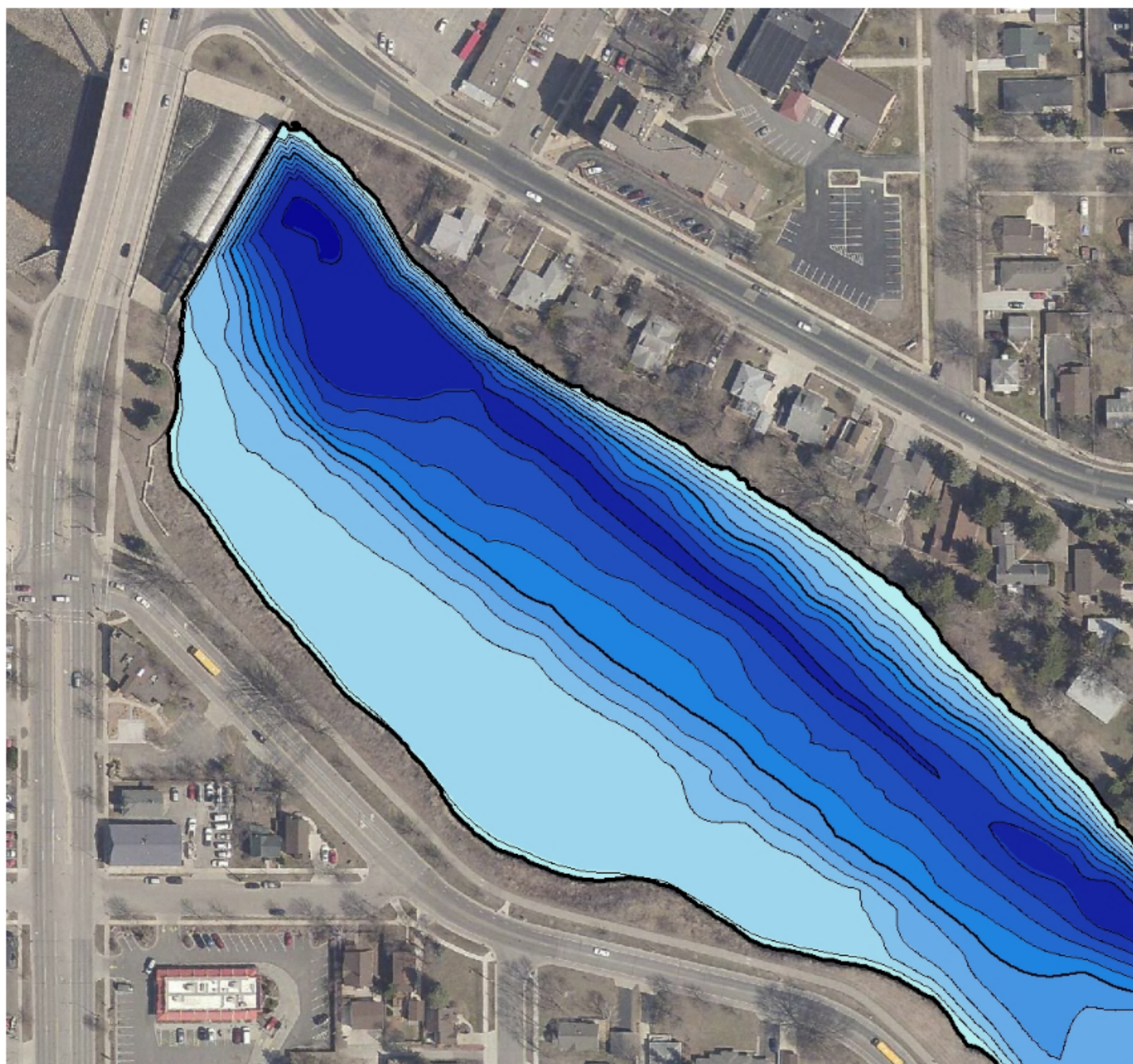


Rochester MN, Sediment Mapping

The growing monster at the bottom of Silver Lake

July 5th, 1978 was a day to remember in Rochester, Minnesota. About six inches of rain fell in just six hours, flooding the streets and homes of the city. Five deaths were connected with the flooding as well as \$60 million in damage to homes, buildings and infrastructure.

Following the flood, and in response to other severe floods in previous years, the City worked with the US Army Corps of Engineers to design and build an elaborate flood control system. In the years since, the system has done a remarkable job of protecting Rochester. City officials estimate that, without the controls in place, there would have been four significant and damaging flood events since 2000 alone.



Sediment deposits in excess of 5 feet deep were observed in some areas of the Silver Lake Reservoir.

The flood control system includes a series of lakes that serve as containment reservoirs, holding the storm water until it can dissipate slowly into the natural drainage system. Over the years, though, sediment has accumulated on the lake bottoms, reducing their volume. City officials wanted to know how quickly the sediment is accumulating and how soon dredging would have to be done to ensure the lakes' holding capacity.

WHKS undertook the bathymetric survey to map the lake bottom. It required specialized, multi-frequency sonar equipment that would locate both the original lakebed and the layer of sediment that has formed on top of it. After extensive research to locate the right equipment, the firm developed specialized tools to mount the equipment on boats and designed custom software to collect and process the data.

This combination allowed the surveyors to record both the top and bottom of the sediment layer and calculate how deep it had become. In some locations, the sonar data was verified with drilled core samples. With this baseline data now in hand, the lake bottoms can be monitored every few years and maintenance decisions made based on how quickly the sediment is accumulating.

Silver Lake, which is an integral part of the flood control system, is located in downtown Rochester and a popular recreational facility. The survey discovered that the lake is essentially full of sediment with a layer that varies from two feet to as much as seven feet deep. A dredging project to restore it to as new condition is now in the planning stages.



WHKS personnel conducted periodic sediment measurements using a variety of instruments.