Introduction

Staff of the Biology Section, Michigan Department of Natural Resources (MDNR) spot-checked the benthic macroinvertebrates in the Muskegon River in the vicinity of the Big Rapids Wastewater Treatment Plant (WWTP) on September 21, 1982 (Figure 1). This survey was requested by District Four Water Quality personnel in response to past citizen complaints of minor algal problems in the river and the downstream Rogers Pond impoundment. This survey was limited to one station located 200 m downstream of the Big Rapids WWTP.

Conclusion

The Big Rapids WWTP had no visible effect on the Muskegon River based on stream observations and the abundant and diverse benthic macroinvertebrate community found below the WWTP.

Methods

Benthic macroinvertebrates were sampled 200 m downstream of the Big Rapids WWTP using a long-handled triangular dip net and handpicking the available substrates until no new organisms were found. Organisms were identified in the field and stream observations were made.

Results and Discussion

The Muskegon River was 80 to 90 m wide, averaged 0.5 m deep and had a velocity of approximately 0.6 m/s in the urban residential area sampled (two blocks south of Oak Street). Because of its width, the stream was mostly open but the stream banks were lined with deciduous trees, grasses and brush. The water temperature was 13°C.

The substrate was estimated to be 20% boulders, 30% rubble, 40% gravel and 10% sand. Periphyton was abundant on the rocks but filamentous algae were sparse as were macrophytes.

The benthic macroinvertebrate community was diverse and abundant and dominated by scuds, stoneflies (two species), heptageniid and baetid (including Isonychia)
mayflies and hydropsychid caddisflies. Sponges, flatworms, crayfish, limpets, adult veliids and gyrinids and larval and adult elmid beetles were found in moderate numbers. This type of community is normally found in high quality coldwater streams and reflects the excellent quality of the Muskegon River downstream of the Big Rapids WWTP.

Survey By: Dr. Elwin D. Evans, Aquatic Biologist
David Kenaga, Aquatic Biologist

Report By: David Kenaga, Aquatic Biologist
Biology Section
Water Quality Division
Michigan Department of Natural Resources
Figure 1. Sampling location in the Muskegon River, Big Rapids, Mecosta County, September 21, 1982.