

Prepared in cooperation with the
Monroe County Departments of Health and Environmental Services

Water Resources of Monroe County, New York, 1979 to present

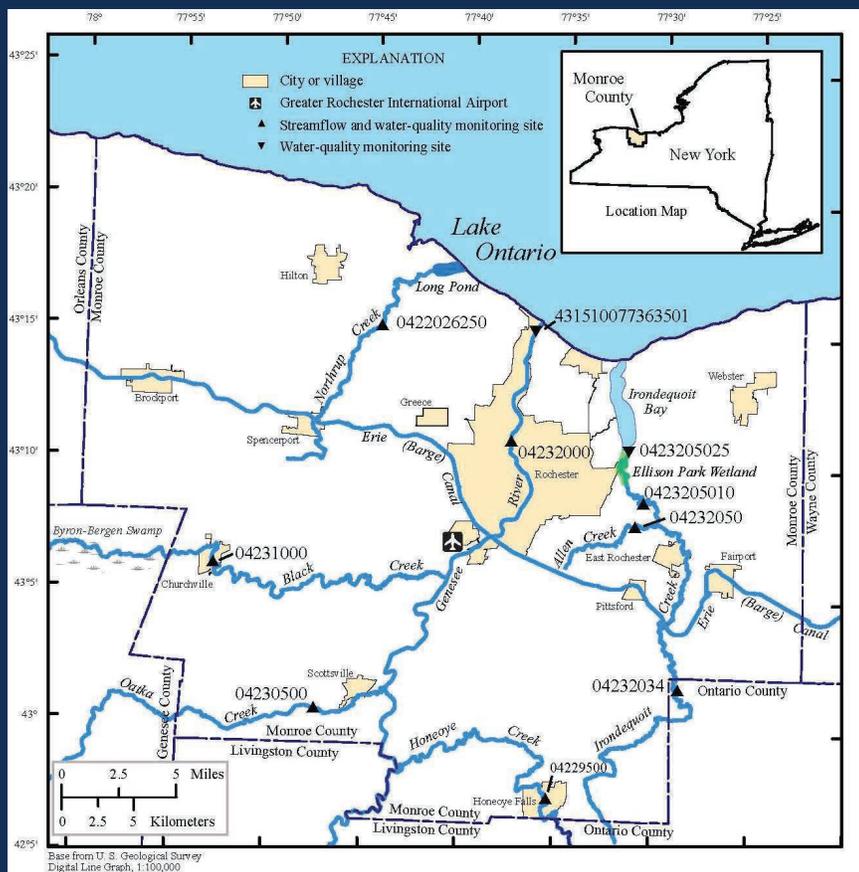
Ongoing collaboration between the U.S. Geological Survey and Monroe County has led to decades of productive and meaningful work, which has permitted water-resources managers in Monroe County to make scientifically-informed decisions to solve, alleviate, and prevent many water-related problems that afflict expanding urban communities throughout the United States.

In 1979, the U.S. Geological Survey (USGS) entered into a cooperative agreement with Monroe County (MC), which, over the span of more than three decades, has resulted in more than 30 reports that have summarized flow and water-quality data at sites in Monroe County and have presented the results of investigations of particular water-related issues that existed in the County.

The collaborative relationship between Monroe County and the USGS entails:

- USGS training and oversight of MC personnel to conduct site visits and measure streamflow and collect water samples at monitoring sites;
- analyses of water samples by MC in a certified environmental laboratory that routinely participates in a USGS quality-control program for analytical laboratories that provide results to the USGS;
- analyses and interpretation of flow and water-quality data and inclusion of these data in the USGS National Water Information System; and
- periodic short-term studies by the USGS to address specific problems in the County.

Locations of streamflow and water-quality monitoring sites in Monroe County, New York, 2014



Long-term Monitoring of Flow and Water Quality

The core of the U.S. Geological Survey (USGS) and Monroe County (MC) cooperative agreement has been the operation and maintenance of streamflow and water-quality monitoring stations on the Genesee River, Irondequoit Creek and its tributaries, and Northrup Creek. In addition, water-quality data have been collected on tributaries of the Genesee River, including Honeoye Creek, Oatka Creek, and Black Creek. Prior to 2003, the monitoring program included measurement of precipitation quantities and groundwater levels and analyses of atmospheric deposition and groundwater samples for selected constituents. The number and location of monitoring sites have changed over the years as data needs and funding levels have varied. The collected data are periodically assessed to identify sources of contamination, estimate the annual loads of selected constituents, detect trends in concentrations of these constituents, and assess the effectiveness of resource-management practices. These assessments have been published in a series of reports, titled "Water Resources of Monroe County" for the following years:

1984-88 <http://pubs.usgs.gov/of/1993/0370/report.pdf>
and <http://pubs.usgs.gov/wri/1996/4054/report.pdf>
1989-93 <http://pubs.usgs.gov/of/1997/0587/report.pdf>
and <http://pubs.usgs.gov/wri/1999/4084/report.pdf>
1994-96 <http://pubs.er.usgs.gov/publication/wri004201>
1997-99 <http://pubs.er.usgs.gov/publication/wri024221>
2000-02 <http://pubs.er.usgs.gov/publication/sir20055107>
2003-08 <http://pubs.usgs.gov/sir/2010/5216/>

Long-term trends in loads of selected constituents were assessed for 1984-2001 (<http://pubs.er.usgs.gov/publication/wri034197>).

Investigations of Water Issues in Monroe County

A second and equally important component of the USGS-MC cooperative agreement has been the identification and study of specific water-related issues or problems in the County. The first of these investigations was the inclusion of the Irondequoit Creek basin in the Nationwide Urban Runoff Program (NURP) during the early 1980s (<http://pubs.er.usgs.gov/publication/wri854113>). The data collected during this study documented the loads of selected constituents that were generated from different land types and created support for the continuation of the streamflow and water-quality network that had been established for the study. The NURP study identified gaps in data and in the understanding of hydrogeological processes in the County and raised additional questions that were addressed by subsequent studies. Below are summaries of some of these investigations.

A study of the geohydrology of the Irondequoit Creek basin in 1982-83 (<http://pubs.usgs.gov/wri/1984/4259/>) was expanded to include the glacial history of the valley in a subsequent 1985-86 study (<http://pubs.usgs.gov/wri/1988/4145/report.pdf>).

The effects of road-deicing salts on the mixing patterns and stratification characteristics of Irondequoit Bay were documented in 1984-85 (<http://pubs.usgs.gov/wri/1987/4223/report.pdf>).

Several studies were conducted to assess the effects that storm-water detention basins would have on peak flows and the chemical quality of runoff. The studies included the assessment of potential flow-attenuation sites (<http://pubs.usgs.gov/wri/1988/4106/report.pdf>) and existing stormwater-detention basins with different designs and purposes (<http://pubs.usgs.gov/wri/1992/4003/report.pdf>, <http://pubs.usgs.gov/wri/1995/4157ny/report.pdf>, <http://ny.usgs.gov/pubs/wri/wri014099/> and <http://ny.water.usgs.gov/pubs/wri/wri034301/>).

Ellison Park Wetland



Other projects assessed a constructed wetland system for treatment of landfill leachate (<http://pubs.er.usgs.gov/publication/70074427>);

evaluated hydrologic evidence for climate change using long-term flow records from Monroe County streamgages (<http://pubs.usgs.gov/of/2008/1199/>); and

identified water-quality improvements in Northrup Creek and its receiving waterbody, Long Pond, as a result of reductions in phosphorus loads from the Spencerport wastewater-treatment plant (<http://pubs.er.usgs.gov/publication/fs12899>).

Hydraulic, hydrologic, and water-quality computer models often were developed as parts of the above-mentioned projects, especially those concerned with assessing the effects of detention basins on flows and water quality. A precipitation-runoff model of the Irondequoit Creek basin was created as a decision-making tool for water-resources managers. The model simulated hydrologic and water-quality processes in the basin and enabled assessment of the effects of current land uses, changes in land uses, and flow-detention basins on flooding and nonpoint-source pollution (<http://pubs.water.usgs.gov/sir2005-5070/>).

Flow-control structure on the Genesee River downstream from the Interstate 490 suspension bridge in Rochester



An 11-year study of the Ellison Park wetland at the mouth of Irondequoit Creek documented the beneficial effects that the cattail wetland had on water entering Irondequoit Bay by attenuating peak flows and facilitating a decrease in loads of particulate constituents, that is, sediment and phosphorus, through sedimentation. (<http://pubs.usgs.gov/wri/1996/4269/report.pdf> and <http://ny.water.usgs.gov/pubs/wri/wri004032/>).

A second phase of the project identified the additional benefits that could be realized by a flow-control structure that was installed at a natural constriction half-way through the wetland. This structure caused greater dispersal and longer detention of storm flows than was previously possible and increased the removal of sediment and phosphorus (<http://ny.water.usgs.gov/pubs/wri/wri034224/>).

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