

**Kingston Water Department
Four-Year Capital Plan**



2012 to 2015



Only Tap Water SM Delivers

- Public Health Protection**
- Fire Protection**
- Support for the Economy**
- The Overall Quality of Life We Enjoy**

Capital Plan Goals and Objectives

The mission of the Kingston Water Department is to provide its customers with drinking water of the highest quality. In addition, the Department must supply flows adequate for fire suppression and sustain water service capacity at levels sufficient to provide for current and future needs of the residents of the City of Kingston. The capital plan of the Kingston Water Department must provide the assets needed to accomplish these goals. Capital plan items should result in improvements in operational effectiveness and efficiencies and improve service delivery or water quality.

Criteria for Capital Projects and Purchases

While all projects are important to the Department, resource limitations dictate that some mechanism to prioritize items should be established. Therefore, capital projects are evaluated according to the following criteria and prioritized consistent with the following ranking system:

Criteria	Rank
The project is legally mandated	8
The project improves public health or safety	7
The project results in significant cost savings or operational efficiencies	6
The project contributes directly to achievement of strategic goals	5
The project is linked to other projects and improves the results of those initiatives	4
The project cost matches available resources and fulfills at least one other criteria	3
The project improves customer service	2
The project supports economic development	1

The ranking system should be used as a guide in scheduling projects for implementation. It was compiled from a survey of the management staff and was created by averaging individual responses.

Project Description and Ranking

Phase 2 B Project: **Rank: 18** (6 + 5+ 4 + 3)

While the Phase 1 and 2 Improvements to the Treatment Plant dealt with repairs and renovations to the treatment system, the Phase 2B project deals with essential repairs to the building envelope. It addresses repairs to the roof and clerestory as well as heating, electrical, and security repairs.

Cooper Lake Dam Inspection: **Rank: 24** (8 + 7 + 5 + 4)

The Cooper Lake Dam is essential to the system since it is the principal raw water storage reservoir for the Department. Most importantly, the integrity of the dam has significant public health and safety implications. This is a complex multiyear project that includes an engineering assessment of remediation options. Since the total cost of remediation can not be known until the full inspection is completed, this will be amended as information becomes available.

Cooper Lake Remediation: **Rank: 24 (8 + 7 + 5 + 4)**

Although the inspection of the Cooper Lake Dam is in progress, preliminary findings suggest that some remediation will be required. Like the inspection project, this will be a multi-year project that will follow immediately upon the conclusion of the inspection and Engineering Assessment. This project will include the replacement of the regulating valve and meter at the Reservoir.

Upgrade to Radio-read Meters: **Rank: 17 (6 + 5 + 4 + 2)**

It currently is a full-time task for the meter reader to read all of the meters quarterly. By converting to radio read meters, the system could be read in a few days. This would free the meter reader for other tasks and eliminate one position within the meter department. It would also provide the flexibility to issue monthly bills, if that became desirable. The Department purchased a radio-equipped handheld and software during the recent billing conversion and was successful in getting a NYS Archives grant for the purchase of a vehicle mounted reader as well as a handful of radio transmitters. Radio-read meters are presently installed in all new accounts and we have earmarked approximately 300 difficult to read accounts for conversion in 2009. However, to achieve the full cost benefit and efficiency from radio equipped meters, the entire system should be converted.

Replace Wash-Tank at Plant: **Rank: 18 (7 + 6 + 5)**

An inspection has identified some problems with the current 50,000 gallons tank and the recommendation from our consulting engineer is that the tank should be replaced. The tank is essential for the safe operation of the Plant since it enables the filters to be backwashed without creating hydraulic transients that could damage the system.

LT 2 and CT Compliance: **Rank 20: (8 + 7 + 5)**

Changes in EPA regulations have mandated that all treated water reservoirs must be covered or treated for 4-log virus removal by April 2009. Our 12 MG Binnewater Reservoir is uncovered and will not be in compliance unless covered or appropriately treated. A schedule for compliance was agreed upon by April 1, 2009 and full compliance must be achieved by August 2011.

Paint Florence St. Tank: **Rank 12: (7 + 5 + 2)**

Re-coat both interior and exterior of tank as recommended after inspection in 2009.

Paint Glen Street Tank: **Rank 12: (7 + 5 + 2)**

Exterior and interior work recommended in inspection report

Paint Pearl St. Tank: **Rank 12: (7 + 5 + 2)**

Re-Coat both exterior and interior of tank. Add ladder system

Install Tank SCADA System: **Rank 20: (7 + 6 + 5 + 2)**

Currently, there is no remote monitoring capability for the tank systems and personnel must be onsite to determine their status. It is possible to install a SCADA system that would allow them to be monitored and controlled from anywhere there is web access. Due to our proximity to the Town of Ulster, it is possible to install a single system that could serve both communities and grant monies are presently available for shared municipal services. This project would include the replacement of the existing controls

at the Foxhall Pump Station. An application for this work was previously submitted but was not funded. It will be resubmitted to see if funding can be obtained.

Install Vehicle GPS System: Rank 15: (7 + 6 + 2)

Being able to track and locate our vehicles in real time has significant safety and security implications and should result in improved efficiencies and cost savings.

Purchase Backhoe and Dump Truck: Rank 16: (7 + 2 + 4 + 3)

It is essential for the maintenance and repair of the system that the backhoe and dump truck are operational and in reliable condition. The dump was purchased in 1991 and the backhoe was purchased in 1993. While both have had appropriate care and maintenance procedures performed and are in serviceable condition, they are nearing the end of their useful lives and should be replaced in the coming years.

Install Generator at Foxhall Pump Station: Rank 18: (7+5+4+2)

Foxhall is the only pump station that does not have auxiliary power. In lieu of a generator, there is an informal agreement with the KFD to place a fire pumper at the station and pump from the gradient into the tank. A recent DOH inspection found this to be an unsatisfactory arrangement and recommends for health and safety reasons, that a back-up generator be installed.

Purchase Time and Attendance System: Rank 15: (6+4+3+2)

Timesheets and accruals are currently done manually. This system would automatically track time and attendance as well as accruals and scheduling. It would ensure that all employees are equitably subject to the same standards and would improve efficiencies. In addition, it would interface with the Munis payroll system and reduce the amount of data entry required.

Inventory Storage Rack System: Rank 15: (6+4+3+2)

During the renovation of the Office and Shop, existing storage space was converted to work space. Since then, storage of equipment has been scattered among several facilities. This makes inventory control difficult and decreases response times during an emergency. The old boiler room is still used storage. However, we can not take full advantage of its vertical space without the installation of a rack storage system. Such a system would allow better inventory control and promote efficiencies.

Purchase Leak Detection Equipment: Rank 20: (7 + 6 + 5 + 2)

Leaks and unaccounted-for water are a waste of a valuable resource and a loss of revenue. In addition, being able to accurately and quickly pin-point the location of leaks, minimizes outages and loss of service and makes repairs more timely and increases both worker and public safety.

Watercad Software for Hydraulic Model: Rank 15 (6 + 4 + 3 + 2)

Several years ago, CDM created a hydraulic model of the distribution system. Since we lack the software to run the model, it resides on their computers and we must engage them to run scenarios and calibrate it. With the purchase of the software, we could bring the model in-house and utilize it to evaluate project impacts as well as a tool to enhance our operations.

Phase 1B Plant Improvements:**Rank 18: (7+6+5)**

This project calls for the installation of an air scour system for each filter as well as the incorporation of dual media in all filters. The balance of this work will include the installation of a new underdrain system in the Phase 1A filters (filters 1 – 8). This work was the subject of successful litigation against the Phase 1B design engineers. The proceeds from which will fund the installation of the new underdrains (see note 3, Table 1).

Dam Compliance:**Rank 24: (8+7+5+4)**

The New York State Department of Environmental Conservation promulgated new dam safety regulations that became effective in January 2010. Among other things, these new requirements stipulate that detailed engineering assessments be conducted as well as routine inspections of all facilities. Given the hazard classification of all of the Department's dams, the impact of these regulations will be spread over several years.

Mink Hollow Intake:**Rank 24: (7+6+5+4+2)**

The Mink Hollow Intake, constructed in 1943, is the Department's main source of supply. While there was some deterioration in the structure in the intervening years, significant flood events in 2010 seriously compromised its integrity and an engineering assessment determined that it required immediate replacement. After evaluating the alternatives, the Board determined that replacement in-kind, with some minor modifications, was the best strategy. Due to the relative importance of this facility, this work is presently underway and will be completed in 2011.

Distribution System Repair and Replacement:**Rank 21: (7+6+5+2+1)**

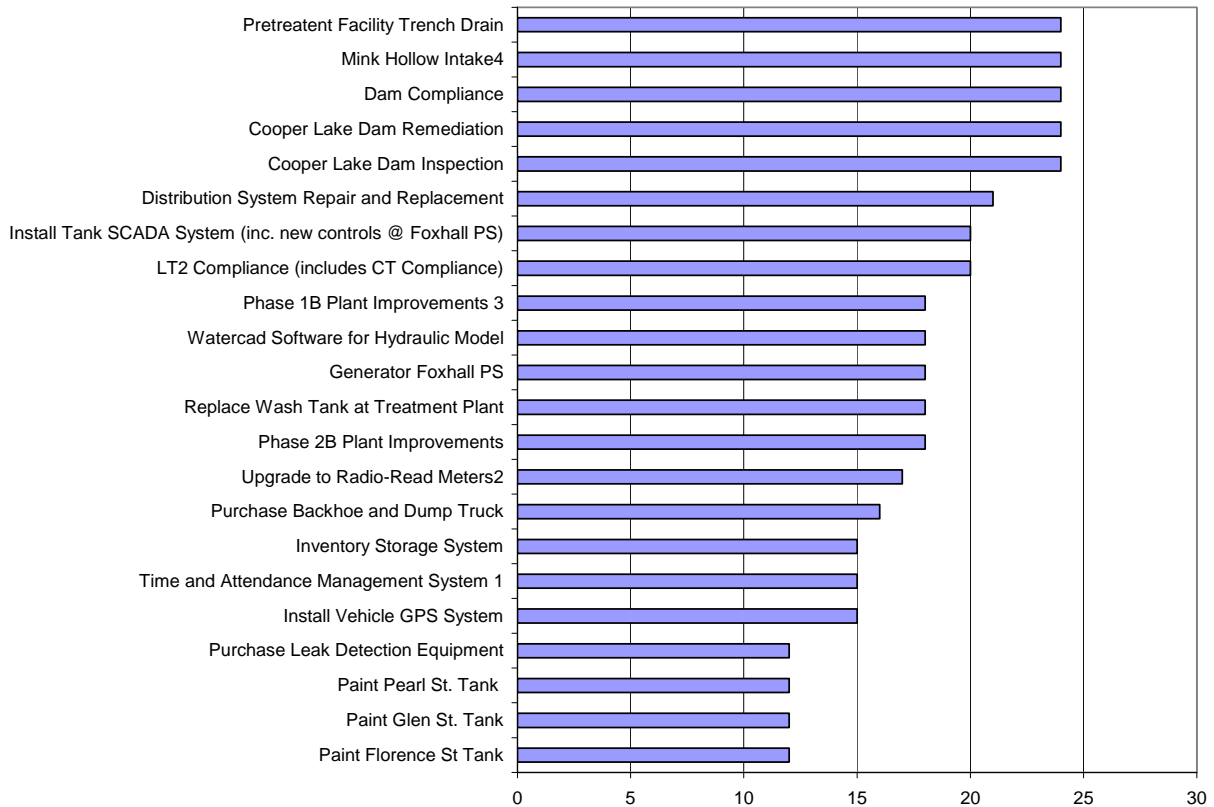
The majority of the Department's distribution system was installed prior to WWII. While significant improvements have been made, including installation of large diameter mains in some areas and cement lining projects, investment in this aging infrastructure needs to be made to maintain the level of service and reliability. Projects include water main replacement, gate valve installation, and replacement of pressure regulating valves throughout the system.

Trench Drain for Secondary Containment at the PTF:**Rank 20: (8+7+5)**

The Pre-Treatment Facility (PTF) was built in 1993 for the purpose of adding coagulant upstream of our filters so that filtration would be more efficient and the KWD could meet the requirements of the SDWR. It was constructed without any secondary containment in the transfer area, even though this was a requirement when the facility went online. The NYS DEC made its first inspection of the facility in 2011 and a notice of violation was issued mandating that the secondary containment in the transfer area be constructed. That project was done, using KWD personnel, in 2011.

The relative ranking for all of these projects can be seen in Figure 1.

Figure 1: Ranking of proposed capital projects and acquisitions



Review of 2011 Capital Spending Plan:

The 2010 capital spending plan provided for:

Description	Funding Source	Status
1. LT 2 Compliance (UV Facility)	Borrowings	Substantially Complete
2. Phase 2B Improvements to WTP	Borrowings	In Progress
3. Upgrade to Radio Read Meters	Budget	In Progress
4. Cooper Lake Dam Inspection	Budget	In Progress
5. Dam Compliance	Budget	InProgress
6. Mink Hollow Intake Replacement	Borrowings	In Progress

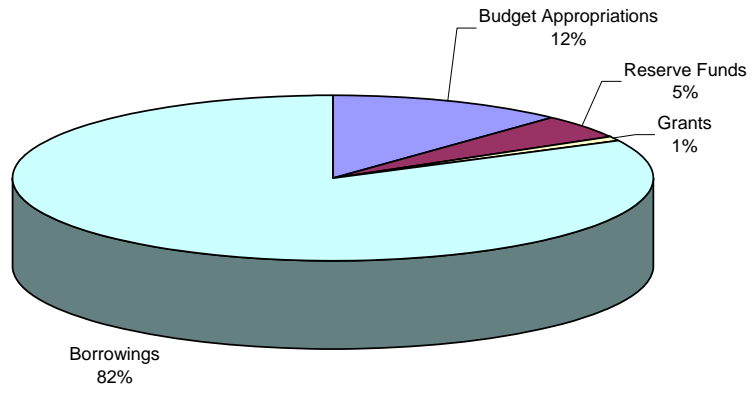
- **Item 1:** As part of EPA's Long-term Enhanced Surface Water Treatment Rule 2, all finished water reservoirs must be covered or adequately treated. This is a mandated multi-year project that is in compliance with the Administrative Order that was agreed up by the Department and the NYS DOH. Site exploratory work was completed in 2009 and construction began in late 2010. All work will be substantially completed in 2011 and punch list items are being addressed in the first quarter of 2012.
- **Item 2:** The Phase 2 Improvements to the Edmund T. Cloonan Water Treatment Plant are on track and expected to be completed by the end of 2012. This is a multi-year project comprising a series of contracts designed to repair and improve the Plant's building envelope. Built in 1899, the facility is an American Water Works Landmark and continues to serve the needs of the City of Kingston.
- **Item 3:** The KWD is committed to the system-wide installation of radio-read meters. The Department has thus far elected to fund this from operations and only has the resources to convert a few hundred meters annually. All funds allocated in 2011 for this project were expended.
- **Item 4:** The Cooper Lake Dam Project is a multi-year project. It calls for the structural evaluation of the dam as well as an update to the facility's Emergency Action Plan and inundation map. The Engineering Assessment (EA) is expected to be completed in 2012. Remediation will follow the completion of the EA.
- **Item 5:** In 2010, New York State promulgated new dam compliance regulations that call for a detailed evaluation of each dam as well as the preparation of an emergency action plan for each structure. This is a multi-year undertaking and the KWD is in compliance with the regulatory schedule for its facilities.
- **Item 6:** In 2010, a series of storm events seriously damaged the raw water intake and emergency repairs were undertaken while a structural evaluation of the facility was conducted. It was finally decided to replace the facility after the second flood made repairs inadvisable, given the condition. Bids were accepted in late 2011 and construction will be completed in 2012.

Four-Year Capital Plan:

The current capital plan proposes spending some \$16,325,015 on 22 projects and acquisitions. Approximately \$4,307,557 has already been expended on these items and \$8,596,458 is expected to be invested over the next 4 years. The detailed plan is contained in Table 1.

The funding sources for the Plan can be seen in Figure 2. Approximately 82 percent is proposed to come from borrowings, 12 percent is expected to come from the Department's annual operating budget, 5 percent will be drawn from encumbered reserve funds and 1 percent is anticipated to be funded through grants.

Figure 2: Capital Plan funding sources



Since 94 percent of the funding for the Plan is proposed to come directly from operations or debt, the anticipated impact on the Department's budget will be significant in the coming years. The specific timing of these projects will certainly have an impact on the magnitude of future rate increases.

**Capital Improvement Plan
2012 to 2015**

Description	Rank	Total Cost	Prior Years	2012	2013	2014	2015	Balance	Annual Maint Cost
Paint Florence St Tank	12	\$ 400,000	\$ -	\$ -	\$ -	\$ -	\$ 400,000	\$ -	\$ 1,000
Paint Glen St. Tank	12	\$ 400,000	\$ -		\$ 400,000		\$ -	\$ -	\$ 1,000
Paint Pearl St. Tank	12	\$ 400,000	\$ -			\$ 400,000	\$ -	\$ -	\$ 1,000
Purchase Leak Detection Equipment	12	\$ 40,000	\$ -				\$ 40,000	\$ -	
Install Vehicle GPS System	15	\$ 7,200	\$ -		\$ -		\$ 7,200	\$ -	\$ -
Time and Attendance Management System ¹	15	\$ 9,950	\$ 9,950	\$ -	\$ -	\$ -	\$ -	\$ -	
Inventory Storage System	15	\$ 20,500	\$ -		\$ 20,500		\$ -	\$ -	
Purchase Backhoe and Dump Truck	16	\$ 180,000	\$ 96,763		\$ -	\$ 83,237	\$ -	\$ -	\$ 1,500
Upgrade to Radio-Read Meters ²	17	\$ 780,000	\$ 159,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 421,000	\$ -
Phase 2B Plant Improvements	18	\$ 629,147	\$ 506,695	\$ 122,452	\$ -			\$ -	\$ -
Replace Wash Tank at Treatment Plant	18	\$ 1,510,800	\$ 10,800		\$ 1,500,000			\$ -	\$ 1,000
Generator Foxhall PS	18	\$ 10,000	\$ -		\$ -	\$ 10,000		\$ -	\$ 1,000
Watercad Software for Hydraulic Model	18	\$ 40,000	\$ -	\$ 27,000		\$ 13,000		\$ -	\$ 500
Phase 1B Plant Improvements ³	18	\$ 1,062,612	\$ 42,121		\$ 1,020,491			\$ -	\$ 1,000
LT2 Compliance (includes CT Compliance)	20	\$ 2,725,417	\$ 2,630,445	\$ 94,972	\$ -			\$ -	\$ 41,000
Install Tank SCADA System (inc. new controls @ Foxhall PS)	20	\$ 100,000	\$ -	\$ 20,000	\$ 80,000			\$ -	\$ 2,000
Distribution System Repair and Replacement	21	\$ 5,000,000	\$ -	\$ -	\$ 500,000	\$ 500,000	\$ 1,000,000	\$ 3,000,000	
Cooper Lake Dam Inspection	24	\$ 179,100	\$ 140,800	\$ 38,300	\$ -			\$ -	\$ -
Cooper Lake Dam Remediation	24	\$ 1,500,000	\$ 5,200	\$ 150,000	\$ 150,000	\$ 500,000	\$ 694,800	\$ -	\$ -
Dam Compliance	24	\$ 286,695	\$ 147,305	\$ 41,000	\$ 34,800	\$ 63,590		\$ -	\$ -
Mink Hollow Intake ⁴	24	\$ 1,007,994	\$ 522,879	\$ 485,115	\$ -	\$ -	\$ -	\$ -	\$ -
Pretreatment Facility Trench Drain	24	\$ 35,600	\$ 35,600					\$ -	
		\$ 16,325,015	\$ 4,307,557	\$ 1,028,839	\$ 3,755,791	\$ 1,619,827	\$ 2,192,000	\$ 3,421,000	\$ 51,000
Funding									
Budget Appropriations		\$ 1,964,492	\$ 647,495	\$ 286,415	\$ 375,791	\$ 136,590	\$ 97,200	\$ 421,000	\$ 51,000
Reserve Funds		\$ 750,000		\$ -	\$ 750,000				
Grants		\$ 151,159	\$ 51,159	\$ -	\$ 80,000	\$ -	\$ -	\$ -	
Borrowings		\$ 13,479,364	\$ 3,608,903	\$ 742,424	\$ 2,550,000	\$ 1,483,237	\$ 2,094,800	\$ 3,000,000	
Other		\$ -							
Total		\$ 16,345,015	\$ 4,307,557	\$ 1,028,839	\$ 3,755,791	\$ 1,619,827	\$ 2,192,000	\$ 3,421,000	
Notes:									
1: \$8,455 from NYS SARA Grant, balance from operations			3: \$750,000 from Reserve Funds, balance from debt						
2: \$42,704 from NYS SARA Grant, balance from operations			4: \$750,000 from DWSRF Loan, balance operations						