulating petitions.

Inter-governmental Cooperation Needed

The need for strong zoning to prevent undesirable development in the wake of sewer construction, was emphasized by John Gore, Township Supervisor of Penn Township, Cass County, which contains about half of the 900 residences served by the recently completed sewer around Diamond Lake. Gore also emphasized the need for inter-governmental cooperation in describing the 18-year history of the effort to build the sewer, which was completed in October, 1991.

Gore, who has been involved in township government for many years and has been Penn Township Supervisor for the past 11 years, explained that the need for a sewer at Diamond Lake was identified by a group of environmentally concerned property owners in the mid-1970s. A citizens’ group joined forces with the Cass County Department of Public Works to secure grant money for environmental and engineering studies. An engineering plan was developed by 1978. But various efforts to secure funding over the next ten
years failed, partly because of the difficulty of obtaining consensus among the several governmental units involved, Gore said.

He noted that under Michigan law, Township Boards have the authority to direct sewer construction and to establish special assessment districts to pay for them. "But," he said, "boards usually do this only if most people want a sewer built." This can be determined via the petition process, or by the township polling the people to be served, he noted.

**Area Utility Authority Established**

In 1989, a new organizational approach to the Diamond Lake situation was suggested by Karl S. Tomlin, then City Manager of Dowagiac, which also involved helping the village of Cassopolis solve problems it was having with its lagoon treatment system. (Sewers had been installed in the village in 1937.) Tomlin's proposal evolved into the Cassopolis Area Utility Authority, which led the project and developed the plans for financing, owning, and operating the sewer system. Under this plan, the Authority serves about 900 residences at Diamond Lake, located in four different townships.

Surprisingly, the 83 residences on the island in Diamond Lake opposed being part of the sewer district early in the process and continued to resist action in the plan. Their argument was that they are seasonal use," Gore explained. "Since the ferry ceases operation in November and does not resume until spring, there are no year-round residences on the island; that to protect lake water quality, the island needs to have sewer service," Gore said, "and the islanders would benefit the most from it."

**Dowagiac Treatment Plant Used**

The sewage from both Diamond Lake and Cassopolis is piped about nine miles to Dowagiac, where it is processed in a three-stage treatment plant owned and operated by the City of Dowagiac. The Dowagiac plant was built with extra capacity and substantial state funding with the idea that it could serve as a regional processing center.

The Cassopolis Area Utility Authority owns the sewer system built to serve Diamond Lake and purchased half the capacity of the nine-mile interceptor line to Dowagiac from the village of Cassopolis. It pays Dowagiac for treating sewage at the same rate charged Dowagiac residents.

The Cassopolis Area Utility Authority is governed by a seven-member board which represents four townships and the village of Cassopolis, in proportion to the benefits that each derives from the sewer. The village of Cassopolis and Penn Township each appoint two members to the board, while Calvin, Jefferson, and LeGrange townships each appoint one member.

The four townships adopted identical ordinances to govern sewer use, including mandatory hook-up and enforcement. They also agreed to assume the debt for construction costs within their portions of the sewer district and to retire the debt via special assessments upon the property owners within the district and served by it. Cass County pledged its full faith and credit to secure the financing, which involved a 20-year $5.25 million loan at 2% from a revolving fund of the Michigan DNR and a $50,000 conventional municipal bond at 7.24%. Construction of the Diamond Lake sewer was begun in October, 1990, and completed a year later. Individual property connections were made over the next year or so.

The Authority contracted with the Village of Cassopolis to operate the interceptor line to Dowagiac, to operate and maintain the Diamond Lake portion of the system, and to bill property owners monthly for the sewer service. The construction financing charges are billed annually by the townships with property tax statements.

**One-time and Continuing Costs**

Currently, service charges at Diamond Lake are $17 a month or $208 a year. Initial hook-up fees were $4,600. In addition, property owners were assessed $10 per foot up to a maximum of 250 feet ($2,500) according to street frontage of their property adjacent to the sewer line. A lot of 75 feet street frontage was assessed $750, bringing the total one-time charge to $5,350, which most property owners are paying off over 20 years. The state financing requires that the principle be paid off in 20 equal installments plus 5.4% interest on the unpaid balance. Thus, the 75-foot property's initial annual payment would be about $440 and the last would be about $267. (Property owners also had to bear the cost of running piping from their houses to the sewer connection point.)

Supervisor Gore was proud to note that the Diamond Lake sewer project is now operating successfully and was built within the cost projections made at the outset.

The recently completed sewer at Barzon Lake near Nikolaus has a monthly service charge of $19.90, a hook-up charge of $4,500, and a street frontage assessment of $20 a foot up to a 50 feet maximum. The project was financed by Cass County bonds sold in June, 1994, at 5.83%.

Cost estimates for sewer projects currently being considered at Donnell Lake and Eagle Lake, both in Cass County, have comparable footage assessments and monthly service fees, but connection fees are in the range of $6,000 to $6,500, according to Tom Deneau, project engineer of Wightman & Associates of Benton Harbor, an engineering firm that has designed all of the lake sewers built recently in Cass County. John Gore, Penn Township Supervisor, expects bonds for the Donnell Lake project to be sold at between 6 and 6.5%. He explained that federal and state funds are still theoretically available for lake sewer projects, but that so many other projects have high priorities that in practice, municipal bonds must be used to fund them.

Installing a sewer around a lake will improve lake water quality, protect vital ground water sources, and enhance property values. However, it brings the possibility of increased development and potential higher density use. Based on current estimates, sewer service will cost the typical property owner about $240 a year, which covers treatment and ongoing maintenance and operation of the system. Connection fees used to defray the cost of construction will vary depending on local factors, but are now in the range of $6,500, usually payable over 20 years at an annual cost with interest of roughly $700 a year for the first year to about $325 in the twentieth year. Engineering and constructing a system are usually easier to accomplish than gaining the political consensus and cooperation necessary to undertake the project and finding or creating an organization to operate and maintain the system over the long term.

William Hokanson is President of the Carey Lake Association, Chairman of the Fabius Township Zoning Board, and a Director of The Michigan Riparian.