



# ONONDAGA DAM FLOOD DAMAGE REDUCTION PROJECT



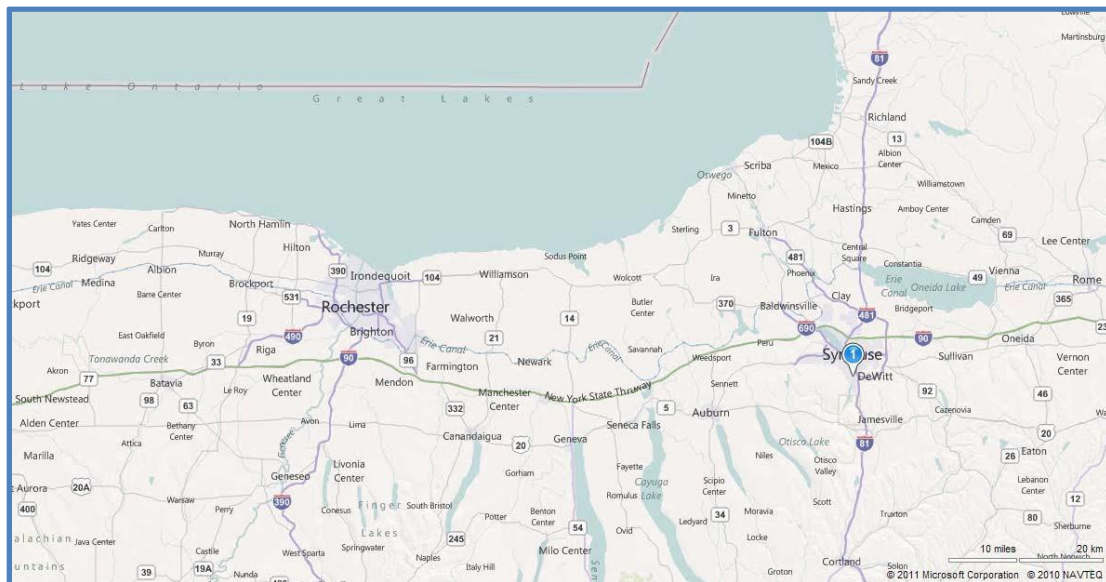
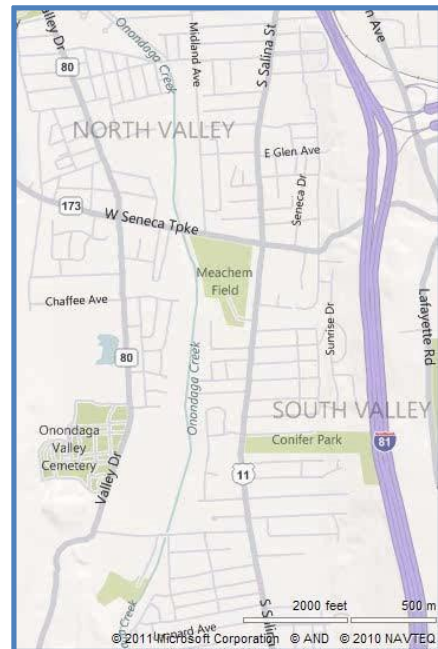
*Department of  
Environmental Conservation*

*Operated and Maintained by: New York State*

**Region 7 Counties:** Broome,  
Cayuga, Chenango, Cortland,  
Madison, **Onondaga**, Oswego,  
Tioga, Tompkins

## PROJECT LOCATION

The project is located within the Onondaga Nation,  
south of Syracuse, Onondaga County, New York State.



## PROJECT DESCRIPTION

### **Onondaga Dam**

- Embankment – Onondaga Dam is located 12 miles upstream from Onondaga Lake on Onondaga Creek, and about 4 miles south of the City of Syracuse. The dam is constructed of rolled earth embankment and is 1,782 feet long and rises 67 feet above the general valley floor. The top elevation of 526 feet provides a freeboard of 5.7 feet above the spillway design flood. The dam has a top width of 25 feet, with a 20-foot macadam roadway. The upstream face of the dam and downstream toe are armored with riprap.
- Outlet – The outlet is an uncontrolled circular concrete conduit 6.5 feet in diameter and extends through the base of the dam near the right abutment. The conduit is 329 feet long with intake and exit invert elevations of 457.00, and 456.21, respectively. This conduit is designed to discharge 1,270 c.f.s. with the reservoir at the spillway crest, elevation 504.5. Entrance and exit channels for the outlet have been provided to insure it functions at design capacity and to prevent scour at the toe of the dam. The inlet is protected by trash racks.
- Stilling basin – The stilling basin is 71 feet long with two rows of concrete baffles and is located just below the conduit outlet. It serves to dissipate the high velocities developed in the conduit which range up to 38 fps with pool at spillway crest elevation. These velocities are reduced to 8 fps in the downstream rock channel and to 4 fps by the time the water reaches the earth channel.
- Spillway – A side-channel spillway with a concrete ogee weir having a crest length of 200 feet and elevation of 504.5 feet has been built in rock in the right abutment. There are no gates or other regulating devices. The spillway is designed to pass 48,500 c.f.s. at the design surcharge of 15.8 feet. A sill 6.25 feet high and 50 feet long has been placed in the spillway exit channel, 25 feet below the weir, to stabilize flows.

**PROJECT DESCRIPTION (continued)**

**Reservoir**

Table 1 displays the Onondaga Reservoir characteristics. The entire available storage capacity of Onondaga Reservoir (5 inches of runoff at spillway crest elevation 504.5) is used for flood control. There is no provision for dead storage or a conservation pool. When streamflow is low the reservoir is dry.

Table 1 – Onondaga Reservoir Characteristics

Characteristic	Spillway Design Flood	Spillway Crest
Elevation, ft (NGVD29)	520.3	504.5
Capacity, acre-feet	38,000	18,200
Area, acres	1,640	910
Shoreline, miles	21	14
West Branch, flooded miles	4.2	2.1
South Branch, flooded miles	3.8	2.7

The highest pool level recorded during the years of operation occurred April 1<sup>st</sup>, 1960 when the pool reached elevation 485.9, 18.6 feet below the spillway crest. The 5,960 ac-ft. of water stored behind the dam for this event, was represented by 1.6 inches of runoff. Various annual peak levels for past years are shown in Table 2. These peak levels of the reservoir pool indicate that use of the uncontrolled spillway will be very rare.

With respect to flowage rights, the State of New York acquired flood easements to land that would be flooded up to elevation 504, which is the approximate elevation of the spillway crest. No flood easements were obtained for land above elevation 504. In addition, all land within the reservoir remains in private ownership.

Originally, all brush and dead trees were cleared from the reservoir area below elevation 480. Much of the brush and small trees have since re-grown.

**PROJECT DESCRIPTION (continued)**

Table 2 – Annual Peak Reservoir Pool Levels

<u>Water Year</u>	<u>Elevation (ft-NGVD29)</u>	<u>Water Year</u>	<u>Elevation (ft-NGVD29)</u>
1950	485.1	1969	467.1
1953	468.1	1970	467.3
1954	472.1	1971	468.3
1955	473.2	1972	480.4
1956	477	1973	469.1
1957	473.2	1974	469.2
1958	471.2	1975	477.7
1959	477.5	1976	475
1960	485.9	1977	472.9
1961	477.3	1978	477.4
1962	471	1979	483.8
1963	471	1982	479.6
1964	478.2	1984	475.8
1965	466.8	1993	478.8
1966	471.1	1996	481.2
1967	464.4	1998	475.8
1968	467	2021	479

**AUTHORIZATION**

Flood Control has been an important problem in Syracuse since the area was first settled. The first attempt to improve conditions was made in 1822 when the outlet of Onondaga Lake was enlarged to lower the lake several feet. Since then, no serious flooding has occurred from Onondaga Lake. Local interests have also made channel improvements in the City of Syracuse.

Several studies were performed prior to the construction of the dam. A preliminary examination report, authorized by the Flood Control Acts of April 10<sup>th</sup>, 1936 and June 22<sup>nd</sup>, 1936, was submitted by the Special Board of Officers on April 17<sup>th</sup>, 1937. It recommended that surveys be made for the purpose of determining flood control plans for Syracuse and other localities. The survey report for flood control in the Oswego River watershed was submitted by the Board of Officers on February 25<sup>th</sup>, 1939 (revised October 1936). The board recommended that a project be undertaken at Syracuse and at other localities subject to certain conditions of local cooperation.

This report was printed as House Document No. 846, 76<sup>th</sup> Congress, 3<sup>rd</sup> Session. The Flood Control Act of 1941 (Public Law 228, 77<sup>th</sup> Congress, 1<sup>st</sup> Session) authorized construction of a project to provide flood protection for the City of Syracuse, substantially in accordance with the recommendation of the Chief of Engineers in House Document No. 846.

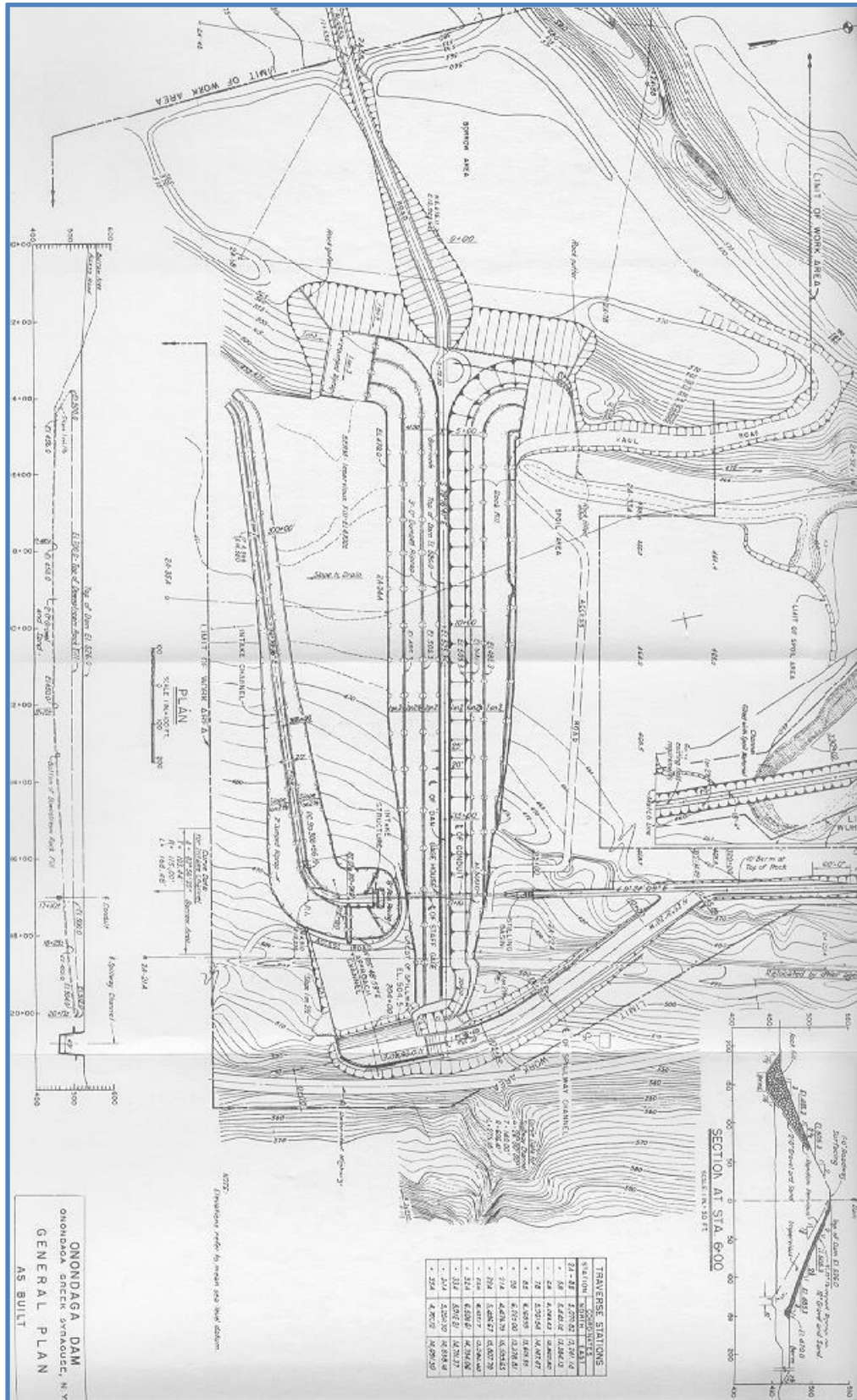
## **PROTECTION PROVIDED**

Originally, a two-reservoir plan was proposed. Subsequent investigation disclosed unfavorable foundation conditions at the two reservoir sites and they were abandoned in favor of a single reservoir site. The selected project consists of a dam and reservoir on Onondaga Creek about 4 miles south of Syracuse. The dam is located within the Onondaga Nation, about 1,700 feet below the confluence of the south and west branches, and when filled to the spillway crest would create a reservoir extending up both branches with a capacity of 18,200 acre-feet. A study performed in 2016 indicates that the dam will detain floodwaters from a .002% recurrence interval (aka "500 year") storm without activating the uncontrolled spillway.

## **CONSTRUCTION**

Construction of the dam, outlet works, and spillway began on May 5<sup>th</sup>, 1947 by contract with S. J. Groves and Son of Minneapolis, MN. Initial operation of the dam for flood control occurred in the summer or fall of 1948. The dam was completed on August 19<sup>th</sup>, 1949.

**ONONDAGA DAM - GENERAL PLAN**



## ONONDAGA DAM - BIRD'S EYE VIEW



# ONONDAGA DAM - GENERAL PLAN AND AERIAL MAP OVERLAY

