NEW YORK CITY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL ENGINEERING

New York City's Combined Sewer Overflow Program

1st Quarterly Report - Year 2003

April 2003

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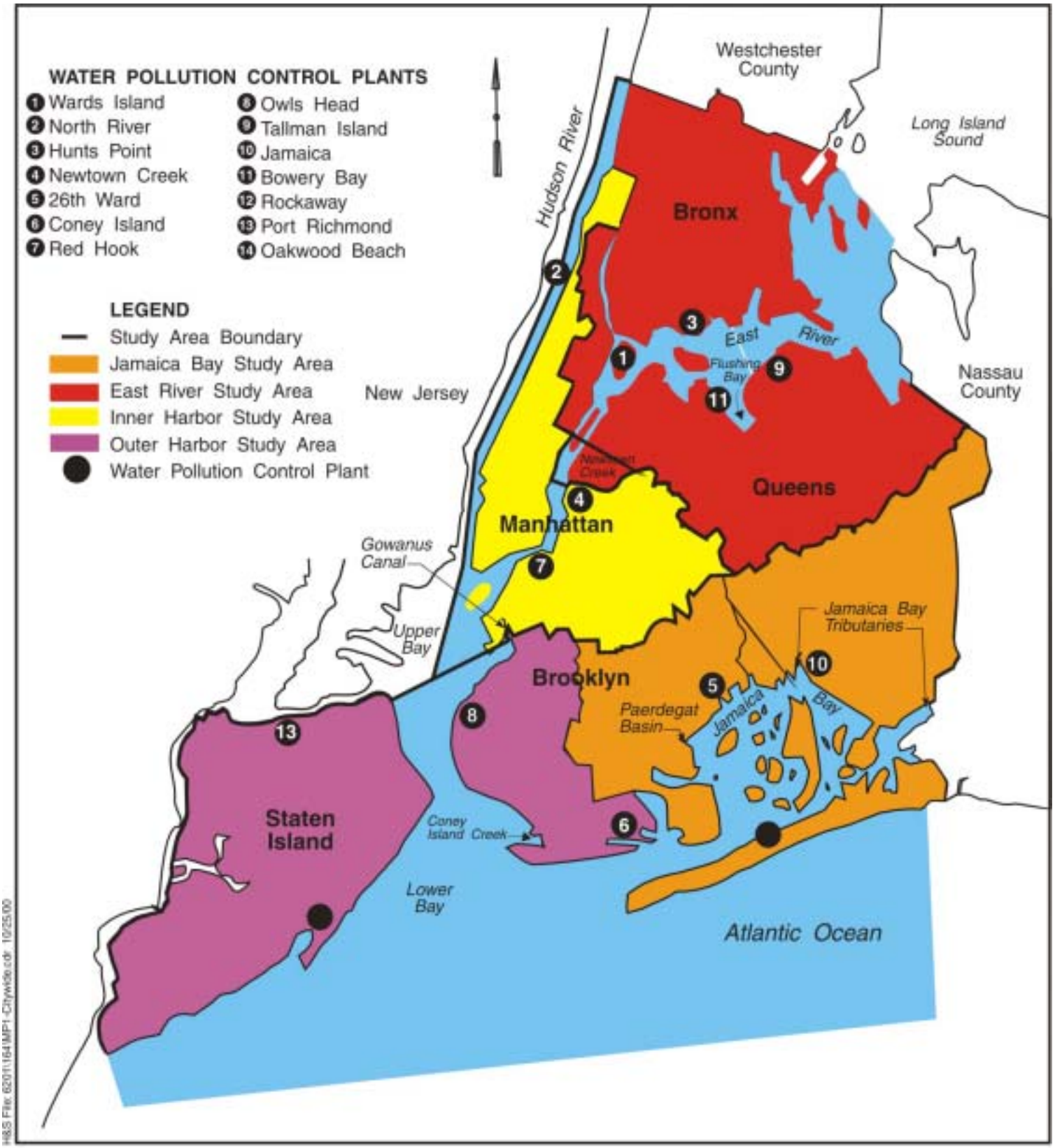
I. Introduction

The City of New York is primarily served by a combined sewer system. Approximately 70% of the City is comprised of combined sewers with 4,800 miles of combined sewers within the five boroughs. The sewer system drains some 200,000 acres and serves a population of about 8 million. Approximately 450 outfalls are permitted to discharge during wet-weather through combined-sewer overflows (CSOs) to the receiving waters of the New York Harbor. Although these discharges do not represent a major source of pollution to the harbor on a long-term basis, they can result in local water-quality problems such as periodically high levels of coliform bacteria, nuisance levels of floatables, depressed dissolved oxygen, and, in some cases, sediment mounds and unpleasant odors.

The NYC Department of Environmental Protection (DEP) is committed to improving water quality and achieving the maximum potential uses of the region's waters, and to maintaining compliance with the applicable regulations. The City has committed billions of dollars for improved pollution-control facilities, water-quality monitoring programs, and scientific and engineering investigations of innovative and cost-effective pollution-control alternatives. As a result, water quality has improved dramatically over the past 10 years.

One of the City's major initiatives to improving local receiving water quality is the Citywide CSO Program. For this program the City has been divided into eight (8) areas, which together cover the entire harbor area. Four (4) area-wide project areas were developed (East River, Jamaica Bay, Inner Harbor, and Outer Harbor) and four (4) tributary projects areas were defined (Flushing Bay, Paerdegat Basin, Newtown Creek, and the Jamaica Tributaries) as shown in Figure 1.

This quarterly report summarizes recent progress by the City in its efforts to plan and construct the recommended CSO facilities under the Citywide CSO Program. This report covers the period from January 1, 2003 through March 31, 2003.



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DEP

CSO Study Area Locations

City-Wide CSO Facility Planning

Figure 1

II. Project Progress for Comprehensive Citywide CSO Project

A.) Flushing Bay

- **Flushing Bay CSO Retention Facility**

The Flushing Bay CSO Retention Facility is an underground storage tank, which will have a storage capacity of 43 million gallons, 28 MG in the tank and 15 MG in the upstream sewers. The facility collects flow from the system tributary to the "CS-4" outfall, which discharges to the head of Flushing Creek. The elements of the facility include:

- Relocation of ball fields in Kissena Corridor
- Rerouting of Park Drive East CSO line inside the construction site and construction of the effluent channel
- Phase 1 construction of the underground structural elements of the tank
- Phase 2 construction of the mechanical and above-ground portion of the facility
- Construction of tide gates on the tank outfall sewer and construction of ball field

The NYCDEP plans to submit the revised Flushing Bay Water Quality Facility Planning Report to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order.

Design

Design has been completed for all elements**.**

Construction

Construction has been completed for the relocation of ball fields and the rerouting of sewers. Phase 1 construction (Contract CS4-3) for the tank was substantially completed as of August 17, 2001. The Notice to Proceed for the Phase 2 construction contracts was issued on April 11, 2002. Construction is progressing on schedule toward the projected milestone date for beneficial use of the storage facility in July 2004. Final completion of the Phase 2 construction is projected for July 2005.

- **Corona Avenue Vortex Facility**

The Corona Avenue Vortex Facility includes three vortex units operating in parallel in an underground facility in Corona Avenue, Queens. The three units treat flow diverted from the lower deck of the "CS-3" outfall (permitted CSO outfall BB–006 in the Bowery Bay WPCP system). The overflow from the facility is returned to the CSO outfall, and the underflow (foul waste) is carried to the 108th Street Pumping Station that pumps the flow to the high level interceptor**.**

Design

Modifications to the facility include replacing the bar racks with mechanically cleaned bar screens, addition of sluice gates to isolate the facility to prevent flooding, diversion of dry weather flow to the existing 108th Street Pumping Station and other miscellaneous improvements to maintain the foul waste pumps. Final design of these modifications is completed and awaiting final Department review and bidding.

Construction

Construction of the original facility design is complete. The facility has been on-line since November 1997.

Monitoring Program

The sampling and evaluation program began in March 2000. Four interim reports have been submitted reporting on progress to September 2002. Field sampling was completed in September 2002. A final report on the evaluation of the data is being prepared. A peer review of the data collection program will be performed.

Additional Swirl Concentrators

Work on additional swirl concentrators was deferred until the completion of testing of the effectiveness of the Corona Avenue facility. The need for the additional vortex facilities originally proposed for floatables control will be re-evaluated as part of the Comprehensive Floatables and Settleables Plan to determine if other alternatives are either more cost effective, faster to implement or result in better floatables capture. An engineering assessment of the additional proposed swirl concentrators is underway, based on hydraulic data from the Corona Vortex Facility evaluation.

Table 1

Flushing Bay CSO Project

Plan Elements:	Corona Avenue Vortex Facility	Flushing Bay CSO Retention Facility
Location:	Corona Avenue, Queens	Intersection of College Point Boulevard and Avery Avenue, Queens
Actions:	Design and construction of three underground vortex units to treat CSO diverted from the lower deck of the "CS-3" outfall.	Design and construction of a 43 MG storage facility, which includes a 28 MG, underground storage tank and 15 MG in-line storage in upstream sewers. The facility collects flow from the system tributary to the "CS-4" outfall.
Cost:	$33,000,000	$291,000,000
Status:	Construction complete	Phase 2 construction started April 2002. Milestone for beneficial use July 2004
Other Issues:	Monitoring program – Final data evaluation report is being prepared; Final design of modifications at the facility is completed and is awaiting final Department review then bidding.	Contract change orders for additional work are in progress.

B.) Paerdegat Basin

The Paerdegat Basin CSO Retention Facility is located in southeastern Brooklyn, at the intersection of Flatlands and Ralph Avenues. The facility will receive combined sewer overflows from a drainage area of approximately 6,000 acres. Once constructed, it will consist of a four (4) bay underground storage tank and operations buildings. The stored CSO will be pumped back to the Coney Island WPCP for treatment after each rain event.

The elements of the originally approved facility plan included:

1. 20 MG of in-line storage.

   The CSO tank effluent weir will be set at an elevation of +2.00 ft (approximately the elevation of high tide), which will allow for the storage of 20 MG of CSO within the existing combined sewer network upstream of the facility.

2. 30 MG of off-line storage.

   The below grade retention tank will have a storage capacity of 20 MG and the influent channels, that redirect the existing outfalls to the CSO facility site on the western shore of Paerdegat Basin, have a storage capacity of 10 MG. The total storage of the new facility is 30 MG.

3. Dredging of the mouth of the basin.

   The dredging plan for Paerdegat Basin entails the removal of 20,000 yd^3 of material from the mouth of the basin and about 38,000 yd^3 of sediment from the head end. A dredging permit from NYSDEC has been obtained to implement this element.

The NYCDEP plans to submit the revised facility plan for the Paerdegat Basin Water Quality Facility Planning Project to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order. The implementation of the facility plan elements will take place during the following phases of design and construction:

- Phase IA – Influent Channels

  This phase includes construction of a major portion of the influent channels and the relief weir.

  Status:

  Construction of the influent channels to the CSO facility was substantially completed in February 2002. A few punch list items remain to be completed.

- Phase II – Foundations and Substructures

  This phase includes construction of the CSO tank and dredging of the mouth of the basin.

  Status:

  The Notice to Proceed was issued on June 24, 2002. The construction is underway. The contract completion date is December 25, 2005.

- Phase III – Structures and Equipment

  This phase includes installation of the CSO tank equipment, construction of the aboveground buildings, and construction of the remaining Influent Channels. The CSO facility will be put on line during construction of this phase.

  Status:

  Final design is 90 % complete. The construction of this phase cannot be scheduled until the CSO tanks and building foundations are substantially constructed under the Phase II.

- Phase IV – Natural Area Park Restoration

  This phase includes restoration and clean up of the Natural Area Park and construction of the park perimeter treatment such as fencing, curbing and lighting.

  Status:

  This phase will be designed in the future.

Table 2

Paerdegat Basin CSO Project

	Phase IA	*Phase II*	*Phase III*	*Phase IV*
Construction Phase:	Influent Channels	Foundations and Substructures	Structures and Equipment	Natural Area Park Restoration
Location:	Flatlands and Ralph Avenues, Brooklyn, NY	West Shore of Paerdegat Basin	West Shore of Paerdegat Basin	Both sides of Paerdegat Basin
Actions:	Construction of the influent channels to the CSO facility	Underground structural elements	Aboveground buildings and equipment	Park extending on both sides of Paerdegat Basin.
Cost:	$9,000,000	$119,101,386	$130,026,844	$8,000,000
Status:	Construction substantially completed in February 2002.	NTP issued on 6/24/02. Construction is in progress.	Final Design is 90% complete.	This phase will be designed in the future.
Other Issues:	-	-	Construction cannot be initiated until Phase II is substantially completed.	-

C.) Inner Harbor

The Inner Harbor CSO Facility Planning area consists of the North River, Newtown Creek, and Red Hook WPCP drainage areas. The facility plan concluded that CSOs in the Inner Harbor do not contribute to dissolved oxygen and coliform problems in the open water areas of the Hudson River, Lower East River, and Upper Bay. Therefore, consistent with the EPA's Nine Minimum Controls, the recommended elements of the facility plan for the open waters consists of:

- Regulator Improvements
- Throttling Facilities
- In-Line CSO Storage

In contrast to open waters, in Gowanus Canal, CSOs have a significant impact on numerical water quality limits for dissolved oxygen. The recommended plan for Gowanus included:

- Reactivate the Flushing tunnel
- Dredge the canal

The NYCDEP plans to submit the revised facility plan for the Inner Harbor CSO Facility Planning Project to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order.

Final Design

In the final design contract for Inner Harbor, the following three elements have been targeted in order to achieve the goals of reducing the magnitude, frequency, and duration of CSO discharges:

- Phase I – Regulator Improvements
- Phase II – Throttling Facilities (Maximize Wet Weather Treatment)
- Phase III – In-Line CSO Storage (Inflatable Dams)

Phase I

Phase I will provide improvements to 72 regulators in Inner Harbor. Added to the 22 regulators that were recently upgraded to fixed orifices under the NYSDOT Route 9A Project, and the 29 locations where the Department will automate the regulators, a total of 123 regulators are being improved in the Inner Harbor area. The breakdown is as follows:

- In the North River drainage area, 9 regulators will be automated under the Citywide SCADA project and 33 regulators have been or will be converted to fixed orifices. Of

these 33, 15 were converted under the NYSDOT's Route 9A Reconstruction Project; the other 18 will be converted to fixed orifices under the Phase I construction contract.

- In the Newtown Creek Manhattan drainage area, 12 regulators will be automated under the Citywide SCADA project, and 29 regulators have been or will be converted to fixed orifices. Of these 29, 7 were converted under the Route 9A Reconstruction Project; the other 22 will be converted to fixed orifices under the Phase I construction contract.

- In the Newtown Creek Brooklyn drainage area, 5 regulators will be automated under the Citywide SCADA project, and 14 regulators will be converted to fixed orifices. All 14 regulators will be converted to fixed orifices under the Phase I construction contract.

- In the Red Hook drainage area, 3 regulators will be automated under the Citywide SCADA project, and 18 regulators will be converted to fixed orifices. All 18 regulators will be converted to fixed orifices under the Phase I construction contract.

Improvements under Phase I construction include plank guide and manhole rung replacement, sluice opening enlargement to a minimum of 12", termination of all water service connections, improved/enlarged access to the regulators, and the conversion of all sluice gates to manual operation for a fixed orifice condition. Hand-held hydraulic-powered valve turners will be supplied to maintenance crews to assist in sluice gate operation.

The Notice to Proceed for both Phase I regulator improvement contracts (Manhattan and Brooklyn) was given to Kenneth J. Delaney Contracting Corp in February 2003, with major construction expected to begin this summer.

The project schedule for the Citywide SCADA Project is under review by the NYCDEP.

Phase II

Phase II is intended to maximize wet weather flow treated at the plants by providing a throttling facility. New throttling facilities will be constructed at the Manhattan Pumping Station and Newtown Creek WPCP, both of which are being designed and constructed under the Newtown Creek WPCP upgrade work. The Newtown Creek throttling facility is included in Contract 30 for the Newtown Creek WPCP upgrade, and this contract is currently underway. The Manhattan Pumping Station throttling facility will be included in the construction contract for the pumping station. Currently final design is at 90% completion. Preliminary design for throttling facility improvements at Red Hook WPCP is complete.

Design on the North River Throttling Facility was suspended in April 2002 due to operational and maintenance concerns. A wet weather operating plan (WWOP) is currently being developed in lieu of the throttling facility. The WWOP will serve the same purpose as the throttling facility, namely to maximize flow treated at the plant during wet weather.

Phase III

Final design of Phase III has not yet been initiated. Results of the Hunts Point in-line storage demonstration facility are being awaited to determine if this technology should be implemented. Under this phase, two inflatable dams will be designed – one for Regulator B-6 in the Newtown Creek-Brooklyn drainage area which will store up to 2.0 MG, and the other for Regulator R-20 in the Red Hook drainage area that will have the capacity to store up to 2.2 MG.

Gowanus Canal

Dredging of Gowanus Canal, along with reactivation of the Flushing Tunnel, was completed in March 1999.

Table 3

Inner Harbor CSO Project

OPEN WATERS

	Phase I	*Phase II*	*Phase III*
Plan Elements:	Regulator Improvements	Throttling Facilities	In-Line Storage
Location:	72 regulator sites in Manhattan and Brooklyn	North River WPCP, Manhattan Pumping Station, Newtown Creek WPCP	Upstream of regulators B-6 and R-20 in Brooklyn
Actions:	Conversion to fixed orifices	Installation of sluice gates and actuator in interceptor sewer	Installation of two inflatable dams in the combined sewer systems
Construction Cost:	$9,500,000	$10,000,000	$3,000,000
Status:	Construction Contract Awarded in Feb 2003	WWOP for NR Under Development Final Design for MPS 90% Complete Construction contract at NC awarded	Final Design – Not Initiated
Other Issues:	-	-	Awaiting Hunts Point demonstration test results

D.) Outer Harbor

The Outer Harbor CSO Facility Planning area consists of the drainage areas of the Port Richmond, Oakwood Beach, Owls Head and Coney Island (separately sewered area) Water Pollution Control Plants (WPCPs) and their associated sewers and pumping stations. The receiving waters of the study area include the New York limits of the Raritan Bay, Arthur Kill, Kill Van Kull, Upper New York Bay waters to the boundary of the Inner Harbor CSO Project, the Narrows, Gravesend Bay, Lower New York Bay, Richmond Creek and Lemon Creek. The facility plan concluded that CSOs have minimal impact on the dissolved oxygen and coliform concentrations in the open water areas of the Outer Harbor. Therefore, consistent with the EPA's Nine Minimum Controls, the recommended elements of the facility plan for the open waters consist of:

- Regulator Improvements
- Throttling Facilities
- In-Line CSO Storage

The NYCDEP plans to submit the revised facility plan for the Outer Harbor CSO Facility Planning Project to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order.

- **Open Waters**

Preliminary Design

A preliminary design report was completed. This report includes the following recommended elements:

- Regulator Improvements
- Throttling Facility
- In-Line Storage

As-built and record drawings, for the regulators selected for improvement, were collected and will be used for developing final design drawings. Detailed site location plans have been developed for the final design drawings.

Final Design

An engineering contract for final design has been developed and a pre-solicitation review (PSR) and CP request have been drafted as part of the engineering contract procurement process. The final design contract consists of three phases:

- Phase I – Regulator Improvements
- Phase II – Throttling Facility

- Phase III – In-line CSO Storage

Phase I – Regulator Improvements

Phase I will provide improvements to 32 regulators in the Outer Harbor. Added to the 6 locations where the Department will automate the regulators, a total of 38 regulators will be improved in the Outer Harbor area. The breakdown is as follows:

- In the Owls Head drainage area, 3 regulators will be automated under the Citywide SCADA project and 4 regulators will be converted to fixed orifices under the Phase I construction contract.

- In the Port Richmond drainage area, 3 regulators will be automated under the Citywide SCADA project and 28 regulators will be converted to fixed orifices under the Phase I construction contract.

The project schedule for the Citywide SCADA Project is under review by the NYCDEP.

Phase II – Throttling Facility

A throttling facility to store up to 5 MG in the Port Richmond WPCP east interceptor sewer has been recommended and preliminary design has been completed.

Phase III – In-line CSO Storage

Preliminary design of two inflatable dam locations for the Outer Harbor has been completed – One at Port Richmond (PR-6W, 1.4 MG) and the other at Owls Head (OH-6C, 2.2 MG).

Table 4

Outer Harbor CSO Project

	Phase I	*Phase II*	*Phase III*
Plan Elements:	Regulator Improvements	Throttling Facility	In-Line Storage
Location:	32 regulator sites throughout Brooklyn and Staten Island	Port Richmond WPCP	Owls Head: OH-6C P. Richmond: PR-6W
Actions:	Conversion to manually operated sluice gates, replacement of stop plank guides, termination of water supply	Installation of sluice gate in Port Richmond east interceptor sewer	Installation of two inflatable dams in the combined sewer system
Project Cost:	$4,800,000	$1,300,000	$3,100,000
Status*:*	Preliminary Design – 100% Complete	Preliminary Design – 100% Complete	Preliminary Design – 100% Complete
Other Issues:	-	-	-

E.) Jamaica Bay

The Jamaica Bay CSO Abatement Facilities Plan submitted in November 1993 recommended retention of 34 million gallons of CSO from Fresh Creek (27 million gallons) and Hendrix Creek (7 million gallons) combined. The retention facility was to be located beneath the Bruekelen Houses Park, a 12-acre site north of the head end of Fresh Creek, and adjacent to the major CSO sewer in Williams Avenue.

Two issues that necessitated examining alternate options impacted the feasibility of constructing this facility at the proposed location. These issues were: 1) the need to provide five interim ball fields off-site, but within the immediate neighborhood, to replace the five ball fields that would be eliminated during the construction, and 2) the subsequent sale of the only large available land in the immediate neighborhood that could accommodate five interim ball fields.

Over the past several years, the advent of soft ground tunneling has resulted in this type of construction to now be seen as practical for the project area. The alternate option of a storage/conveyance tunnel in lieu of retention tank involves a construction of a 23 foot diameter tunnel about 80 feet beneath the Jamaica Bay using advanced full faced Earth Pressure Balanced Tunnel Boring Machine (EPBTMB) and precast concrete segmented gasketed lining techniques. This facility relocates the CSO from the existing Fresh Creek outfall by the Williams Avenue regulator to a NYCDEP owned site south of the sludge dewatering facility at the 26th Ward WPCP, and from Hendrix Creek outfall at the Hendrix Street Canal near the 26th Ward WPCP to the south of sludge dewatering facility at the 26th Ward WPCP. The proposed tunnel will store and convey about 27 million gallons (per Value Engineering revision) of CSO from Fresh Creek (22 million gallons) and Hendrix Creek (5 million gallons), combined, before overflowing into the Hendrix Creek just south of the 26th ward WPCP. Preliminary estimates resulted in a tunnel length of approximately 16,000-ft. Preliminary examination has indicated that less land acquisition would be required for construction for this alternate and also, water quality computer models have resulted in improved water quality in Fresh Creek in reference to dissolved oxygen (DO) and coliform standards.

Other derivative studies from Jamaica Bay CSO Facility Planning Project are the Jamaica Bay Eutrophication Study and Jamaica Bay Chlorine Residual Study.

Meetings

A meeting was held on January 6th to present the preliminary findings of the alternatives analysis. The Engineer presented conceptual drawings and construction cost estimates for five storage concepts at three different storage volumes. The Engineer also presented “knee of curve” analyses comparing various water quality parameters and load reductions versus the capital cost of the various alternatives.

The concepts were as follows:

- -storage tank under creek
- -storage tank under adjacent parking lot
- -storage tunnel
  - -w/pre-screening
  - -w/post- screening

Storage volumes evaluated were: 5 MG, 10 MG and 15 MG.

Preliminary Examinations

The draft final O'Brien & Gere Eutrophication Study report was submitted to the Department on October 19, 2000 and to the NYSDEC on November 3, 2000. A report on the Chlorine Residual Study is under development. The project schedule for the Jamaica Bay CSO Project is under review by NYCDEP.

Table 5

Jamaica Bay CSO Project

Plan Elements:	CSO Storage Tank	Dredging
Location:	Fresh Creek, Brooklyn	Head Ends of Fresh, Hendrix and Spring Creeks
Actions:	Facility Plan and conceptual/preliminary design to be revised	City is local sponsor on the Jamaica Bay Ecosystem Restoration Project
Project Cost:	To be determined	$3 million (estimate from 1993 Facility Plan)
Status:	Evaluating alternatives for storage tunnel, sewer system modifications, and increased wet weather plant capacity	-
Other Issues:	ULURP, SEQR to be revised	-

F.) East River

The facility planning and design services for this project are being performed under East River CSO Project Contracts II, III and IV. Change Order X-1 to East River Contract III, to cover the additional engineering costs associated with additional planning and re-design of the Hutchinson River CSO Storage Conduit, was approved by the Mayor's Office of Construction, and was forwarded in early March 2003 to the Capital Planning Unit for approval. It is anticipated that the change order will be registered in June 2003. The NYCDEP reviewed Change Order X-2 to East River Contract III to cover the additional engineering costs associated with planning, design and construction of the ecological restoration/wetlands construction within Alley Park. Based on review comments provided by the NYCDEP, URS revised the change order and submitted a revised version to the NYCDEP in mid-March 2003 for review. This revised change order is currently under review by the NYCDEP.

▪ Bronx River

Project Summary

As presently planned, the Bronx River CSO Abatement Project will include construction of a storage conduit to effect 4 MG of off-line CSO storage capacity to provide CSO abatement at Outfall HP-23 on the Bronx River. The storage conduit, which will be approximately 500' L x 50' W x 35' H, will be located along the east shore of the Bronx River in an area immediately south of the intersection of East 177th Street, DeVoe Avenue and the Sheridan Expressway. This project will also include relocating Outfall HP-23 approximately 400 feet downstream of the outfall's existing location. At the request of the New York State Department of Transportation (NYSDOT), the NYCDEP changed the new site of Outfall HP-23 from 600 feet to 400 feet downstream of the outfall's existing location. The existing Outfall HP-23 will be abandoned. Other principal facilities to be constructed as part of this project include a pumping station with a rated capacity of 2,800 gpm with an accompanying 16-inch diameter force main for pumpback purposes, air treatment facilities, and mechanical screening facilities.

Meetings

Principal meetings held during this report period are as follows:

- Project Progress Meetings on January 7, 2003, February 14, 2003 and March 27, 2003 at the NYCDEP offices, between representatives of the NYCDEP, New York City Department of Parks and Recreation (NYCDPR), New York City Department of City Planning (NYCDCP), URS, and Lawler, Matusky and Skelly Engineers (LMS) to discuss and review the overall progress of the East River CSO Abatement Project.
- Meeting on January 30, 2003 at the NYCDEP offices, between representatives of the NYCDEP and URS, to discuss and review possible alternatives for relocating/modifying Outfall HP-23 to accommodate the NYSDOT requirements for the Greenway Project prior to the construction of the storage conduit. At this meeting, the NYCDEP indicated that alternatives for relocating/modifying the outfall must include provisions for construction of a storage conduit at a later time.

- Meeting on March 27, 2003 at the NYCDEP offices, between representatives of the NYCDEP and URS, to discuss alternatives for providing floatables control at Outfalls HP-23 and HP-24, as well as other outfalls on the Bronx River.

Field Investigations

Principal field investigations conducted during this report period are as follows:

- The NYCDEP continued to review the Phase IA Archaeological Survey Report for the CSO storage conduit site.
- The NYCDEP continued to review the subsurface geotechnical investigation reports (Subsurface Investigation and Geotechnical Evaluations) for the CSO storage conduit site.
- In early March 2003, URS performed a field survey at the Bronx River CSO Storage Conduit site, using a hand-held level, which indicated that the existing outfall sewer may not interfere with the NYSDOT bicycle path to be provided under the Greenway Project. However, to verify this finding, detailed grades for the bicycle path need to be provided by the NYSDOT.

Environmental Review

In late December 2002, URS submitted a draft EAS for the Bronx River CSO Storage Conduit/Greenway Project to the NYCDEP for review. Air dispersion modeling, to determine if the air treatment facilities need to be a two-stage or one-stage system, was performed as part of the EAS. A one-stage treatment system is recommended. This draft EAS remains under review by the NYCDEP. In addition, further work on the EAS was curtailed as directed by the NYCDEP as a result of recent changes in the project.

As requested by the NYCDEP at the February Project Progress Meeting, LMS reviewed the results of the previously performed environmental sampling and testing for the Bronx River CSO Abatement Project. This review was performed to determine if there was a parameter with an elevated level ("hot spot"). Based on this review, LMS determined that one soil sample contained levels of leachable lead which exceed the hazardous waste criteria. This sample was collected from fill material in an area directly under the on-ramp to the Cross Bronx Expressway, and as such, the high level of leachable lead in this sample is most likely due to flaking or weathering of lead-based paint from the on-ramp. LMS will prepare a draft letter for the NYCDEP to finalize and submit to the NYSDEC, explaining this finding of leachable lead at the Bronx River Project site. This draft letter will be prepared and submitted to the NYCDEP in early April 2003.

ULURP

In early January 2003, URS submitted a ULURP Application for the Bronx River CSO Storage Conduit Project, including work associated with the required mapping actions as a result of the land swaps between the NYCDEP, NYSDOT, NYCDPR and MTA, to the NYCDEP for review. Following submittal of the draft ULURP Application to the NYCDCP by the NYCDEP,

the NYCDCP will schedule an All-Agency Conference to discuss the ULURP Application and the mapping actions. This conference will likely consist of representatives from the NYCDEP, NYSDOT, NYCDOT, NYCDPR and MTA. This draft ULURP Application remains under review by the NYCDEP. In addition, further work on the ULURP Application was curtailed as directed by the NYCDEP as a result of recent changes in the project.

Facility Planning/Preliminary and Final Designs/Permits and Approvals

Principal work performed during this report period includes:

- In early January 2003, the NYCDEP submitted the preliminary drawings to the NYSDOT presenting the revisions to be incorporated in the Bronx River CSO Storage Conduit Project, as requested by the NYSDOT, including a revised layout of the storage conduit and operations building. These drawings remained under review by the NYSDOT.
- Based on the January 30, 2003 meeting indicated above, URS developed and evaluated several alternatives for relocating/modifying Outfall HP-23 to accommodate the NYSDOT bicycle path which will be provided as part of the Greenway Project. URS presented the results of this evaluation at the February Project Progress Meeting, which showed that the outfall can be expanded to four barrels from the existing two barrels, and by so doing can be lowered in height to allow the bicycle path to cross over the outfall without exceeding the grade requirements of the ADA. URS presented two alternatives for relocating/modifying Outfall HP-23; one without provisions for connection to a future storage facility and one with provisions for connection to a future storage facility to be located either north or south of the existing outfall. The conceptual construction cost estimates for the two alternatives ranged from approximately $2,000,000 for the alternative without provisions for connection to a future storage facility to $2,300,000 for the alternative with the provisions for connection to a future storage facility. In conjunction with relocating/modifying Outfall HP-23 to accommodate the NYSDOT bicycle path, the NYCDEP requested that URS work with HydroQual, Inc. to determine methods and facilities for providing floatables control at Outfalls HP-23 and HP-24 as well as other outfalls on the Bronx River.
- At the direction of the NYCDEP, URS curtailed preparation of the revised Bronx River CSO Abatement Facilities Plan until alternatives for floatables control for the outfalls on the Bronx River have been developed and evaluated, as indicated above, and until the NYCDEP has had an opportunity to discuss the project with the NYSDOT and NYSDEC to resolve several outstanding issues.
- Design of the CSO storage conduit remained on hold for the same reasons presented above for curtailing the preparation of the CSO abatement facilities plan.
- The NYCDEP continued to review the report submitted by URS that provides results of the investigation into alternatives for installing the diversion conduit underneath the ramp to the Sheridan Expressway, and details of the selected installation method, the New Austrian Tunneling Method (NATM).

- The NYCDEP continued to review the detailed hydraulic calculations for the CSO storage conduit and detailed hydrologic calculations for existing Outfall HP-23 that were submitted by URS.
- URS completed the digital terrain model of the Bronx River CSO Storage Conduit site, including adjacent areas, as requested by the NYSDOT.

Project Schedule

- The project schedule for the Bronx River CSO Abatement Facilities Project is under review by the NYCDEP.

Table 6

Bronx River CSO Project

Plan Elements:	Bronx River CSO Storage Conduit
Location:	Property adjacent to intersection of East 177th Street, DeVoe Ave., and Sheridan Expressway
Actions:	Design and construction of a 4 MG storage conduit, with new outfall, including screenings facility, air treatment system, and pumping station to pump stored CSO flow back into the interceptor system for conveyance to the Hunts Point WPCP for treatment; abandonment of existing Outfall HP-23
Cost:	$45,047,000
Status:	Preparation of CSO abatement facilities plan, EAS, ULURP Application and design for the project on hold until issues between NYCDEP, NYSDOT and NYSDEC are resolved, and until a determination is made as to methods and facilities to be provided for floatables control at the outfalls on the Bronx River
Other Issues:	Issues need to be resolved between the NYCDEP, NYSDOT and NYSDEC; determination needs to be made with regard to floatables control at the outfalls on the Bronx River; revised CSO abatement facilities plan needs to be prepared and approved; revised EAS needs to be prepared, approved and Negative Declaration issued for the project; revised ULURP Application needs to be prepared, certified and approved; mapping for land transfers needs to be completed prior to ULURP Application certification

- **Hutchinson River**

Project Summary

As presently planned, the Hutchinson River CSO Abatement Project will include construction of a storage conduit to effect 7 MG of off-line storage in order to provide CSO abatement at Outfalls HP-14 and HP-15 on the Hutchinson River. As a result of public opposition to locating the southern reach of the storage conduit within the right-of-way of CO-OP City Boulevard, the NYCDEP has agreed to relocate this southern reach of the conduit into land located between CO-OP City Boulevard and the Hutchinson River, which is owned by the Riverbay Corporation. However, relocation of the southern reach of the storage conduit will require major revisions to the design of the conduit.

Most of the design revisions will involve the southern reach; however, some revisions will be required to the design of the northern reach. Although the southern reach will be relocated out of the roadway right-of-way, the majority of the northern reach of the conduit will remain within roadway rights-of-way, extending approximately 3,600 linear feet southward from near where Boston Road crosses over the Hutchinson River to the Conner Street Pumping Station. Under the re-design of the storage conduit, the northern reach may have a storage volume of less than 4.7 MG as presently designed with the southern reach having a storage volume of greater than 2.3 MG as presently designed. Other principal facilities to be constructed as part of this project include four large chambers for connection of the storage conduit to the existing sewer system, modifications to the existing Conner Street Pumping Station and possibly to the existing CO-OP City North Pumping Station, air treatment facilities, rehabilitation of existing Outfalls HP-14 and HP-15, and possibly construction of a new outfall at the southern terminus of the southern reach. In addition, a public recreational area will be constructed over top of the southern reach of the storage conduit within the property adjacent to the Hutchinson River. This recreational area will consist of paved walkways for walking and cycling, grass areas and shrubs.

Meetings

Principal meetings held during this report period are as follows:

- Project Progress Meetings on January 7, 2003, February 14, 2003 and March 27, 2003 at the NYCDEP offices, between representatives of the NYCDEP, NYCDPR, NYCDCP, URS and LMS, to discuss and review the overall progress of the East River CSO Abatement Project.
- Meeting on January 30, 2003 at the NYCDOT offices located on Conner Street at the Public Place Site, between representatives of the NYCDEP, NYCDOT, NYCDPR and URS, to review the status of the Hutchinson River CSO Abatement Project and to discuss issues with regard to utilizing the Public Place Site for construction of a CSO storage facility.

Field Investigations

Principal field investigations conducted during this report period are as follows:

- Based on site visits to the CO-OP City ballfields in early June and August 2002 by representatives of the NYCDEP and URS, alternative scopes of work for restoration of the ballfields were developed by URS. A letter describing these alternative scopes of restoration work, which range from approximately $70,000 to $160,000, along with recommendations for performing the work, was submitted to the NYCDEP in late August 2002. The NYCDEP has indicated that a decision regarding the scope of restoration work to be performed at the ballfields will be made following completion of the additional facilities planning and preliminary design work as discussed below under Facility Planning/Preliminary and Final Designs/Permits and Approvals.
- The subsurface geotechnical investigation reports (Subsurface Investigation and Geotechnical Evaluations), summarizing the results and conclusions of the subsurface geotechnical boring investigations along the northern and southern reaches of the CSO storage conduit, within the public rights-of-way, remained under review by the NYCDEP.
- The subsurface environmental investigation report, summarizing the results and conclusions of the subsurface environmental boring investigations along the northern and southern reaches of the CSO storage conduit, within the public rights-of-way, remained under review by the NYCDEP.
- The letter report prepared by LMS in November 2001, which provides the results of the investigation into the source of the contamination detected in the sentry wells located near the Hexagon Pharmaceutical Spill Site, remained under review by the NYCDEP. The results of the investigation indicate that the contamination detected in the sentry wells is from the Hexagon Pharmaceutical Spill Site, and that the spill contamination is migrating towards the Hutchinson River, which will impact on the dewatering operations during construction of the storage conduit.
- Massand Engineering has completed the topographic survey, along the proposed route of the southern segment of the storage conduit within the property adjacent to the Hutchinson River. The electronic file for the survey has been provided to URS by Massand. This survey will be used by URS during the additional facilities planning and preliminary design work as discussed below under Facility Planning/Preliminary and Final Designs/Permits and Approvals.

Environmental Review

As directed by the NYCDEP, work associated with the preparation of the EAS remained discontinued until the additional facilities planning work as discussed below under Facility Planning/Preliminary and Final Designs/Permits and Approvals is completed. Preparation of the EAS is included in Changer Order X-1 to East River Contract III. Air dispersion modeling, to determine if the air treatment facilities need to be a two-stage or one-stage system, will be performed as part of the EAS.

As requested by the NYCDEP at the February Project Progress Meeting, LMS reviewed the results of the previously performed environmental sampling and testing for the Hutchinson River CSO Abatement Project. This review was performed to determine if there was a parameter with an elevated level ("hot spot"). Based on this review, LMS determined, that no "hot spots" were identified during the previous sampling and testing.

ULURP

Work associated with the preparation of the ULURP Application remained discontinued until the additional facilities planning work as discussed below under Facility Planning/ Preliminary and Final Designs/Permits and Approvals is completed. Preparation of the ULURP Application is included in Change Order X-1 to East River Contract III.

Facility Planning/Preliminary and Final Designs/Permits and Approvals

Principal work performed during this report period includes:

- Based on the meeting held on January 30, 2003 at the NYCDOT offices located on Conner Street, between representatives of the BEE, NYCDOT, NYCDPR and URS, additional facilities planning was initiated to determine the best approach and most cost-effective means of providing CSO abatement at Outfalls HP-14 and 15 discharging into the Hutchinson River. This more extensive additional facilities planning, involving combinations of storage conduits and tanks, will be performed in place of the previously planned additional facilities planning wherein the focus was to be confined to relocation of the southern reach of the storage conduit eastward out of CO-OP City Boulevard into the property adjacent to the Hutchinson River. URS conceptually developed five alternatives consisting of a combination of storage conduits and tanks, to be evaluated to achieve the required CSO abatement at the two outfalls. The NYCDEP concurred with the five alternatives and requested URS to prepare preliminary construction cost estimates, and a listing of the non-financial advantages and disadvantages for each of the alternatives. The results of this cost and non-cost analysis will be presented to the NYCDEP in late April 2003. As directed by the NYCDEP, this additional facilities planning work was initiated under East River Contract II and will be continued under East River Contract III as required, once Change Order X-1 to East River Contract III is registered. The NYCDEP has indicated that the objective is to submit a revised CSO abatement facilities plan to the NYSDEC in June 2003 as per the current project schedule.
- Design of the revised storage facility, as well as permitting activities, remained discontinued until the additional facilities planning work as discussed above is completed. Design and permitting activities associated with the revised storage facility are included in Change Order X-1 to East River Contract III.
- The NYCDEP Legal Department has determined that the Riverbay Corporation is the owner of the property located between CO-OP City Boulevard and the Hutchinson River (Lot 440, Block 5141), except for approximately 3.4 acres which was deeded by the

Riverbay Corporation to the NYCDPR for construction of the existing Little League ballfields.. This is the property where the southern segment of a storage conduit would be constructed, if the additional facilities planning determines that construction of a CSO storage conduit on this property is the best approach for CSO abatement at Outfalls HP-14 and 15.

- In early November 2002, URS submitted a drawing to the NYCDEP Legal Department showing the extent that R.A.M. Used Auto Parts has currently cleared the City-controlled property of junk vehicles and parts in the vicinity of Outfall HP-15. Essentially the area that has been cleared is within the easement limits for the outfall sewer for Outfall HP-15, directly above the sewer. This drawing also identifies the area that will need to be cleared of junk vehicles and parts in the future in order to accommodate construction of the Hutchinson River CSO abatement facilities. The NYCDEP Legal Department is checking on the status of the removal of junk vehicles and parts from the City-controlled property.

Project Schedule

- The project schedule for the Hutchinson River CSO Abatement Facilities Project is under review by the NYCDEP.

Table 7

Hutchinson River CSO Project

Plan Elements:	Hutchinson River CSO Storage Conduit
Location:	Public rights-of-way from Boston Road to Conner Street Pumping Station; City-owned and privately-owned property adjacent to Hutchinson River
Actions:	Design and construction of a 7 MG CSO storage conduit consisting of two segments; a northern segment and a southern segment; includes overflow chambers and conduits, dry weather flow conduits, outfalls and drainage conduits with connections to Conner Street Pumping Station for northern segment, and either Conner Street Pumping Station or CO-OP City North Pumping Station for southern segment
Cost:	$141,942,000
Status:	To be re-planned and re-designed
Other Issues:	Change Order X-1 to East River Contract III needs to be registered for re-planning and re-design of storage facility; revised CSO abatement facilities plan needs to be prepared and approved; revised EAS needs to be prepared, approved and Negative Declaration issued for the project; ULURP Application needs to be prepared, certified and approved

- **Alley Creek**

Project Summary

The Alley Creek Drainage Area Improvements/CSO Abatement Facilities Project, which has been designated as Phase I of the comprehensive Alley Creek Project, will be constructed in three stages, the Alley Creek Drainage Area Improvements (Stage 1), the Alley Creek CSO Abatement Facilities (Stage 2), and the Alley Park Environmental Restoration (Stage 3). The Oakland Ravine Stormwater Treatment System, which is not a part of the CSO abatement project, has been designated as Phase II of the comprehensive Alley Creek Project. The principal elements included in the project are: additional stormwater and combined sewers, a new outfall sewer, and a new combined sewer outfall to substantially eliminate street flooding and sewer surcharging, and construction of a new 5 MG CSO storage facility to abate CSO discharges into Alley Creek (Stage 1); activation of the 5 MG CSO storage facility, upgrading the Old Douglaston Pumping Station to enhance the station's reliability to pump the captured combined sewage to the interceptor sewer system for conveyance to the Tallman Island WPCP for treatment, a fixed weir constructed within the new outfall sewer at its downstream end near the outfall to induce storage of the combined sewage, and a baffle constructed within the outfall sewer immediately upstream of the fixed weir for floatables control (Stage 2); and permanent ecological restoration of approximately 14 acres within Alley Park to include planting of trees and other vegetation as well as the creation and restoration of wetlands (Stage 3). Construction of a stormwater treatment system in the form of settling basins and natural emergent wetlands will be included in the Oakland Ravine Stormwater Treatment System (Phase II). The construction contracts for Phase I, Stage 1 and Phase I, Stage 2 have been designated as ER-AC1 and ER-AC2, respectively. Contract numbers have not been designated for Phase I, Stage 3 and Phase II at this time.

The principal facilities to be provided under Phase I, Stage 1 include approximately 1,400 linear feet of an 11'-0" W x 8'-0" H combined sewer; approximately 1,200 linear feet of an 11'-0" W x 9'-0" H combined sewer; approximately 4,700 linear feet of stormwater sewers ranging from 15 through 48 inches in diameter; approximately 2,350 linear feet of a 20-inch diameter force main; approximately 1,180 linear feet of water mains with diameters of 20 and 40 inches, a double barrel outfall sewer consisting of approximately 1,475 linear feet of two 16'-0" W x 7'-6" H barrels followed downstream by approximately 650 linear feet of two parallel 20'-0" W x 7'-9" H barrels; a CSO storage facility to be constructed alongside of the 20'-0" W x 7'-9" H double barrel outfall sewer, with approximate dimensions of 120 feet wide by 600 feet long and depths ranging from approximately 9 to 12 feet; and an outfall structure and stilling basin on Alley Creek, including scour protection measures to prevent scouring of the creek bed, and restoration of the disturbed creek bed with riprap. The outfall sewer will discharge into Alley Creek, through the new outfall structure to be constructed under Phase I, Stage 1, which will be located north of Northern Boulevard, on the west side of Alley Creek.

The 5 MG CSO storage facility will be constructed under Phase I, Stage 1, and activated under Phase I, Stage 2. The new outfall sewer will function as part of the CSO storage facility after the construction of a fixed weir under Phase I, Stage 2, at the downstream end of the outfall sewer, to induce CSO storage during rainstorms. The CSO storage facility will be emptied by

use of 24-inch and 36-inch diameter gravity drains to the Old Douglaston Pumping Station, which is located (in Alley Park) along the south side of Northern Boulevard, west of Alley Creek. The Old Douglaston Pumping Station, which will be modified under Phase I, Stage 2, will be used to pump the captured combined sewage to the interceptor sewer system for conveyance to the Tallman Island WPCP for treatment. A baffle will be constructed within the outfall sewer immediately upstream of the fixed weir to prevent floatables from entering Alley Creek. The CSO storage facility will be cleaned, after each storm event, through the use of ten sediment flushing gates (five at each end of the CSO storage facility). Also under Phase I, Stage 2, an air treatment system will be installed at the Old Douglaston Pumping Station to treat exhaust air from the CSO storage facility and the wet well of the pumping station.

Under Phase I, Stage 3, approximately 14 acres within Alley Park will be provided with permanent ecological restoration, including the restoration of approximately 5.92 acres of existing wetlands and the creation of approximately 1.37 acres of new wetlands. In addition, the restoration will include the planting of approximately 850 trees, 3,100 bushes and groundcover plants, and 109,000 wetland planting plugs.

The stormwater treatment system to be provided under Phase II will consist of a wetlands treatment system to be constructed in Oakland Ravine to provide primary and secondary treatment of stormwater. The treated effluent will be discharged into Oakland Lake, and ultimately into Alley Creek through the existing 10'-0" W x 7'-6" H outfall sewer.

Meetings

Principal meetings held during this report period are as follows:

- Project Progress Meetings on January 7, 2003, February 14, 2003 and March 27, 2003 at the NYCDEP offices, between representatives of the NYCDEP, NYCDPR, NYCDCP, URS and LMS, to discuss and review the overall progress of the East River CSO Abatement Project.
- Construction progress meeting on January 17, 2003 at the NYCDEP offices, between representatives of the NYCDEP, URS, Dvirka and Bartilucci Consulting Engineers (DB) and Carp Construction Corporation, to discuss and review the progress of Contract ER-AC1.
- Meeting on January 29, 2003 at Middle School 158 in the Borough of Queens, NY, between representatives of Community Board No. 11, NYCDEP, NYCDOT, URS, Carp Construction Corporation and residents within the construction area of Contract ER-AC1, to review the progress and status of the construction contract. The NYCDEP and URS presented an overview of the Alley Creek CSO Abatement Project and discussed specific issues regarding Contract ER-AC1 with the residents.
- Meeting on January 31, 2003 at the NYCDEP offices, between representatives of the NYCDEP, URS, DB and Carp Construction Corporation, to discuss issues regarding construction of the water trunk and distribution mains included in Contract ER-AC1.
- Meeting on February 5, 2003 at the Queens Borough President's Office, between representatives of the Queens Borough President's Office, NYCDEP, NYCDPR,

NYSDEC, URS, Alley Pond Environmental Center, Community Board No. 11, community groups, political organizations and special interest groups to review the status of the Alley Creek CSO Abatement Project.

- Meeting on February 21, 2003 at the Alley Creek Engineer's field office, between representatives of the NYCDEP, URS and DB, to discuss specific issues and tasks regarding Contract ER-AC1.
- Construction progress meeting on February 28, 2003 at the Alley Creek Engineer's field office, between representatives of the NYCDEP, NYCDPR, URS, DB and Carp Construction Corporation, to discuss and review the progress of Contract ER-AC1.
- Meeting on March 7, 2003 at the offices of Community Board No. 11 in the Borough of Queens, NY, between representatives of Community Board No. 11, NYCDEP, NYCDOT, NYCDPR, Public School 203, URS, Carp Construction Corporation, community groups, political organizations and special interest groups, to review the progress of Contract ER-AC1 and to discuss specific issues regarding the contract.
- Meeting on March 21, 2003 at the Alley Creek Engineer's field office, between representatives of the NYCDEP, URS and DB, to discuss specific issues and tasks regarding Contract ER-AC1.
- Construction progress meeting on March 28, 2003 at the Alley Creek Engineer's field office, between representatives of the NYCDEP, NYCDPR, URS, DB and Carp Construction Corporation, to discuss and review the progress of Contract ER-AC1.

Field Investigations

Principal field investigations conducted during this report period are as follows:

- Massand Engineering has previously indicated that, based on their review of available records as well as discussions with the NYCDPR, defined property boundaries for the Old Douglaston Pumping Station were never established. The NYCDEP requested that URS prepare and submit a site plan of the Old Douglaston Pumping Station showing revised locations of the existing and proposed facilities based on the preliminary design documents. Following their review, the NYCDEP will forward the site plan to the NYCDPR (Permits, Planning and Natural Resources Groups) for review.
- In mid-January 2003, URS issued a request for cost proposals to qualified surveying firms to provide topographical and wetlands delineation surveys within the area of Alley Park, where the ecological restoration/wetlands construction work is to be implemented. Based on this request, three firms submitted cost proposals to URS in late January 2003. Following evaluation of the submitted cost proposals, URS selected Munoz Engineering and Land Surveying to be awarded the survey work and submitted documents to the NYCDEP to obtain approval of the selected firm. The NYCDEP granted approval of Munoz in mid-February 2003, and the field work was initiated in late March 2003.
- The protocol for collecting and analyzing samples from the bed of Oakland Lake to determine the feasibility of dredging and removing material from the lake remained under review by the NYCDEP.

Environmental Review

A Negative Declaration for the Alley Creek CSO Abatement Project was previously issued. In early December 2002, the NYCDEP submitted information to the NYSDEC to allow full approval to be granted for the Joint Application for Permit. The information included a project schedule, specifications on the dewatering system requirements and soil erosion/sediment control measures, erosion monitoring plan for the shorelines of Alley Creek in the vicinity of the new outfall, and drawings presenting the conceptual design of the ecological restoration/wetlands construction proposed within Alley Park. In mid-February 2003, the NYSDEC submitted a letter to the NYCDEP, which amended the Joint Application for Permit for the project to authorize the extension of the deadlines for submission of final mitigation and dewatering plans. With this amendment, the Joint Application for Permit is approved.

In late January 2003, URS submitted the results of revised air dispersion modeling to the NYCDEP for review. These air dispersion modeling results were submitted to determine the facilities required to treat air exhausted from the Alley Creek CSO storage facility and the wet well of the Old Douglaston Pumping Station. A one-stage treatment system is recommended. These modeling results remained under review by the NYCDEP.

A decision needs to be made by the NYCDEP as to whether an EAS needs to be prepared for the Oakland Ravine Project.

ULURP

The ULURP Application for the siting action for the Alley Creek Drainage Area Improvements – Phase I, Stage 1, Alley Creek CSO Abatement Facilities – Phase I, Stage 2, and Alley Park Environmental Restoration – Phase I, Stage 3 has been fully approved.

A decision needs to be made by the NYCDEP as to whether the Oakland Ravine Project requires ULURP approval.

Facility Planning/Preliminary and Final Designs/Permits and Approvals

Principal work performed during this report period includes:

- The NYCDEP plans to submit the revised Alley Creek CSO Abatement Facilities Plan to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC
- URS continued work to obtain the following final approvals/permits for the Alley Creek Drainage Area Improvements, Contract ER-AC1:
  - Joint Application for Permit from the NYSDEC
  - Maintenance and Protection of Traffic Plan from the NYCDOT – OCMC Highways
  - Coastal Zone Consistency Certification from the NYCDCP

- Disposal of Dredged Fill Material from the USACOE
- SPDES General Permit for Stormwater Discharges from Construction Activity (No. GP-02-01) from the NYSDEC, which requires preparation of a Stormwater Pollution Prevention Plan (SWPPP).

° In early March 2003, the NYSDEC issued a modified Tallman Island WPCP SPDES Permit to include the new CSO outfall discharging into Alley Creek. However, Alley Creek is indicated as a Class SB water body in the modified permit, which needs to be revised to a Class I water body. The BEE will follow up with the NYSDEC on this issue.

° The Alley Creek CSO Abatement Project has not yet been approved by the NYCDOT - OCMC Highways. To secure approval of the NYCDOT - OCMC Highways, approvals need to be obtained from the NYCDOT - Division of Bridges, NYCDOT - Highway Design and NYSDOT - Planning, Design and Construction. During February and early March 2003, approvals were received from the above-listed three agencies contingent upon minor comments being addressed and requirements being met. URS submitted the approvals received from the three agencies to the NYCDOT - OCMC Highways in late March. It is anticipated that approval will be received from the NYCDOT - OCMC Highways in April 2003.

° In early March 2003, URS and LMS initiated preparation of the Stormwater Pollution Prevention Plan (SWPPP) for the Alley Creek CSO Abatement Project, which is required to obtain the SPDES General Permit for Stormwater Discharges from Construction Activity. In order to complete the SWPPP, Carp Construction Corporation needs to submit an erosion and sediment control plan for Contract ER-AC1, which will become a part of the SWPPP. Upon receipt of the erosion and sediment control plan from Carp, URS and LMS will finalize the SWPPP and submit the required permit information to the NYCDEP for subsequent submittal to the NYSDEC. It is anticipated that the permit information will be submitted to the NYCDEP by the end of April 2003.

° LMS continued preparation of the USACOE Disposal of Dredged Fill Material Permit Application. This permit is needed for construction of the new outfall on Alley Creek.

° The NYSDEC continued to review the Total Maximum Daily Load (TMDL) Program for floatables removal for Alley Creek.

° URS submitted a revised draft NYSDEC Form 2-A for the Alley Creek CSO Abatement Project to HydroQual, Inc. for review in mid-December 2002. This Form 2-A remained under review by HydroQual, Inc..

° URS submitted a draft of the Wet Weather Operating Plan (WWOP) for the Alley Creek CSO Abatement Project to HydroQual, Inc. for review in mid-March 2003.

° The design of the extension of a 24-/36-inch diameter storm sewer along Cloverdale Boulevard between 46th Avenue and Birmington Parkway is essentially complete. The extension of the existing storm sewer will result in the sewer discharging into the existing outfall sewer for Outfall TI-7 in lieu of into Oakland Lake as is the current condition. The NYCDEP will make a decision whether to include this sewer extension in Contract ER-AC1 via a change order after they have had an opportunity to evaluate Carp Construction Corporation’s progress on the contract.

- Based on information provided by the NYCDDC, the NYCDEP has determined that the design of the proposed 12-inch diameter sanitary sewer along Bell Boulevard, 217th Street and 56th Avenue is in the preliminary stage. As a result, it is likely that the NYCDDC will not complete the design of the sewer in time for Carp Construction Corporation to include the installation of the sewer along with the other work being completed in the vicinity of 56th Avenue under Contract ER-AC1. The NYCDEP indicated that they will request URS to complete the design of the sewer following receipt of the preliminary design information from the NYCDDC.
- Design of Contract ER-AC2 continued based on the comments provided by the NYCDEP on the preliminary design report. Preliminary specifications and drawings are scheduled to be submitted to the NYCDEP for review in late April 2003.
- As requested by the NYCDEP, URS prepared and submitted a design/bidding/contract registration schedule for Contract ER-AC2 to the NYCDEP in late February 2003.
- URS prepared a draft information brochure summarizing the key features of the Alley Creek CSO Abatement Project. This brochure, which is to be distributed to the public, was submitted to the NYCDEP in early March 2003 for review and approval.
- As directed by the NYCDEP, work on the Oakland Ravine Stormwater Treatment System was halted.

Facility Bidding and Construction

Principal work performed during this report period includes:

- DSDC activities continued for Contract ER-AC1. For the report period, these activities primarily consisted of review of shop drawings, preparation of Field Clarifications to address issues noted in the constructability review, securing required approvals/permits, attendance at progress meetings, review and coordination of water main work with the NYCDEP, coordination with the public through Community Board No. 11, and general coordination with the NYCDEP and Carp Construction Corporation on multiple issues. The Engineer's field office was set up, and Carp was in the process of setting up their field office. Actual construction activity is expected to begin in May 2003.
- Carp Construction Corporation initiated the pre-construction survey to determine the conditions of existing buildings and houses prior to the actual start of any construction activities.
- Carp Construction Corporation has been coordinating directly with Con Edison to resolve the issue regarding the crossing under of the existing 10- and 16-inch diameter gas mains by the new outfall sewer at Northern Boulevard. These two gas mains are shallow and appear to interfere with the alignment of the new outfall sewer.

Project Schedule

- The current construction schedules for the Alley Creek CSO Abatement Project are as follows:
  - Drainage Area Improvements, Phase I, Stage 1, Contract ER-AC1: December 2002 through June 2006
  - CSO Abatement Facilities, Phase I, Stage 2, Contract ER-AC2: August 2005 through July 2009
  - Alley Park Environmental Restoration, Phase I, Stage 3: December 2005 through June 2008
  - Oakland Ravine Stormwater Treatment System: Schedule under review by the NYCDEP

Table 8

Alley Creek CSO Project

Plan Elements:	Alley Creek Drainage Area Improvements (Phase I, Stage 1)	Alley Creek CSO Abatement Facilities (Phase I, Stage 2)	Alley Park Environmental Restoration (Phase I, Stage 3)	Oakland Ravine Stormwater Treatment System (Phase II)
Location:	46th Avenue, 53rd Avenue, 56th Avenue, Bell Boulevard, Luke Place, 214th Street, 216th Street, 217th Street, Springfield Boulevard, Cross Island Parkway, Northern Boulevard and Alley Park in Bayside, Queens	Northern Boulevard and Alley Park in Bayside, Queens	Alley Park in Bayside, Queens	Oakland Ravine and Oakland Lake in Bayside, Queens; Queensborough Community College Campus in Bayside, Queens
Actions:	Construction of additional stormwater and combined sewers, catch basins, outfall sewer and outfall structure to effect improved drainage in areas upstream of Outfall TI-7 in Bayside, Queens; Construction of 5 MG CSO storage facility for CSO abatement within Alley Creek	Design and construction of modifications to the Old Douglaston Pumping Station including mechanical screenings facilities and air treatment facilities to treat air exhausted from the CSO storage facility and the pumping station; design and construction of hydraulic control structures and facilities to activate the 5 MG CSO storage facility constructed under Phase I, Stage 1	Design and construction of ecological restoration areas and wetlands to mitigate construction impacts; approximately 14 acres to be constructed	Design and construction of a wetlands stormwater treatment system in Oakland Ravine to treat stormwater prior to discharge into Oakland Lake and ultimately into Alley Creek; design and construction of upgrades to the stormwater sewer system on the Queensborough Community College Campus; and design and construction of rehabilitation measures within Oakland Ravine and Oakland Lake
Cost:	$93,093,094	$9,126,000	$8,000,000	$26,500,000
Status:	Under Construction by Carp Construction Corporation	Final design underway	Conceptual design completed; Change Order X-2 to East River Contract III to cover additional engineering costs under review by NYCDEP	Preliminary design report under review by NYCDEP
Other Issues:	Approvals required, including NYC – OCMC Highways, Disposal of Dredged Fill Material, and SPDES General Permit for Stormwater Discharges; ULURP Application fully approved; Negative Declaration issued for project	Address property boundary issue for Old Douglaston Pumping Station with NYCDPR	NYC Department of Parks and Recreation approved conceptual design	Project schedule needs to be established; determine if ULURP Actions required; determine if EAS required; NYCDPR and NYCDEP to reach agreement on elements to be incorporated into project; input required from local environmental groups

- **Westchester Creek**

Project Summary

The Westchester Creek CSO Storage Tank Project will include construction of a 12 MG underground CSO storage tank to be located in the southwest section of the Bronx Psychiatric Center (BPC) Campus adjacent to Waters Place, near the intersection of Eastchester Road . The proposed underground storage tank will have approximate dimensions of 410' L x 170' W x 36' H and will provide CSO abatement at Outfall HP-25 on Westchester Creek. Other principal facilities to be constructed as part of the project include: a one-story operations building to house operational units including air treatment facilities; a single-barrel supply conduit (20'-0" W x 22'-0" H) extending from the Outfall HP-25 sewer in Eastchester Road to the underground storage tank; and a pumping station with a rated capacity of approximately 10,000 gpm with two accompanying 8- and 24-inch diameter force mains extending from the underground storage tank to the interceptor sewer system in Eastchester Road for pumpback purposes. In addition to the facilities required for CSO abatement at Outfall HP-25, the NYCDEP has agreed to provide, as part of this project, amenities for use by the Bronxchester and Van Nest Little Leagues that utilize the baseball fields adjacent to the site of the underground storage tank. These amenities consist of restroom facilities, a clubhouse facility, a parking lot and playground to be located on top of the underground storage tank, and fencing to separate the Little League facilities from the BPC Campus facilities and NYCDEP facilities.

Meetings

Principal meetings held during this report period are as follows:

- Project Progress Meetings on January 7, 2003, February 14, 2003 and March 27, 2003 at the NYCDEP offices, between representatives of the NYCDEP, NYCDPR, NYCDCP, URS and LMS, to discuss and review the overall progress of the East River CSO Abatement Project.

Field Investigations

Principal field investigations conducted during this report period are as follows:

- In late February 2003, Savin Engineers initiated the inspections and documentation of the conditions of Outfall HP-25 and the upstream outfall sewer.
- The subsurface geotechnical investigation report, summarizing the findings and results of the geotechnical borings drilled at the locations for the proposed Little League restrooms and clubhouse facility, remained under review by the NYCDEP.
- The subsurface investigation report, summarizing the findings and results of the geotechnical borings drilled at the site of the CSO storage tank, as well as along Eastchester Road and Waters Place, remained under review by the NYCDEP. Work continued on preparation of the Geotechnical Evaluations Report.

- Oriented rock core drilling services are required to complete the subsurface geotechnical evaluation for the CSO storage tank due to the presence of fractured rock. As such drilling services are highly specialized and only one drilling firm in the area, Warren George, Inc., has the equipment to perform the required services, URS requested approval from the NYCDEP Contract Compliance Office in early February 2003 to retain the services of Warren George, Inc. to perform the required drilling services. NYCDEP approval to utilize the services of Warren George, Inc. was granted in late February 2003. It is anticipated that the borings will be drilled in April 2003.
- Due to the potential presence of leachable lead at the Westchester Creek CSO Storage Tank site based on previous soils sampling and testing, the Department of City-Wide Administrative Services (DECAS) is requiring that surface soils sampling and testing be performed at the site prior to New York City acquiring the site from the Dormitory Authority of the State of New York (DASNY). The purpose of this surface soils sampling and testing is to obtain a general characterization of surface soils at the site to be acquired. Results of the sampling and testing will be used to conduct a qualitative human health exposure risk assessment. URS and LMS prepared a work scope for this surface soils sampling and testing, and submitted the work scope to the NYCDEP in late March 2003 for review and forwarding to the OEPA for review and approval. From the time the work scope is approved by the NYCDEP, seven weeks will be needed to perform the field sampling, complete the laboratory analysis and prepare the report summarizing the findings of the investigation. This work scope is under review by the NYCDEP.
- In mid-December 2002, LMS submitted protocols to the NYCDEP for review and approval for drilling the environmental borings at the Westchester Creek CSO Storage Tank site, and for taking samples and analyzing the samples from the borings. The NYCDEP subsequently submitted these protocols to the NYSDEC for review and approval in mid-March 2003. These environmental borings are required to allow URS and LMS to classify the quantities of soils within each classification to be disposed of off-site for bidding purposes. It is anticipated that the borings will be drilled in late Spring or Summer of 2003.
- The metes and bounds survey for the property being acquired at the BPC Campus for the CSO storage tank project remains under review by DASNY and the BPC. Because of the easement granted by DASNY to the private development corporation along the west boundary of the BPC Campus, this survey will need to be slightly modified in the future prior to initiation of construction of the site preparation contract (Little League restrooms).

Environmental Review

In mid-February 2003, the NYCDEP issued a Negative Declaration for the Westchester Creek CSO Storage Tank Project, based on a parking lot and playground for use by the Bronxchester and Van Nest Little Leagues being constructed on top of the storage tank. Air dispersion modeling, to determine if the air treatment facilities for the CSO storage tank project need to be a two-stage system or a one-stage system, was performed as part of the EAS. A one-stage treatment system is recommended.

Site Acquisition/ULURP

- The ULURP Application for the Westchester Creek CSO Storage Tank Project was approved by the NYCDEP and was submitted to the NYCDCP for review in early January 2003. This ULURP Application is based on a parking lot and playground for use by the Bronxchester and Van Nest Little Leagues being constructed on top of the storage tank in lieu of a replacement soccer field for the Italian American Soccer League of NY.
- DECAS proceeded with negotiations to acquire the property at the BPC Campus from DASNY, as a result of receiving the ULURP Application and the issuance of a Negative Declaration for the Westchester Creek CSO Storage Tank Project.

Facility Planning/Preliminary and Final Designs/Permits and Approvals

Principal work performed during this report period includes:

- The NYCDEP plans to submit the revised Westchester Creek CSO Abatement Facilities Plan to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC.
- URS continued preparation of the draft NYSDEC Form 2-A for the Westchester Creek CSO Storage Tank Project. It is anticipated that the draft Form 2-A will be submitted to HydroQual, Inc. for review in the Spring of 2003.
- URS continued preparation of the Wet Weather Operating Plan (WWOP) for the Westchester Creek CSO Storage Tank Project. It is anticipated that a draft of the plan will be submitted to HydroQual, Inc. for review in the Spring of 2003.
- As per direction from the NYCDEP, preparation of the TMDL Program for settleables removal for Westchester Creek remained on hold until the TMDL Program for floatables removal for Alley Creek is finalized with the NYSDEC.
- Work continued on finalizing the design of the site preparation contract for the Westchester Creek CSO Abatement Project. This contract includes the women and men's restroom facilities for the Bronxchester and Van Nest Little Leagues, installation of fencing and other miscellaneous site work at the BPC Campus project site. The contract documents for the site preparation contract are based on completing the construction contract under the Wicks Law. Three separate construction contracts are involved; general, electrical and plumbing. The contract specifications for the site preparation contract were submitted to the NYCDEP Legal Department for review and approval. Law approval is expected in April 2003 at which time the contract can be advertised for bids. The NYCDEP authorized URS to initiate the preparation of an addendum to the site preparation contract documents to address changes that have occurred since submittal of the documents for Legal Department review.
- On February 19, 2003, the site preparation contract was presented to the NYC Art Commission to obtain the Commission's final approval. Following minor revisions requested by the Commission, final approval was granted in mid-March 2003.

- As directed by the NYCDEP, URS prepared the NYC Building Permit Application for the site preparation contract using the existing lot and block numbers, as presently filed with the Borough of the Bronx Tax Department, for the NYS-owned property, and with DASNY as the property owner. The NYCDEP will ask DASNY to sign the permit application as the owner. Following acquisition of the project site by the NYCDEP, when new lot and block numbers are assigned, the Building Permit will be amended to reflect the NYCDEP as the owner, and the new lot and block numbers. The completed Building Permit Application was submitted to the NYCDEP following the March Project Progress Meeting for review and further processing. In addition to the Building Permit Application, URS continued preparation of the NYCDEP Site Connection Proposal Form, NYCDEP Application for Backflow Prevention Devices, and NYCDEP Service Connection Data Sheet. It is anticipated that these three permits/approvals will be applied for following acquisition of the project site by the NYCDEP, so that the NYCDEP can be shown as owner on the permit applications.
- URS continued with preliminary design of the Westchester Creek CSO Storage Tank based on a dead-end tank configuration. As part of the design, URS continued with the hydrologic and hydraulic analyses needed for the design of the tank, and the development of the site plan and storage tank layout.
- The clubhouse facility for use by the Bronxchester and Van Nest Little Leagues will be constructed as part of the Westchester Creek CSO Storage Tank contract. URS initiated design of this clubhouse facility along with the design of the CSO storage tank.

Project Schedule

- The current schedule for the site preparation contract shows construction beginning in October 2003 and extending through June 2004.
- The project schedule for the CSO storage tank is under review by the NYCDEP.

Table 9

Westchester Creek CSO Project

Plan Elements:	Westchester Creek CSO Storage Tank and Little League Amenities
Location:	Bronx Psychiatric Center Campus in the Bronx
Actions:	Design and construction of a 12 MG underground CSO storage tank to provide CSO abatement at Outfall HP-25 on Westchester Creek, including an influent conduit along Waters Place and Eastchester Road; design and construction of a one-story operations building; and design and construction of amenities for the Bronxchester and Van Nest Little Leagues
Cost:	$143,505,000
Status:	Final design essentially complete and being reviewed for the site preparation contract (restrooms for Little Leagues and miscellaneous site preparation work); site preparation contract scheduled to be advertised for bids in April 2003; design underway for storage tank and clubhouse facility for Little Leagues
Other Issues:	Site needs to be acquired by NYCDEP from the State of New York; ULURP Application needs to be reviewed, certified and approved; licensing agreement between the NYCDEP and the Little Leagues needs to be finalized; NYC Building Permit Application needs to be processed for restrooms for Little Leagues

G.) Coney Island Creek

- **Avenue V Pumping Station**

The recommended plan for the Coney Island Creek CSO Facility Planning Project is to increase the wet weather pumping capacity of the Avenue V Pumping Station. The Avenue V Pumping Station tributary area encompasses 2,900 acres, of which 2,056 acres are separately sewered and 844 acres have combined sewers. The Avenue V Pumping Station capacity will be increased to capture 85 percent, by volume, of the CSO discharges to Coney Island Creek. The capacity of the pumping station will be increased from approximately 30 mgd to 80 mgd. New pumps, motors, variable frequency drives (VFDs) and controls will be installed and two new force mains will be constructed.

The NYCDEP plans to submit the revised facility plan for the Coney Island Creek CSO Facility Planning Project to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order.

Meetings

Principal meetings held during this report period were as follows:

- Meetings between NYCDEP and Hazen and Sawyer on January 22 and March 26.
- Meeting between NYCDPR, NYCDEP and Hazen and Sawyer on February 20.

Maximize Flows: Upgrade Avenue V Pumping Station for Wet Weather Flow Conveyance Capacity and Regulator Automation at Avenue V Pumping Station

Final design work of the pumping station upgrade, associated new force mains and modification of existing regulators has continued.

The proposed 480V electrical service will require construction within the pumping station site of a single story Network Protector Structure (NPS) with approximate dimensions of 45 feet long by 26 feet wide. The NPS will be located at the southwest corner of the pumping station site on West 11th Street. Zoning requirements for the Avenue V PS (map 28c, R5, corner lot) dictate that the NPS have a minimum front yard of 18 feet on West 11th Street, given that the front yard on Avenue V is 10 feet. In order to locate the facility closer to the property line, a variance (from Board of Standards and Appeals [BSA]) is required. Because the NPS cannot be located with the required setback along West 11th Street, the Department of Building (DOB) will initially disapprove the submission and a submission to BSA will be required 25 days thereafter.

Documents for submission to DOB were prepared to initiate the process for obtaining a variance for the NPS. DOB application and drawing comments received from a DOB expeditor were incorporated and a draft submittal to DOB was made in late March. The DOB reviewer indicated that DOB has no record of pumping station lot ownership and as such, a letter of

explanation for DEP is required. A letter was prepared for DEP signature and will be hand-carried to DOB along with the submittal package.

A meeting and presentation to NYCDPR was held on February 20, 2003. DPR personnel requested that DEP consider an alternate force main alignment along the Shore Parkway—on the waterside rather than inland side of the roadway. A draft letter with summary of issues related to alternate routing along the waterside of the Parkway was prepared for DEP signature. Based on the findings, the proposed force main route on the inland side of the Parkway remains more favorable than the waterside alignment considered.

Elimination of Dry Weather Overflows (DWOs)

Thirteen outfalls that discharge to Coney Island Creek were identified as contributing dry weather overflows to the Creek. The following table identifies the outfall number, location, and determination date of the discharge, flow, and current status.

Outfall I.D.	Location	Determination Date	Flow (GPD)	Status
CI-214	CI Creek (N) 600' w/o Shore Pkwy	12/20/90	1,860	Abated as of 12/31/96
CI-215	CI Creek (N) 10' w/o Shore Pkwy	12/20/90	1,411	Abated as of 12/31/98
CI-602	CI Creek & W.33rd Street	11/20/90	259	Abated as of 12/31/98
CI-639	CI Creek (SS) & W.12th Street	02/08/95	2,938	Abated as of 12/31/96
CI-641	Head of CI Creek & Shore Pkwy	12/20/90	372,960	Abated as of 12/29/94
CI-653	CI Creek (SS) 1500' sw/o Shore Pkwy	02/08/95	1,958	Abated as of 12/31/98
CI-664	CI Creek (S) & W.15th Street	12/12/90	3,326	Abated as of 12/31/98
CI-601	CI Creek & W.28th Street	11/16/90	158	Capital Project to abate discharge is under design
OH-021a	CI Creek – 90" Storm Sewer	12/02/94	50,000	Abated as of 12/02/94
OH-021b	CI Creek – 108" Storm Sewer	12/02/94	150,000	Abated as of 12/02/94
OH-021c	CI Creek – Avenue X Storm Sewer	12/02/94	70,000	Abated as of 12/02/94
OH-101	CI Creek – @ Bay 50th Street	02/08/95	800	Abated as of 02/22/95
OH-606	16th Avenue @ Coney Island Creek	07/09/96	2,880	Abated as of 07/09/98

Dredge the Head End of Coney Island Creek

At this time, DEP has no specific plans for dredging the Creek. The inability to dispose of dredged materials at an ocean mud dump site and the high costs associated with land disposal of dredged sediments requires further investigation to define the extent of dredging actions. DEP has made a formal request to the Army Corps of Engineers that the Creek be dredged as part of the Hudson-Raritan Estuary Restoration Project. We will continue to work with the Corps to have this action implemented in its ongoing Feasibility Plan for the Hudson-Raritan Estuary.

Table 10

CONEY ISLAND CREEK CSO Project

	Contracts PS-79G, H, P, E	*Contract PS-79G*	*Contract PS-79F*
Plan Elements:	Upgrade Avenue V Pumping Station	Regulator Modifications	New Force Mains
Location:	Avenue V PS (Avenue V and West 11th Street)	Reg. AV-1 at Avenue V PS site; Reg. OH-1 (Shore Pkwy. vic. Verrazano Bridge)	42-inch to SE-133 (Shore Pkwy. Vic. Verrazano Bridge); 48-inch to vic. Reg. 9A
Actions:	Comprehensive upgrade to automate and increase station capacity to 80 mgd; Lower Wet Well operating level to reduce sewer surcharges; Network Protector Structure to reliably transform utility power; Generator system to improve station reliability; Architectural restoration of Main Building to 1915 appearance	Automate Reg. AV-1 throttling gate (influent gate to Wet Well); Lower weir at Reg. OH-1 diversion chamber and at Reg. 9A to maintain existing HGL in upstream sewers	New force mains to convey DWF and WWF
Cost:	$33,000,000	Incl. at left	$67,600,000
Status:	Final Design – 50% Complete	Final Design – 0% Complete	Final Design – 50% Complete
Other Issues:	Relocation of station personnel during construction.	-	Routing of force main along parkland; Selective replacement of water and sewer utilities along route.

H.) Newtown Creek

- **Phase I Aeration Facilities**

This element of the plan will provide for aeration of English Kills, south of the Grand Street Bridge, to raise DO concentrations to a minimum of 1.0 mg/l at all times. A compressor station will be located at 1106 Grand Street, adjacent to English Kills and will deliver air to English Kills via air headers and diffusers on the Creek bottom along its centerline. Data will be collected during the first year of operation to guide refinements in operating procedures and verify performance.

Preliminary Design

The preliminary design has been completed. Drawings, facility descriptions and construction cost estimates have been prepared for three alternatives. The Department has reviewed the alternatives.

A preliminary evaluation of an alternative utilizing perforated plastic pipe as a header/diffuser, has also been completed and was reviewed by the Department.

CEQR and Permitting

An EAS for the Phase I Aeration has been completed and sent to NYSDEC together with applications for permits for their review. OEPA issued a negative declaration on December 14, 2000 for the Phase I Aeration project. NYSDEC issued a permit on May 31, 2001. The U.S. Army Corp. of Engineers has approved the Departments request for a Nationwide Permit No. 5 concurrence for Scientific Measurement Devices. Contact has also been made with the US Coast Guard for their review of the project.

ULURP

The NYC Department of City Planning certified the ULURP application on October 22, 2001. The Community Board and the Borough President's Office reviewed it. A Public Hearing before the City Planning Commission was held on February 6, 2002 and the City Planning Commission adopted the application on March 6, 2002.

Final Design

Construction of the Phase I Aeration Facility will be performed in two stages. During the initial stage of construction, plastic perforated piping will be used and evaluated. If the perforated piping does not achieve the desired result, the piping will be replace with stainless steel pipe with air diffusers under the second stage of the construction contract.

The 30 % design was submitted to the Department in July 2002. The 60% design submittal was submitted on December 12, 2002. The City Art Commission gave preliminary

approval of the building architecture on November 20, 2002. Final approval is contingent upon the finalized Contract Documents.

- **Phase II Aeration Facilities**

This element of the facility plan includes aeration of the Lower English Kills, the East Branch and Dutch Kills. This work will follow the performance evaluation of the Phase I facilities.

- **Maximize Flow Through Morgan Ave. Interceptor**

In-line storage in the combined systems within the Newtown Creek wet weather tributary area has been determined to be inconsistent with the City drainage plan. An alternative to installation of in-line storage dams has been proposed that would increase the capacity of Regulator B1, increase flow through the Morgan Avenue Interceptor, and provide a relief sewer from the St. Nicholas Weir to Regulator B1. Facility planning for routing of the sewer has been completed. The facility plan includes throttling of the Kent Avenue Interceptor in order to allow more flow from the Morgan Avenue Interceptor to reach the WPCP. Modeling of the interceptors was performed to determine the size and operation of the throttling gate.

Receiving water modeling to assess the benefits of this proposal has established required volume for supplementary off-line storage.

Preliminary Design

Modeling to establish a control strategy for the Kent Avenue throttling gate is complete. A meeting was held on August 14, 2002 with the Newtown Creek WPCP design team to exchange information regarding the facility, with a follow-up conference call on September 20, 2002. Additional modeling, as requested by the Department, indicated that it is not practical to utilize the existing automated regulators on the Kent Avenue Interceptor to meet CSO goals in lieu of a throttling gate. The modeling also indicated that if a throttling facility were not constructed, it would be necessary to increase the capacity of the proposed storage tank from 9 MG to 16 MG. A meeting was held on December 23, 2002 with the NYCDEP BEE, BWSO and BWT to present the proposed plan for the throttling facility.

- **Off-Line Storage Tank**

This plan element comprises the construction of an off-line storage facility to control CSO discharge into English Kills. Flow would be diverted from the combined sewers flowing west along Johnson Avenue. As described in the May 1995 facilities plan, the proposed tank was to be on property located on Varick Avenue, adjacent to English Kills. The tank was to be co-located on the site with a Department of Sanitation facility.

Siting

An alternative siting proposal was developed, to construct the tank within the head end of English Kills. This proposal was sent to NYSDEC for comment on its feasibility. The Department met with NYSDEC on May 23, 2001 to review this proposal and to solicit comment from NYSDEC. The proposal was rejected because the Department had not established sufficient cause why a tank could not be constructed on existing land.

A re-evaluation of land based siting alternatives was initiated following this meeting. Six (6) alternative sites were reviewed and presented to the Department. Information presented to the Department included possible site plans, construction feasibility and risks, impacts on current occupants and neighborhood, and construction and O&M costs. The alternative sites were screened and the advantages and disadvantages were evaluated. The preferred site is located at the intersection of Johnson and Morgan Avenues. This site is preferred due to its close proximity to the interceptor, outfall and force main. A presentation was made to NYCDEP's Commissioner on September 11, 2002 describing the proposed plan and the need for the preferred site. Presentations were also made to the NYC Economic Development Corporation and Community Board No. 1 in Brooklyn. The Department has given approval to finalize the EAS and commence ULURP for the preferred site.

Facility Planning

A draft Facility Plan was prepared for construction of the storage facility on the preferred site. Modeling analysis was performed to verify CSO abatement projections. Preliminary plan and profile drawings and preliminary equipment sizing was performed. An updated Facility Plan Draft Report was submitted to the Department on June 5, 2002.

CEQR and Permitting

A draft EAS for the proposed storage facility was prepared. OEPA has reviewed and submitted comments to the report. A Phase I Site Assessment, including the site history and site inspection was prepared. OEPA has reviewed and accepted this report. A scope of work for the Phase II Site Assessment has been prepared. OEPA has reviewed and submitted comments to the scope of work. The phase II Site Assessment will begin once access to the site is granted.

Project Schedule

The project schedule for the Newtown Creek CSO Storage Facility is under review by the NYCDEP.

- **Sediment Dredging**

A dredging feasibility study was added to the facility plan at the request of NYSDEC. The feasibility of dredging CSO sediments from the branches of Newtown Creek was investigated. The investigation included a hydrographic survey to determine locations of sediment mounds and sediment sampling to clarify sediment quality.

Feasibility Study

The draft Dredging Feasibility Study Report was completed in October 2000. The Department anticipates collaboration with the Army Corps of Engineers to include the dredging of Newtown Creek with the COE Habitat Restoration Projects.

Table 11

Newtown Creek CSO Project

Plan Elements:	Maximize flow through Morgan Ave. Interceptor	Phase I Aeration Facilities	Off-line Storage Tank
Location:	Regulator B1 and WPCP throttling chamber	Head end of English Kills, south of Grand Street	Sewers tributary to CSO outfall discharging to English Kills
Actions:	Raise overflow weir in Regulator B1; increase sluice gate openings to interceptor; provide relief sewer from St. Nicholas weir to Regulator B1; provide throttling gate on Kent Avenue Interceptor.	Provide aeration of English Kills to raise DO concentrations to a minimum of 1.0 mg/l. The facility includes a landside compressor station and an air header and diffuser assembly on the Creek bottom.	Design of an off-line storage facility to control CSO discharge into English Kills. The facility would include the tank, a pumping station, and a new gravity drain to drain the tank for treatment at the Newtown Creek WPCP.
Cost:	$4,000,000*	$8,000,000	$93,000,000
Status:	Facility plan elements for modifications to regulator and routing of the relief sewer have been completed and included in an Updated Facility Plan Draft Report. Modeling of the interceptors was performed to determine the size and operation of the throttling gate. Coordination with the WPCP design team is continuing.	Preliminary design & CEQR completed. Permit issued by NYSDEC. Nationwide Permit No. 5 concurrence issued by USACOE. ULURP application adopted by City Planning Commission. Final design is approximately 85% complete. The NYC Art Commission granted preliminary approval of the building architecture.	Siting within English Kills was rejected by NYSDEC. Identified preferred site at intersection of Johnson and Morgan Avenues after re-evaluation of siting alternatives and proceeding with finalization of EAS and commencing ULURP. Preliminary plan and profile drawings and preliminary equipment sizing prepared for construction of tank at preferred location. Updated Facility Plan Draft Report Submitted to DEP.
Other Issues:	Requires coordination with WPCP planning and design requirements	Phase II for the lower English Kills, the East Branch and Dutch Kills will follow.	Site approval (ULURP) and acquisition of property required.

* Does not include cost of Kent Avenue Throttling Facility to be constructed under Newtown Creek WPCP project.

I.) Jamaica Tributaries

The Jamaica Tributaries project area includes the Jamaica WPCP sewershed area and the tributaries, which receive the wet weather discharges from the drainage area. These tributaries include Bergen, Thurston, Shellbank, and Hawtree Basin, which are located in the northeast portion of Jamaica Bay.

The NYCDEP plans to submit the revised facility plan for the Jamaica Tributaries CSO Facility Planning Project to the NYSDEC for review and approval in April 2003. This revised facilities plan will address the comments previously provided by the NYSDEC and documents the changes to the originally approved facility plan, pursuant to requirements of the CSO Consent Order.

Area-Wide Recommendations

- Clean the East Interceptor.

  4,970 cubic yards of accumulated sediment were removed from the Jamaica WPCP East Interceptor sewer in October 2000.

- Automate and improve the regulators 2, 3, and 14.

  In July of 2002, the order to commence work was given for the Citywide Collection Facilities Supervisory Control and Data Acquisition (SCADA) System Project. This new project will automate key regulators in the City by installing electro-hydraulic actuators capable of controlling flows to the sewer interceptor. The project will also make site improvements to these key regulators to include the installation of power and communications utilities, sensors to measure depths and/or flows, remote telemetry units (RTUs) or programmable logic controllers (PLCs), structural modifications, and above-ground vaults to house controls. The project schedule for the Citywide SCADA Project is under review by the NYCDEP.

- Build-out storm sewers in Jamaica WPCP drainage area within 30-40 years.

  Since the time of the submittal of the original facility plan, DEP has made substantial progress in addressing the build out of the storm sewer system in the Jamaica WPCP drainage area. Specifically, the SE-552 project was constructed in Springfield Gardens in the southeast section of Queens to relieve the known bottleneck. A constriction occurred where the double-barrel Springfield Boulevard sewer discharged to a single-barrel storm sewer along Carson Street. To mitigate this bottleneck, a four-phase project was undertaken, with a total construction value in excess of $100 million.

  After the completion of SE-552 significant flooding relief in southeast Queens was realized. Subsequently, several additional storm sewers were built, discharging into the newly completed storm sewer trunk, providing additional relief from severe flooding and SBU's (sewer back ups). This strategy of building storm water laterals will continue

throughout the Springfield drainage basin through a new major drainage planning initiative by the Bureau of Water and Sewer Operations (BWSO) as described below.

The DEP's BWSO is about to undertake a major drainage planning effort for the Springfield Drainage Basin System (drainage districts 42 SW and 42) and the adjacent South Jamaica Drainage Basin System in southeast Queens, to "build out" the storm system. The Springfield Drainage Basin System consists of mostly one and two-family residential housing in the communities of Springfield Gardens, Laurelton, St. Albans, Cambria Heights, Rosedale, Brookville, and Queens Village. Both combined and separate sewers serve the Springfield Drainage Basin System, including approximately 1,450 acres of combined sewers and 5,500 acres of designated separate sewers. The 1,450 acres of combined sewers in the Laurelton area, adjacent to Montefiore Cemetery, will be converted to a high-level storm sewer system, in accordance with the NYC Master Drainage Plan.

° Jamaica WPCP stabilization.

The original facility plan stated that the Jamaica WPCP was to undergo a stabilization project to correct various operational problems, including the inability of the plant to treat peak wet weather flows. Subsequent to submitting the original facility plan, the conveyance and treatment of two times design dry weather flow (2x DDWF) at this plant was included as a requirement in the OMNI IV Consent Order.

In addition to correcting the problem with treating up to 2x DDWF, the Jamaica WPCP Stabilization is resolving other operational issues. The improved facilities will include new raw wastewater sewage pumps, a new force main, an additional primary tank, new residuals handling facilities, an additional chlorine tank, increased thickener capacity, new return sludge pumping stations, odor control systems, a new administration building, and improved instrumentation and controls. Due to the extensive amount of work required to upgrade the existing plant, the work is being completed in two construction phases. Phase I construction, which began in May 1997 and is expected to conclude in June 2005, has to date awarded in excess of $140 million in plant construction work. Phase II, which is in design, will have a four year construction period beginning in FY 2004 and concluding in FY 2008. The current DEP Capital Plan has allocated an additional $140 million to construct Phase II.

° Reconfigure forebay at JA WPCP.

To clarify this component of the plan, an excerpt from page 8-37 of the Jamaica Tributaries CSO Draft Facilities Planning report dated May 1996 is presented below:

"The current configuration of the east and west interceptors should be *evaluated.* The interceptors currently meet head-on which may create undesirable conditions…"

As described above, the Jamaica WPCP is undergoing a $280 million upgrade, and the matter related to the conveyance and treatment of 2x DDWF at this plant was included as a requirement in the OMNI IV Consent Order.

The HydroWorks hydraulic model of the drainage area is being developed. This model will be used to evaluate the hydraulics of the interceptor and forebay.

° Continue use of booms for floatables control.

DEP continues the use of interim facilities to capture floatables with in-stream booms in Bergen and Thurston Basins, and to remove floatables with skimmer vessels.

° Nitrogen Control Action Plan

An analysis of BNR technologies for the four (4) Jamaica Bay WPCPs was performed since the original facility plan for Jamaica Tributaries CSO Facility Plan was submitted. The BNR technology analysis was documented in the Nitrogen Control Feasibly Plan that was submitted to NYSDEC in December 1998. Currently, NYCDEP is meeting the total nitrogen discharge limits that are specified in the existing SPDES permit.

Thurston Basin Recommendations

° In-stream basin aeration.

The 1996 facility plan recommended that in-stream aeration be evaluated to determine if aerating the basin was a technically feasible and cost-effective method for increasing dissolved oxygen levels in the basin. The DEP will perform a full-scale demonstration of this technology within the English Kills waterbody. The results of the demonstration will determine the applicability of in-stream aeration for other waterbodies in NYC, including Thurston Basin.

° Dredge basin.

At this time, DEP has no immediate plans for dredging Thurston Basin. The inability to dispose materials at an ocean mud dumpsite and high costs associated with land disposal of dredged sediments requires further evaluation to define the extent of the dredging. DEP will continue to pursue dredging opportunities with the Army Corps of Engineers through ongoing ecosystem restoration efforts in Jamaica Bay.

° Eliminate dry weather overflows to basin.

The EAS and ULURP application for The Meadowmere and Warnerville Dry Weather Discharge Abatement project are near completion and will be submitted by DEP to the NYCDCP, in the second quarter. The Wetland Mitigation Plan is also being updated as per comments from the OEPA. The Schlumberger UtiliLOG GPIR survey was successful in locating utilities less than 10 feet deep in the area of the pumping station

site. This technology has been determined to be of value in the case that DEP chooses to use the service for the force main construction along Brookville Boulevard.

- Evaluate CSO control vs. high-level storm sewers in the Laurelton area.

  DEP has recently made the decision to construct high level storm sewers as described in the section above entitled *Build-out of Storm Sewers in Jamaica WPCP drainage area within 30-40 years* because it has been determined that sewer construction is the most cost-effective solution to CSO control in this area. In that section, DEP's current effort to develop a comprehensive drainage planning effort is described. This effort will include the conversion of the 1,450 acres of combined sewers in the Laurelton area, adjacent to Montefiore Cemetery, to a high-level storm sewer system, in accordance with the NYC Master Drainage Plan.

Bergen Basin Recommendations

- Evaluate the potential for 7 MG in-line storage.

  An investigation of the potential in-line storage upstream of the Regulator 3 and 14 drainage areas was performed subsequent to the 1996 CSO Facility Plan Report. Due to the magnitude of flooding in these two adjacent regulator drainage areas, ILS is not considered to be feasible and will not be implemented in these areas.

- In-stream basin aeration

  The 1996 facility plan recommended that in-stream basin aeration be evaluated to determine if aerating the basin was a technically feasible and cost-effective method for increasing dissolved oxygen levels in the basin. The DEP will perform a full-scale demonstration of this technology within the English Kills waterbody. The results of the demonstration will determine the applicability of in-stream aeration for other waterbodies in NYC, including Bergen Basin.

- Eliminate Jamaica WPCP discharge to Bergen Basin.

  The installation of a new motor operated sluice gate in the Jamaica WPCP outfall structure was recommended to allow the discharge of plant effluent flow to Bergen Basin after the capacity of the plant's Grassy Bay outfall is maximized. With the gate in place, Bergen Basin would receive plant effluent flow only during peak flow periods when flows exceed the Grassy Bay outfall.

  The feasibility as well as the necessity of installing a gate will be evaluated under the Phase II Jamaica WPCP stabilization design, which is now underway.

- Reduce CSO discharges through Jamaica WPCP expansion of wet weather capacity.

The 1996 facility plan recommended that the wet weather capacity of the Jamaica WPCP be expanded from 200 mgd to 250 mgd to reduce CSO discharges to Bergen Basin. A dual track approach was outlined. Track I would consider the use of a new technology – high rate physical chemical treatment (HRPCT). If this emerging technology were not successful, then Track II would be implemented – namely conventional primary treatment.

The DEP has completed a pilot-testing program of the HRPCT process since the 1996 facility plan was submitted. Currently, a full scale HRPCT demonstration is being planned to evaluate the process impacts of HRPCT's reliance on high levels of ferric chloride on the WPCP liquid and sludge streams. Preliminary design of a 9 mgd demonstration facility at the Port Richmond WPCP is underway. The project schedule for the wet weather expansion of the Jamaica WPCP is under review by the NYCDEP.

° Dredge basin.

At this time, DEP has no immediate plans for dredging Bergen Basin. The inability to dispose materials at an ocean mud dumpsite and high costs associated with land disposal of dredged sediments requires further evaluation to define the extent of the dredging. DEP will continue to pursue dredging opportunities with the Army Corps of Engineers through ongoing ecosystem restoration efforts in Jamaica Bay.

Shellbank Basin Recommendations

° Bulkhead CSO outfall to basin.

A single CSO discharge location existed near the head end of Shellbank Basin in 1996. This discharge location was associated with Jamaica regulator 12, a high-level relief off the west interceptor (Jamaica SPDES outfall #004). It was recommended that this location be bulkheaded because it was apparently an inactive location. In May of 2001, the discharge location was bulkheaded by DEP, thereby eliminating any potential CSO discharges to Shellbank Basin.

° Pilot destratification system for basin.

DEP is currently involved in an EAS and a ULURP site acquisition process effort to obtain a permanent site at Shellbank Basin to install a long-term facility. These 2 items are near completion and will be submitted to NYCDCP in the second quarter. The preliminary design for the permanent facility has been completed.

° Pilot chemical oxidation.

A laboratory bench-scale evaluation has been performed to determine if chemical oxidation of marine sediments will reduce sediment oxygen demand (SOD). Fourteen sediment samples were collected in September 1998 from Bergen Basin. Half of the samples were collected from the head-end terminus of the waterbody and half from

immediately downstream of a CSO discharge location about 1000 feet downstream of the head-end. Laboratory experiments were initiated to evaluate SOD before and after a chemical (calcium nitrate) was injected into the sediment samples. Baseline measurements of SOD were first conducted on all samples. This was followed by SOD experiments to determine the effectiveness of chemical oxidation at several doses equivalent to what would be applied in a full-scale application. The results of these experiments indicated that chemical oxidation of sediments would have a minimal if not negligible beneficial impact on sediments exhibiting high levels of sediment oxygen demand, such as those in the tributaries of Jamaica Bay.

The oxidation evaluations were conducted in the laboratory. Calcium nitrate solutions were injected into the top 5 cm of sediment cores at the dosages presented in the table below.

DOSAGE OF CALCIUM NITRATE SOLUTION (50%) FOR SOD CORES COLLECTED FROM BERGEN BASIN

Core No.	Dose to Sediment Core (ml of solution)	Equivalent Dose in Field (g $Ca(NO_3)/m^2$)
1,2	0	0
3,4	4.6	500
5,6	6.4	700
7,8	8.3	900
9,10	12.4	1,350
11,12	16.6	1,800

SOD measurements were conducted on six occasions for each core to detect any long-term beneficial improvement in SOD. These measurements were conducted on the day of the chemical oxidation, and at 3, 6, 13, 19, and 26 days after the application.

The results of these experiments indicate that chemical oxidation of sediments would have a minimal if not negligible beneficial impact on impaired sediments exhibiting high levels of sediment oxygen demand, such as those in the tributaries of Jamaica Bay. Therefore, this alternative will not be further evaluated for full-scale application.

Hawtree Basin Recommendations

- Construct sanitary sewers in Hamilton Beach.

The facility recommended that sanitary sewers be constructed in the Hamilton Beach section of Queens. The small community, which lies between JFK Airport and Howard Beach, is adjacent to Hawtree Basin. Elevated coliform levels in the basin were attributed to the failing septic tanks in this neighborhood. The DEP's BWSO, in association with NYCDDC, completed the construction of sanitary sewers in December of 1999 within the Hamilton Beach area under project SE629.

Meetings

Principal meetings held during this report period were as follows: Project Progress Meetings with NYCDEP on January 16 and March 14, 2003.

Table 12

Jamaica Tributaries CSO Project

Plan Elements:	Chemical Oxidation, HRPCT and Destratification Demonstrations	Abatement of Meadowmere and Warnerville	Preliminary Design – Thurston/Bergen Drainage Plan
Location:	Port Richmond WPCP and Shellbank Basin	Meadowmere and Warnerville – Queens, New York	Jamaica WPCP Drainage Area
Actions:	Conduct demonstration testing of new technologies	Construction of 1 Pumping Station, Sewer Collection System, and Dual Force Mains	Develop drainage plan for sewer separation
Construction Cost:	HRPCT Demonstration Facility - $15 million Permanent Destratification Facility - $500,000	$12.2 million	To be determined
Status:	- Continued Preliminary Design of the HRPCT Demonstration Facility - Continued Preparation of EAS and ULURP application for Destratification Facility	Preliminary Design Complete; ULURP and EAS Submitted	Consultant Selection Process Underway

J.) Citywide Floatables

Work continued on tasks being performed for the development of the Comprehensive City-Wide Floatables Control Abatement Plan. During the period January through March 2003, progress continued on tasks related to comprehensive plan development, CSO modeling and floatables loadings, wet weather capacity analysis and wet weather operating plans, in-stream controls, and the Cryders Lane Outfall Diversion Channel Project.

- ***Comprehensive Plan Development***

Coordinated efforts continued between the Use and Standards Attainment (USA) Project and the Comprehensive Plan Project. Landside modeling and CSO analysis under the Comprehensive Plan WPCP studies are being integrated with USA studies presently being conducted for Gowanus Canal, Newtown Creek and Flushing Bay.

Work was completed on the Tallman Island WPCP draft comprehensive plan. The Draft Report entitled "Alternatives Analysis and Recommended Plan to Convey 160 MGD to the Tallman Island WPCP" was completed and delivered to DEP on December 31, 2002, in accordance with the schedule established for the project. Discussions were held with DEP regarding the content and conclusions of the Tallman report. Additional model analysis was performed to characterize the impacts of the Flushing Tank and Alley Creek improvements under the preferred alternative 3C-1. A meeting was held on February 6, 2003 to present and review the findings of the Tallman Island Report. In response to comments from the meeting, as-built drawings with invert elevations were collected for the Flushing and Whitestone Interceptors for use in performing Manning calculations. Regulators were evaluated, based on information from the Regulator Improvement Program (RIP) document, to determine flow capacity and potential for restricting flow. A plan was developed to evaluate and redesign Regulator TI-09 on an accelerated schedule to allow necessary modifications to coincide with the in-service data for the Flushing Tank. A meeting was held on March 6, 2003 with DEP to present and discuss the pumpback of the Flushing Bay Tank and how it is affected by the Flushing Interceptor and Tallman Island WPCP Regulator TI-09. SWMM modeling was performed to evaluate the implications of closing Regulator TI-09. In addition, HydroQual investigated and modeled the impact of closing Regulator TI-10 on the Whitestone Interceptor and the need for construction of a parallel interceptor to carry flow to the Tallman Island WPCP.

During this period HydroQual completed additional analysis and modeling of CSOs from Bowery Bay WPCP outfalls BB-006 and BB-008. Both conveyance and treatment and storage tunnel alternatives were evaluated for total overflow and percent reduction in CSO from these outfalls. A cost analysis was performed for each alternative to develop a knee-of-the-curve approach for determining a cost/benefit relationship. This information will be integrated with the USA Project's Flushing Bay analysis.

- ***CSO Modeling and Floatables Loadings***

HydroQual is presently coordinating the effort to develop calibrated hydraulic models for all WPCP drainage areas. HydroQual is working closely with Hazen & Sawyer, P.C. (H&S),

URS Corporation (URS), O'Brien and Gere (OBG), and Lawler, Matusky & Skelly Engineers LLP (LMS) to recalibrate the existing XP-SWMM and InfoWorks models and configure them for Comprehensive Plan/USA needs. Presently under development are models for Wards Island, Hunts Point, Bowery Bay, Red Hook, Owls Head, 26th Ward and Newtown Creek WPCPs. These models will be configured for baseline, facility plan, sewer separation and complete capture scenarios for use in the ongoing USA Project waterbody studies.

HydroQual worked with Dvirka and Bartilucci (D&B) in selecting monitoring locations within the Red Hook WPCP drainage area to confirm hydrologic parameters such as percent imperviousness. Five meters have been installed by the D&B subcontractor for a period of one month. Upon receipt, the data will be reviewed for quality assurance and will be used in finalizing the InfoWorks model parameters. As-built drawings were obtained of the Bond-Lorraine sewer to provide information on four relief outfalls not presently included in the InfoWorks model on the Red Hook WPCP area. Similarly, the information on three relief outfalls on the Owls Head WPCP area along the 3rd Avenue was sought. Due to very limited set of drawings available in these two areas, HydroQual requested Savin Engineers to conduct a field survey of the relief outfalls and obtain elevation data for inclusion in the hydraulic model. Savin conducted a field survey of the requested locations between January 27 and February 11, 2003.

HydroQual is assisting Camp Dresser & McKee (CDM) in association with H&S to assess the potential in-line storage available within the North and South Interceptors of the North River combined sewer system. The InfoWorks model was developed from the existing XP-SWMM model of the North River WPCP drainage area, and was calibrated based on the plant inflows in the calendar year 2000.

In conjunction with the Tallman Island WPCP analysis, XP-SWMM modeling was performed to evaluate the implications of closing Regulator TI-09 and Regulator TI-10.

On March 26 and 27, 2003, HydroQual hosted a training seminar given by Wallingford Software, who distributes and supports InfoWorks. Attendees from DEP, HydroQual, LMS, H&S, URS and OBG were provided with a general overview of InfoWorks capabilities, as well as hands-on training for users of the program.

- ***Wet Weather Capacity Analysis***

Meetings and presentations for initiating the preparation of Wet Weather Operating Plans (WWOPs) were held for the following WPCPs in January: 26th Ward, Bowery Bay, Hunts Point, North River, Red Hook, Tallman Island, and Wards Island. WWOPs for several WPCPs are in various stages of development. These plans are generally being developed by the facility planning engineers responsible for the facilities. HydroQual attended a 26th Ward design meeting on March 10, 2003 to discuss the draft plan for the plant. HydroQual also analyzed throttling operations for the North River WPCP to determine if the same storage volume can be achieved by throttling at the proposed throttling gates or the plant sluice gates.

WWOPs are being prepared for the following current or planned CSO treatment and retention facilities: Spring Creek, Alley Creek, Flushing Creek, and Paerdegat Tanks, and the Corona Avenue Vortex Facility (CAVF). These are required as an attachment to the Form NY-2A Applications and to the WWOPs for the WPCPs. Drafts of the Form NY-2A Applications for all but the CAVF were submitted to DEP on February 28, 2003. HydroQual has also continued to facilitate the WWOPs for the CSO treatment facilities. A first draft of the plans for these facilities were completed in March.

WPCP operating data for FY2001 was analyzed for several WPCPs and did not reveal any performance-related wet weather capacity limitations. A similar conclusion was drawn based on the FY2000 data.

During this period, the Top Ten Storm Analysis for FY2002 and CY2002 was completed and submitted to DEP.

- ***In-Stream Controls***

DEP is investigating the use of inter-pier skimmer vessels for use in floatables removal where other CSO control measures are not feasible. These vessels would be completely self-contained, self-powered, and capable of operating on New York City inter-pier waterways. The RFP and PSR for the first phase, which covers the conceptual/preliminary design to meet the performance criteria for the DEP inter-pier marine trash skimmer vessels, have been finalized.

The recommended Bronx River Waterbody/Watershed Plan prepared under the USA Project, which was submitted to DEP on January 1, 2003, is being updated to reflect a phased facility plan implementation and re-consideration of the Bronx River 4 MG CSO storage conduit. Floatables control alternatives for Outfall HP-007 are being developed as part of the Bronx River Plan. During this period, a “screening level” in-line netting design was developed for HP-007.

HydroQual completed an initial investigation concerning relocation of the Whale Creek boom and skim off-loading facility at the Newtown Creek WPCP. A site visit was conducted on February 13, 2003 to inspect the new location of the off-loading facility on the opposite side of Whale Creek. Also visited was the site of the planned aeration facility for English Kills. The results of the initial investigation were presented to DEP on March 6, 2003.

- ***Cryders Lane Outfall Diversion Channel Project***

Design and Construction

Construction activities on the Cryders Lane Diversion Channel project continued in January by the contractor, Spearin, Preston & Burrows (SPB). Major construction activities included completion of the installation of the steel sheeting for the bypass channel; constructing the by-pass wall for the new outfall; constructing the new slab on top of the existing outfall; closing up the outlet for the existing outfall; installing the floating netting system frame; and placing rip rap in the channel and along the outside walls of the new concrete culvert. Construction activities on the Cryders Lane Diversion Channel project was basically completed

by the end of January except for some minor items including the ornamental fencing, etc. No work was done during February and March at the site.

During January, HydroQual received and reviewed five shop drawings. Four of the submittals were approved: Material Certifications for Steel Sheet Piling (Spec 02461G); Precast Culvert Shop Drawings (Spec 03400); Netting System Quality Control Manual (Spec 13121); Rip Rap Modifications (Spec 02318). One of the submittals was approved as noted: Netting System Maintenance Manual (Spec 13121).

During March, shop drawings were reviewed, including specifications for the picket fence and the operations and maintenance manual for the In-Line Netting System. HydroQual also prepared the Contract Change Request for the implementation of the mitigation plan which was not part of the original contract. It is the intention of DEP to have SPB complete the mitigation work at the site. The mitigation plan was prepared by the DEP Office of Environmental Planning and Assessment (OEPA). OEPA is currently getting approval of the plan from NYSDEC and the U.S. Army Corp of Engineers (ACOE). HydroQual also reviewed the mitigation plan and cost estimate provided by OEPA.

III. Project Progress for Use and Standards Attainment Project

The Use and Standards Attainment (USA) Project is being conducted by the New York City Department of Environmental Protection (DEP) for waterbodies throughout New York Harbor to address compliance with water quality standards and designated uses. The goals of the USA Project are to:

- Define, through a public process, more specific and comprehensive long-term beneficial use goals for each waterbody, including habitat, recreational, wetlands and riparian uses, in addition to water quality goals, thus maximizing the overall environmental benefit;
- Develop technical, economic, public and regulatory support for prioritizing and expediting implementation of projects and actions needed to attain the defined goals; and
- Provide the technical, scientific and economic bases to support the regulatory process needed to define water quality standards for the highest reasonably attainable use and to allow water quality standards to be attained upon implementation of recommended projects.

Waterbody/Watershed assessments are being conducted for more than 23 waterbodies throughout New York Harbor. The waterbodies include major open water areas of New York Harbor and selected urban tributaries. The following is a brief description of USA Project activities for the period of January 1 to March 31, 2003.

- **Waterbody/Watershed Assessments**

The USA Project is conducting focused waterbody/watershed assessments on more than 23 waterbodies. Organization of the waterbodies was modified during this reporting period to recognize the City's need to develop long-term CSO control plans and more realistically reflect effective coordination between the USA Project, the Comprehensive City-Wide Floatables Control Abatement Plan project, and they City's various CSO and water quality facility planning projects. Waterbody/watershed assessments have been redistributed into nine groups. The "pilot waterbody/watershed assessments", Paerdegat Basin and the Bronx River, represent Groups 1 and 2, respectively. The Group 3 waterbodies are Bergen and Thurston Basins. Fresh, Hendrix and Spring Creeks are the Group 4 waterbodies. Jamaica Bay, Sheepshead Bay, Mill and East Mill Basins, and Shellbank Basin are the Group 5 waterbodies. Alley Creek, the East River, Flushing Creek and Bay, the Hutchinson River, and Westchester Creek are the Group 6 waterbodies. Gowanus Canal and Newtown Creek are the Group 7 waterbodies. The Arthur Kill, Harlem River, Hudson River, Arthur Kill, Lower New York Bay, Raritan Bay, and Upper New York Bay are the Group 8 waterbodies. Coney Island Creek constitutes Group 9. The waterbody/watershed assessments include various activities including existing data and information gathering/compilation, watershed/waterbody field investigations and data collection, public outreach in the form of stakeholder teams, land use and shoreline characterizations, data management, watershed and receiving water mathematical modeling, ecosystem (habitat) evaluations, waterbody use evaluations, problem identification and prioritization, engineering analyses, and waterbody/watershed planning.

Assessment Schedule

The Paerdegat Basin assessment is completed and the Preliminary Paerdegat Basin Waterbody/Watershed Plan has been finalized. Follow-up regulatory actions are now proceeding with the State of New York to advance the Paerdegat Basin plan. A Preliminary Bronx River Waterbody/Watershed Plan was finalized this reporting period but was subsequently modified to reflect changes being considered for DEP's Capital Plan. Work is ongoing on assessment Groups 4, 5, 6, and 7.

Local Waterbody/Watershed Stakeholder Teams

Stakeholder involvement is a critical component of the USA Project. Local stakeholder teams are being convened for each waterbody assessment. The USA Project has formed local waterbody stakeholder teams for the Bronx River and Paerdegat Basin. The Bronx River team has met on three occasions. The Paerdegat Basin Stakeholder Team has met on four occasions. Potential team members were identified this reporting period for Gowanus Canal. The first meeting of the Gowanus Canal Stakeholder Team is scheduled for April 2003. Efforts continued for forming stakeholder teams for the Newtown Creek and Jamaica Bay waterbody/watershed assessments.

DEP continues to make presentations to New York City Community Boards to introduce the USA Project and the value of the stakeholder team process. Lists of potential members of stakeholder teams are being developed from suggestions made by the Boards as well as reaching out to local community groups.

Field Investigations

Field Sampling and Analysis Programs (FSAPs) are developed and executed to conduct field investigations for waterbody/watershed assessments. Specific FSAPs address biological sampling, shoreline characterizations, and other investigations necessary for collecting comprehensive information on each waterbody/watershed, where no information has previously been collected or is out of date. A Field and Laboratory Standard Operation Procedures (SOP) document for the USA Project is being used in support of FSAP execution. This document is updated when new procedures are required for additional investigations. The SOP and all FSAPs are developed in conformance with SOP guidelines developed by the U.S. Environmental Protection Agency (EPA) and discussed with the EPA Monitoring and Assessment Branch in Edison, NJ.

Laboratory work continued on biological samples collected during the year 2002 FSAPs executed in the East River and Jamaica Bay areas. Ichthyoplankton sub-samples shipped to the University of Connecticut for RNA/DNA are being typed and identified for Quality Assurance/Quality Control (QA/QC). Revision No. 2 to the project Standard Operating Procedures (SOP) document is the current version. Laboratory analytical work and database entry with QA/QC is ongoing.

A sampling program that was initially completed for characterizing total and fecal coliform and enterococcus in New York City's sanitary sewage has been extended to collect additional data. The program originally sampled the influent of all 14 New York City Water Pollution Control Plants (WPCP) on five occasions with a rotating schedule. Four samples were collected on an hourly basis on each sampling day that was performed following at least one full day of dry weather to assure that the samples truly represent sanitary sewage. This information is being used to reinforce the selection of sanitary pathogen concentrations for mathematical modeling purposes. A database for the sampling is being compiled and reviewed for QA/QC. The data is being compared to data collected during previous monitoring programs and the literature for ground-truthing. Issues recognized with laboratory QA/QC has necessitated collecting additional data with the same procedures and schedules. Each WPCP is being sampled at least one additional time.

Sewer system monitoring for hydraulic conditions at selected locations has been requested of DEP for the Red Hook WPCP service area to enhance confidence in hydrologic model parameter selection, as well as to provide information to DEP to plan its upgrade of the Gowanus Pump Station. DEP has assigned this monitoring to another contract associated with the Gowanus Pump station upgrade and data collection has begun. The USA Project provided suggestions to DEP for modifying the monitoring to accommodate physical sewer system issues while meeting data goals.

Existing data is now being reviewed to draft a biological FSAP for investigations of Gowanus Canal, Newtown Creek, Coney Island Creek, and Sheepshead Bay, and northern tributaries of Jamaica Bay in 2003. The Gowanus Canal portion of this work will be coordinated with the U.S. Army Corps of Engineers (USACE) to satisfy the City's non-federal cost-share obligation on the USACE's Gowanus Canal and Bay Ecosystem Restoration Project. A bathymetry survey of Gowanus Canal is being planned to update mathematical models and waterbody characterizations – this is also being coordinated with the USACE. Based on the success and lessons learned during deployments of continuous monitoring sensors by the DEP Harbor Survey at several locations in the New York Harbor complex, similar monitoring is being planned for 2003 to coincide with biological FSAP efforts.

Data Management

Sewer system, surface water, sediment, biological, and many other categories of data are continually being compiled from a variety of sources to construct a relational database. The database consists of data from DEP's Harbor Survey, the Interstate Environmental Commission, the National Park Service, and virtually all of DEP's past and ongoing CSO and water quality facility planning projects. The relational database is integrated with a Geographic Information System (GIS) such that spatial information is maintained for analyses. Water quality, biological, and other data forms collected by the USA Project are being added to this relational database for waterbody assessments with quality assurance/control verification.

Land Use and Shoreline Characterizations

Land use and shoreline characterizations are continuing. The characterizations are general in nature and build upon existing data. Field verification of the analyses is being performed as existing information is compiled and interpreted. Land use and shoreline characterizations are being conducted on all USA Project waterbodies and watersheds at this time.

A shoreline development index analysis is being performed to develop a multi-metric measure of tributary habitat complexity that might be correlated with marine species abundance and diversity. Shoreline development indexes (SDI) are being calculated using GIS data for shoreline lengths and waterbody surface areas of USA Project waterbodies. Measures of wetlands and/or salt marshes in the waterbodies are also being conducted for added correlation purposes. The SDIs are then being compared to biological data to develop correlations between habitat and aquatic life.

Waterbody/Watershed Mathematical Modeling

An important component of the USA Project is assessing existing conditions in waterbodies as well as projecting the long-term benefits of the DEP's various water quality improvement projects. Mathematical modeling consists of both watershed modeling and receiving water modeling. The models are being prepared to calculate water quality conditions for an average precipitation year. DEP's System-Wide Eutrophication Model (SWEM) is the primary model being used to assess harbor-wide conditions as well as calculating boundary conditions for tributary models. The Jamaica Bay Eutrophication Model (JEM) is being used to assess conditions in Jamaica Bay and calculate boundary conditions for Jamaica Bay tributaries. Tributary models are being used to assess near-field water quality impacts of point and non-point sources and evaluate long-term improvement alternatives.

Watershed modeling for SWEM and JEM is primarily being performed using HydroQual's RAINMAN model, which is a simplified rainfall-runoff model used to calculate watershed pollutant loadings to receiving waters. Watershed models are being modified and updated for all fourteen of New York City's WPCPs as new information is developed and water quality improvement plans evolve. The models are calibrated to the City's WPCP flow data for the years 1996 and 2000 and validated by comparing model calculations to the latest WPCP during the top-ten storms of the years. Detailed hydraulic models (SWMM) are being used for simulating combined sewer systems for tributary assessments and will replace the RAINMAN models when calibrations and validations are acceptable. Recalibration of SWMM models for the Gowanus Canal and Newtown Creek watersheds is ongoing while efforts to recalibrate SWMM models of other WPCP service areas have begun.

Mathematical modeling activities for Flushing Bay and Creek continued this reporting period. A receiving water model of these waterbodies previously developed as part of the USACE's Flushing Bay and Creek Ecosystem Restoration Study is being used to evaluate waterbody modification options that may enhance benthic habitat and species diversity while also addressing aesthetic issues. Model analyses have been completed for predicting beneficial

effects that breakwater removal, dredging, facility plans, and additional CSO abatement in inner Flushing Bay would have on water and sediment quality.

A receiving water model for East River Tributaries Model is being developed with a model domain to simulate the Group 6 waterbodies. Current efforts are focused on model calibration and validation.

Receiving water modeling of Gowanus Canal continued. RAINMAN watershed models are being used while SWMM models of the Red Hook and Owls Head WPCPs are being recalibrated and validated. The model domain is Gowanus Canal and Gowanus Bay to satisfy the modeling requirements of the USA Project as well as the USACE's ecosystem restoration project. The model is calibrated using original CSO facility planning data. A validation was performed using data collected after the Gowanus Canal Flushing Tunnel was reactivated. Projection cases were simulated to evaluate DEP's current planning efforts for upgrading the Gowanus Pump Station and modernizing the Gowanus Canal Flushing Tunnel.

Receiving water modeling of Newtown Creek continues. RAINMAN watershed models are being used while SWMM models of the Bowery Bay and Newtown Creek WPCPs are being recalibrated and validated. The model domain is all of Newtown Creek and a portion of the East River. The hydrodynamic component of the model was calibrated using original CSO facility planning data. A hydrodynamic validation is being prepared using data collected during DEP's pilot aeration studies. A water quality model was constructed and is being calibrated to original CSO facility planning data.

Mathematical modeling of Jamaica Bay by the USA Project is being coordinated with DEP's Jamaica Bay CSO Facility Planning Project, the Jamaica Bay Eutrophication Project, and the Long Outfall Project to assure consistency of approach. The progress of these activities influences the schedules for Jamaica Bay and back-bay tributary waterbody/watershed assessments. The Jamaica Eutrophication Model (JEM), which is being used by the USA Project, is undergoing a review by a Model Evaluation Group (MEG). Mathematical modeling of the 26th Ward Tributaries (Fresh, Hendrix, and Spring Creeks) by the Jamaica Bay CSO Facility Planning Project was being monitored by the USA Project to assure consistency of approach – this effort is now complete.

Ecosystem Evaluations

Data collected during field investigations are being used to comprehensively analyze existing ecological conditions of USA Project waterbodies. Comparisons are being made between waterbodies of similar and differing water quality and habitat conditions both within and outside New York Harbor. Information developed by mathematical modeling is also being used to assess existing benthic and water quality biological conditions and to assess future potential conditions with anticipated water quality improvements of facility plans and other pollution abatement programs. Evaluations of existing and potential dissolved oxygen conditions are being conducted for larval growth, larval survival, and juvenile growth of aquatic species for dissolved oxygen conditions. Evaluations were completed for the Bronx River and are now focused on East River and Jamaica Bay waters.

Engineering Analyses

Engineering analyses are being conducted to identifying control alternatives that may be implemented in addition to WPCP and CSO facility plans such that water quality goals are met. CSO abatement alternatives such as outfall relocation, additional storage, floatables controls, and disinfection are being evaluated. Costs, constructability, implementation schedule, environmental impact, and other associated issues are being developed with conceptual planning of these alternatives. Floatables controls and facility plan enhancements are being identified and evaluated in coordination with the DEP's Comprehensive City-Wide Floatables Control Abatement Plan project and DEP's CSO facility planning projects.

Engineering alternatives for the Bronx River were reevaluated to address potential changes in DEP's Capital Plan. Engineering analyses have begun for Gowanus Canal and Newtown Creek.

Public Opinion Survey

A public opinion survey is being conducted to measure how various City populations feel about, use, and might use water resources in their community and elsewhere throughout New York Harbor. The survey is investigating question areas such as how people feel about their waterbodies (i.e., the importance they place on them); what waterbodies they use; existing and desired uses of the waterbodies; if not used, why not; and, reactions to potential improvements of the waterbodies. Survey activities include focus groups, a telephone survey, and a mail survey. Efforts are currently underway to develop the telephone survey of New York City residents.

Waterbody/Watershed Planning

Planning efforts are complete for Paerdegat Basin. A preliminary waterbody/watershed plan has been developed for Paerdegat Basin and is described in a draft plan report. A Use Attainability Analysis (UAA) for Paerdegat Basin that was requested by NYSDEC is being reviewed by DEP.

A meeting was held between DEP and the New York City Departments of Health (DOH), Parks and Recreation (DPR), and City Planning (DCP) to discuss bathing issues for the Bronx River. In general, neither DCP nor DPR have any intent or policy to develop swimming uses or bathing areas in the Bronx River or at other locations in New York Harbor. DPR discourages such uses on its property in the Bronx River. DOH has issued summonses to property owners in the past, and will continue to do so in the future, when swimming occurs at un-permitted locations. DOH has no program to promote swimming uses, but rather reviews requests for bathing permits and enforces the Health Code. A preliminary waterbody/watershed plan has been developed for the Bronx River and is described in a draft plan report. However, the plan was modified this reporting period to reflect potential changes in DEP's capital plan. The plan is being reviewed by DEP for finalization.

The USA Project is assisting DEP in developing plans for Flushing Bay and Creek in coordination with the USACE's Ecosystem Restoration Project. A draft Flushing Bay Ecosystem Restoration Assessment Report was submitted to DEP for review.

Planning efforts are underway for Gowanus Canal. A technical memorandum was submitted to DEP on March 3, 2003 describing analyses performed to evaluate Gowanus Canal facility planning alternatives. The analyses explored the benefits of modernizing the Gowanus Canal Flushing Tunnel and upgrading the Gowanus Pump Station in terms of water quality standards compliance. Additional analyses were performed to evaluate the alternatives in terms of settleable solids discharges, sedimentation, and habitat improvement. The analyses also investigated the amounts and potential cost of beneficial dredging at the head end of the canal. This information has been reported to DEP for finalizing its flushing tunnel and pump station plans. This information will then be used for developing the Gowanus Canal waterbody/watershed plan.

- **Interagency Coordination**

Harbor-Wide Government Steering Committee

A Harbor-Wide Government Steering Committee provides guidance and coordination for conducting the USA Project. Members of the Harbor-Wide Government Steering Committee represent the U.S. Environmental Protection Agency, the National Park Service, the U.S. Army Corps of Engineers, the Interstate Environmental Commission, the New York State Department of Environmental Conservation, the New York City Departments of Environmental Protection, City Planning, and Parks & Recreation, and the New York City Citizens Advisory Committee on Water Quality. Harbor-Wide Government Steering Committee meetings are scheduled to occur on a quarterly basis. There were no Steering Committee activities this period. The next meeting is scheduled for April 23, 2003.

U.S. Army Corps of Engineers Ecosystem Restoration Projects

The USA Project is conducting a variety of field and engineering investigations that are similar in scope to proposed plans being developed by the U.S. Army Corps of Engineers (USACE) for New York Harbor and its tributaries. These plans are primarily focused on habitat/ecosystem restoration. USA Project efforts are continually being evaluated for identifying cost-sharing opportunities that will fulfill DEP's commitments as a local sponsor to the USACE projects. Specifically, the USA Project is coordinating its activities with the USACE's restoration work on Jamaica Bay, Gowanus Canal, Flushing Creek and Bay, and the Bronx River. The USA Project is also gathering information on these projects to identify the water quality benefits and how they can be integrated into DEP's waterbody/watershed plans.

The Port Authority of New York and New Jersey

A meeting with representatives of the Port Authority of New York and New Jersey (PANYNJ) was held on January 14, 2003 to apprise them of the USA Project and to request their

participation in stakeholder teams as each team is convened. The PANYNJ will participate on teams where their properties or interests are located within the individual assessment areas.

- **Project Documentation, Reports, and Publications**

Waterbody/Watershed Fact Sheets

A waterbody/watershed fact sheet for Sheepshead Bay was drafted for distribution to project participants, stakeholder teams, and the public. It is being finalized for public release.

Preliminary Waterbody/Watershed Characterizations

Preliminary waterbody/watershed characterization documents are being developed for all waterbodies being assessed by the USA Project. Documents are completed for Paerdegat Basin, the Bronx River, and Jamaica Bay. Documents are being developed for all remaining USA Project waterbodies. These preliminary characterization documents are being used as a baseline for developing more comprehensive documents for each waterbody/watershed as their assessments proceed and planning is begun.

Preliminary Waterbody/Watershed Plan Reports

A draft preliminary waterbody/watershed plan report for Paerdegat Basin was submitted to DEP this reporting period. The draft report describes project findings, all information used to construct the preliminary plan, a detailed description of plan components, and recommendations for use attainability. A preliminary waterbody/watershed plan report for the Bronx River is being reviewed by DEP.

Project Web Site

A project web site describing the objectives of the USA Project and the importance of public participation is now accessible to the public (http://www.nyc.gov/depusa). The web site has specific areas focused on each of the waterbody/watershed assessments. Dissemination of local waterbody stakeholder team documents such as meeting notes is facilitated. Federal and state regulations on designated uses and water quality standards are described with links to governmental sites for additional information. An interactive mapping tool provides spatial representations of USA Project and general DEP activities such as the Harbor Survey.

IV. Demonstration Projects

A.) Destratification Demonstration at Shellbank Basin

The purpose of this demonstration is to specifically address the poor water quality that seasonally exists in Shellbank Basin (located in the Jamaica Bay) due to natural temperature stratification of the waterbody.

System Design

In an effort to mitigate the natural temperature stratification, which results in marine kills and odor releases, a full-scale destratification demonstration system has been installed in Shellbank Basin. The destratification facility consists of a shore-side compressor station and diffused-air lines, which run along the bottom of the basin. The destratification system delivers compressed air to the basin bottom, which vertically mixes the water column of Shellbank Basin to create an isothermal condition.

System Operations

The demonstration facility remained inactive during this reporting period.

B.) In-Line Storage

The Hunts Point drainage basin comprises the eastern two thirds of the borough of the Bronx. It is bounded by Westchester County to the north and the East River estuary to the east and the south. The drainage area comprises of approximately 1,800 acres of urban terrain. The Hunts Point drainage area sewer system may be appropriate for in-line storage because of a large sewer storage capacity, shallow hydraulic grade, gravity flow, and low potential for flooding.

The Hunts Point In-line Storage project incorporates the use of three inflatable dams, installed in sewers within the Hunts Point drainage basin, to make use of the in-line storage capacity of the sewers. The purpose of this project is to demonstrate the technology and ascertain the operational and maintenance issues and concerns at actual full scale New York City installations. The systems from two inflatable dam manufacturers, Rodney Hunt and Bridgestone, will be tested. O'Brien and Gere will be operating both systems for a period of one year.

The use of inflatable dam sewer installations are planned for use at several Track 1 CSO abatement projects and could be involved in Track 2 CSO abatement projects (floatables and settleables control).

Meetings

Various meetings with the contractor have been held on-site. Informational meeting with Department on-site was held.

Preliminary Examinations

The Engineer has taken over the operation of the facility. The twin dam site is on automatic operation mode. Delay in putting the single dam site in automatic mode has been caused by a collapsed conduit that has prevented the replacement of a problematic ULT. Several problematic ULTs have been replaced with new model ULTs this past winter. The twin dam site has been functioning properly while in automatic mode.

C.) High Rate Physical Chemical Treatment

Progress on the HRPCT Demonstration Facility preliminary design included:

- Developed conceptual hydraulic wastewater profile (from the interceptor to the plant)
- Contacting pump manufacturers
- Researching two dimensional band screen technologies
- Developed preliminary chemical feed systems design
- Developed preliminary sand feed/handling system design options for the Actiflo process
- Developed preliminary solids production/characterization for HRPCT trains
- Working with plate settler vendors to firm up high rate primary w/ plate settler basin layout and design
- Preparing process flow diagrams/P&IDs for the overall HRPCT system and each of the three HRPCT trains
- Preparing process flow diagrams/P&IDs for the chemical feed systems
- Preparing HRPCT building layout plan
- Preparing preliminary plan and section views of each of the three HRPCT trains
- Developing electrical load list
- Updated project schedule

A meeting between BEE, BWT, and Hazen and Sawyer was held on January 13, 2003 to discuss the design approach and to get concurrence with various aspects of the design before the design of the demonstration is advanced. The comments that were received will be reflected in the preliminary design report.

D.) CSO Control Technologies

The draft technical memorandum on the CSO demonstration project is being reviewed and updated to include the evaluation of a hinged baffle system as retrofit CSO control technologies.

V. Contracts

- **New Contracts**

  No new contracts were reported this quarter.

- **Change Orders**

  No new change orders were reported this quarter.

VI. Public Participation

- **Public Outreach**

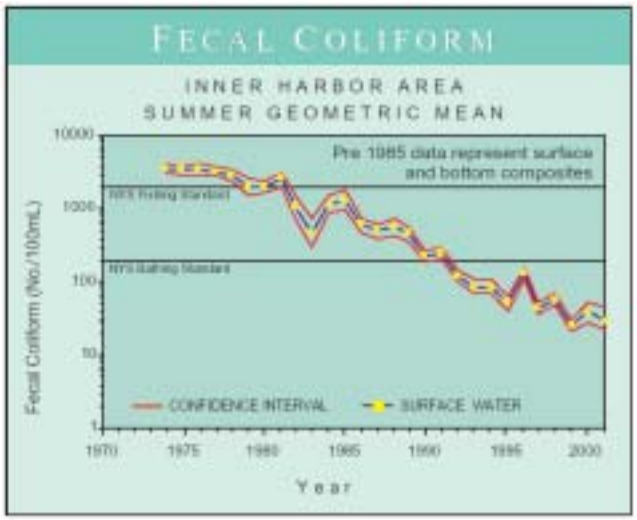
Citizens Advisory Committee on Water Quality

There were no water Quality CAC meetings during the first quarter of 2003.

VII. Water Quality

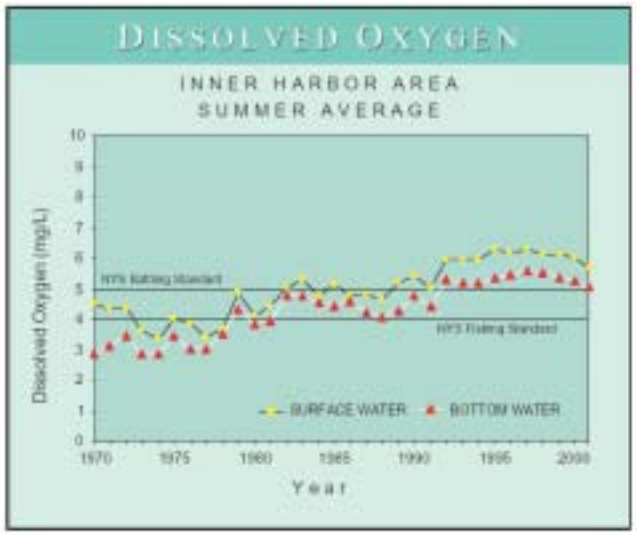
The following information was taken from the New York Harbor Water Quality Regional Summary Report for the year 2001.

- **Inner Harbor**



Sanitary water quality as estimated by fecal coliform (FC) concentrations was excellent for the Inner Harbor Area in summer 2001. All IH Area monitoring sites complied with monthly FC standards of 200 cells/ 100 mL.

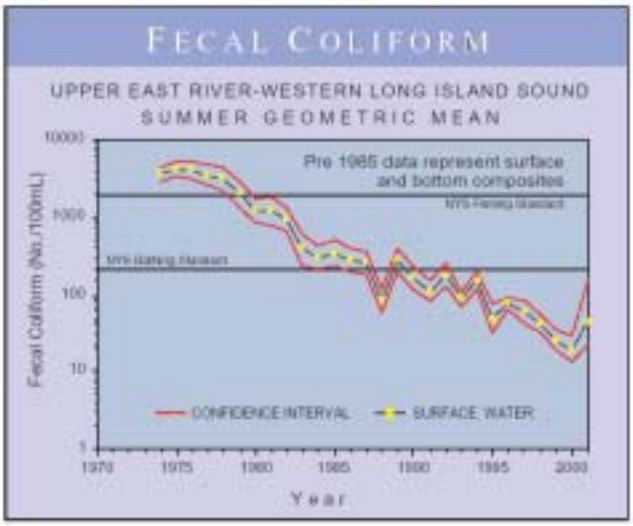
Fecal coliform concentrations for the Inner Harbor Area show a dramatic decline from the early 1970s to the present time. Today's water quality has improved to the degree that surpasses conditions deemed appropriate for most recreational activities, whereas 1970s water quality did not meet fishing standards.



Dissolved Oxygen (DO) values in the Inner Harbor area declined slightly from 2000. However, average DO values remained above the DEC standard of 4 mg/L deemed appropriate for fishing for both surface and bottom waters.

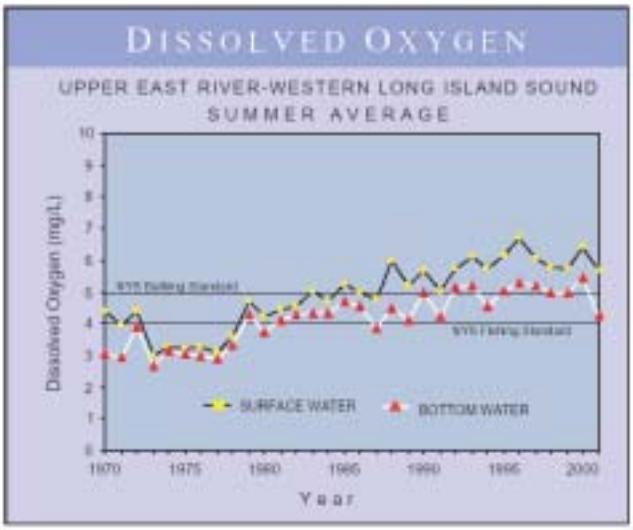
Dissolved oxygen has shown a consistent increase in the Inner Harbor Area over the past 30 years. The average DO values for bottom waters have increased from below 3mg/L in 1970 to nearly 6 mg/L in 2001.

- **East River**



In 2001, a slight increase in fecal coliform concentrations was observed for this area. Average levels increased from 19 cells/100 ml to 65 cells/100ml. Weather and illegal connection are suspected of causing this upturn. Corrective action is ongoing.

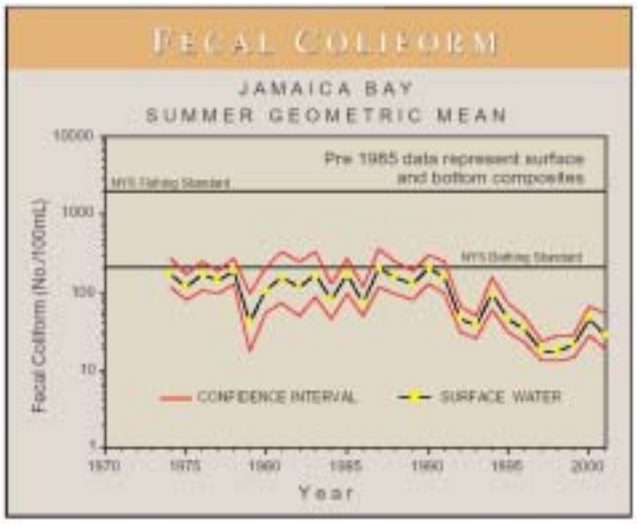
Fecal coliform levels in 2001 reversed the trend that has been observed in the Upper East River - Long Island Sound (UER-LIS) region for the past twenty years. A similar upturn was observed in 1989, with a downward trend following thereafter for the past two decades.



Average summer DO values for the UER-LIS vicinity showed a pattern similar to that displayed by fecal coliform values. However, at all stations the surface waters met or exceeded state standards, and only two stations showed average levels below standards in the bottom waters (a decrease from three in 2000).

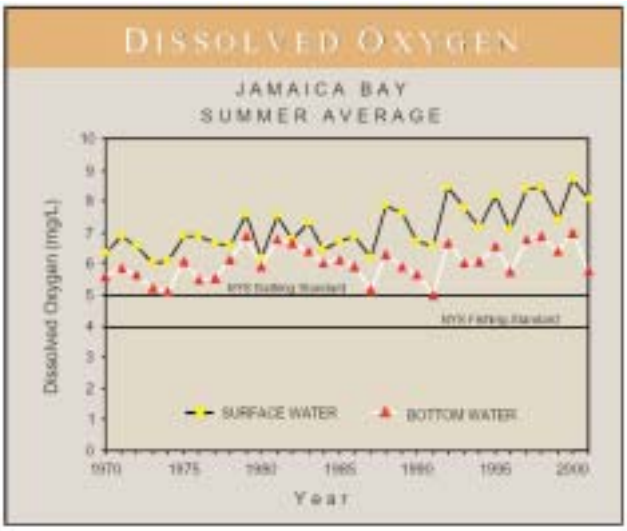
Trend analysis for the UER-WLIS area shows an increase in DO of almost 2 mg/L for top waters and almost 1.5 mg/L for bottom waters since 1970.

- **Jamaica Bay**



In 2001, sanitary water quality was superior for Jamaica Bay, with summer fecal coliform concentrations well below standards for most stations.

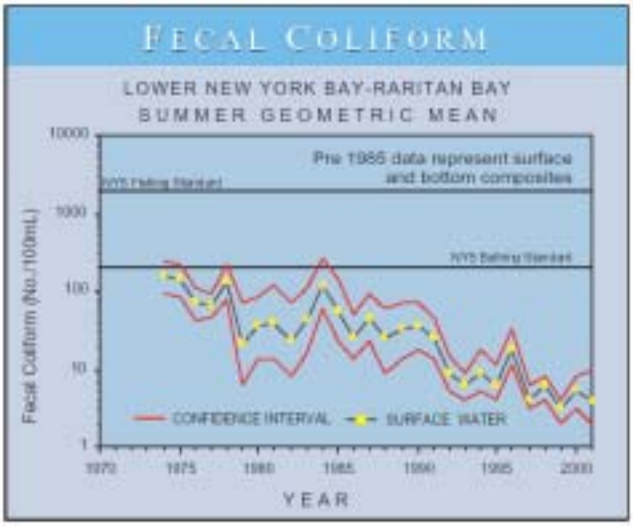
Trends for Jamaica Bay FC, from the early 1970s until 1990, show considerable variability above and below the standard. However, beginning in the 1990s, a significant improvement is apparent. From this point, and continuing through 1999, the geometric mean FC concentration decreased by an order of magnitude.



The summer averages for dissolved oxygen for surface and bottom waters surpassed the New York State standard of 5 mg/L for bathing at all Jamaica Bay sites.

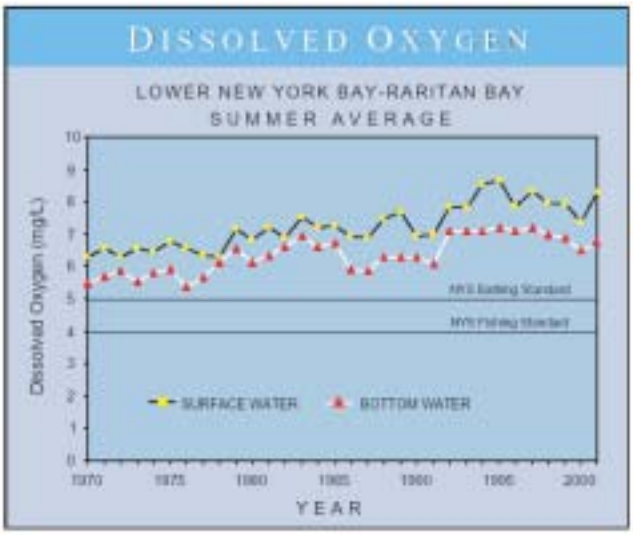
Average DO concentrations in Jamaica Bay have shown improvement over the past 30 years; with top waters often reaching DO levels over 8 mg/L since the 1990s.

- **Outer Harbor**



Fecal coliform levels in the Lower Bay / Raritan area (collectively, dubbed Outer Harbor) surpassed NYS standards, with all stations having average summer values below 20 cells/100ml.

Fecal coliform concentrations for Outer Harbor show significant declines from the early 1970s to the present time.



Dissolved Oxygen values for top and bottom waters show excellent compliance with the NYS DO standard of 5 mg/L.

Since 1970, average DO concentration have increased by 1.75 mg/L – from just over 6 mg/L to just over 8 mg/L for surface waters, and from about 5.5 mg/L to nearly 7 mg/L for bottom waters.

APPENDIX A

QUARTERLY REPORT ON STATUS OF CITY-WIDE FLOATABLES PLAN

City of New York
Department of Environmental Protection
Bureau of Environmental Engineering
Comprehensive City-Wide Floatables Control Abatement Plan

TECHNICAL MEMORANDUM

QUARTERLY REPORT ON STATUS OF CITY-WIDE FLOATABLES PLAN JANUARY 2003 – MARCH 2003

HydroQual Environmental Engineers and Scientists, P.C.
In Association With
HydroQual, Inc.

April 2003
Project No: NYDP4008/89

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GLOSSARY OF ACRONYMS USED IN THIS REPORT

BNR	Biological Nutrient Removal
CAC	Citizens' Advisory Committee
CB-01	Capital Program for replacement of collapsed catch basins
CP	Capital Program (NYC)
CSO	Combined (Sanitary and Stormwater) Sewer Overflow
DEC	Department of Environmental Conservation (NYS)
DEP	Department of Environmental Protection (NYC)
DWF	Dry-Weather Flow
DDWF	Design Dry-Weather Flow
DOS	Department of Sanitation (NYC)
DOT	Department of Transportation (NYC)
HI-3	Capital Program for hooding of catch basins in Phase III areas
HI-S	Capital Program for hooding of catch basins in high-speed roadways
HSV	Harbor Survey Vessel
IFCP	Interim Floatables Containment Program
MOO	Mayor's Office of Operations (NYC)
NYC	New York City
NYS	New York State
OMB	Office of Management and Budget (NYC)
SLR	Scorecard Litter Rating
PS	Pumping Station
USA	Use and Standard Attainment
WPCP	Water Pollution Control Plant
XP-SWMM	Storm Water Management Model, (proprietary version)

OVERVIEW OF PLAN ELEMENTS

REPORTING PERIOD: January 2003 THROUGH March 2003

Floatables Plan Elements	New Information This Period
1. Ongoing Activities	
-Maintain Street Cleanliness	Yes
-Catch Basin Hooding in Phase I/II Areas	No
-Netting/Booming and Skimming	Yes
-Track I Facilities	*
-Maximizing Wet-Weather Flow to WPCPs	*
2. Catch Basin Hooding in Phase III Areas	No
3. City-Wide Reconstruction of Unhoodable Catch Basins	Yes
4. City-Wide Catch Basin Re-Inspection Program	Yes
5. Illegal Disposal Control	No
6. Public Education Program	*
7. Pilot Studies and Demonstration Projects	*

* -Please refer to NYC's CSO Program 1st Quarterly Report – Year 2003.

1. Ongoing Activities

Prior to the issuance in June 1997 of the City-Wide CSO Floatables Plan, the City of New York had been engaged in a number of activities that help to control floatables. Some of these ongoing activities, such as street sweeping and catch basin hooding, were not originally intended for the purpose of reducing floatables discharges. Other activities, such as the Interim Floatables Containment Program, had been instituted specifically for floatables control. This section summarizes the status of these ongoing activities. Chapters 2 through 7 address other activities that were instituted after the June 1997 City-Wide CSO Floatables Plan.

a) Maintain Street Cleanliness

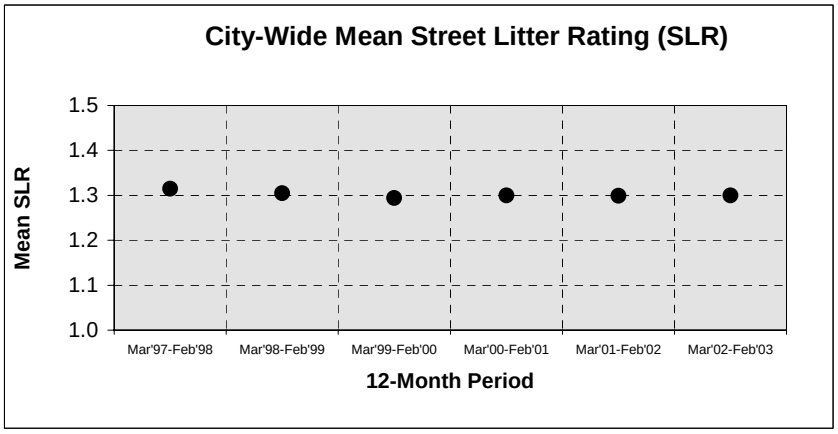
Previous studies have indicated that most floatable litter in New York Harbor can be traced to city streets (HydroQual, 1993). Although many factors can affect the amount of litter on city streets at any given time, the City of New York attempts to control litter levels through a street-sweeping program administered by the Department of Sanitation and through systematic street-litter monitoring, known as the "Scorecard Program," conducted by the Mayor's Office of Operations.

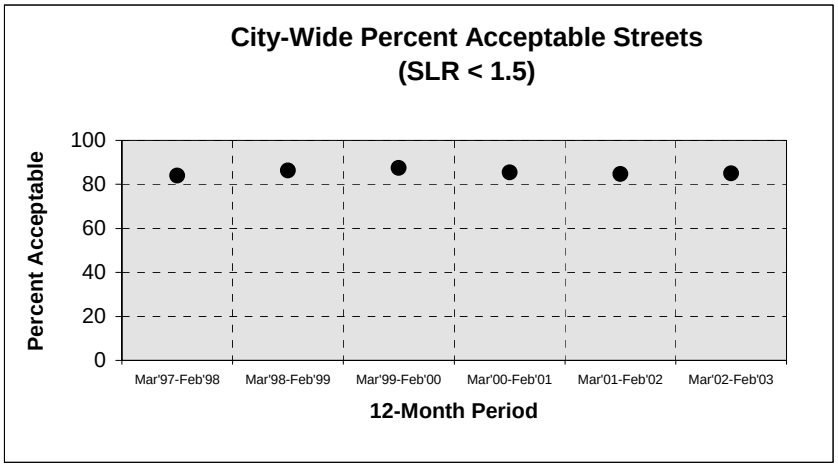
According to the Scorecard Program, city-wide street litter levels have remained relatively constant over the past six years. Scorecard Program results for the past six 12-month periods are summarized in the following table and on Figure 1.

City-Wide Street Cleanliness, 1997[(1)] - 2003

Measure of Street Cleanliness	Results of Scorecard Litter Ratings (SLR)					
	3/97-2/98	3/98-2/99	3/99-2/00	3/00-2/01	3/01-2/02	3/02-2/03
Mean SLR[(2)]	1.32	1.31	1.29	1.30	1.30	1.30
% Acceptable[(3)]	83.9	86.4	87.5	85.5	84.7	85.0
% Filthy[(4)]	2.1	1.2	1.2	1.3	1.7	1.7

Notes:
[(1)] Scorecard Program initiated in September 1994
[(2)] SLRs follow a 7-point scale from 1.0 (cleanest) to 3.0 (dirtiest).
[(3)] Percentage of tested blockfaces with SLR less than 1.5.
[(4)] Percentage of tested blockfaces with SLR greater than 1.74.





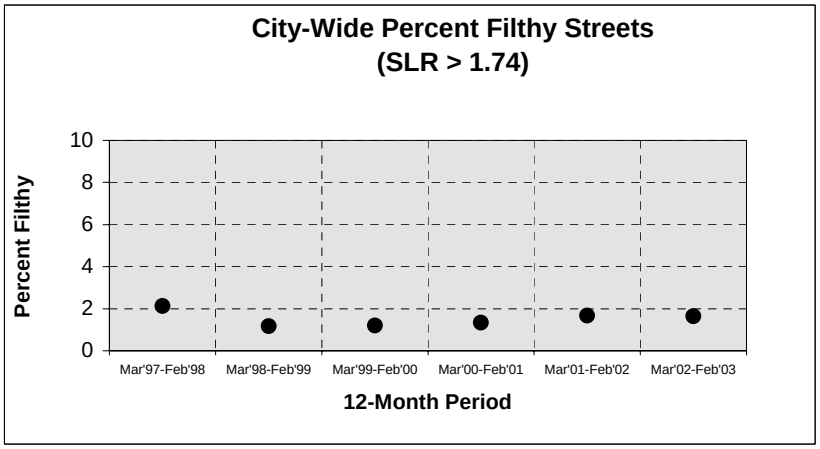


Figure 1. Street Cleanliness

b) Catch Basin Hooding in Phase I / II Areas

Catch basin hooding in Phase I/II areas was completed on or ahead of schedule. A detailed description of these activities, with a summary of the results, is available in previous Quarterly Reports and will not be repeated here.

c) Netting/Booming and Skimming (Interim Floatables Containment Program)

As of January 31, 2003, the IFCP included 19 boomed sites and 4 netted sites draining a total of approximately 58,600 acres. As shown in the table below and on Figure 2, the total volume of floatable material retrieved annually from these sites has varied between about 400 and 1100 cubic yards. These retrievals are affected by many factors, including the number and efficiency of IFCP sites, street cleanliness, catch basin hooding, and weather.

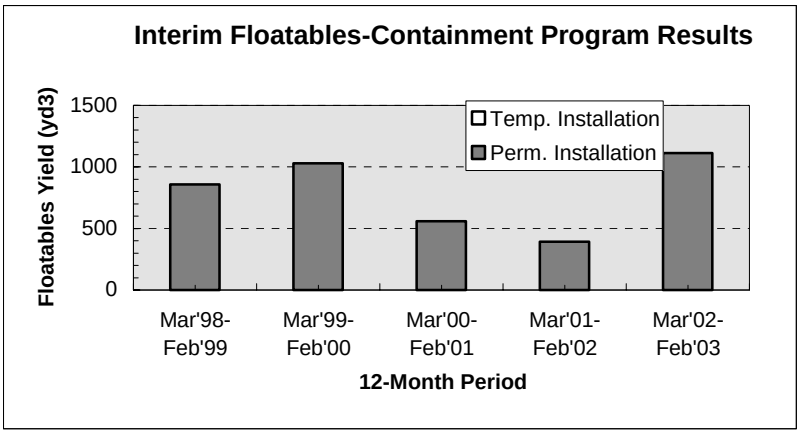


Figure 2. Floatable Material Retrieved from IFCP

As shown on Figure 2 and in the table below, the most recent 12-month period experienced higher yields than in the previous two years. In May 2002 a new IFCP contractor, Miller Marine, took over boom service, maintenance and repair responsibilities. DEP also enhanced the facility monitoring procedures and has instituted several new maintenance and repair activities. Some the significant activities are:

- Ebb tide boom inspections;
- Digital video recording of inspections;
- Boom replacements with a new type of boom that is more durable and includes a debris skirt which hangs in the water column below the boom;

- Tide slide repairs and replacements; and
- Employing a gate system at some booms to trap floatables in the corral until the skimmer vessel arrives.

These activities appear to have enhanced the capture of floatables at most boom sites as reflected in the increase in floatable yield for March 2002 through February 2003 as shown in the table below. The IFCP monitoring data will continue to be reviewed to determine if this trend continues.

Interim Floatables Containment Program Results, 1998[(1)] - 2002

	3/98-2/99	3/99-2/00	3/00-2/01	3/01-2/02	3/02-2/03
No. Sites[(2)]					
Permanent	21	22	22	21	21
Temporary[(3)]	1	1	1	2	2
Total	22	23	23	23	23
Volume [cy][(4)]					
Permanent	858	1023	559	393	1112
Temporary	0.5	0	0	0	0
Total	858.5	1023	559	393	1112

Notes:
[(1)] Volume measurements began in July 1995.
[(2)] Maximum number of sites operating during period.
[(3)] "Temporary-status" sites feature lower-quality equipment than "Permanent-status" sites.
[(4)] Total volume of floatables retrieved from sites during period.

In addition to the IFCP netting and booming sites, there are two additional sites from which DEP has agreed to collect material on an as-needed basis. These sites are located at Buttermilk Channel (at the intake to the water tunnel) and near Bowery Bay at the Ogden Fuel Services site. Both sites are boomed. From December 2002 and January 2003, 19.5 cubic yards of material was collected from the Buttermilk channel site (including material collected by the Transportation Section). Nothing was observed at the Ogden Fuel services site.

DEP also conducts retrievals of large floating debris using the *Cormorant* skimmer vessel throughout New York Harbor. During December 2002 and January 2003, the *Cormorant* retrieved a total of approximately 63.43 tons of floating debris, including roughly 7.30 tons of

trash, 3.42 tons of metal, 3.00 tons of plastic, and 1.20 tons of rubber. The remaining 48.51 tons of material was comprised of wood from decayed piers and derelict vessels.

No community clean-up activities were reported during this period.

d) Track I Facilities

Please refer to Section II of the NYC's CSO Program 1st Quarterly Report – Year 2003.

e) Maximizing Wet-Weather Flow to WPCPs

Please refer to Section II-J of the NYC's CSO Program 1st Quarterly Report – Year 2003.

2. Catch Basin Hooding in Phase III Areas

Non-priority ("Phase III") areas of the city are not subject to Consent Order requirements for catch basin inspections and hooding. However, DEP proceeded with catch basin inventory and hood replacement operations in Phase III areas. Catch basin hooding in Phase III areas was completed on or ahead of schedule. A detailed description of these activities, with a summary of the results, is available in the NYC's CSO Program 4th Quarterly Report – Year 2001.

3. City-Wide Reconstruction of Unhoodable Catch Basins

Catch basin reconstruction is provided for in Capital Program CB-01, which appropriates $6 million annually for replacement of collapsed catch basins and associated work required to make sidewalks handicapped accessible. The funding for CB-01 is above and beyond the existing levels needed to address normal repair work.

In addition to the catch basins identified for reconstruction, there are also catch basins that were not inspected or hooded during the original program because they are located in "high-speed roadways" and as such require DOT permits as well as special safety equipment. Inspection, cleaning and hooding of these basins were performed between July 26 and October 4, 2002. A total of 1320 basins were inspected in these areas. These basins will be added to the catch basin GIS.

4. City-Wide Catch Basin Re-inspection Program

As a follow-up to the catch basin hooding program (discussed in Section 1b), the Consent Order also requires that all catch basins in Phase I and Phase II areas be re-inspected every two years to confirm that hoods remain in place. These two-year re-inspection cycles are to commence upon completion of the initial hooding process, for which the milestone dates were February 1998 (Phase I) and February 1999 (Phase II). DEP completed initial hooding ahead of schedule, in December 1997 (Phase I) and September 1998 (Phase II).

The Status of DEP's reinspection program is as follows:

Reinspection Round	Phase	Completion
1	1	December 1999
1	2	September 2000
2	1	January 2002
2	2	September 2002
3	1	Currently Ongoing

Discussions with Mr. Edward Coleman of DEP indicate that the Department completed second round of re-inspections for Phase 2 by September 2002. Mr. Coleman also confirmed that, all missing hoods are being replaced within 90 days of the inspection, as per the Consent Order.

HydroQual is assisting the Department in the reinspection program as part of a change order to the Catch Basin Inspection and Hooding Project. HydroQual's activities started in July of 2002. Initial activities were inspection of catch basins on high speed roads. Post inspection of Phase 1 areas began in October 2002 and is projected to be completed by December 2003.

DEP compiled the results of the first round of Phase I re-inspections and determined that, of the 29,383 basins that had been hooded initially, just under 3.3 percent required re-hooding over the two-year re-inspection cycle. This equates to an annual hood-dislodge rate of about 1.6 percent.

5. Illegal Disposal Control

In 1998, HydroQual helped DEP and DOS develop a protocol to record and report locations of suspected illegal shoreline trash-dumping. This "Illegal Dumping Notification" program has coordinated efforts between DEP's Harbor Survey Program, DEP's Sentinel Monitoring Program, and two branches of DOS, the Environmental Police and the Sanitation Police. The Environmental Police handle information related to hazardous substances (such as medical waste and asbestos), and the Sanitation Police handle information related to illegal trash dumping. The status of the "Illegal Dumping Notification" program is presently being discerned. An update will be provided when available.

6. Public Outreach

Please refer to Section III of the NYC's CSO Program 1st Quarterly Report – Year 2003.

7. Pilot Studies and Demonstration Projects

Please refer to Section IV of the NYC's CSO Program 1st Quarterly Report – Year 2003.