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Improving Water Quality In Monroe County

A Newsletter of
MONROE COUNTY DEPARTMENT OF HEALTH and the U.S. GEOLOGICAL SURVEY

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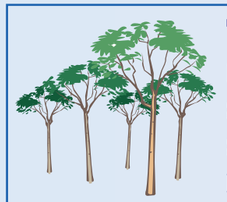
25 YEARS OF COOPERATIVE SCIENCE

More than 25 years of cooperation between Monroe County and the U.S. Geological Survey–a look back

The Monroe County Department of Health and the U.S. Geological Survey (USGS) have benefited from more than 25 years of cooperative environmental monitoring and scientific studies to improve the quality of the water-resources in Monroe County. This cooperative program has been funded jointly over the years by Monroe County and the USGS through the USGS's Cooperative Water Program. This cooperative program allows the USGS to contribute as much as 50 percent of funds to undertake water-resource-related projects with a cooperating agency.

This 25-year scientific relationship is an example of how local and federal governments can accomplish work together to meet the needs of each other's programs. The cooperative efforts between the Monroe County Department of Health's Environmental Health Laboratory (MCEHL) and the USGS started in 1978 with the establishment of a streamflow gage at Browncroft Boulevard. The purpose was to obtain discharge and water-quality data (temperature and specific conductance) of Irondequoit Creek to characterize the quality of water entering Irondequoit Bay.



The history of the 25-year scientific relationship is an example of how local and federal governments can accomplish work together to meet the needs of each other's programs.

In the late 1970's, the MCEHL and USGS conducted a study to evaluate the chemical quality of urban runoff entering Irondequoit Creek as part of the U.S. Environmental Protection Agency's National Urban Runoff Program (NURP). This study was one of about 30 such studies in major cities across the United States and the purpose was to assess changes in loading of stormwater contaminants entering Irondequoit Bay after discharges from 12 wastewater-treatment plants within the basin were diverted to the Van Lare regional wastewater-treatment facility on Lake Ontario. Results indicated the need for continuous water-quality and streamflow monitoring in the Irondequoit Creek basin despite the diversion of sewage out of the basin. Consequently, operation of several NURP streamflow gages were continued, and the cooperative water-quality monitoring program between the USGS and MCEHL was established in 1978.

The water-quality monitoring program soon was expanded to assess the effects of several stormwater-detention basins on water quality downstream. These types of basins were required in new housing developments in New York State after the early 1970's to help mitigate the effects of increased runoff on the hydrology and water quality of streams draining the developments. County officials realized the potential dual role of mitigating downstream flooding problems by attenuating streamflow during storms and improving the water-quality of the stream. The effects of detention basins on storm-water quality were assessed through studies of the changes in water-quality constituents such as sediment and

nutrients in the outflow from detention basins constructed at several housing developments. These studies led to an additional cooperative project in which the chemical quality of storm runoff was simulated through advanced modeling techniques.

The diversion of sewage out of the Irondequoit Creek basin was followed by a new focus on the effects of nutrients from upstream sources on the water quality of Irondequoit Bay. A major conclusion of the NURP project was that the predominantly cattail wetlands at the upper (south) end of the bay might be able to remove much of the nutrient load carried by stormwater into the bay. A monitoring site was established at Empire Boulevard to provide data on the wetland's effect on the chemical quality of Irondequoit Creek, especially the concentration of nutrients entering Irondequoit Bay.

The diversion project entailed rerouting water through a diversion channel on the main branch of Irondequoit Creek just downstream from Blossom Road (in Ellison Park) through additional areas of the wetland to allow natural wetland processes to remove more nutrients and thereby decreasing the load to Irondequoit Bay. Permits were obtained for installation of a weir to increase inundation of the upper wetland unit after storms. Detailed monitoring was done to document loads before and after the structure was established to assess its efficiency. Pre-installation monitoring began in the early 1990's and continued into 1997 when Federal and State permits were granted, and the weir was installed. Post-installtion monitoring is continuing.

In the mid 1990's, Monroe County and the Town of Pittsford, in cooperation with the USGS, modeled flow of a tributary of Allen Creek that was subject to extreme flooding. This effort culminated in the installation of the Jefferson Road regional flood control facility, which has successfully prevented flooding in downstream areas of the Irondequiot Creek basin.

In 1989 the USGS and Monroe County began monitoring Northrup Creek for phosphorus loading to Long Pond on Lake Ontario. A small municipal waste-water-treatment plant that discharges to the stream underwent installation of equipment for tertiary treatment by the Monroe County Department of Environmental Services; the result was a significant reduction in phosphorus loading from the plant. More recently, the USGS has expanded the role of the streamflow monitoring stations run cooperatively with the U.S. Army Corps of Engineers by working with Monroe Coiunty to add water-quality-monitoring equipment at these stations. These efforts have allowed characterization of three of the larger tributaries to the Genesee River in Monroe County (Oatka, Black, and Honeoye Creeks) and have provided information on sources of nutrients flowing into the Rochester Embayment of Lake Ontario, one of the 42 "Areas of Concern" identified for remedial action by the International Joint Commission.

In 1999, the MCEHL, the USGS, and several of the County's towns that constitute the Irondequoit Creek Watershed Collaborative joined in a cooperative program for the development of a rainfall-runoff computer model of the basin by the USGS. The model will be used to (1) assess the effects of changes in land use and (2) determine the effectiveness of detention basins in mitigating flooding and improving water quality. This project is nearing completion.

More than 30 publications related to Monroe County's water-resources have been completed since the beginning of the MCEHL--USGS cooperative program in Monroe County. A complete USGS/Monroe County bibliography can be viewed at the New York USGS web site (http://ny.usgs.gov). All Monroe County data collected with funding from the cooperative program are published in the USGS annual water-data report - "Water Resources of New York - Volume 3, Western New York" and are also avaiable online through the USGS New York District website (http://ny.usgs.gov).

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