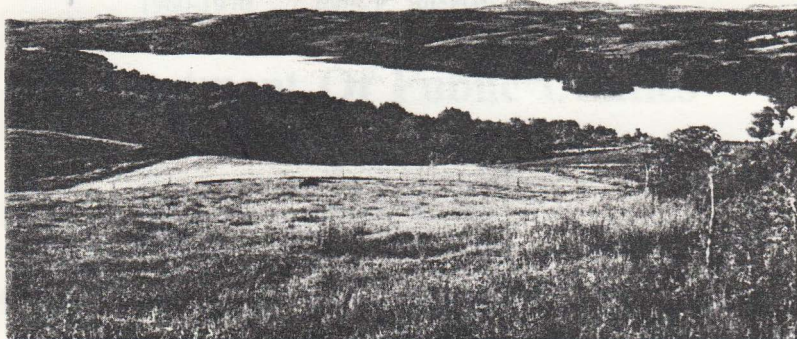


*Two Centuries  
of  
Public Service*



**History  
of  
Troy Water Works**

**Troy, New York**

# Bureau of Water & Sewer Superintendents

|           |                    |
|-----------|--------------------|
| 1838-1840 | Harvey Warner      |
| 1852-1886 | Edward H. Chapin   |
| 1887-1889 | Palmer H. Baerman  |
| 1890-1899 | Edward Dolan       |
| 1900-1903 | Richard F. Hall    |
| 1904      | Thomas McDonough   |
| 1905      | David Morey        |
| 1906-1907 | William H. Shields |
| 1908-1911 | Eugene S. Osborne  |
| 1912-1919 | John M. Diven      |
| 1920-1923 | William A. Nial    |
| 1923-1925 | John M. Diven      |
| 1926-1949 | William F. Luby    |
| 1950-1956 | John P. Buckley    |
| 1957-1959 | Roland Heacox      |
| 1960-1970 | John P. Buckley    |

# Department Of Public Utilities Commissioners

|           |                  |
|-----------|------------------|
| 1971-1975 | John P. Buckley  |
| 1976-     | Richard W. Casey |



# *Two Centuries of Public Service*

## History of Troy Water Works

At the beginning of the nineteenth century, Troy was still a village and was supplied with water by the Aqueduct Water Works, through wooden pipes from a spring on the west slope of Mount Ida in the area east of Liberty Street. On July 1, 1806, an ordinance was passed by the Village Trustees "to preserve the unnecessary waste of water brought to the Village by the aqueducts."

Prior to the War of 1812 the Aqueduct Water Works was acquired by the Earthen Conduit Company of Troy. The Legislature on June 16, 1812 passed an act to incorporate the new company, and on April 13, 1814 the company was permitted to use cast-iron pipes which were being manufactured at that time at Salisbury, Conn.

The act incorporating the Troy Water Works was passed by the New York State Legislature on April 18, 1829 and the stock was not to exceed \$250,000. This company did little or nothing towards establishing a municipal water works system. On April 23, 1830, the Common Council of the City of Troy, appointed a committee to study the feasibility of inaugurating a municipal water supply. William Roberts made a study for the committee which reported in April 1831, recommending that water be obtained either from Gorton Springs or the Piscawan Kill. At the same meeting the City Council appointed a committee to negotiate with the Troy Water Works Company for the purchase of the Company. On March 26, 1832 the rights of the Water Company were transferred to the City for the sum of \$174.34, this amount being the actual expenditures of the Company to date. A committee of the Common Council was appointed to manage the City Water Works. This committee was active until 1855, when its duties were taken over by a Board of Water Commissioners.

The first official act of the Committee in 1832 was to make a study of the 12,000 inhabitants of the City, to determine the number of possible consumers before proceeding with the construction of a public water supply. The results of the house to house canvass showed 637 were in favor, 18 indifferent and 8 opposed.

In 1833, the City entered into a contract for the construction of three reservoirs on the Piscawan Kill, the stream running through what is now known as Frear Park. The contract for the 12-inch cast-iron pipe and fittings was awarded to Samuel Richards of Philadelphia. Some of these pipes are still in service today in the present distribution system. The construction of the one covered and two open reservoirs located just east of the Boston and Main Railroad tracks (now the City of Troy Bicycle Path) in Eddy's Lane and the 12-inch pipeline were completed in 1834. The storage capacity of the three reservoirs was one million gallons.

In 1838 it became apparent that it was necessary to augment the existing supply. The Committee made a study to determine the feasibility of constructing a new reservoir or pumping from the Hudson River. The outcome of the investigation was that a fourth reservoir known as the "Fire Dam" was constructed west of Oakwood Avenue, east of the three reservoirs previously developed. In spite of the construction of the new reservoir in 1839, it was necessary in 1840 to build another reservoir about two miles north of the City on the Piscawan Kill known as the Brunswick Reservoir.

In 1857 and 1858 a 20 inch main was laid in 8th Street to supplement distribution capacity within the City. By 1875 the 20 inch main had been completed south to Federal Street; westerly along Federal Street to 4th Street and south as far as Madison Street; reducing to 16 inch and continuing to Main Street. This main at the time was the principal trunk main in the City.

By 1860 it became necessary to build the lower Oakwood Reservoir, and in 1861 a pump was installed to pump from the Hudson River. Shortages continued, and in 1862 it was necessary to supplement the supply from the Hudson River using fire pumps.

Periodic shortages of water requiring pumping from the Hudson River in 1862 and a major fire destroying much of the City on May 10, 1863 pointed out the need for additional storage and distribution capacity. In 1863 the upper Oakwood Reservoir was constructed in the Frear Park area.

By 1866 it was decided to purchase another permanent type steam pump, which was not installed until 1870. By 1871 three steam pumps were in service for use during supply shortages. These pumps were located in space leased from mills where steam power was available, located in the vicinity of the Hudson River Dam.

In 1868 the Vanderheyden Reservoir was added just west of the Brunswick Reservoir. The total amount of storage after the construction of the new reservoirs was approximately 400 million gallons. Water from the reservoirs was transported through open streams to the distribution reservoir east of the railroad tracks, where it entered the 20 inch main to the distribution system.

In 1872 Honorable William J. McAlpine submitted a report in which additional supplies from Tomhannock Creek, Poesten Kill, Deep Kill and the Hudson River were considered. No significant action was taken on McAlpine's proposals until 1877, at which time a report was submitted to the Commissioners by Mr. D. M. Greene for obtaining an increased supply of water from the Hudson River and pumping this water to the lower Oakwood Reservoir. Greene also proposed a new reservoir on the Piscawan Kill to supply the higher portions of the City. This was constructed just west of Lake Avenue near the entrance of Frear Park in 1879. A 20 inch transmission main from the new reservoir was constructed through Frear Park and along Burdett Avenue, Brunswick Avenue and Pawling Avenue creating a "high service." A new 30 inch transmission main was constructed from a new pumping station at 123rd St. through Lansingburgh to the lower Oakwood Reservoir. During the same period, the upper Oakwood Reservoir was connected to the Troy distribution system by new mains on Oakwood Avenue, 8th Street south of Federal Street, and Congress Street, creating the middle service. The High Service Distributing Reservoir, west of Lake Avenue, and the upper Oakwood Reservoir both obtained their supply from the Piscawan Kill. The Low Service was fed from the lower Oakwood Reservoir obtaining its supply from the pumping station at 123rd Street at the Hudson River. Construction of the pumping station was completed in 1880, and contained two Holly pumps each having a capacity of 6 MGD.

In 1883 the "Fire Dam" west of Oakwood Avenue was abandoned and a new reservoir known as the "Lower Oakwood Distributing Reservoir" was constructed on the same site. A 24 inch main connected the new reservoir to the 20 inch main constructed in 1857. It was at this time that the three original reservoirs on the Piscawan Kill were abandoned. In 1885 a second 24 inch main was constructed from the Lower Oakwood Distributing Reservoir and connected to the distribution system at River Street.

The supply developed thus far proved to be adequate until 1892 at which time the supply was again deficient. Mr. W. G. Raymond was authorized to make a study and submit a report on remedial measures. No action was taken until 1897 during which period the existing supply was at times inadequate. In June, 1897 Mr. Raymond presented a new study to the Commissioners recommending that Quacken Kill be developed and used to supply water to the high and middle service area. He also recommended Tomhannock Creek be developed for a supply to the low service area. Again, no immediate action was taken. In 1899, the existing supply was found to be inadequate, and the Hudson River water unfit for human consumption.

On December 31, 1899, a new City Charter was adopted in which the Board of Commissioners was dissolved. In their final report to the City, the Commissioners repeated their recommendations that immediate action should be taken in contracting for a new supply. The Water Commissioners' duties were taken over by the Commissioner of Public Works at that time. The new City Charter also incorporated the Village of Lansingburgh into the City of Troy. The incorporation became effective January 1, 1901. Authority was then obtained from the Legislature for the expenditure of \$1,250,000.

Between 1883 and 1900 the Village of Lansingburgh had developed its own water supply. In 1900 the Lansingburgh supply was located in the northeast section of the Village in the Miami Beach area and consisted of three reservoirs known as the Lansingburgh Storage, Interceptor, and Distributor Reservoirs respectively. The capacity of these reservoirs was about 60.6 million gallons. A 12 inch main located in Northern Drive connected the distributor reservoir to the distribution mains in Lansingburgh. Immediately prior to the annexation of Lansingburgh to the City of Troy, work of developing Deep Kill was inaugurated by the Board of Water Commissioners of the Village of Lansingburgh. At the time the Village became part of Troy a 12 inch pipeline from the Deep Kill to the Lansingburgh intercepting reservoir was nearly completed and a dam on the Deep Kill was about half finished. Because of faulty design based on incomplete geological investigations, the Deep Kill dam was never completed to the height originally proposed.

Construction of the Quacken Kill and Tomhannock supplies was started in 1900. The Quacken Kill supply, with a 16 inch and 12 inch transmission main from Vanderheyden Reservoir was connected to the 20 inch main serving the High Service Distributing Reservoir west of Lake Avenue and the reservoir was abandoned.

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The diverting dam on the Quacken Kill was initially supplied from four ponds located in the Town of Grafton, namely Long Pond, Second Pond, Mill Pond and Shaver Pond. Dams and spillways were built at each pond with valved outlet pipes. When required, the valves were opened and water was allowed to flow down the Quacken Kill to the diverting dam from whence it was transported to the Brunswick Reservoir through a cast-iron main.

After the High Service Distributing Reservoir was abandoned and supply to the high service taken directly from Vanderheyden Reservoir, it was possible to serve a larger area in the eastern part of the City located at higher elevations by virtue of the increased head of approximately 90 feet from the Vanderheyden Reservoir.

In 1905 considerable thought was given to construction of a filter plant for treating Tomhannock water. The Board of Public Works went so far as to prepare plans and specifications and take bids for the construction of the plant near the lower Oakwood Reservoir. However, construction of the plant and other facilities never came about. In conjunction with the filter plant, it was also proposed to construct two standpipes and a pumping station for service to the higher areas in the City.

The 123rd Street Pumping Station was closed in 1906 after the Tomhannock supply was put in service. In 1906 the Lansingburgh Reservoirs were shut off and the Deep Kill was taken out of service. After the Tomhannock main was placed in service, the entire supply for Lansingburgh and the low service of Troy was obtained from the Tomhannock. It was found at this time that the entire City including Lansingburgh, but with the exception of the Troy high service, could be supplied by gravity from Tomhannock.

During the first eight years of operation, leaks in the 33 inch steel pipe from Tomhannock necessitated occasional interruptions of water service to the City. In 1914, to prevent further shutdowns and increase delivery to the City, a 30 inch cast-iron main was installed parallel to the existing 33 inch riveted steel main. The new 30 inch cast-iron main from Tomhannock was connected at Glen Avenue. In 1916 an interconnection between the two 24 inch mains from the lower Oakwood Distributing Reservoir was installed and the reservoir abandoned. Supply to the low service distribution system was provided from the 30 inch main after regulating pressure north of Northern Drive by means of pressure-reducing valves. Service to

the middle service area was from the 33 inch riveted steel transmission main which was connected to the 30 inch force main from the old pumping station at 121st Street. The upper and lower Oakwood Reservoirs were abandoned. Provision was made for supplementing the low service supply from the middle service by means of pressure-reducing valves at Glen Avenue at 7th Avenue and on Congress Street.

The area in the eastern portion of the City continued to develop making it necessary in 1914 to increase the capacity of the Grafton supply. Increased storage capacity was obtained by building the Martin-Dunham Reservoir. Transmission capacity from Vanderheyden Reservoir to the City was increased by the construction of a new 16 inch main parallel to the 20 inch main in Lake Avenue.

In 1916 after the completion of the new 16 inch transmission main, the high service district was divided into two districts, namely the high service district and the upper high service district. The upper high service district was supplied entirely from the new 16 inch transmission main while the high service district was supplied entirely from the existing 20 inch transmission main.

In January 1925 the City's water supply was treated with liquid chlorine. This was the first chemical treatment of the City's water supply.

In 1929 it was necessary to raise the pressure of the upper high service to adequately serve the area of Troy higher than the elevation of Vanderheyden Reservoir. This was accomplished by installing pressure regulating valves east of the Brunswick Reservoir on the transmission main from the Quacken Kill diverting dam. A new 16 inch main was connected from the Quacken Kill supply main at the Brunswick Reservoir along North Lake Avenue to the 16 inch main connected to the upper high service.

In 1938 it was again necessary to supplement the supply to the upper high service. A 16 inch cast-iron main was laid from the Quacken Kill diverting dam at Eagle Mills and then along Pinewoods Avenue to Central Avenue where a regulating valve was installed and one main connected to the upper high service distribution system. In 1953, to provide better pressure regulation, another regulator was installed on the Pinewoods avenue main about half way between Eagle Mills and Central Avenue.





Very little has been done to increase the distribution capacity of the low and middle service systems after the installation of the 30 inch cast-iron main from Tomhannock and related improvements in 1916. Facilities were constructed at the Tomhannock, Quacken Kill (Grafton), and Vanderheyden supplies in 1952 for the proportional control of chlorination, for metering the flow, and for feeding lime. Screening facilities were also installed at the Quacken Kill and Vanderheyden supplies at the same time. Until 1955, when a new 20 inch cement-lined cast-iron main was laid in River Street from Glen Avenue to Federal Street, no major improvements were made to the distribution system. In 1957 a 20 inch cast-iron main with a coal tar coating was laid in 1st Street from the 20 inch main in Front Street and Liberty Street south to Main Street, primarily to serve the Village of Menands. A new spillway channel was constructed at the Tomhannock Reservoir in 1959, at which time various improvements, including the installation of screens, were made at the Tomhannock intake.

In 1960 a comprehensive engineering study was completed by the consulting engineering firm of Camp, Dresser & McKee of Boston, Mass. Troy was plagued with "black" water, periodic "boil water" orders from the Health Department and an unending number of large and small water main breaks. For several years, in the Fall, the City almost ran out of water in storage in the High and Upper High Service areas, due to increased consumption and leakage. The engineering study encompassed — 1) The City of Troy, 2) a Limited Region which included the communities immediately adjacent to Troy and 3) the Entire Region which included most of the populated area of southern Rensselaer County.

As a result of the studies it was determined that the Tomhannock Reservoir be utilized to serve the entire water system, including the surrounding communities. This would require pumping to the higher elevations of the City and storage in each of the High and Upper High Service areas. A major rehabilitation of the Tomhannock transmission mains and most of the large distribution mains in the City was required, due to excessive leakage and corrosion, along with the installation of several large diameter mains.

Actual construction started in 1960 with the cleaning and cement lining of 13,500 feet of the 33 inch riveted steel transmission line to the Tomhannock Reservoir. Design was also commenced on all of the other needed improvements including pumping, storage, treatment and trans-

mission. In 1961 the remaining 22,000 feet of the 33 inch pipeline was cleaned and cement-lined to the Tomhannock Reservoir, along with 11,200 feet of 20 inch cast-iron pipe in the distribution system through Frear Park and over Burdett Avenue to Congress Street. An additional 8,800 feet of 20 inch and 7,300 feet of 12 inch pipe were cleaned in the distribution system in North Lake Avenue and Campbell Avenue respectively.

During 1962 the entire 34,000 feet of 30 inch cast-iron transmission main to the Tomhannock Reservoir was cleaned and cement-lined as well as 4,000 feet of 16 inch cast-iron pipe in Pawling Avenue. Construction was commenced on the Eddy Lane Pumping Station to feed both the High and the Upper High Service Areas, and construction was started on the 5 million gallon ground Storage Reservoir, which would feed the High Service Area. Also 2,400 feet of old 20 inch pipe was cleaned and cement-lined through Frear Park to connect the new Pumping Station to the High Service distribution system. The old Middle Service Area was discontinued and was combined with the Low Service Area.

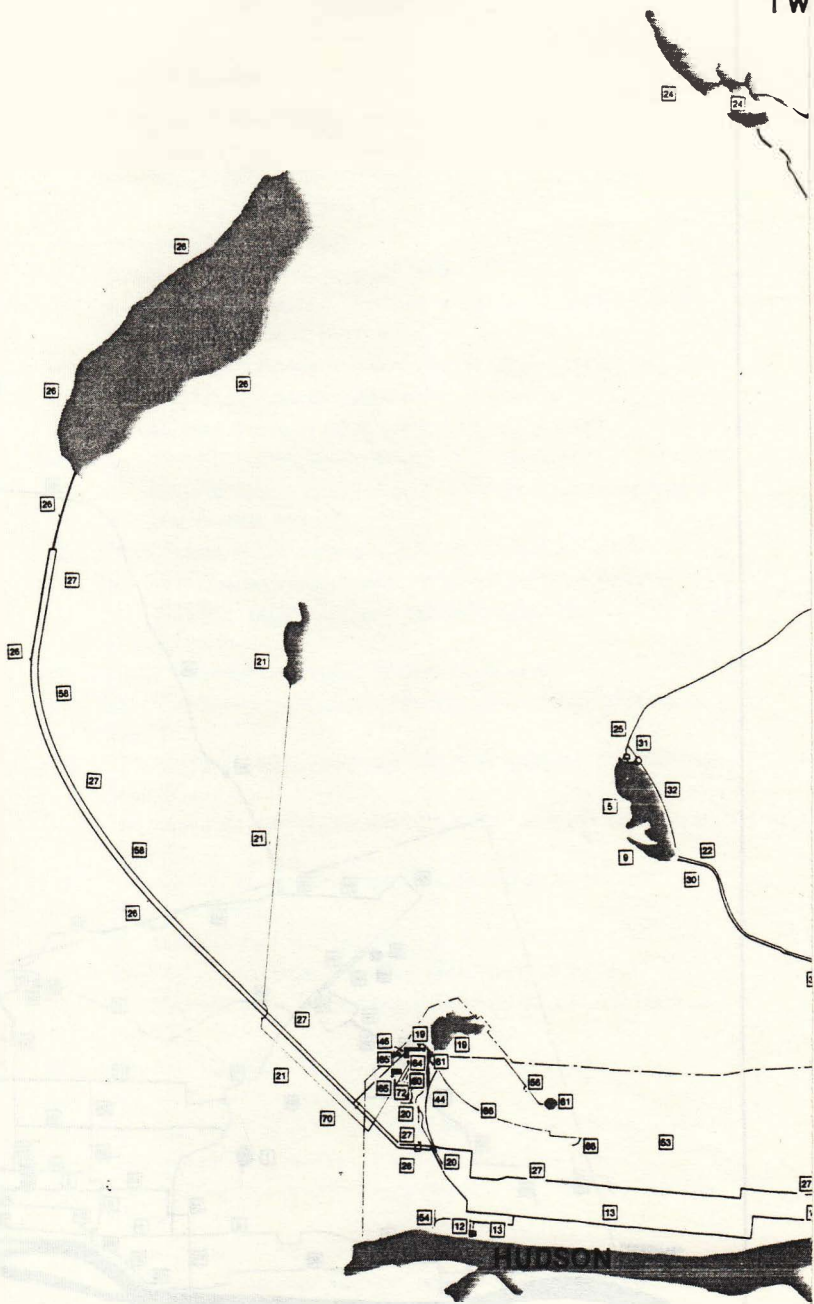
1963 was a banner year for the Troy Water System, when the Board of Aldermen unanimously approved a \$7,000,000 Bond Issue which assured the construction of a new 45 million gallon per day Water Treatment Plant on the site of the old Miami Beach Lansingburgh Reservoir. Construction was commenced during the summer on the project that would take almost three years to build. All bids for the work came well within the engineers' estimate and the City received an excellent rate on its Bond Sale.

During the Spring and Summer, the Bureau cleaned and cement-lined 23,000 feet of 30 inch water mains through Lansingburgh to the site of the new Eddy Lane Pumping Station. The 5 million gallon Ground Storage Reservoir was completed in the Summer, and 2,000 feet of new 20 inch cement-lined, cast-iron pipe was installed in Pawling Avenue to connect the new reservoir to the High Service Area. With the dedication of the Eddy Lane Pumping Station in October, the entire High Service area was placed on the Tomhannock supply and led to the discontinuance of the Brunswick-Vanderheyden Reservoirs. These were later sold to the Town of Brunswick for the establishment of a Town Park.

With Tomhannock water being transmitted through newly rehabilitated water pipes, through the new Eddy Lane Pumping Station to the new

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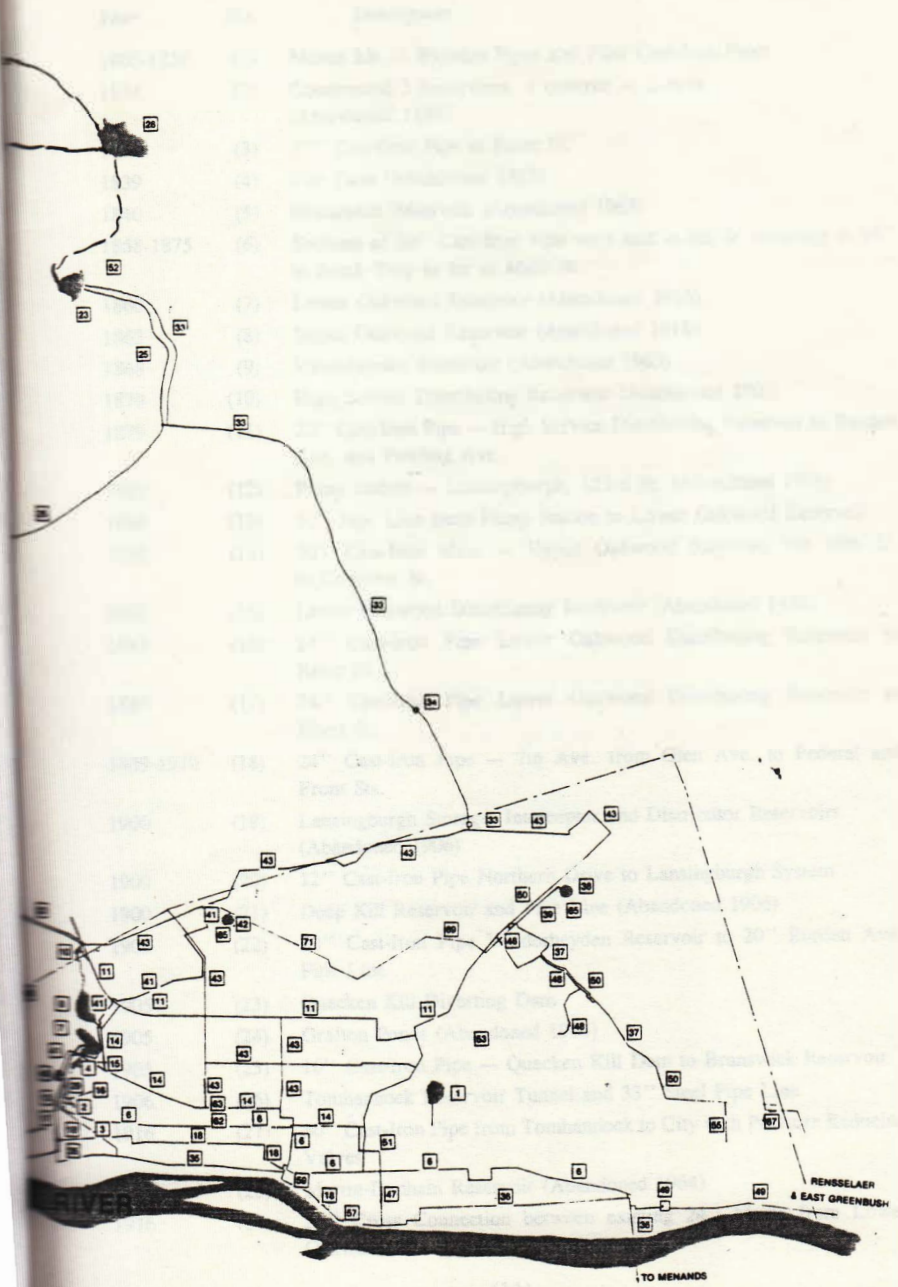
# THE HISTORY OF TW



(LEGEND on following pages)

# TROY'S WATER SUPPLY CENTURIES

## LEGEND



RENSSELAER & EAST GREENBUSH

TO MEHANS

# LEGEND

| <i>Year</i> | <i>No.</i> | <i>Description</i>  |
|-------------|------------|---|
| 1800-1830   | (1)        | Mount Ida — Wooden Pipes and First Cast-Iron Pipes  |
| 1834        | (2)        | Constructed 3 Reservoirs, 1 covered — 2 open<br>(Abandoned 1884)  |
| 1834        | (3)        | 12'' Cast-Iron Pipe to River St.  |
| 1839        | (4)        | Fire Dam (Abandoned 1883)   |
| 1840        | (5)        | Brunswick Reservoir (Abandoned 1963)  |
| 1858-1875   | (6)        | Sections of 20'' Cast-Iron Pipe were laid in 8th St. reducing to 16''<br>in South Troy as far as Main St. |
| 1860        | (7)        | Lower Oakwood Reservoir (Abandoned 1916)  |
| 1863        | (8)        | Upper Oakwood Reservoir (Abandoned 1916)  |
| 1868        | (9)        | Vandeheyden Reservoir (Abandoned 1963)  |
| 1879        | (10)       | High Service Distributing Reservoir (Abandoned 1900)  |
| 1879        | (11)       | 20'' Cast-Iron Pipe — High Service Distributing Reservoir to Burdett<br>Ave. and Pawling Ave.             |
| 1880        | (12)       | Pump Station — Lansingburgh, 123rd St. (Abandoned 1906)   |
| 1880        | (13)       | 30'' Pipe Line from Pump Station to Lower Oakwood Reservoir   |
| 1880        | (14)       | 20'' Cast-Iron Main — Upper Oakwood Reservoir via 10th St.<br>to Congress St.                             |
| 1883        | (15)       | Lower Oakwood Distributing Reservoir (Abandoned 1916)   |
| 1883        | (16)       | 24'' Cast-Iron Pipe Lower Oakwood Distributing Reservoir to<br>River St.                                  |
| 1885        | (17)       | 24'' Cast-Iron Pipe Lower Oakwood Distributing Reservoir to<br>River St.                                  |
| 1889-1910   | (18)       | 24'' Cast-Iron Pipe — 7th Ave. from Glen Ave. to Federal and<br>Front Sts.                                |
| 1900        | (19)       | Lansingburgh Storage, Interceptor and Distributor Reservoirs<br>(Abandoned 1906)                          |
| 1900        | (20)       | 12'' Cast-Iron Pipe Northern Drive to Lansingburgh System   |
| 1900        | (21)       | Deep Kill Reservoir and Pipe Line (Abandoned 1906)  |
| 1900        | (22)       | 20'' Cast-Iron Pipe Vanderheyden Reservoir to 20'' Burdett Ave.<br>Pipe Line                              |
| 1905        | (23)       | Quacken Kill Diverting Dam  |
| 1905        | (24)       | Grafton Ponds (Abandoned 1964)  |
| 1905        | (25)       | 16'' Cast-Iron Pipe — Quacken Kill Dam to Brunswick Reservoir   |
| 1906        | (26)       | Tomhannock Reservoir Tunnel and 33'' Steel Pipe Line  |
| 1916        | (27)       | 30'' Cast-Iron Pipe from Tomhannock to City with Pressure Reducing<br>Valves                              |
| 1916        | (28)       | Martin-Dunham Reservoir (Abandoned 1964)  |
| 1916        | (29)       | 24'' Cross Connection between existing 24'' Mains from Lower<br>Oakwood Distributing Reservoir            |

# LEGEND

| <i>Year</i> | <i>No.</i> | <i>Description</i>   |
|-------------|------------|--|
| 1916        | (30)       | 16" Cast-Iron Pipe Parallel to 20" in North Lake Ave.                                |
| 1929        | (31)       | Pressure Regulating Valves East of Brunswick Reservoir                               |
| 1929        | (32)       | 16" Cast-Iron Pipe — Connecting Regulators to Upper High Service — North Lake Avenue |
| 1938        | (33)       | 16" Cast-Iron Pipe — Quacken Kill Diverting Dam to Pinewoods Ave. Regulator Valves   |
| 1953        | (34)       | Pressure Regulating Valves Between Eagle Mills and Central Avenue                    |
| 1955        | (35)       | 20" Cast-Iron Pipe River St.   |
| 1957        | (36)       | 20" Cast-Iron Pipe First St.   |
| 1960-1961   | (26)       | Cleaned and Cement-Lined 33" Steel Tomhannock Transmission Main                      |
| 1961        | (11)       | Cleaned and Cement-Lined 20" Cast-Iron Pipe — Frear Park and Burdett Ave.            |
| 1961        | (22)       | Cleaned 8,800 Ft. 20" Cast-Iron Pipe — Vanderheyden to Frear Park                    |
| 1961        | (37)       | Cleaned 7,300 Ft. 12" Cast-Iron Pipe — Campbell Highway                              |
| 1962        | (27)       | Cleaned and Cement-Lined 30" Cast-Iron Tomhannock Transmission Main                  |
| 1962        | (11)       | Cleaned and Cement-Lined 16" Cast-Iron Pipe in Pawling Ave.                          |
| 1963        | (13)       | Cleaned and Cement-Lined 30" Cast-Iron Mains through                                 |
|             | (27)       | Lansingburgh   |
| 1963        | (38)       | High Service 5-Million Gallon Ground Storage Reservoir                               |
| 1963        | (39)       | 20" Cast-Iron Pipe — Pawling Ave. to 5-Million Gallon Tank                           |
| 1963        | (40)       | Eddy Lane Pump Station   |
| 1964        | (41)       | 24" Cast-Iron Pipe — Eddy Lane Pump Station to 4-Million Gallon Elevated Tank        |
| 1964        | (42)       | Upper High Service 4-Million Gallon Elevated Storage Reservoir                       |
| 1965        | (43)       | Cleaned and Cement-Lined 5 miles 12" Cast-Iron Pipe                                  |
| 1965        | (44)       | 60" Reinforced Concrete Effluent Pipe — Northern Drive                               |
| 1965        | (45)       | Maintenance Shop and Vehicle Shop  |
| 1966        | (46)       | Water Treatment Plant  |
| 1966        | (18)       | Cleaned and Cement-Lined 24" Cast-Iron Pipe from Glen to Fulton and Front Streets    |
| 1967        | (6)        | Cleaned and Cement-Lined 20" and 16" Cast-Iron Pipe — Fourth Street                  |
| 1968        | (47)       | 16" Cast-Iron Pipe in Ferry St.  |
| 1968        | (48)       | 16" Cast-Iron Pipe in Griswold Heights   |
| 1968        | (49)       | Rensselaer - East Greenbush Pump Station and Pipe Line                               |
| 1969        | (50)       | Cleaned and Cement-Lined 3 miles 12" Cast-Iron Pipe                                  |

# LEGEND

| <i>Year</i> | <i>No.</i> | <i>Description</i>  |
|-------------|------------|---|
| 1970        | (51)       | 16" Main in Ferry Street extended to Congress and 8th Streets                           |
| 1971        | (52)       | Abandoned the Grafon Chlorine Station which had been in reserve since 1964              |
| 1971-1974   | (53)       | City Meter Program. Installation of 12,000 meters                                       |
| 1971        | (54)       | 16" Main installed from 123rd St., north on 2nd Avenue, to Waterford Bridge             |
| 1972        | (55)       | 12" Main Morrison Avenue  |
| 1972        | (56)       | Gurley Ave. Pumping Station (pit) and 20,000 gallon storage tank                        |
| 1973        | (57)       | Relocate a 20" Main on Front Street. (New City Hall)                                    |
| 1975        | (58)       | Rehabilitation of Bridges Tomhannock Transmission Mains                                 |
| 1975        | (59)       | Relocated 20" and 24" Mains in new Federal and Third Sts.                               |
| 1976        | (60)       | Sludge Lagoon (upper) constructed   |
| 1976        | (61)       | Gurley Avenue Pump Station and 800,000 Gallon Tank [old system abandoned-(56)]          |
| 1976        | (62)       | Cleaned and Cement-Lined 16" and 20" Main on 8th Street                                 |
| 1977        | (63)       | Cleaned and Cement-Lined 16" and 20" Main on 10th Street                                |
| 1979        | (64)       | 12" Ductile Iron Pipe from Northern Drive to Water Treatment Plant                      |
| 1979        | (65)       | High Service. Upper High and Wash Water Tank Sandblasted and Painted                    |
| 1979        | (46)       | Filters-Water Treatment Plant Renovated   |
| 1981        | (66)       | 12" Ductile Iron Pipe Gurley Avenue   |
| 1982        | (67)       | 12" Ductile Iron Pipe from Glenmore Road to HVCC  |
| 1985        | (68)       | Installed Frear Park Golf Course Water System   |
| 1986        | (69)       | 12" Ductile Iron Pipe Belle Ave. to Maple Ave.  |
| 1988        | (70)       | 12" Ductile Iron - Water Treatment Plant to the Reactivated Deep Kill Transmission Main |
| 1988        | (81)       | 16" Ductile Iron on Tibbits Avenue Upper High Service Tank to Brunswick Road            |
| 1990        | (72)       | Sludge Lagoon (lower) Constructed   |

5 million gallon High Service Reservoir, a marked improvement was noted in the color of the water that had been a source of discomfort to consumers. Sodium Hexametaphosphate treatment was commenced at Tomhannock Intake to control the manganese problem, which was the cause of numerous black water complaints. Construction was also started on the 4 million gallon elevated Storage Reservoir, which would serve the Upper High Service and a large area in the Town of Brunswick and place these areas on the Tomhannock supply.

In 1964, approximately 9,000 feet of 24 and 20 inch cast-iron cement-lined water pipe was installed, connecting the Eddy Lane Pumping Station with the 4 M. G. elevated tank on Tibbits Avenue. The elevated tank, which is the largest elevated steel water reservoir in the United States, was completed and placed in service during the summer, just in time to overcome the effects of the severe drought that hit the entire northeastern part of the country. The Grafton Ponds and the Martin-Dunham Reservoir were then taken out of service and sold to the State of New York for the construction of a new State Park. The Grafton Chlorination Station was maintained as a source of future emergency gravity supply.

Due to the construction of the Hoosick Street Arterial Highway in 1965, it was determined to concentrate on rehabilitating the 12 inch water line in the street and also in the area. As a result, Bureau of Water crews cleaned and cement-lined 24,000 feet of 12 inch pipe in Hoosick Street, Fifteenth Street, Peoples Avenue, North Lake Avenue, South Lake Avenue, under the Poesten Kill and across Central Avenue to Pawling Avenue. Water pressure had been dropping in the Albia area during the summer months and rehabilitating the supply main stabilized the pressure for the consumers. The Bureau also installed the 2,900 feet of 60 inch reinforced concrete effluent pipe from the Water Treatment Plant to the distribution system.

The Bureau of Water maintenance shop and vehicle garage were completed in the Spring of 1965. All shop operations were transferred from the rear of Central Fire Station to the new building and the vehicles that were formerly housed in the Public Works garage were moved to the new site.

Troy's new modern Water Treatment Plant was dedicated by Governor Nelson A. Rockefeller on May 16, 1966. The Governor threw the

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switch to start treated water flowing to Trojans for the first time in 165 years. The water is chlorinated for the elimination of harmful bacteria, alun is added for sedimentation of solid matter, lime is added to reduce the corrosive action of the water, carbon may be added for taste and odor control, potassium permanaganate may be added for manganese control and fluoride is added for the protection of the teeth of the consumers. The modern plant is capable of being expanded to 100 million gallons per day, by adding basins as required. The Water Bureau offices were moved out of the Central Fire Station to the new Administration Building. A new Laboratory was constructed in the Administration Building and the old Laboratory at Melrose was abandoned. All of the facilities of the Bureau of Water were then concentrated at a single location.

After the new Water Treatment Plant was put on the line, it was still necessary to continue the program of rehabilitating the City's old corroded trunk mains in order to supply a clean water in sufficient quantity at the consumer's tap. Therefore, in 1966 the Bureau cleaned and cement-lined 8,500 feet of 24 inch cast-iron water pipe from Glen Avenue to Fulton and Front streets. In 1967 a total of 9,500 feet of 20 inch and 4,500 feet of 16 inch cast-iron pipe was cleaned and cement-lined from Federal and Fourth Streets to South Troy at Main and Fourth Streets.

Two of the major construction projects accomplished in 1968 were the installation of a 16 inch pipeline in Ferry Street from Front Street to Seventh Avenue to replace the old pipes removed during the construction of the Ferry Street Tunnel and Arterial. The serious water shortage in the Griswold Heights, Hillsvie Heights section was alleviated by the installation of 7,000 feet of 16 inch pipe from Pawling Avenue to the perimeter of the developed area and a new 12 inch line was installed to serve what is now the Emerald Greens area.

The City of Rensselaer and the Town of East Greenbush completed a large construction program and commenced taking water from the City of Troy in the Fall of 1968. Their consumption increased the demand by 3 million gallons per day.

In 1969 an extensive cleaning and cement-lining program was again undertaken during which 17,000 feet of 12 inch cast-iron water pipe was rehabilitated in Fifteenth Street, Congress Street, Sixth Avenue, Pawling Avenue and Campbell's Highway.

In 1970, the City Council created the Department of Public Utilities by making the necessary changes in the City Charter. The Bureaus of Water and Sewers, which had been attached to the Department of Public Works, were assigned to the new department. For the most part, the Department continued to follow the recommendations suggested in the Engineering Survey of 1960. Improvements undertaken by the new department that first year completed important loops in the distribution grid. They included the installation of a new main, 24 inches in diameter and 2,400 feet long along the old Boston & Maine right of way, from Glen Avenue to Middleburgh Street and the extension of the Ferry Street main to Congress and Eighth Streets by the laying of 900 feet of 16 inch main.

In 1971 the City Council passed legislation requiring all services in the city to have water meters. The installation of over 12,000 meters was accomplished between 1971 and 1974, resulting in water consumption during the next few years dropping from about 24 MGD, to less than 15 MGD.

To be able to supply water to the Village of Waterford for emergency use a 16 inch main was laid along Second Avenue from 123rd Street to the Waterford Bridge. The Village then had a private contractor extend the main across the bridge and connect it to their system.

To improve service due to the expanding Hudson Valley Community College and the Crestwood Avenue area, during 1972 a 12 inch main was laid in Morrison Avenue from Stow Avenue to Vandenburg Avenue. At the same time, a new residential development, named Miami Beach Estates, was being built around the old Lansingburgh Storage Reservoir. In order to provide this area with sufficient water flows, it was necessary to construct a completely new system. A tap was made at the finished water reservoir south of the Water Treatment Plant and a small pump pit was constructed. A 20,000 gallon stand pipe was then erected, on the hill west of Oakwood Avenue and 2,900 feet of twelve inch mains were laid from it to the development.

Troy's business district was to undergo some drastic changes, as urban renewal programs were designed to demolish and rebuild sections of downtown. With the implementation of these programs, and the start of the Uncle Sam Mall in 1973, it was necessary to abandon water mains and disconnect services to those buildings scheduled for demolition. Old mains up to 24 inches in diameter, had to be relocated and in some cases, new

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mains installed. The building of new City Hall required a 20 inch main on Front Street to be relocated around the site.

In 1975 seven bridges that support the 30 and 33 inch transmission mains along their route from the Tomhannock Reservoir to the Treatment Plant were rehabilitated.

A sludge lagoon was constructed on the site of the former brickyard at the rear of the Water Treatment Plant in 1976, using both a private contractor and Department of Public Utilities crews. Approximately 750 feet of 36 inch pipe was installed for the lagoon. As Miami Beach Estates grew it became necessary to replace the existing system with a larger one. A new pump station (Gurley Avenue) was constructed in 1976, on the corner of Northern Drive and Leverage Road, with a 16 inch main running to a new 800,000 gallon standpipe erected between Oakwood and Gurley Avenues. When the new system was placed in service, the old pump pit and tank were abandoned.

That same year, due to the construction of the parking garage at Federal and Third Streets, it was necessary to relocate several large water mains, with diameters of 20 and 24 inches. In the distribution system, 7,000 feet of 16 inch and 20 inch mains in Eighth Street were cleaned and cement-lined. The project was continued into 1977 with 3,200 feet of 16 and 20 inch mains being refurbished in Tenth Street.

In 1978, as part of the preventive maintenance program, private contractors cleaned and painted the interior and exterior of the High Service, Upper High Service and the Wash Water Tanks. Installation of pressure reducing valves and the use of a Town of Brunswick Storage Tank were necessary to provide temporary supply.

The Department of Public Utilities abandoned, relocated and installed mains for the Collar City (Hoosick Street) Bridge and CDTA Bus Garage construction in 1979. The same year a twelve inch main was laid from the Gurley Avenue system on Northern Drive to the rear of the Plant for process and domestic water.

The Department finished the renovation of the filters at the Water Treatment Plant in 1980. During this two year project, to improve treatment and backwashing, and minimize filter maintenance, the old filter media and

underdrains were removed, new tile underdrains installed and the media replaced.

Due to continuing expansion and water pressure requirements, Hudson Valley Community College was removed from the Troy High Service System and connected to the Rensselaer-East Greenbush System in 1983. The roofs for the Administration Building, Water Treatment Plant, Shop Building and Eddy's Lane Pump Station were replaced beginning in 1983.

The watering system for the Frear Park Golf course was installed in 1985 by Public Utilities personnel.

Looping within the Upper High Service continued in 1986 with the installation of a 16 inch main in Tibbits Avenue and a 12 inch main through Belle Avenue, Lakewood Place and Pawling Avenue to Maple Avenue.

On December 30, 1986, the Water Treatment Plant was rededicated as the "John P. Buckley Water Treatment Plant."

In 1988, the 12 inch Gurley Avenue main was connected to the abandoned Deep Kill line. It had originally been installed in 1900, and was sold to the Town of Schaghticoke. It began supplying treated water to customers north of the Water Treatment Plant. That year also saw the completion of the Water Meter Replacement Program, which had begun in 1986.

Construction of a second sludge lagoon, including diversion of the filter backwash waste to the lagoons began in 1989 and was completed in 1990. This completed the process of directing all the Water Treatment Plant wastewater to the lagoons. A sludge drying bed, to be utilized to process the alum sludge was also constructed.

As a result of the construction improvements, costing approximately \$15,000,000, undertaken during the second half of the 20th Century, Troy now has a modern, efficient water system that should carry it well into the 21st century.

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