

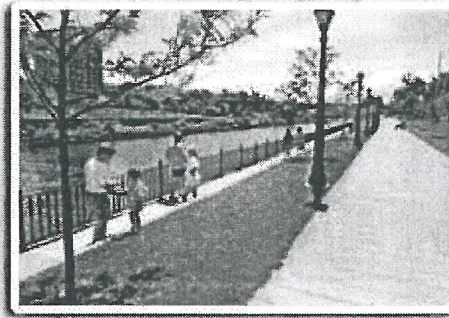
# Frequently Asked Questions

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[Current Water Levels](#) | [Rule Curves](#) | [Water Management](#) | [Baker Study](#)

## OSWEGO RIVER BASIN STUDY - EXECUTIVE SUMMARY



- Purpose of the Study
- Scope
- Background
- Operating Procedures
- Climate Assessment
- Land Use
- Conclusions
- Recommendations

### 1.0 Purpose of the Study

The New York State Thruway Authority (NYSTA) contracted with Baker Engineering NY to conduct an independent operational audit of the watershed management policies, procedures, and implementation practices of the New York State Canal Corporation (NYSCC), a subsidiary of NYSTA, within the Oswego River Basin. Emphasis was placed on the assessment of the Finger Lakes (Seneca, Cayuga, and Oneida) that the NYSCC controls, the lake outlets, and canals.

### 2.0 Scope

The effectiveness of NYSCC operating procedures was determined through various methods, including:

- Examining agency records and conducting interviews with representatives from those that manage the lakes and canals within the system;
- Reviewing documents prepared by other organizations and groups involved in watershed management activities;
- Interviewing other related representatives from agencies such as the New York State Department of Environmental Conservation (NYSDEC), the U.S. Army Corps of Engineers (USACE), and the New York State Department of Health;
- Attending two public meetings held to discuss basin water levels and canal operations with local residents, the business community, local municipal agencies, and State and Federal officials; and,
- Site visits to the basin.

### 3.0 Background

The NYSCC is responsible for the operation of locks and other water control structures, the maintenance of canals within the Oswego River Basin, including Seneca Lake, Cayuga Lake, and Oneida Lake. On August 3, 1992, State legislation dictated the transfer of Canal System control from the New York State Department of Transportation to the NYSTA and created the NYSCC to manage these functions.

The NYSCC operates four canals, three of which impact the Oswego River Basin: Erie; and Cayuga-Seneca. Five of the 22 locks within the basin are considered major water points because of their effect on the water levels in the upstream channel and lakes. Fixed and/or movable dams control the upstream water levels at each of these locks.

The water levels of the basin and rivers influence the levels maintained in the canals. Canal water levels for the basin are also determined based on the various water uses, including:

- water supply
- water quality
- navigation
- hydropower
- recreation
- flood mitigation
- critical habitat
- irrigation

The water demand and the amount of water available varies for each lake and through the season. Competing demands often create conflicting water level targets; therefore, managers must prioritize water use objectives and balance the remaining needs of lake users. For example, flood mitigation interests may demand lower levels and greater water storage reserve capacity, while water supply interests simultaneously demand higher water levels to provide assurance of water supplies during periods of below normal precipitation.

#### **4.0 Operating Procedures**

The interrelationship of the lakes and canals within the New York State Canal System requires that canal operators follow a series of regular procedures for monitoring water levels and taking prescribed actions to deal with natural meteorological phenomena and competing demands for water. Data on current conditions are gathered from various sources, such as lake operations, Geological Survey gage stations, weather services, and other water level observers. Water management is based on the following four steps:

- determination of the present conditions;
- evaluation of the present conditions;
- implementation of appropriate actions; and,
- communication regarding changes and monitoring of effects.

Each of these steps is repeated daily, including weekends and holidays; however, frequency increases depending on flow conditions. Hourly monitoring is performed during high water.

#### **5.0 Climate Assessment**

A climate assessment evaluated recent meteorological conditions within the Oswego River Basin. Weather conditions during years of flooding such as 1993 were of particular interest. Climate factors, such as rainfall, snowmelt, or intense winds, have a significant influence on the operation of the Canal System. The climate assessment examined the:

- annual precipitation (rain and snow) record for the previous 97 years;
- daily precipitation patterns during 1996 at six weather stations in the basin;
- annual maximum lake levels for Cayuga, Seneca, and Oneida Lakes;
- the April 1993 event; and,
- impact of wind and waves on flood conditions.

Highlights of the climate assessment are discussed below.

##### **Precipitation**

An analysis of the annual precipitation for the period 1900-1996 at the Ithaca weather station revealed that 1996 had the highest precipitation on record. Furthermore, 1992, 1993 and 1994 were among the 25 wettest years on record. High precipitation during these years correlated with high water levels in the basin.