

## 16. NEW ELECTRIC WEIR AND PUMPING STATION

As part of the construction of Winona's permanent flood dike, a permanent pumping station was completed in 1984 in County Ditch No. 4 adjacent to Winona's Waste Water Treatment Plant at Shive Road. The new station replaces the temporary pumps and flood gates which were located at Mankato Avenue. In the past, the flood gates at Mankato Avenue were closed whenever river level equaled or exceeded the level of Lake Winona. The new gates and pumping station make it possible to maintain continuous outflow from Lake Winona. During flood time, lake water flows outward through the Mankato Avenue culverts into County Ditch No. 4 and runs about a half mile to the new station where it is pumped over flood gates into the Mississippi River. The station operates whenever river level exceeds lake level.

As part of the flood control project, the culverts at Mankato Avenue were rebuilt. This necessitated replacing the old electric weir which prevented ingress of river fish. The new electric weir was constructed under the supervision of the U.S. Army Corps of Engineers. Stanley Peterson, Sea Lamprey Control Program, U.S. Fish and Wildlife Service, provided technical expertise on the design of the electrical system and made recommendations on the configuration of the outlet.

The new system consists of two independently operating systems which are electrically efficient and isolated for safety. Red indicator lights, visible from Mankato Avenue, show that the system is functioning properly. Electrodes are made of stainless steel tubing to provide minimal projections for the collection of debris. A rectangular electrode configuration functions equally well at low-flows to culvert-full flows. Enlarged culverts and manholes make inspection easier and safer. Gates prevent stunned fish from entering the lake during back-flow conditions. In addition, the gates allow one unit to be operated independently of the other, concentrating flow and saving electricity. Safety grills cover both ends of the culverts to prevent access. The weir which controls the lake level has been moved to the downstream end of the culvert so the electrical barrier will be partially submerged at all times. A prototype of the system was tested in September, 1983 and the completed system was installed in 1984. Design sheets of the new weir can be seen at the City Engineer's office.