

Funding Wastewater Facilities: An Historical Overview

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The theme of this issue of *Clearwaters* is funding water quality control facilities. This is a continuing issue. A brief review of the history of funding wastewater facilities will put this subject area in perspective. The question of who pays for the wastewater infrastructure has been with us ever since the state first moved to require municipalities to provide for adequate sewage collection and treatment, particularly treatment. This question arises because municipalities seldom, if ever, provided for sewage treatment prior to 1900.

Things began to change in the first three decades of the 20th century. The first New York State water pollution control law, adopted in 1904 and amended in 1909, required health department permits to discharge municipal and industrial wastewater. But it was of limited effectiveness. By 1930 the entire landscape changed, and water pollution and wastewater facilities became public issues. Interstate water pollution control regulatory agencies covering the New York City metropolitan area and the Ohio River watershed were created. Depression-era public works construction grants, which were instituted to relieve unemployment, started the first largescale building of sewage treatment works promoted by the State Health Department. In 1936 the State Health Department took legal action against the City of Buffalo and ordered it to provide sewage treatment facilities for its population due to disease outbreaks that occurred downstream and were attributed to the discharge of untreated sewage from Buffalo. This interest in water pollution control waned somewhat as World War II loomed. War and then post-war concerns took priority. Many of the wastewater facilities built with construction grants during the Depression thirties were not maintained properly, and some were virtually abandoned by the municipalities. By the late forties both the federal and state governments had started new water pollution control programs.

The first federal water pollution control law was adopted in 1948. Program grants were provided by the law as an incentive to encourage the states to adopt effective water pollution control programs. After a three-year study (1946–49) and evaluation process, New York State adopted a comprehensive water pollution control law and program in 1949. The funding issue for municipal facilities was still paramount. The federal water pollution control law of 1956 that provided modest wastewater facilities construction grants to small municipalities addressed this. Both federal and state programs continued to develop over the next decade. Amended federal water pollution control laws were adopted in 1956, 1961, 1965, and 1966. Each amendment increased program and facilities grants and the program authority of the federal government. The New York State program developed to the extent that it was applying regulatory pressure to municipalities and generating a political response that was again focused on funding required facilities. The facilities funding issue was joined first in New York State with the adoption of the New York

State Pure Waters Program in 1965. This provided construction grants of 60 percent, consisting of a 30 percent state share and a 30 percent federal share. The state pre-financed the federal share in view of the lack of federal commitment. State operation and maintenance grants were also provided at 33 percent of the cost level. The state monies to fund the construction grants were provided through a billion dollar bond issue endorsed by the people in 1965 as part of the Pure Waters Program.

The 1966 federal Water Pollution Control Act responded to the New York State program by eliminating construction grant ceilings, including all projects regardless of size and provided for repayment of state monies that had been advanced to pre-finance the federal share. It also increased the federal construction grants to 55 percent. Combined with the state grant of 30 percent, this resulted in a total grant of 85 percent of the facilities cost. However, the federal government failed to fully fund the program, and the federal share fell to 5 percent or lower, not 55 percent. The state maintained the grant at 60 percent in spite of the lack of federal funds, and this situation continued until 1972.

In 1970 the state and federal governments created new environmental agencies, the Department of Environmental Conservation (DEC) in New York State, and the U.S. Environmental Protection Administration (EPA) at the federal level. In 1972 the federal Clean Water Act was adopted. This act made water pollution control a federal program and responsibility. The states no longer had the primary responsibility for water pollution control; they became the surrogates for the federal program. The act also raised construction grants to 75 percent for the federal share and 12.5 percent for the state share, for a total grant to municipalities of 87.5 percent. Congress also appropriated the monies to fully fund the program, and the perennial federal problem of failure to fund was solved. This new federal program combined higher standards, a huge construction grant program, and a tough and effective regulatory enforcement program. These programs greatly improved the level and adequacy of treatment, and reduced the backlog of needed facilities over the next 20 years. The construction grants were reduced to 55 percent in 1981 and phased out by 1987, with some carryover to the early nineties. New York State continued the 30 percent state grant, keeping the construction grants for municipalities at 85 percent. The state operation and maintenance grants were also terminated in 1980. This was the end of general construction grants for municipalities. However, some grants have been made on an individual basis, including some made through the Pataki environmental bond issue of 1998, which is now nearly exhausted. Another possible avenue of assistance is a special award as a state member item or a grant in the annual federal budget. There are also grants available for special cases, such as small rural communities, which are detailed in this issue.

Essentially the Clean Water State Revolving Loan Fund, which is capitalized equally by the federal and state governments, replaced the grant programs. In New York State the Environmental

Facilities Corporation (EFC) administers the Clean Water State Revolving Loan Fund. This program provides low-interest loans and eliminates the cost of borrowing incurred when a municipality proceeds to market bond issues on its own. In cases of extreme need, some modest grants may be available, but most of the grant programs were terminated because the construction of these facilities was deemed a local obligation.

Requirements and regulations that municipalities must meet have grown over the past decades. In addition to meeting the effluent limitations, municipalities must provide for stormwater management, minimize sanitary sewer overflows by limiting inflow and infiltration into the sanitary sewers. They must also provide for treatment for combined sewer overflows and, where possible, reduce inflow or install separate sewers, reduce or eliminate industrial pollutant discharges into the system by implementing an effective pretreatment regulatory program, provide for advanced treatment usually for the reduction of nitrogen and phosphorous concentrations, control non-point sources of pollutants, and in a few instances some small villages and hamlets provide a collection system and treatment facilities where none were provided in the past. In addition to meeting these regulations, municipalities have to deal with aging and deteriorating wastewater systems that require rehabilitation and, in some instances replacement, since many of the systems are 40 to 100 years old. Nonetheless, it is evident that water quality management is a continuing responsibility that will require significant capital and operating costs. This is exemplified by the projects submitted to the EFC for funding under the Clean Water State Revolving Loan Fund, as of 2003. The total number of the projects for 2003 was 327, with an estimated cost of \$1,010,739,205. The New York City share alone is 120 projects at an estimated cost of \$576,308,005.

A factor in understanding this subject is the size and number of wastewater facilities in the state. New York State has 1,610 municipalities (New York State Comptroller, January 1998), 62 counties, 62 cities, 932 towns, and 554 villages. These municipalities are served by 605 wastewater treatment plants (WWTPs) (Department of Environmental Conservation, 1999). The sizes of these facilities range from less than 0.1 million gallons per day (mgd) to 310 mgd. The average size of a WWTP in the state is 6.0 mgd, and the median size (half above, half below) is about 0.15 mgd. The populations served range from 500 or less to over a million people. The breakdown in numbers and size of the facilities is shown in Table 1.

Well over 60 percent of the facilities (417) are small to extremely small, about 23 percent (138) are medium, 7 percent (41) are large, and 1.5 percent (9) are extremely large. Of the nine extremely large facilities, eight are in New York City, and one is in the City of Buffalo.

The large plants (41) are located in the metropolitan counties, and the remainder medium and small facilities (555) are scattered across the state.

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All municipal capital borrowings are through full faith and credit bonds, and taxes are pledged to retire the bonds. Another option is the use of authorities, although their use has been limited for wastewater facilities. Authorities are freestanding institutions, which must have income-producing facilities and use revenue bonds where future revenues are pledged to retire the bonds. All authorities are created by act of the state legislature. They have been used to fund and operate water supply facilities. There are a number of county water authorities. They are both administrative and funding agencies. The only sewer authority is the Buffalo Sewer Authority, created in 1936 to provide wastewater facilities for the City of Buffalo as ordered by the state. Another form of an authority is the water finance authority. This type is being used by New York City to finance their water and wastewater infrastructure. The agreement between the bondholders and the authority imposes a series of stringent requirements on the authority relative to reserves, rate setting, annual revenue, and capital improvement plan and program. It imposes much more stringent financial requirements than the local finance law and other municipal laws.

Experience has shown that municipalities have difficulty in funding required operation and maintenance and capital improvements for water quality facilities when part of the annual budget process. When fiscal difficulties arise it is easy to cut needed funding in favor of other priorities. This, in turn, leads to poor performance and the deterioration of facilities. This problem is overcome when the system is made self-supporting through service charges based on use that are adjusted as needed. The water finance authority is a device that makes this possible, as New York City demonstrates.

Municipalities are responsible and have the legal obligation to operate, maintain, and update their wastewater infrastructure. Programs available to aid and assist municipalities in funding the wastewater infrastructure are presented in this issue.

Wastewater Facilities in New York State (DEC, 1999)

NUMBER OF PLANTS					CAPACITY OF PLANTS			
Size (in mgd)	Number	Sum Number	Percent of Total	Sum Percent	Capacity (in mgd) +/-	Sum Capacity	Percent of Total	Sum Percent of Total
0 to 0.1	173	173	28.6	28.6	0.8	0.8	.02	.02
0.1 to 1.00	244	417	40.3	68.9	60.0	60.7	.60	1.63
1.00 to 10.00	138	555	22.8	91.7	551.0	611.2	14.90	16.57
10.00 to 100.00	41	596	6.8	98.5	1487.0	2097.7	40.36	56.82
100.00 to 315.00	9	605	1.5	100.0	1585.0	3683.01	43.04	100.00
	605		100.0		3683 +/-		100.00	