

INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY



2002 ANNUAL REPORT

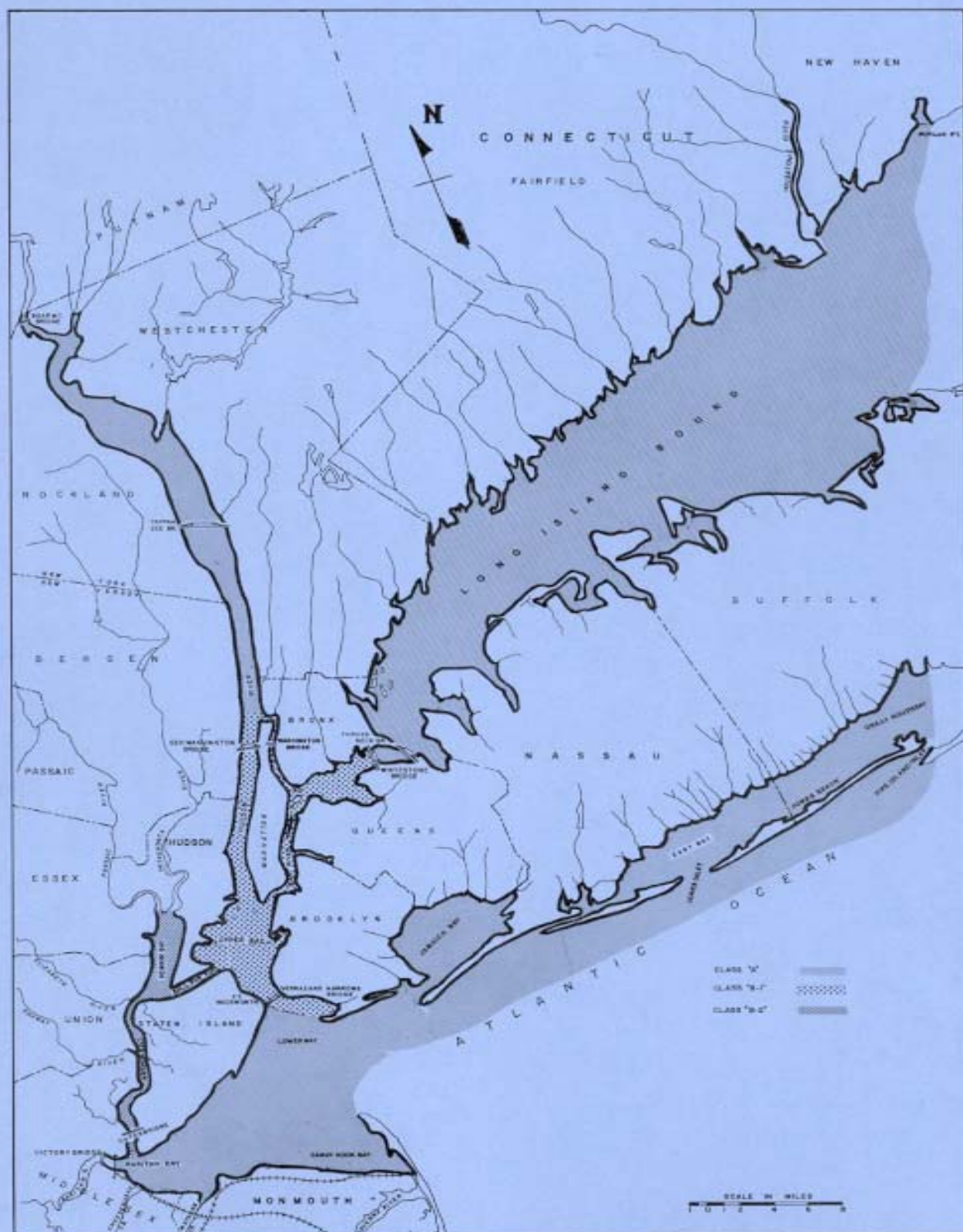
2002: THE YEAR OF CLEAN WATER

*COMMEMORATING THE 30TH ANNIVERSARY
OF THE CLEAN WATER ACT*

NEW YORK

NEW JERSEY

CONNECTICUT



INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY



2002

ANNUAL REPORT OF THE INTERSTATE ENVIRONMENTAL COMMISSION

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OF THE CLEAN WATER ACT*

Formerly the
INTERSTATE SANITATION COMMISSION

INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY

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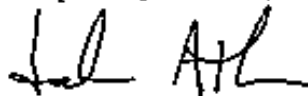
The Honorable John G. Rowland
The Honorable James E. McGreevey
The Honorable George E. Pataki
and the Legislatures of the States of
New York, Connecticut, and New Jersey

Dear Governors:

The Interstate Environmental Commission respectfully submits its report
for the year 2002.

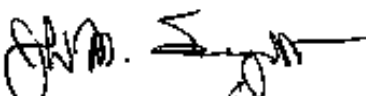
The members of the Commission are confident that with the continued
support of the Governors and the members of the Legislatures, the Commission
will maintain active and effective water and air pollution abatement programs.

Respectfully submitted,



Chairman

For the State of Connecticut



Vice Chair

For the State of New Jersey



Vice Chair

For the State of New York

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INTERSTATE ENVIRONMENTAL COMMISSION

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Executive Secretary

Eileen D. Millett
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STATEMENT OF THE CHAIRMAN OF THE INTERSTATE ENVIRONMENTAL COMMISSION

As I approach the end of my term as IEC Chairman and look back at the two years, I believe my fellow Commissioners and staff would agree that the events of September 11, 2001, were the defining moments in the 66-year history of the Commission. The tragedy of that day will be indelibly marked in the memories of all us who witnessed the horror.

And I think back to the days following September 11, 2001, when the Commission distinguished itself by promptly and professionally supplying vitally needed information relating to potential threats of water pollution. Following the terrorist tragedy, this Commission moved forward with even greater intensity, strengthened in our resolve to protect the integrity of our waterways in our dual areas of responsibility in regulation and enforcement within our tri-state area.

More recently, the Commission participated in the first annual National Water Monitoring Day this past October. Thinking back to my many years of experience in the areas of the preservation of our natural resources has led me to believe that the responsibility for the environment is obviously not merely a governmental function. It must extend all the way down the line from independent agencies to support on the grassroots level. That has been the Commission's policy and that, in brief, is why I find my ten years of service to the IEC so gratifying.

As indicated in this Annual Report, the Commission's broad range of programs and activities runs the full gamut — from far-reaching litigation against major entities, to student internship programs and community outreach on the grassroots level. It is the theme that runs throughout this Report.

In this connection, it is also with a sense of pride that I review our menu of activities which so appropriately reflect the continuing progress in our prime areas of responsibility — interstate coordination, ambient and effluent water monitoring, and regulation and enforcement, including litigation when we must.

Although space does not permit a full description of our activities and accomplishments over the past 12 months, I'd be remiss if I did not touch on issues and matters of particular significance, such as our monitoring at Ground Zero at the World Trade Center site and the Fresh Kills Landfill, and addressing nitrogen impacts from sewage treatment plants.

We have continued our commitment and involvement with the Long Island Sound Study and the New York-New Jersey Harbor Estuary Program, including special intensive

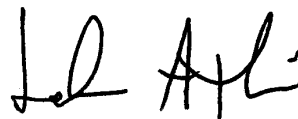
surveys in support of these programs. We just completed our 12th year of monitoring in Long Island Sound to document dissolved oxygen conditions. Other surveys focused on shellfish harvesting in Raritan Bay and monitoring for pathogens in the New York-New Jersey Harbor Complex.

In addition to our participation in the aforementioned first annual National Water Monitoring Day as part of the anniversary celebration of 30 years of the Clean Water Act, I was pleased that the Commission co-sponsored and presented at a two-day conference *Celebrating the Clean Water Act: 30 Years of Success in NY Harbor*.

It is also gratifying that the Commission's annual Boat Inspection Trip has become a much talked about event, eagerly anticipated by legislators, state and federal officials, and environmental representatives throughout the region. This year's trip — covering the upper East River and the New York and Connecticut waters of Long Island Sound — had the largest turnout ever.

Finally, it is my hope that you will take time to inspect the full and impressive scope of all the Commission's endeavors that also embrace air pollution control, wide-ranging educational and outreach programs, and continually expanding relationships with other interstate agencies . . . so that you, too, will share my enthusiasm and optimism for the future of the environment in our tri-state metropolitan area. I also invite you to visit our website, www.iec-nynjct.org, for reports and information on our activities.

On a personal note, I want to express my heartfelt gratitude to my fellow Commissioners and to our Executive Director, Howard Golub, and his dedicated staff for their support in making my term as Chairman so fulfilling and richly rewarding.

A handwritten signature in black ink, appearing to read "John Atkin". The signature is stylized, with the first name "John" written in a cursive-like script and the last name "Atkin" in a more blocky, capital-heavy style.

John Atkin
Chairman

C O N T E N T S

	<u>PAGE</u>
I. EXECUTIVE SUMMARY	1
WATER POLLUTION	2
AIR POLLUTION	4
II. WATER POLLUTION CONTROL	6
GENERAL	6
CONNECTICUT WATER POLLUTION CONTROL PLANTS	8
NEW JERSEY WATER POLLUTION CONTROL PLANTS	14
NEW YORK WATER POLLUTION CONTROL PLANTS	22
EFFLUENT AND AMBIENT WATER QUALITY MONITORING	56
SPECIAL INTENSIVE SURVEYS	58
2002 AMBIENT WATER QUALITY MONITORING IN LONG ISLAND SOUND TO DOCUMENT DISSOLVED OXYGEN CONDITIONS	58
AMBIENT WATER QUALITY COOPERATIVE STUDIES	67
2001-2002 MICROBIOLOGICAL SURVEYS IN THE SHELLFISH HARVESTING WATERS OF WESTERN RARITAN BAY	68
GREAT KILLS PARK MULTI-AGENCY MICROBIOLOGICAL WORK GROUP	71
2002 AMBIENT WATER QUALITY MONITORING FOR PATHOGENS IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX	72
NATIONAL WATER MONITORING DAY	78
PATHOGEN TRACK DOWN ON THE BYRAM RIVER	79
WORLD TRADE CENTER: GROUND ZERO INSPECTIONS	79
HARBOR-WIDE WATER QUALITY MONITORING ACTIVITIES IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX	80
2002 BOAT INSPECTION TRIP	81
REGIONAL BYPASS WORK GROUP	84
CLEAN WATER ACT SECTION 305(b) WATER QUALITY ASSESSMENT	86
STORET	88
PROPOSED REVISIONS TO DISSOLVED OXYGEN SURFACE WATER QUALITY STANDARDS FOR MARINE WATERS	88

	<u>PAGE</u>
NATIONAL ESTUARY PROGRAM	89
COMBINED SEWER OVERFLOWS AND MUNICIPAL SEPARATE STORM SEWER SYSTEMS	90
CONFERENCES AND TECHNICAL EXCHANGES	91
NEW YORK WATER ENVIRONMENT ASSOCIATION'S LEGISLATIVE FORUM	91
CELEBRATING THE CLEAN WATER ACT: 30 YEARS OF SUCCESS IN NEW YORK HARBOR	92
PUBLIC EDUCATION AND OUTREACH	92
LONG ISLAND SOUND WATER MONITORING WORK GROUP	92
BOARD OF COOPERATIVE EDUCATIONAL SERVICES (BOCES)	93
LAW STUDENT INTERNSHIPS	93
OUR WORLD UNDERWATER	93
III. AIR POLLUTION	94
GENERAL	94
AIR POLLUTION COMPLAINTS	94
OZONE HEALTH MESSAGE SYSTEM	96
REGIONAL AIR POLLUTION WARNING SYSTEM	96
IV. LEGAL ACTIVITIES	97
LITIGATION TO MITIGATE NEGATIVE EFFECTS OF NEW YORK CITY'S OPERATION OF THE FRESH KILLS LANDFILL	98
ADDRESSING NITROGEN IMPACTS OF SOME NEW YORK CITY SEWAGE TREATMENT PLANTS	102
ADJUDICATORY HEARING CONCERNING THE DELETION OF IEC'S REGULATIONS FROM THE PASSAIC VALLEY SEWERAGE COMMISSIONERS' DISCHARGE PERMIT	104
APPENDIX A - WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS - 2002	A-1
APPENDIX B - INTERSTATE ENVIRONMENTAL COMMISSION FINANCIAL STATEMENT FY 2002	B-1
APPENDIX C - GLOSSARY	C-1

ILLUSTRATIONS

		<u>PAGE</u>
PHOTO	Spuyten Duyvil Swing Bridge, Confluence of Harlem River With Hudson River	5
MAP	Wastewater Treatment Plants in the Interstate Environmental District	7
PHOTO	Generating Station, Norwalk, Connecticut	8
PHOTO	Expanded Denitrification Tanks, Fairfield Water Pollution Control Plant, Fairfield County, Connecticut	9
PHOTO	New Septage Receiving Area, West Haven Water Pollution Control Commission, New Haven County, Connecticut	12
PHOTO	Greens Ledge Light, Norwalk, Connecticut	13
PHOTO	Final Clarifier Under Construction, Joint Meeting of Essex & Union Counties, Union County, New Jersey	16
PHOTO	Execution Lighthouse, Sands Point, New York	22
PHOTOS	Manhole Rehabilitation, Orangetown WPCP, Rockland County, New York	41
PHOTO	Dredging Operations in Eastchester Bay, Bronx, New York	55
PHOTO	Pathogen Analyses at IEC Laboratory	57
MAP	2002 Long Island Sound Study, Ambient Water Quality Sampling Stations	59
TABLE	2002 Long Island Sound Study Sampling Stations	60
CHARTS	Long Island Sound Study — 2002 Dissolved Oxygen Monitoring — Surface and Bottom Waters — Pie Charts	63
CHARTS	Long Island Sound Study — 2001-2002 Dissolved Oxygen Monitoring — Surface and Bottom Waters — Pie Charts	64
CHARTS	Long Island Sound Study — 2002 Dissolved Oxygen Monitoring — Average and Range of All Stations Sampled — Profiles	66
MAP	2001-2002 Sampling Stations for Microbiological Surveys in the Shellfish Harvesting Waters of Western Raritan Bay	69

		<u>PAGE</u>
TABLE	2001-2002 Sampling Station Locations for Microbiological Surveys in the Shellfish Harvesting Waters of Western Raritan Bay	70
MAP	2002 Ambient Water Quality Monitoring for Pathogens in the New York-New Jersey Harbor Complex	73
TABLE	2002 Sampling Station Locations, Ambient Water Quality Monitoring in the NY-NJ Harbor Complex — East River	74
TABLE	2002 Sampling Station Locations, Ambient Water Quality Monitoring in the NY-NJ Harbor Complex — Raritan Bay	75
TABLE	2002 Sampling Station Locations, Ambient Water Quality Monitoring in the NY-NJ Harbor Complex — Hudson River	76
TABLE	2002 Sampling Station Locations, Ambient Water Quality Monitoring in the NY-NJ Harbor Complex — The Kills	77
PHOTO	IEC research vessel, R/V Natale Colosi	79
TABLE	Existing New York-New Jersey Harbor Wide Water Quality Monitoring Programs	82
MAP	2002 Boat Inspection Trip	83
CHART	2002 Bypass Events-Common Causes	85
CHART	2002 Bypass Events Per Waterway	86
TABLE	2001 Individual Use Support in the Interstate Environmental District	87
CHART	Air Pollution Complaints, 1982-2002	95
CHART	Communities Impacted by Odors, 1982-2002	95
PHOTO	Skimmer Boat Operating at Fresh Kills Landfill	101

I. EXECUTIVE SUMMARY

In commemoration of the 30th anniversary of the Clean Water Act, 2002 has been proclaimed as the Year of Clean Water. This Act set a national goal to restore and maintain the physical, chemical, and biological integrity of the waters of the United States. This year is also the 66th anniversary of an agency with a mandate to protect this tri-state region's waters long before the creation of state and national environmental entities, and before national standards were established. The Commission actively participated in activities related to the Clean Water Act's 30th anniversary. IEC's annual boat inspection trip was dedicated to the anniversary. The Commission co-sponsored and spoke at a two-day conference reflecting on the past 30 years and looking towards the future. And, IEC took part in the first annual National Water Monitoring day held on October 18th — the actual anniversary of the Clean Water Act. These activities are included in this report.



On October 27, 2000, the President of the United States signed the Bill containing the language that changed the name of this agency from the Interstate Sanitation Commission to the ***Interstate Environmental Commission (IEC)***. The new name more accurately reflects the Commission's mandates, mission and responsibilities that embrace a broad range of programs and activities that include air pollution, public involvement and education, and toxics. However, the IEC's continuing emphasis is on water quality — an area in which the Commission is a regulatory and enforcement agency. The Commission's website — **www.iec-nynjct.org** — contains information on the IEC, including recent annual reports and other reports, and use links to other appropriate websites. This annual report will also soon be available on the Commission's website.

Following the recommendation of the Tri-State Treaty Commission, the Tri-State Compact establishing the District and the Commission was enacted in 1936, with the Consent of Congress. The Commission has an overall responsibility of protecting the environment by viewing the District from a regional, impartial and unbiased perspective. Whereas each state deals with issues within its own borders, the Commission can and does cross state lines. The Commission strives to harmonize water quality standards, regulations and requirements throughout its District.

The Commission's environmental programs and actions have greatly contributed to the many significant improvements in the region's waters. IEC's adoption of the year-round disinfection requirements was instrumental in opening thousands of acres of shellfish beds year-round rather than only in the summer months, and has led to previously closed shellfish beds now being available for harvesting. There have been fewer beach closings during the summer bathing seasons due to elevated levels of coliform bacteria. During the three year period, 2000-2002, there were no beach closure days caused by floatables or medical debris. In an effort to eliminate or, at a minimum, lessen the impacts from planned sewage bypasses, in 1997, the Commission amended its regulations to require mandatory notification to the IEC of planned sewage bypasses. Additionally, in conjunction with its three states' environmental and health departments, US EPA and NYC DEP, the Commission coordinated and spearheaded the effort to have a computer model developed to

predict the impacts of unplanned sewage bypasses on area beaches and shellfish beds. As part of this effort, regional notification protocols were developed and have been in place since the 1998 bathing season. This program has proved to be extremely effective and is an excellent example of regional cooperation and coordination among many agencies.

The mission of the IEC is to protect and enhance environmental quality through cooperation, regulation, coordination, and mutual dialogue between government and citizens in the tri-state Region. The IEC is in a unique position to take the lead on regional issues because, as an interstate agency, the Commission views the Region as an environmental entity and IEC can cross state boundaries in an impartial and unbiased manner. By interacting with other agencies and interstate commissions, challenges and successes are being shared to better address specific mandates. The staff continues to fulfill IEC's technical and administrative responsibilities within the limitations of the current resources.

The objectives of the Commission's programs are to address specific environmental deficiencies and/or to assure compliance with the Tri-State Compact and the Commission's Water Quality Regulations. The programs are designed for gathering the information necessary for enforcement actions, opening waters for commercial and recreational shellfishing, opening waters for swimming, developing water quality and/or effluent criteria, and other needs that may arise.

The Commission continues to put a high priority on public involvement, education and outreach activities. This includes testifying at public hearings and meetings on various issues of concern, and lecturing at local schools, colleges and to community groups on subjects of environmental concern and Commission activities. IEC maintains its programs of environmental and legal internships. This year, the 30th anniversary of the Clean Water Act, the Commission participated in and co-sponsored several special activities to commemorate this historic event.

This report provides a record of the water and air pollution activities of the Interstate Environmental Commission for the period December 2001 through November 2002. To address the environmental problems within its area of jurisdiction, the Commission has focused on technical assistance, enforcement, engineering, planning, laboratory analysis, ambient and effluent water quality monitoring, statistical analysis, coordination, oversight and public outreach and education.

WATER POLLUTION

As always, we must adapt to adverse conditions, but rely on good science and sound engineering to maintain and rebuild. The Metropolitan Area is truly a water world containing a world class harbor that is able to support commercial and recreational industries.

The Commission's water pollution abatement programs continue to focus on the effective coordination of approaches to regional problems. Opening additional areas for swimming and shellfishing remains a high Commission priority. The IEC's programs include enforcement, minimization of the effects of combined sewers and storm sewers, participation in the National Estuary Program, control of floatables, compliance monitoring, pretreatment of industrial wastes,

toxics contamination, sludge disposal, dredged material disposal, and monitoring the ambient waters — especially with regard to opening new areas for swimming and shellfishing.

Throughout the District, planning and construction is under way to provide water pollution control and abatement from municipal and industrial wastewaters discharging into the IEC's District waters. It is estimated that over \$9.755 billion has been allocated by municipalities and bond act dispersements in the District for projects recently completed, in progress, and planned for the future.

For the fifth consecutive year, the Commission took the lead and coordinated the efforts of the Regional Bypass Work Group which is comprised of 16 federal, interstate, state, county and local agencies. The Work Group maintained notification protocols to inform each other of unplanned bypasses and, based upon modeling software especially developed to predict the effects of those bypasses, determined if area beaches and shellfish beds should be closed to protect the health of the public. During the calendar year ending November 30th, a combination of 84 raw sewage, illegal connections, treatment reductions, and sludge bypasses occurred, some of which resulted in beach closures.

The Commission's involvement in several legal actions continued this past year. Those actions are detailed in the Legal Activities section of this report and are highlighted as follows:

- continued participation as an amicus curiae (friend of court) in a New York State case settled this year regarding violations of nitrogen limits by several City of New York treatment facilities,
- continued involvement and oversight of the Consent Orders designed to prevent debris from escaping from the Fresh Kills Landfill located on Staten Island, and
- receiving closure with a favorable decision that the IEC's Water Quality Regulations must be included in a NJPDES permit.

The Commission remains deeply committed and actively involved with the Long Island Sound Study (LISS) and the New York-New Jersey Harbor Estuary Program (HEP). IEC actively participated on the Management Committees for both of these National Estuary Programs and on various work groups for these studies. With the Comprehensive Conservation and Management Plans (CCMPs) for the LISS and the HEP in place, IEC is actively involved with the work groups that are dealing with total maximum daily loads (TMDLs) for nutrients, toxics and pathogens. The Commission remains an active participant in the process for public involvement events and products, such as newsletters and fact sheets. The Commission has been involved with implementation teams, research proposal committees and interactions with citizen advisory committees.

IEC coordinates its compliance monitoring program with the three states' environmental departments, as well as with US EPA. This program consists of the Commission regularly sampling waste discharges from municipal and industrial permittees throughout the District. Using the IEC research vessel, the R/V Natale Colosi, the Commission again participated in a multi-agency

intensive survey in Long Island Sound to continue to document dissolved oxygen conditions. This was IEC's twelfth consecutive year as a participant in this important project. The Long Island Sound surveys also include the collection of water quality samples for the Nassau County Health Department to identify phytoplankton species. Concurrently, water quality samples were collected for the New York State Department of Environmental Conservation to determine the presence of a toxic dinoflagellate, *Pfiesteria piscicida*. For the seventh year in a row, at the request of NJ DEP, during the winter and spring of 2001-2002, the Commission collected water quality samples needed by NJ DEP to check the sanitary conditions of the shellfish waters of western Raritan Bay. In support of the HEP Pathogens Work Group, IEC completed a series of 40 ambient water quality surveys of the entire New York-New Jersey Harbor Complex. These and other sampling programs are detailed in this report.

The IEC laboratory has been located on the campus of the College of Staten Island (CSI) since late 1993. In addition to its day-to-day operations, IEC's laboratory personnel continue to collaborate with CSI on environmental projects of mutual concern. The IEC laboratory is certified by NJ DEP and NYS DOH and also follows US FDA procedures for sampling in shellfish waters. In January 2001, the Commission's laboratory also received certification under the National Environmental Laboratory Accreditation Program (NELAP).

IEC's library holdings and archives continue to be updated and provide an accessible regional depository of water and air quality related subjects. The Commission's current and historical holdings have been sought and made available to the academic community, consulting engineering firms, attorneys, environmental and public awareness groups, government agencies across the nation, and international entities.

As previously mentioned, as part of the celebration of the 30th anniversary of the Clean Water Act, 2002 was declared the Year of Clean Water. The Commission took part in several events including National Water Monitoring Day. On October 18th, Commission joined thousands of volunteers and agencies across the United States to sample water quality and report their findings. Aboard the IEC research vessel, R/V Natale Colosi, nine sampling stations were monitored for a variety of parameters. The Commission also co-sponsored and spoke at a two-day conference celebrating the success of improved water quality in the New York Harbor Complex.

AIR POLLUTION

The Commission's air pollution monitoring and response programs remain in place. IEC's 24-hour-a-day, 7-day-a-week answering service (718-761-5677) remains active and IEC personnel investigate as many complaints as its resources will allow. IEC also forwards complaints to the appropriate enforcement and health agencies.

During the 12-month period from October 2001 through September 2002, the Commission received a minimal number of air pollution complaints. As has been the pattern, all of the calls originated from Staten Island. Citizen complaints have proven to be an invaluable source of firsthand information about poor air quality. Accurate odor descriptions could lead to the discovery

of the emissions sources.

IEC continued its role as coordinator of the High Air Pollution Alert and Warning System for the New Jersey-New York-Connecticut Air Quality Control Region; conditions during the past year did not warrant activation of the system.

The Commission again participated in the Ozone Health Message System to alert the public of unhealthy ambient air conditions. Based on information received from its member states, the Commission disseminated 46 health messages — 38 for ozone and 8 for fine particulates — between June 7th and September 10th to the appropriate government environmental and health agencies throughout the region.

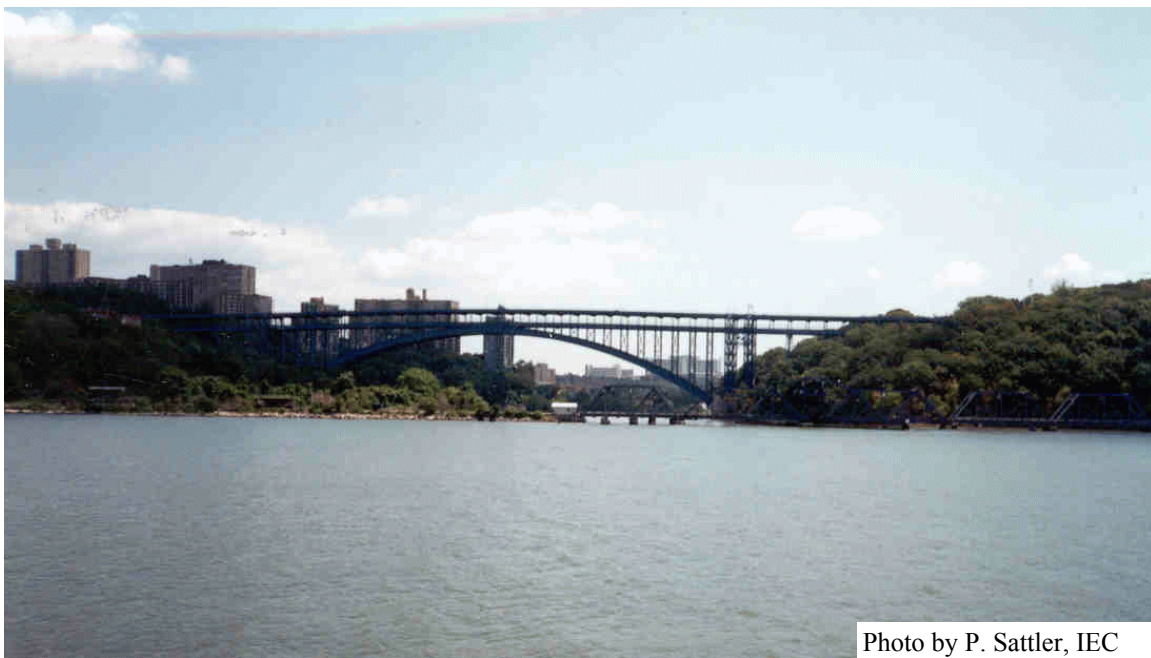


Photo by P. Sattler, IEC

SPUYTEN DUYVIL SWING BRIDGE
CONFLUENCE OF HARLEM RIVER WITH HUDSON RIVER

II. WATER POLLUTION

GENERAL

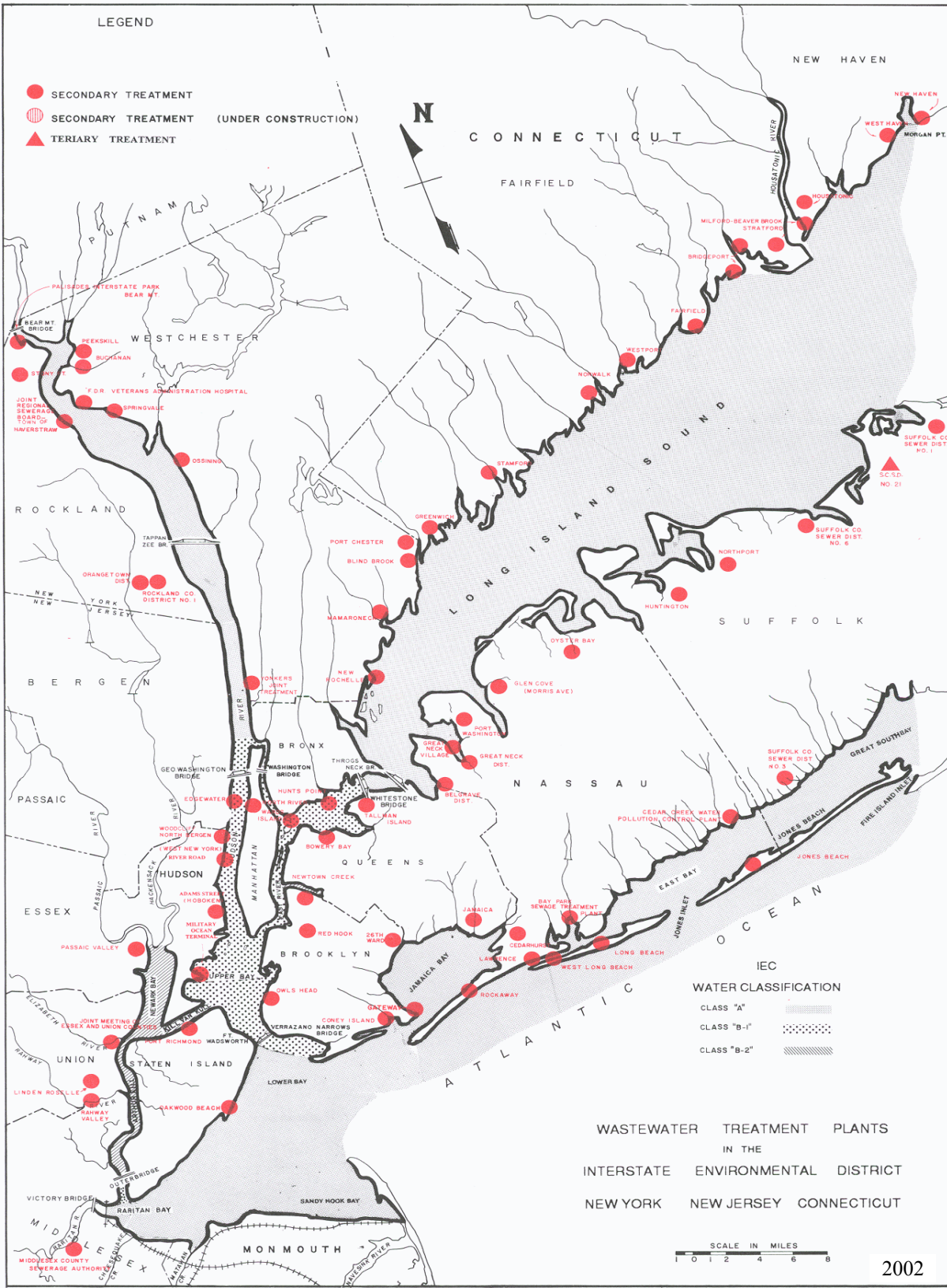
During 2002, in the Interstate Environmental District, approximately \$9.755 billion was allocated for 300 water pollution control projects which were either completed, in progress, or planned for the future. These monies were allocated in the following manner: over \$370 million for 70 completed projects, more than \$5.6159 billion for 134 projects in progress, and more than \$3.769 billion for 96 future projects. These expenditures are being used for engineering studies, pilot projects and experiments; CSO abatement projects; land-based alternatives for sewage sludge disposal; construction of new facilities; and upgrading and/or expanding existing facilities in order to provide adequately treated wastewater for discharge into District waterways. These figures do not include the monies spent by and committed to pollution control by industries.

The Commission has long advocated adequate infrastructure as a necessity for maintaining and improving receiving water quality, as well as for minimizing use impairments. These tremendous expenditures on the infrastructure have resulted in significant water quality improvements throughout the District these past years; however, much remains to be done.

With secondary treatment virtually in place since 1994 throughout the Interstate Environmental District, control of the region's combined sewer overflows is necessary in order to achieve further significant water quality improvements. Communities throughout the District have ongoing CSO control programs and projects that range from sewer separation to swirl concentrators to booming and skimming to in-line and off-line storage. The National Estuary Programs in the District have identified major problems affecting water quality which are exacerbated by anthropogenic impacts, namely, nutrient enrichment, sediment contamination, pathogens, habitat loss and floatables. These issues must be addressed in order to maintain and improve commercial and recreational maritime activities, living marine resources, land use, and wetland creation/remediation.

The Commission obtained the information on water pollution control projects presented in this section from officials in the representative state and local governmental agencies, sewerage authorities, consulting engineering firms, and national depositories of water quality data and industrial/municipal effluent data. The format used in this report is designed to provide background, as well as the current status of construction, engineering studies and experiments, pilot projects and experiments, and related environmental conditions within the associated drainage basins. The information in this section is that which was available and accurate through November 2002.

A map of the Interstate Environmental District on the following page shows the locations of wastewater treatment plants which discharge into District waterways, the type of treatment and upgrade status of each plant, and the Commission's water quality classifications. Additional information on each plant is listed in Appendix A.



CONNECTICUT WATER POLLUTION CONTROL PLANTS

The Long Island Sound Study — part of the National Estuary Program — is a partnership of federal, state, interstate, and local agencies, universities, environmental groups, industry and the public in a program to protect and restore the health of Long Island Sound. The main focus has been controlling hypoxia, or low dissolved oxygen concentrations, that are typical during summer seasons. Southwest coastal Connecticut is entirely within the study area and represents the Connecticut portion of the Interstate Environmental District. The Long Island Sound Study launched a three phase program for nitrogen reduction.

The LISS 2001 Agreement more clearly defines desired outcomes of the CCMP actions in measurable, trackable terms, proposes a better link between monitoring/research and environmental indicators to established goals and results, promotes implementation and addresses new issues. Due to the tragic events of September 11, 2001, the Agreement signing was postponed. It was finalized on December 4, 2002, by the Regional Administrators of US EPA, Regions I and II and the Commissioners of CT DEP and NYS DEC. Connecticut has already achieved a 26% reduction in nitrogen based on 1990 levels, restored 465 acres of wetlands, and reopened over 43 river miles. During 2003, Connecticut will begin additional nitrogen reductions by implementing a credit trading program. It will allow treatment plants with advanced BNR technology to remove higher levels of nitrogen and trade credits with smaller antiquated plants.



Photo by P. Sattler, IEC

GENERATING STATION - NORWALK, CT

Refer to the individual plant write-ups and the National Estuary Program section for additional information.

Bridgeport - East Side and West Side Plants, Connecticut (Fairfield County)

Projects in Progress

Biological nutrient reduction retrofits at both plants are 15% complete with plans to be operational during the 2003 spring season. Costs of \$5.5 million are estimated.

A phased construction multi-year CSO improvement program has been ongoing since 1991 in the Bridgeport drainage basins which consist of 3,880 acres. This ongoing improvement program is undergoing a dual phase approach. Phase I is 90% complete with estimated costs of \$32 million. Phase II design work is estimated to cost \$80 million with a completion date of all construction by 2013. During the extent of this program, 40 CSOs

which discharge into Black Rock and Bridgeport Harbors will be eliminated and the 19 remaining CSOs will be monitored by a remote telemetering system. In addition, the Water Pollution Control Authority has also allocated about \$1.5 million per year for sewer system rehabilitation in both drainage basins; this agenda is ongoing.

Future Projects

Both treatment facilities are operating under State Consent Orders to improve plant performance and attain secondary treatment capabilities. The Authority negotiated new compliance dates with the City of Bridgeport during 1994 which was modified December 12, 1996.

It is proposed that both plants share sludge disposal facilities which are estimated to cost \$27.3 million. A sludge incinerator will be sited at the East Side plant. Force mains, which are to be installed on land and subaqueously beneath Bridgeport Harbor, will convey sludge from the West Side plant to the East Side plant. A construction schedule has yet to be released.

Fairfield, Connecticut (Fairfield County)

Completed Project

This facility is operating under a State Consent Order that requires plant upgrades and attainment of secondary treatment operational levels by November 2002. Plant modifications include rebuilding the existing facilities, installation of UV disinfection, converting one digester to a waste sludge holding tank, three new clarifiers, additional aeration tankage, and an expanded biofilter for odor control. The final cost was \$32 million. The operational start-up coincided with the actual completion date of October 2002. Additional nitrogen removal retrofits will be implemented as needed.

FAIRFIELD WATER POLLUTION
CONTROL PLANT
FAIRFIELD COUNTY, CONNECTICUT



Photo Courtesy of FWPCF

EXPANDED DENITRIFICATION TANKS

Greenwich (Grass Island), Connecticut (Fairfield County)

Projects in Progress

This 12.5 MGD secondary activated sludge plant is operating under a 1995 State

Order to eliminate overflowing manholes in the Byram and Old Greenwich neighborhoods, as well as to complete the Phase II biosolids improvements. The Order requires substantial completion by March 2003.

A biosolids handling facility is being installed (70% complete) at a re-estimated cost of \$12 million. This construction schedule includes a new belt press, odor controls, truck bay, thickener retrofits, and the elimination of two digesters.

Future Projects

Several collection system rehabilitation proposals are imminent. Estimated to cost \$2.8 million, a new force main will be installed subaqueously beneath the Mianus River. New gravity sewers are planned for the Millbrook (\$5 million) and North Mianus (\$16.5 million) neighborhoods. Design work (\$4 million) is scheduled to begin on the Cos Cob, Old Greenwich, Chapel Lane, and South Water Street pump station upgrades.

Milford- Housatonic, Connecticut (New Haven County)

Completed Project

A facilities study was completed at a final cost \$500,000.

New Haven - East Shore, Connecticut (New Haven County)

Completed Projects

A regional septage study is nearly complete (95%) at a final cost of \$200,000. Preliminary engineering for the Truman School CSO retention tank was recently completed at a cost of \$90,000.

The Boulevard and East Street pump stations are being modified with new control systems in order to improve operating efficiency. Overall, the pump stations are 95% complete; will accrue costs of \$800,000; and were operational during June 2002. Other completed collection system upgrades include the rehabilitation of about 0.5 linear miles of antiquated gravity sewer which incurred costs of \$500,000.

Projects in Progress

A preliminary SSES is 90% complete. The re-estimated \$500,000 study is anticipated to be complete during December 2002. Recently under way, a low level nitrogen removal assessment study is estimated to cost \$159,000.

Sewer separation construction will continue until combined sewers discharging to

New Haven Harbor are eliminated. This work will not be completed until approximately 2015 at a re-estimated cost of \$353 million. Overall, the work is approximately 20% complete and will commence based on the recommendations of the SSES.

Estimated to cost \$1.5 million, the East Shore main sewage pumps are being replaced with smaller, more efficient pumps to better match flow conditions and reduce energy costs. Construction is 50% complete.

Future Projects

An engineering design study has determined the capacity needs for the Barnes Avenue and Quinnipiac Avenue pump stations. Estimated to cost \$4.1 million, the existing Quinnipiac Avenue pump station will be rehabilitated and the antiquated Barnes Avenue facility and force main will be replaced. This work will have an approximate operational start-up of March 2004. The out-dated Morris Cove pump station will be replaced at an estimated \$4.5 million. Construction is anticipated to begin during March 2003.

Rescheduled to begin during January 2004, a regional septage receiving and handling facility will be built. The estimated cost to complete this project is \$3.5 million.

Norwalk, Connecticut (Fairfield County)

Future Project

Approximately 5% of the Norwalk drainage basin is served by combined sewers. No construction agenda is scheduled, but sewer separation work (~\$100,000) is being considered.

Stamford Water Pollution Control Authority, Connecticut (Fairfield County)

Completed Projects

New sewers were installed to connect 140 properties which used septic tanks. The one-year project was estimated to cost \$2.5 million. The Cove Island pumping station was upgraded and operational during September 2002. Final costs incurred amounted to \$3.1 million.

Projects in Progress

This facility is operating under a State Consent Order to upgrade, expand and implement nitrogen removal capabilities. Consent Order compliance dates require substantial completion by 2005. Upgrading and expansion of this 20 MGD secondary facility is 10% complete. This four-year construction program was also re-estimated to cost

\$105 million. The plant renovation and upgrade will address all plant processes including high efficiency BNR technology, sludge processing equipment and a conversion from chlorine to UV disinfection. The UV system is an additional Consent Order requirement to be on-line by March 2003.

Stratford, Connecticut (Fairfield County)

Future Project

A proposal for capacity expansion in conjunction with a facility-wide upgrade, has been approved by the Town of Stratford and CT DEP. Recent meetings have been held to discuss and implement the design phase. Total cost estimates range from \$52 to \$60 million to complete all construction phases.

West Haven, Connecticut (New Haven County)

Completed Projects

Operational during September, a new septage receiving area for the Town of Orange and a new plant-wide pump system to deliver effluent water to the belt filter press and gravity belt filter were completely on-line during this past November. Costs incurred amounted to \$700,000.

WEST HAVEN WATER POLLUTION CONTROL COMMISSION NEW HAVEN COUNTY, CONNECTICUT



Photo Courtesy of WHPCC

NEW SEPTAGE RECEIVING AREA

Projects in Progress

This facility is operating under a 1990 (amended in 1992) Stipulated Judgement which requires collection system, pump station and main facility upgrades.

Just under way (January 2003), 8,000 linear feet of new 12-inch diameter (12"Ø) force main to service the Oyster River pump station is being installed. Concurrently, a new incinerator is being replaced. Combined this work will accrue expenditures of \$3 million.

Westport, Connecticut (Fairfield County)

Completed Projects

This facility was operating under a State Infiltration/Inflow Abatement Order. In addition, a State Consent Order was issued on April 3, 1998, to address and implement odor abatement corrective measures. A facility plan, completed during 2002, will address all Order stipulations. The State has accepted the I/I evaluation and a program of implementation will be included in the aforementioned facility plan. Design work for a facility upgrade will begin during 2003.

Future Projects

At an estimated cost of \$250,000, the Church Street sewer replacement was postponed for another year until the summer of 2003.

Estimated to cost as much as \$35 million, a complete facility upgrade with nitrogen reduction capabilities is planned to begin during 2004.

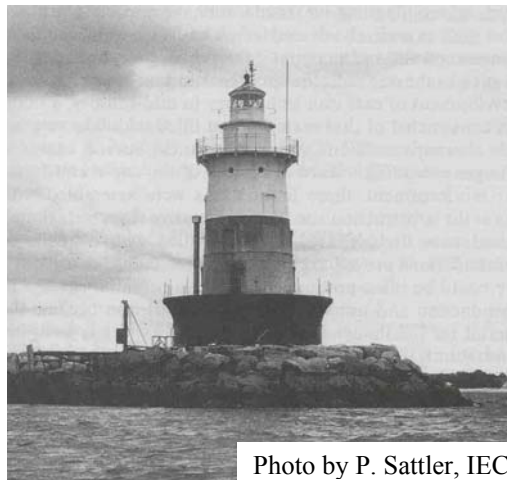


Photo by P. Sattler, IEC

GREENS LEDGE LIGHT - NORWALK, CT

NEW JERSEY WATER POLLUTION CONTROL PLANTS

The New Jersey Department of Environmental Protection developed a CSO Strategy in 1990 which was approved by US EPA on July 9, 1996. To address the “Nine Minimum Controls”, NJ DEP issued a CSO General Permit in 1995 to 19 NJPDES permittees state-wide with 244 CSO outfalls. Individual permits were also issued to 10 permittees with 36 CSO outfalls. Specifically, the General Permit prohibits dry weather overflows and requires planning, design and construction of facilities that will capture and remove solids and floatables which cannot pass through a bar screen having a spacing of 0.5 inches. All communities have completed the planning of these projects; most are in the design phase or have completed the design, and some are already in the construction phase. The projected cost of these control facilities totals \$306 million of which approximately \$122 million has been awarded. The General Permit also began the process by requiring all permittees to develop and submit a CSO discharge characterization study. Long-term CSO control plans must ensure that both the technology-based and water quality-based requirements of the federal Clean Water Act are met. It also places a high priority on eliminating or redirecting CSOs that discharge to sensitive areas such as beach areas and shellfish beds. NJ DEP is currently developing a general permit that would require owners and/or operators of combined sewer systems to develop and evaluate alternative control measures for the control of pathogens and to formulate cost performance relationships.



Bayonne Municipal Utilities Authority, New Jersey (Hudson County)

Project in Progress

The Bayonne primary facility was converted to a pump station and diverted flows for treatment at the Passaic Valley Sewerage Commissioners' (PVSC) secondary plant on March 31, 1990. This authority received a \$4.99 million (eligible project cost) low interest loan in 1999 for CSO abatement and sewer system upgrades from the New Jersey Environmental Infrastructure Trust. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects. During 2000, the Bayonne MUA received an additional award of \$8.9 million for CSO abatement projects.

The treatment plant at the closed Military Ocean Terminal (renamed the Peninsula at Bayonne Harbor) is now under the auspices of the Bayonne MUA. Refer to the Peninsula

at Bayonne Harbor write-up for additional information.

Jersey City Municipal Utilities Authority, New Jersey (Hudson County)

Project in Progress

The Jersey City primary facilities were converted to pump stations and diverted flows for treatment at PVSC during late September 1989. This authority received over a \$3.7 million (eligible project cost) low interest loan for CSO abatement from the New Jersey Environmental Infrastructure Trust. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects. During 2001, the Environmental Infrastructure Financing Program sold Trust bonds in the amount of \$15.82 million for combined sewer overflow abatement consisting of construction of 11 in-line and 4 end-of-pipe netting facilities and tide gates to capture solids and floatables, and rehabilitate one CSO regulator.

Joint Meeting of Essex and Union Counties (Edward P. Decher Wastewater Treatment Facility), New Jersey (Union County)

Completed Projects

Various building rehabilitations plant-wide were completed during this past summer with costs amounting to \$900,000.

Projects in Progress

Final clarifier upgrades of four existing units are 90% complete and will cost about \$1.0 million. The work includes the installation of density current baffles, new walkways with a bridge truss system, scum collection equipment, new motorized operators for the sluice gates, and final paint.

The City of Elizabeth, a customer municipality serviced by this facility, received low interest loans from the New Jersey Environmental Infrastructure Trust's Environmental Infrastructure Financing Program in the amount of \$7.621 million. The sale of these bonds will provide for combined sewer overflow abatement consisting of the construction of solids/floatables control facilities and/or sewer separation in the vicinity of the City's 19 CSOs. The CSO outfalls are located on the Arthur Kill and Elizabeth River. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects.

Future Projects

Six major upgrades are planned throughout the facility starting as early as February

JOINT MEETING OF ESSEX & UNION COUNTIES
UNION COUNTY, NEW JERSEY



Photo Courtesy of Jt. Mtg of Essex & Union Counties

FINAL CLARIFIER UNDER CONSTRUCTION

2003 with an anticipated end date of June 2005. The disinfection system will undergo a \$1 million hypochlorite conversion with plans to be operational during November 2003. Additional building rehabilitations costing \$1.75 million are planned to be completed by January 2004. Sludge thickener upgrades have been rescheduled to begin during June 2003 at a cost of \$3.2 million. Planned to begin during June 2003, rehabilitation of a digester (\$1.8 million) and the screen house/primary building (\$1.6 million) will commence concurrently. Finally, a SCADA telemetry control system costing \$2.7 million will be installed and operational during June 2005.

Kearny Municipal Utilities Authority, New Jersey (Hudson County)

Completed Projects

An evaluation of the Hackensack Avenue sewer began during September 2000. Under way since 2000, new mechanical bar screens were installed at the South Kearny pump station. Sewer lining of about 1,200 linear feet of existing sewer and stormwater separation was also completed under this contract. These collection system projects were estimated to cost \$650,000.

Projects in Progress

Engineering designs are under way for a new gravity sewer collection extension and a pump station with associated force mains. The installations will be made in the vicinity of the Jersey City Turnpike from Bergen Avenue to the Meadowlands “1D” site. The new pump station at the “1D” location will convey leachate, as well as sewerage to the existing Harrison Avenue pump station.

Future Project

During November 1990, this primary facility was converted to a pump station and diverted all flows to the PVSC regional facility for treatment. Completed during November 1998, the Harrison Avenue pump station went on-line to convey flows to the existing South Kearny pump station and then to the PVSC facility. Proposed for a November 2003 construction start-up, a new gravity sewer and pump station will convey Meadowlands leachate to the existing Harrison Avenue pump station and then to PVSC for treatment. Refer to the PVSC write-up for additional information.

Linden Roselle Sewerage Authority, New Jersey (Union County)

Completed Projects

Operational during June 2002, new drives on the primary sludge pumps were installed. In addition, the restoration of the dissolved air floatation unit was completed. Costs incurred for all upgrades were \$30,000.

Projects in Progress

Rehabilitation of the main building is continuing (5% complete). Specifically, \$430,000 will be spent to replace all electrical boxes. Additional upgrades are being assessed for this building and will be implemented on an as needed basis.

The Authority is completing a study for the rehabilitation of the sludge handling area. The results will be part of the commitment letter for the New Jersey Environmental Infrastructure Financing Program. A design phase will commence to coincide with the March 2003 loan application in order to meet the November 2003 funding cycle.

Middlesex County Utilities Authority (Edward J. Patton Water Reclamation Facility), New Jersey (Middlesex County)

Completed Project

With only punch list items to be addressed, disinfection facilities (building, tanks and associated piping) utilizing sodium hypochlorite are on-line. The re-estimated \$1.5 million

project was operational during May 2002.

Projects in Progress

This facility is operating under a State Consent Order (last modified May 1998) to identify I/I and develop alternatives to correct the extraneous flows. Engineering studies that are in progress address water quality impacts on the Raritan River (90% complete and re-estimated at \$283,000) and land-based sludge management improvements which are in the design phase(80% complete).

Future Project

Planned to begin during January 2003, MCUA will build dryers and install mixers with ancillary equipment to reduce the volume and operating costs of the sludge end product. This one-year project is expected to cost \$32 million.

Middletown Sewerage Authority, Township of, New Jersey (Monmouth County)

Completed Project

Operational since December 2001 with punch list items addressed during October 2002, the anaerobic digester cleaning with a new mixer system and gas piping incurred costs of \$1.053 million.

Projects in Progress

Collectively, two upgrades of treatment units are 20% complete. Two dissolved air floatation sludge thickeners with gravity belt thickeners are being replaced. In addition, new digester gas and natural gas burning boilers are being installed. The total estimated cost is \$750,000.

Future Project

Planned to begin during 2003, the bar screens will be replaced and automated screenings removal equipment will be installed. The estimated cost ranges from \$1 million to \$2 million. Additionally, an I/I study for the North Middletown area was postponed due to the 2002 drought conditions. This study is estimated to cost \$100,000 and, weather permitting, will be undertaken during the new fiscal year.

North Bergen Municipal Utilities Authority - Woodcliff Plant, New Jersey (Hudson County)

Project in Progress

Negotiations between this facility and the NJ DEP to upgrade the plant design flow from 2.9 MGD to 3.4 MGD are ongoing.

North Hudson Sewerage Authority - Adams Street (formerly Hoboken), New Jersey (Hudson County)

Completed Project

In order to control solids and floatables discharged to the Hudson River, construction to consolidate two outfalls and implement in-line capture devices was completed during November 2001 and incurred costs of \$2.6 million.

Projects in Progress

Under way in October 2002, additional CSO abatement facilities are being installed along the Hudson River in Weehawken, New Jersey. A collection system comprised of a total of 19 regulators and 14 outfalls will be enhanced with screening modules in order to eliminate solids and floatables greater than one inch. Anticipated to be operational during 2005, re-estimated expenditures will amount to over \$16.9 million.

Collection system upgrades are under way comprising three separate contracts totaling over \$1.61 million. The contracts include repair of catch basins, manholes and sewer lines; sewer main line cleaning; and the 7th Street trunk sewer cleaning and the Clinton Street sewer main repairs. These contracts are anticipated to be completed during January 2003.

North Hudson Sewerage Authority - River Road (formerly West New York), New Jersey (Hudson County)

Completed Projects

Miscellaneous repairs have been completed during 2002 throughout the facility at a final estimated cost of \$50,000. A collection system I/I study was recently completed at a cost of \$200,000.

Project in Progress

Repairs of catch basins, manholes and sewer lines are 75% complete and are planned to be operational by January 2003. The costs are estimated at \$125,000.

Future Project

Re-scheduled to begin during 2003, CSO abatement facilities will be installed along

the Hudson River. Estimated expenditures will amount to \$6.475 million and the facilities will be operational during 2004.

Passaic Valley Sewerage Commissioners, New Jersey (Essex County)

Completed Projects

This facility was operating under federal and State Consent Orders to address alternatives for beneficial reuse of biosolids (September 1989) and to comply with secondary effluent limitations (August 1995). This 330 MGD secondary facility met the terms and requirements of the Orders during 2002.

PVSC was involved in legal actions regarding the omission of the IEC's Water Quality Regulations in the NJPDES permit issued to this sewerage authority. Refer to the Legal Activities section of this report for details.

Projects in Progress

A sewer rehabilitation project estimated to cost \$3.9471 million, is ongoing. Final clarifier modifications are 80% complete; this work is estimated to cost \$3.787 million.

Presently on hold, a plant-wide upgrade includes the replacement of existing mixers and gas recirculation compressors with new surface aerators, a new electric distribution system for the oxygenation tanks, and the installation of the oxygenation tankage instrumentation and controls. Collectively, the work is 60% complete and is awaiting contractor efficacy testing. The latest cost estimate for this work is over \$20.8 million.

Peninsula at Bayonne Harbor (formerly Military Ocean Terminal), New Jersey (Hudson County)

Future Project

This property was decommissioned as a military base during the fall of 1998 and is now reverting to the City of Bayonne. The Bayonne Local Redevelopment Authority (BLRA) has proposed a \$32 billion plan to develop 18 million square feet of commercial and residential space. In December 2002, the complete and total transfer to the BLRA was finalized and the property was renamed The Peninsula at Bayonne Harbor. The 437-acre site is located in Upper New York Harbor. The proposal includes a port facility, townhouses, office space, movie production facilities, a marina, and a retail complex.

As is the case with the rest of Bayonne, the sewage from this site will be treated at the PVSC treatment plant.

Rahway Valley Sewerage Authority, New Jersey (Union County)

Completed Projects

A new liquid waste receiving facility is complete. The unit was operational during October 2001 and cost \$103,000. Additional rehabilitation addressed a grit chamber which included the installation of new screens (\$277,000), installation of new railings and gratings at the primary settling tanks (\$205,000) and replacement of DC motor drives with new AC motor drives at the sludge dewatering pumping facilities (\$167,000).

Construction of a new laboratory is complete (\$1.6 million) and was operational during February 2002.

Projects in Progress

As of October 12, 2001, this facility is operating under a State Consent Order to expand the capacity of the existing plant in order to accommodate additional wet weather flows from diverted CSOs.

Four major upgrades were under way this past summer. First, a new centrifuge is being installed at the sludge dewatering facility at a cost of \$2.7 million. Secondly, two air handling units are being replaced with new energy recovery equipment (\$850,000). Rehabilitation of a digester with new mixing and pumping systems (\$4 million) and the removal and replacement of service water and foam spray pumps (\$400,000) were also started this past June. The construction timetable for these projects range between 9 and 16 months.

The interim closure of one CSO located on the Rahway River began this past July at a cost of \$300,000. The complete elimination of this overflow is anticipated during 2007.

Future Projects

Planned to begin during January 2003, a cogeneration sludge drying facility will incur estimated costs of \$16.7 million.

Planned to begin during October 2004, expansion of the existing plant (40MGD) will be needed to accommodate wet weather flows due to the elimination of CSOs. The \$64 million undertaking will include filtration, disinfection and clarification, as well as force mains and onsite/offsite pump stations to convey flows. Additional digesters will be added to the treatment scheme under another contract which will begin during September 2003 with anticipated costs of \$3.5 million.

NEW YORK WATER POLLUTION CONTROL PLANTS

The Clean Water/Clean Air Bond Act was passed by voter referendum in 1996. Statewide, the \$1.75 billion bond act provides \$790 million for water quality projects, \$355 million to protect potable water supplies, \$175 million for recycling and landfill closures, \$200 million for brownfields reclamation, and \$230 million for clean air projects. Other funding programs available in New York State include the Environmental Protection Fund, the Performance Partnership Grant, the Great Lakes Coastal Watershed Restoration Program, and the Long Island Sound Restoration Act.

The LISS Phase III nitrogen reduction program in New York has attained 28 % of its goal and SPDES permit modifications are underway. Six New York City treatment plant permits will be finalized by April 2003. Draft permits for the four Westchester County plants discharging to Long Island Sound were issued during December 2002. Letters of Intent to Modify are being sent to the Nassau and Suffolk Counties' plants. NYS DEC is now evaluating BNR pilot and full scale demonstration projects. The implementation of the LIS coastal management plans are being developed on the county level; these include NYC DEP's East River plants, Westchester County (3 are complete), Nassau County and Suffolk County. Local watershed management plans are being developed for Hempstead Harbor and Manhasset Bay.



Photo by P. Sattler, IEC
EXECUTION LIGHTHOUSE - SANDS POINT, NY

Bay Park Sewage Treatment Plant - Disposal District No. 2, New York (Nassau County)

Projects in Progress

Aluminum covers are being installed atop the facility's five aeration tanks. A counter-current wet scrubber odor control system is also being built concurrently. The system will treat the exhaust air drawn from the newly covered tankage. Construction is 72% complete with costs estimated at over \$16.9 million. An approximate operation start-up date is May 2003.

Belgrave, New York (Nassau County)

Completed Project

Operational since May, the secondary digesters were overhauled with new valves, piping, and covers. Final costs amounted to \$977,000 and included the replacement of safety rails and gratings throughout the facility.

Future Project

Estimated to cost \$3.5 million, denitrification and UV disinfection facilities will be installed. An approximate construction start-up is planned for September 2003.

Blind Brook, New York (Westchester County)

Project in Progress

Phase II Automation design work was completed during 2001. Currently, installation of the system is 50% complete. This upgrade will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. All construction and installations are estimated to cost \$700,000 and are expected to be complete during December 2002.

Future Projects

New influent headworks and clarifier improvements are anticipated to begin during April 2003. This \$1.8 million upgrade will include replacement of the influent/effluent pumps with modifications to the VFDs, a new grit removal system, a submersible pumping system in the primary clarifier scum transfer, full radius scum skimmers, and troughs for the secondary clarifiers. In addition, structural building improvements will involve roof and wall updates.

Bowery Bay, New York (Queens County)

Projects in Progress

The Bowery Bay WPCP upgrade is a multi-phase modernization intended to improve process efficiency, reduce manpower requirements and improve reliability. These measures will ensure compliance with all applicable SPDES permit requirements and Consent Orders. The Bowery Bay WPCP is located on the upper East River south of Rikers Island.

Phase I is a \$213 million, 3½-year construction phase which is currently under way. This phase includes most of the wet stream processes. The major treatment unit upgrades include the replacement of the above ground air header, upgrading of the return sludge system, replacement of the main sewage pumps, replacement of the mechanical components of the disinfection system, and the installation of a distributed control system. Essential structures to be built are a combined residuals handling facility to handle grit, screenings, and scum under one roof, as well as an expansion of the main building to provide for additional electrical and boiler equipment.

Phase II is currently under design. This 2½ -year construction phase will ensure plant

reliability throughout the BNR construction by addressing critical items within the solids handling facilities. The major treatment unit upgrades include the replacement of failed digester domes, sludge heat exchangers, thickener mechanisms, the gas flare system and repairs to the ventilation system.

Phase III is currently under design. This five-year construction phase will include work related to BNR improvements. In order to comply with LISS III nitrogen reduction requirements, this phase will include the replacement of the process air blowers, air headers and diffusers, upgrade of the aeration tanks and final settling tanks, construction of a new utility service substation, and alkalinity and polymer systems. This phase is under Consent Order and must be constructed and operational by December 31, 2010.

The New York City Department of Environmental Protection (NYC DEP) maintains a vast infrastructure comprised of 14 drainage basins. The 14 treatment facilities are sited throughout the City's five boroughs and range in capacity from 40 MGD to 310 MGD. Under way since July 2001, all 14 plants are being evaluated in regards to meeting proposed total chlorine residual permit limits. The sludge management program consists of dewatering facilities sited at eight of the existing 14 treatment plants. The sludge is transferred from the other six plants by sea.

The fourteen New York City drainage basins are serviced by a combined sewer system which has approximately 500 outfalls. Completed in 1985, the New York City Regulator Improvement Program was a study to inventory, assess and determine required improvements to the regulators, interceptors and tide gates. These elements control the amount of combined sewer flow captured for treatment, convey it to the treatment plants and prevent tidal inflow from entering the system. City-wide, there are 382 regulators with tide gates.

A City-wide CSO abatement program is under way. The objective is to eliminate or ameliorate the effects of untreated sewage which is bypassed during storm events. The first phase identified the extent to which CSOs result in the contravention of water quality standards. The second phase consists of facility plans involving the entire area of New York City, which has been divided into four major geographical areas of concern. The ultimate goals of the program are the removal of floatable and settleable materials, and the achievement of New York State standards for dissolved oxygen and coliform bacteria. These programs are being conducted in accordance with SPDES permit and/or Consent Order requirements.

A total of \$1.5 billion has been committed by New York City for a CSO program which is currently in its fifteenth year. Structural and nonstructural solutions are being evaluated and prioritized. Final implementation is scheduled through 2006. The East River proposals include floatables capture, holding tanks, disinfection, in-line storage and swirl concentrators. Tributaries of the East River will also have holding tanks and in-line storage.

Refer to the Hunts Point and Tallman Island WPCP write-ups for additional information.

The second geographical area addresses Jamaica Bay. Holding tanks and in-line storage are the selected CSO abatement alternatives. The Spring Creek Auxiliary Water Pollution Control Plant (AWPCP) is an existing CSO detention facility with a storage volume of approximately 13 MG — 10 MG basin storage and 3 MG influent barrel storage. The Spring Creek AWPCP is located on Spring Creek, a tributary of Jamaica Bay. Refer to the Jamaica and 26th Ward write-ups for information on additional CSO projects.

The other areas that are being addressed are the Inner New York Harbor and Outer New York Harbor. The plan for the Inner Harbor includes maximizing flow to the WPCPs and activation of the flushing tunnel in the Gowanus Canal (completed May 1999). Facility planning is under way for regulator improvements (\$20 million). In-line storage is planned for Newtown Creek at an estimated cost of \$100 million; facility planning is under way.

Outer Harbor proposals include maximizing flow to the WPCPs and reducing CSOs and dry weather flows in Coney Island Creek. These projects are anticipated to accrue \$96.205 million in construction management fees. Preliminary design is under way for regulator improvements. Additional fees of \$10 million are estimated to determine designated use and the attainment of New York State standards in the receiving marine waters.

The NYC DEP is conducting 23 studies over a four-year period on waterbodies throughout the New York Harbor Complex to address compliance with water quality standards and designated uses. The Use and Standards Attainment (USA) Project began in March 2000. The Waterbody/Watershed Stakeholder Teams, a Government Committee of which IEC is a member, and the NYC Citizens Advisory Committee are active participants in this undertaking. The goals of the project are to (1) define specific and long-term beneficial uses for each waterbody, as well as water quality goals; (2) develop technical, economic, public and regulatory support for prioritizing and expediting implementation of projects and actions needed to attain goals; and (3) 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. Data collection and analyses are under way in Jamaica Bay and its tributaries, Bronx River, Hutchinson River, New York Harbor and the East River.

Refer to the Legal Activities section of this report for additional information.

Future Projects

Phase IV will include work related to the upgrade of the solids handling facilities and odor control. Major items of work include the conversion of two storage tanks to active

digesters, demolish two sludge storage tanks, install pump mixing systems for all digesters, replace digester recirculation and hot loop systems, replace gas compressors and thickened sludge withdrawal pumps, provide thickener covers and odor control, construct new sludge storage tanks and a new methanol facility. At the present time, air modeling is being performed to determine the necessity for covering process units and treating off-gasses. It is anticipated that it will be necessary to completely cover the primary influent channels, and partially cover the primary tanks.

Cedar Creek Water Pollution Control Plant - Disposal District No. 3, New York (Nassau County)

Projects in Progress

Operational since February 2001, main plant upgrades include aluminum covers for the aeration tanks and new effluent channels. Concurrently, a counter-current scrubber odor control system is being installed to treat the exhaust air drawn from the aeration tanks. These items are estimated to cost \$14.5 million; collectively they are 95% complete.

Over 42% complete, a compressor facility is being constructed so as to upgrade the existing conditions and allow digester gas to be used for the plant's boilers. A cost estimate for this work is \$7 million. An approximate operational start-up date is anticipated for November 2003.

Future Project

Construction is planned to begin during 2003 on a sludge dewatering facility with new belt filter dewatering equipment and ancillary systems. The estimated cost is \$32.344 million and the approximate operational start-up date is anticipated during 2005.

See the Great Neck Water Pollution Control District write-up for more information.

Cedarhurst, New York (Nassau County)

Projects in Progress

Recently under way, several plant improvements are being installed. The new treatment units will include an influent screening station, influent pumps and controls, and primary digester tank covers. This work agenda will also address pump station upgrades, as well as miscellaneous improvements, as needed. The one-year construction schedule will incur costs of about \$1.5 million.

Coney Island, New York (Kings County)

Completed Project

Paerdegat Basin, a tributary of Jamaica Bay, was a fresh water-fed creek that has been channelized and bulkheaded. This waterway is bounded by a dense residential community. The objective of the Paerdegat Basin CSO facility is to improve the water quality by substantially reducing CSO discharges during rainstorms. The facility plan includes maximizing the use of existing facilities (sewers, interceptors and Coney Island WPCP) amounting to 20 MG of in-line storage. It also includes construction of a 30 MG off-line facility that would be comprised of underground influent channels and a 21 MG retention tank. The diverted flow would be screened prior to entering the tank. After storms, stored combined sewage would empty into the Paerdegat Basin Interceptor connected to the Coney Island WPCP. The flow will be conveyed by gravity sewers, but mostly by pumps and force mains.

Above ground facilities will include four buildings with ancillary equipment to support the operation of the storage facility. Community enhancements will include park spaces, meeting rooms and wetlands mitigation. The total cost of this project is \$300 million and is being constructed in four phases. Phase I was completed during February 2002 and consisted of the construction of influent channels and sewers at the head end of Paerdegat Basin, including a new outfall structure and dredging for the new outfall.

Projects in Progress

Upgrading the Coney Island WPCP is a multi-phase project intended to improve process efficiency and improve reliability. These measures will ensure compliance with all applicable permit SPDES requirements and Consent Orders.

All phases of construction, including Consent Order mandated items, have been completed except for Phase 5b - Knapp Street laboratory and visitors' center, Phase 5c - reconstruction of the 72-inch diameter (72"Ø) ocean outfall, and Phase 5d - miscellaneous punch list items. Phase 5b is approaching design completion and is being readied for bid. This phase is estimated to cost \$36.8 million and will take 30 months to complete.

One ongoing in-house engineering study involves oxidation reduction potential testing.

The Paerdegat Basin CSO facility Phase II involves the construction of foundations for above-grade structures and 4 below-grade retention tanks. These tanks will interface with the new influent channels constructed under Phase I. Construction began this past June and includes additional dredging at the mouth of the basin, as well as the area along the CSO tank interface. This phase is scheduled to be ongoing through December 2006.

Future Projects

The Coney Island upgrade Phase 5c is in the planning stage. Design is expected to begin in FY'2003. The scope of work includes abandoning an existing ocean outfall structure in Rockaway Inlet, constructing a new section of outfall with diffusers adjacent to the existing diffusers to be abandoned, and repairing the outfall pipes that remain. The estimated construction cost is \$2.5 million with a 12-month schedule.

Phase 5d is in the planning stage. Design is expected to begin in FY'2003. The scope of work includes miscellaneous wrap-up work to conclude the upgrading project. The estimated construction cost is \$18.5 million and the construction period will be 27 months.

The Paerdegat Basin CSO facility Phase III involves the construction of above-grade structures consisting of a screenings building, odor control and HVAC building, a CSO pump back building, and a collections building with an adjacent Community Board No. 18 meeting room. Construction is scheduled to begin September 2005. Phase IV is the construction and restoration of lands surrounding Paerdegat Basin including decorative fences, lighting and development of an Ecology Park (4.5 acres) adjoining the 28-acre Natural Area Park. Construction is scheduled to begin during March 2008.

Through a commitment of \$100,000 of CW/CA Bond Act funds, one acre of upland will be restored to dune grassland and maritime shrubland. This will complete the Gerritsen Creek Maritime Ecosystem restoration which is being carried out by the NYC Department of Parks and Recreation.

Glen Cove, New York (Nassau County)

Completed Project

Sea Cliff, a community located on the eastern shore of Hempstead Harbor, was awarded \$587,350 under the auspices of the CW/CA Bond Act to construct a sanitary sewer along Shore Road. The project involves the installation of about 1,040 linear feet of 8 inch diameter (8"Ø) gravity sanitary sewer along Shore Road/The Boulevard to collect and transport sanitary waste from about 25 residences to the existing City of Glen Cove collection system. This will eliminate sanitary waste discharges into cesspools currently located along the shoreline of Hempstead Harbor, and subsequent discharges into the harbor due to cesspool blockages, failures and/or tidal influences. The installation of the sewer began March 2002 and was completed in June 2002. Several residents have hooked up and the Village is working to connect the Beach Pavilion.

Projects in Progress

The City of Glen Cove wastewater treatment plant is operating under a State Consent

Order, effective February 4, 1999, to address whole effluent toxicity and heavy metals limitations. Notice of Complete Application for a modified SPDES permit was issued in September 2002. The final permit with the modified effluent limits for copper and flow, and water quality based limits for silver, chlorine, nickel, lead, zinc and cadmium will be issued pending the receipt of public comments.

BNR retrofits began August 30, 2001, in order to comply with the Long Island Sound Study nitrogen reduction targets. Modifications will be accomplished during a phased construction schedule. It is anticipated that Phase I work will achieve nearly 50% nitrogen removal and improve operations at the existing plant. Presently, Phase I is 25% complete (\$3.5 million) and is scheduled to be operational during March 2003. More than \$3.3 million was awarded for the nitrogen reduction project under the auspices of the Clean Water/Clean Air Bond Act in 1998 and 1999.

In addition, the CW/CA Bond Act will fund \$100,000 for the creation of a constructed wetlands stormwater treatment system with retention basins and plantings to reduce stormwater runoff impacts to Cedar Swamp Creek which drains to Hempstead Harbor; this work is ongoing.

Future Project

A cost re-estimate of \$900,000 was made in order to put the facility's chemical and fuel storage tanks in compliance with State and federal regulations. A construction and compliance schedule are under negotiation.

Greater Atlantic Beach Water Reclamation District (formerly West Long Beach Sewer District), New York (Nassau County)

Completed Project

Pursuant to Town Law, the West Long Beach Sewer District changed its name to the Greater Atlantic Beach Water Reclamation District during March 2002.

Future Projects

Rescheduled for a construction start-up during April 2003, additional upgrades at this facility will include replacement of both secondary clarifier drives, walkways and railings, isolation gates on the new primary clarifiers, motorized valve operators, and a redundant primary sludge station. The estimated cost for this work is \$500,000. In addition, a Phase II improvement assessment of the facility may be undertaken during 2003.

Great Neck, Village of, New York (Nassau County)

Future Projects

A proposed collection system upgrade involves installing a liner in the Steamboat Road force main, as well as replacing a section of gravity sewer. Construction may start this winter with estimates of about \$240,000.

An engineering study is being proposed with a five-year plan for upgrading the treatment plant by adding four new pump stations, as well as BNR retrofits, at a cost of about \$100,000 per year. Another feasible alternative to the upgrade would be to divert all flows for treatment at a regional facility.

Great Neck Water Pollution Control District, New York (Nassau County)

Project in Progress

An I/I study is ongoing (75% complete) in certain areas of the collection system to evaluate hydraulic capacity and eliminate extraneous flows.

Future Projects

In order to comply with the LISS Phase III nitrogen reduction plan, this facility will incorporate BNR technology. Estimates of over \$16 million will be spent to retrofit or build new tankage for nitrogen reduction. Additional flow diversion studies may be undertaken. This additional engineering would be an information gathering project to determine the long-term needs for expansion and upgrading of the plant. Additional evaluations are proposed for expansion versus regionalization to the Cedar Creek WPCP, one of Nassau County's south shore treatment facilities.

Huntington Sewer District, New York (Suffolk County)

Completed Project

At a final cost of \$227,000, improvements were completed at the 5th Avenue pump station. The modernization included replacement of pumps, valves, a standby engine generator, controls, an emergency force main connection, site fencing and wet well ventilation. The station was operational during April 2002.

Projects in Progress

Modifications to the sludge piping in the primary digester building are complete. Additional cleaning and painting is under way with cost estimates of \$125,000.

In order to improve the hydraulic capacity and reduce surcharging, 700 linear feet of 18-inch diameter (18"Ø) influent sewer is being installed. Operational during August 2002, the installation is re-estimated to cost \$233,000 and is 90% complete. Additional collection system installations include 800 linear feet of 8-inch diameter (8"Ø) gravity sewer in Sterling Court, and 440 linear feet of 8-inch diameter (8"Ø) gravity sewer in Southdown Court. These installations are just under way.

Awarded more than \$8.8 million under the auspices of the Clean Water/Clean Air Bond Act for the nitrogen reduction upgrade, the Town of Huntington has recently received the final design for the phased nitrogen reductions retrofits utilizing SBRs. An operational start-up is anticipated for January 2005. Construction was rescheduled to begin during July 2003 with costs estimated at \$10.5 million. Concurrent with the SBR design, the Town is also investigating a zeolite-based nitrogen removal technology and will begin pilot testing shortly.

The Town of Huntington has approved funding for three projects to address pollutants from stormwater runoff. One project was approved for funding of \$40,000 to address the West Shore Road shoreline stabilization and stormwater management plan. Under this plan, stormwater control devices, such as catch basins and outfall pipes, will be installed to reduce pathogens prior to discharge to Huntington Bay. However, because of litigation concerning land ownership, the project is on hold indefinitely and the Town has released its award. The other two projects are the Fleets Cove/Knollwood Beach Stormwater Mitigation (\$300,000) and the Centerport Harbor Stormwater Runoff Mitigation. The Fleets Cove project will entail installation of new drainage pipes, leaching basins and catch basins. The Centerport Harbor Stormwater Runoff Mitigation Project received CW/CA Bond Act funds of \$250,000 for improvements to the existing stormwater drainage system.

Suffolk County has approved funds of \$320,000 for the remediation of highway stormwater discharge to Huntington Harbor. The County is presently drafting a project work plan and construction is tentatively scheduled to start during the 2002-2003 winter season. During 2000, \$241,391 was awarded for the installation of stormwater leaching basins in order to remediate Swan Cove and Huntington Harbor. Funding is being provided by the Clean Water/Clean Air Bond Act. All objectives are consistent with the priorities identified in the CCMP for the LISS.

Future Projects

Planned for the 2003 summer season, improvements to the wastewater collection system for the Cobblestone Estates development includes the installation of 6,400 linear feet of eight-inch diameter (8"Ø) gravity sewer lines. An additional 1,300 linear feet of eight-inch diameter (8"Ø) gravity sewer lines will be installed for the Huntington Glen subdivision. Improvements to the Huntington Farms pump station have been postponed for several years in anticipation of this residential sewer expansion. Capacity upgrades will be

assessed as necessary.

Hunts Point, New York (Bronx County)

Projects in Progress

The Hunts Point WPCP upgrade is a five-phase project intended to improve process efficiency, reduce manpower requirements, and improve reliability. These steps are being taken in order to ensure compliance with all applicable SPDES permit requirements and Consent Orders.

Phase I is a \$203 million, 3½-year construction phase which was bid in July 2001. This phase includes Consent Order mandates for hydraulic improvements to allow treatment of twice design dry weather flow (200 MGD) by October 29, 2004, as well as upgrades to most of the wet stream processes. The modernization includes forebay gate chamber improvements, screen chamber modifications, raw sewage conduit modifications, personnel facility additions, aeration tank froth and foam control, and an RAS system upgrade. The chlorine building and contact tank also need modifications. A new combined residuals handling facility to handle grit, screenings, and scum under one roof will be built on site.

Phase II is currently under design. Re-estimated to cost \$210 million, this 3½-year construction phase involves the solids handling facilities and BNR enhancement. Specifically, mechanical, structural, and architectural work is needed on the gravity thickeners, new egg-shaped digesters, and sludge storage tanks. In order to comply with nitrogen reduction requirements, this phase will also include a new blower building, air headers and diffusers, methanol, alkalinity and polymer addition. At the present time, air modeling is being performed to determine the necessity for covering the process units and treating of the off-gasses. The BNR work in this phase is also under Consent Order and must be constructed and operational by June 30, 2007.

Phase III is currently under design. This \$263 million, 3½ year construction phase includes work associated with solids handling. Mechanical and structural enhancements, as well as instrumentation and controls installations with associated electrical work are necessary. This phase will also include replacement of digesters, thickeners and sludge storage tanks.

Phase IV is currently under design. This \$36 million, 2½ year construction phase includes a methanol feed system, a centrate equalization and distribution system, polymer addition for froth control, odor control systems and all associated instrumentation and controls. The work in this phase is required under Consent Order, as well as required to achieve compliance with the required TMDLs. The compliance schedule mandates construction and operational levels by January 06, 2014.

Phase V is currently under design. This \$61 million construction phase will complete the proposed construction of the solids handling facility and the new main electrical substation, which was deferred to a later date for budgetary reasons.

The objective of the East River CSO facilities is to improve the water quality of several rivers and creeks tributary to and including the East River by substantially reducing combined sewer overflows during rainstorms. The upper East River is bounded by the NYC boroughs of the Bronx on the north shore and Queens on the south. The combined sewer outfalls are located along the river and its tributaries: Bronx River, Westchester Creek, and Hutchinson River.

The Hutchinson River CSO Project will consist of an in-line storage conduit constructed along Loop Road, Tillotson Avenue, Conner Street and Co-op City Boulevard. This seven-million gallon storage conduit is designed to capture 90% of the historical storm volume and then store this stormwater until it can be treated at the Hunts Point WPCP. This three-year construction project is estimated at \$120 million; it has been delayed due to the relocation of the southern portion of the conduit, and will be bid by the end of 2008.

See the Bowery Bay write-up for information on the City-wide projects.

Future Projects

The Bronx River CSO Facility will consist of a storage conduit, pumping station and outfall. It is scheduled to be advertised in 2005.

The Westchester Creek CSO Facility will be constructed in two phases. Phase I will involve site preparation and the construction of restrooms for local parks. It will be advertised in January 2004. Phase II is the construction of a CSO retention tank. Estimated at \$200M, it will take four years to construct and will be advertised in 2007.

A BNR alternative will receive Clean Water/Clean Air Bond Act funding and is consistent with the CCMP priorities of the LISS. A froth control facility (\$328,461 approved) will be installed.

Jamaica, New York (Queens County)

Projects in Progress

In order to comply with SPDES limitations and requirements, plant-wide interim expansions are ongoing. This work is re-estimated to cost over \$260 million plus over \$48 million in engineering and design construction management fees. Performed in two construction phases, the first phase will entail new installations of treatment units such as a primary tank splitter box, a primary tank, a primary force main, the main sewage pumps

driven by VFDs, return activated sludge pump stations, waste activated sludge pump stations, a chlorine contact tank, odor controls, and an electrical substation.

The second phase will include the new installations of various units including a thickener building with centrifuge thickeners, a residuals handling building, an administrative and maintenance building, odor controls, emergency lighting, and a boiler plant. Final design for this phase is 90% complete; collectively, both phases are 70% complete.

CSO abatement projects in this drainage basin include the placement of a retention tank in Fresh Creek; the preliminary design is under way. For additional information on other CSO control projects in the Jamaica Bay tributaries see the Coney Island and 26th Ward write-ups.

See the Bowery Bay write-up for information on City-wide projects.

Joint Regional Sewerage Board-Town of Haverstraw (Rockland County)

Completed Project

A main pump station upgrade was completed on June 1, 2002. The final cost for all construction and instrumentation installations was over \$536,700.

Future Project

Anticipated to begin during June 2003, a re-estimated cost of \$2.5 million will be spent in order to upgrade the aeration system.

Jones Beach State Park, New York (Nassau County)

Completed Project

Emergency repairs were initiated during early November 2001, on the primary clarifiers. This treatment unit received a new drive unit. After further inspection, it was determined that the secondary clarifier also needed a new drive. Final costs of over \$90,000 were incurred for all installations and were completed by January 2002.

Lawrence, New York (Nassau County)

Completed Project

Phase I plant improvements were completed during July 2002. Over \$800,000 was incurred to replace the trickling filter media, grit collecting and scrubbing equipment, a

generator, digester mixing pumps, and associated instrumentation.

Future Project

Phase II plant improvements are planned to begin during the spring season of 2003. Various plant-wide equipment upgrades/replacements will be done as needed. Remediation costs are estimated at \$700,000.

Long Beach, New York (Nassau County)

Projects in Progress

This facility is operating under a State Consent Order (August 1, 2001) requiring compliance with SPDES discharge limitations. Engineering studies are addressing Phase II facility-wide upgrades.

Rehabilitation of several treatment units is 10% complete and re-estimated to cost \$2.5 million. The work includes the replacement of the trickling filters and the hypochlorite systems. The project also includes necessary repairs and cleaning of the digesters, as well as the installation of new mechanical bar screens. Under way since this past summer, completion is anticipated for August 2003.

Mamaroneck, New York (Westchester County)

Completed Project

Construction of a BNR demonstration pilot project is complete. The Clean Water/Clean Air Bond Act award of over \$3.83 million also requires monitoring of the system until 2004.

Projects in Progress

Phase II Automation installation is under way. The \$850,000 modernization will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. In addition, VFD replacement is being assessed by in-house staff.

The Glen Oaks pump station rehabilitation is still at the design phase (\$300,000).

New Rochelle, New York (Westchester County)

Completed Projects

Construction and installation of sludge collection equipment was operational and

during August 2002. Cost estimates were \$3.5 million. Also completed during 2002 were the replacement of the administration building roof and ceiling, as well as the upgrading the photovoltaic roof system (\$125,000).

Projects in Progress

On December 12, 1986, NYS DEC imposed a sewer extension moratorium on the New Rochelle Sewer District; this ban is still in effect. This plant is operating at or above its permitted flow capacity. With anticipated development, there is concern of insufficient plant capacity, as well as the ability to meet effluent requirements. Completed SSES and I/I reduction studies with associated construction is 90% complete.

This facility is operating under a State Consent Order to accomplish collection system rehabilitation (I/I) and eliminate two storm sewer overflows (SSOs). The New Rochelle Sewer District — which is comprised of Larchmont, a small section of Mamaroneck, New Rochelle, and Pelham Manor — anticipates a cost of \$35 million for all construction phases; construction is under way. Awarded during October 1998 under the Clean Water/Clean Air Bond Act, Westchester County will receive over \$3.3 million to build overflow retention basins in the New Rochelle drainage basin to capture and treat stormwater runoff in order to reduce negative impacts on Long Island Sound. The scope of construction necessary to eliminate the SSOs has increased so greatly that the CW/CA Bond Act award has increased to about \$8 million; construction began during mid-November 2002. Other collection system work includes the Sutton Manor pump station rehabilitation (design phase - 60% complete) and a sludge force main assessment.

Automation Phase II will cost \$750,000 for increasing remote monitoring of plant processes. This phase will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. This instrumentation upgrade is under way.

Newtown Creek, New York (Kings County)

Completed Projects

The Interim Upgrade Project is to modify and/or renovate existing facilities to ensure the reliable functioning of the plant throughout the construction period of the major Plant Upgrade Project. The Interim Upgrade involves disinfection improvements, demolition, remediation, a biofilter demonstration plant, building and equipment upgrades, tankage covers, digester cleaning and piping modifications, tank reconstruction, and water/drainage improvements. The 10-year construction schedule was completed during October with an estimated total design and construction cost of \$222 million.

During the Interim Upgrade, a modification of the step-feed aeration process was discovered which produced favorable effluent treatment without the deeper aeration tanks

or the primary settling tanks. This new process, termed “Track 3”, has been formally accepted by NYS DEC under the Second Modified Judgment on Consent that was entered on June 12, 2002 by the Supreme Court of the State of New York. The Track 3 process significantly reduced the cost of construction.

A second biofilter demonstration plant program was concluded during December.

Projects in Progress

The Consent Decree goal of this upgrade was to achieve effluent quality standards at a prescribed influent flow dictated by SPDES permit limitations. The existing Newtown Creek facilities required expansion and modifications to provide full secondary treatment. The Plant Upgrade Project’s first construction contract began in July of 1998 with a demolition/site remediation contract. Construction contracts for a new Construction Management Building and Reconstruction of Kingsland Avenue began in 1999, followed by contracts for solids handling facilities, disinfection facilities with a support building, and the south addition to the main building, which started in 2000. The total design and construction cost of the active Plant Upgrade Project is re-estimated to cost \$1.094 billion and is approximately 22% complete.

A “Long Outfall Alternatives” contract began in November of 2000 to assess the aquatic environment in proximity to existing and potential WPCP outfalls. In addition, this study is evaluating the potential for siting new outfall locations.

CSO abatement measures include in-line storage in Newtown Creek (facility planning), a tributary of the East River and regulator improvements (final design).

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Future construction contracts under Track 3 include a sludge force main and East River loading dock modifications (\$38 million), north and north-central batteries of aeration and final tanks (\$460 million), modifications to main building-north (\$100 million), modifications to the Manhattan pump station (\$154 million), central residuals facilities (\$209 million), reconstruction of Kingsland Avenue - Stage 2 (\$1 million), south-central and south batteries of aeration and final tanks (\$302 million), and final site work (\$20 million). The estimated total design and construction cost of these phases is \$1.543 billion.

Northport, New York (Suffolk County)

Future Projects

This facility, which also provides treatment for the Centerport Sewer District, received \$977,500 in CW/CA Bond Act funds during 1999 for nitrogen removal, UV disinfection and capacity expansion to a design flow of 0.45 MGD. Final plans and specifications and bid documents have been received by the State with subsequent plant upgrades and expansion work rescheduled to begin during June 2003.

The Stormwater Runoff Control Project for Northport Harbor received CW/CA Bond Act funds of \$178,000. The project entails the installation of a network of catch basins and leaching pools to mitigate stormwater runoff and improve shellfishing and primary contact recreation in Northport Harbor. The Bond Act grant contract was executed in July 2002. The consultant engineer is currently designing the project and it is anticipated that construction will start in spring 2003.

North River, New York (New York County)

Completed Project

The experimental polymer enhancement of thickened sludge solids was completed during August 2002.

Projects in Progress

Miscellaneous process control experiments have been under way since August 2001.

Currently in the design phase, replacement of existing digester equipment and other miscellaneous repairs will be undertaken. Under a previous contract, an inspection was conducted on three of the eight digester tanks. It was found that two tanks had damage to the mechanical piping and support system. The required repairs on these tanks were performed. However, during a similar inspection and cleaning of one of the five remaining tanks, similar damage to the mechanical piping and support systems was found. The scope of work to repair the digester tanks includes the internal inspection of the six digester tanks; develop the required repairs to the digester piping, pipe support systems, steel liner, and concrete surfaces subsequent to the inspection; and final testing of each digester tank for leaks after the repairs have been completed.

Future Projects

This facility, located on the Hudson River south of the George Washington Bridge, is operating under a State Consent Order (July 1, 1992) to address issues of capacity, odor,

and air emissions. Odor emissions are a particularly sensitive issue for the North River WPCP since it is located in a heavily populated section of Manhattan with Riverbank State Park constructed on its rooftop. The Post Odor Construction Survey, which was mandated by Consent Order, was to identify and recommend solutions to odor control. The findings of this study were published in the Post Construction Odor Study, which also includes the results of an independent study as part of a settlement with the Natural Resources Defense Council (NRDC), West Harlem Environmental Action (WHEACT) and the City. Both studies focus on identifying odors and recommend remedial measures to further control odor emissions, as necessary.

The North River Water Pollution Control Plant (WPCP) currently has three odor control systems in operation. These include the systems dedicated to the north and south portions of the plant, and a third system dedicated to the covered primary tanks. All three systems control odors by using a two-stage treatment system. The first stage pulls odorous air through packed bed wet chemical scrubbers. The second, polishing stage, pushes the wet scrubber effluent through activated carbon absorbers. The final settling tanks are the only major plant operational process that is not odor controlled.

The scope of work required to meet the odor minimization goal includes digester gas holder odor control modifications, digester overflow box odor control, thickener room ventilation modifications, cover and odor control openings in chlorine contact tanks, remove restrictions in the secondary bypass and modulate based upon plant flow. Improvements to the laboratory odor control system includes the addition of six carbon adsorbers and two wet scrubbers in the south sector, cover final settling tank effluent launders, addition of two carbon adsorbers in the north sector, replacement of headwork ventilation ductwork, new process air blower and parallel discharge header, remote alarm system, and mixed liquor channel ventilation. Expenditures are estimated at \$60 million. The design phase of this project is 90% complete. It's anticipated to go to bid by mid-2003.

The scope of work required under this contract dealing with miscellaneous process and odor control improvements includes rehabilitation of existing scrubbers and absorbers, including the removal of the carbon absorbers bypass, modifying existing carbon bed supports and replacing carbon; replacing chemical metering pumps, pH and orthophosphate controls; replacing and motorizing dampers; and relocating of the scrubbers' fans outside of a partially treated air plenum. Hypochlorite will be added to the skimming system and aeration tanks; baffle wall height additions in the aeration tanks will prevent back mixing between the passes; addition of observation points on the aeration tanks to allow visual monitoring of the process; replacement of the aeration tank dump valves; modification of the dissolved oxygen (DO) control system to provide more flexibility in controlling the DO in various passes of the aeration tanks and to prevent the blowers from surging; provide additional capacity to the plant's waste sludge system; replacement of diffuser system in the aeration tanks to improve the efficiency of the system and to allow the plant to meet its peak air demand; replacement of operators on the final settling tanks' sluice gate weirs to allow

operators to continuously adjust the water level in the effluent channel; reduce the amount of odors which are released into the air as the water falls over the weirs; and modification of the primary settling tank adsorbed fans to reduce vibration signature. Expenditures are estimated at over \$42.96 million. This project was bid and the Order to Commence Work was sent out on January 29, 2002.

See the Bowery Bay write-up for information on City-wide projects.

Oakwood Beach, New York (Richmond County)

Projects in Progress

Engineering studies under way this past year involve thickener blankets and dissolved oxygen metering.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

A joint facility planning effort for the Oakwood Beach and Port Richmond plants is under way as part of the Staten Island Wastewater Facilities Improvement Project that was initiated in 2001. Area-wide facility planning will address the needs of both Richmond County treatment plants, as well as pumping station and collection system issues. Refer to the Port Richmond write-up for additional information.

Long-term facility planning includes the identification and design of priority rehabilitation needs. Approximately \$7 million of priority rehabilitation work at the Oakwood Beach WPCP has been identified to date, and design of these improvements is under way. Included among these priorities are disinfection system improvements, skimmings removal improvements, rehabilitation of gas piping, and upgraded personnel facilities. Priority improvement contracts will be bid in mid-2002. Projected changes in influent flows, loads and potential future treatment requirements, as well as full upgrade and modernization needs will be addressed as part of facility plan development. Facility plan completion is scheduled for 2003.

See the Port Richmond write-up for information on City-wide projects.

Orangetown, New York (Rockland County)

Completed Project

Rehabilitation of the Pearl River trunk sewer was complete by November 2002. Final costs of \$550,000 provided for labor and materials for 2,200 linear feet of 21-inch

diameter (21"Ø) asbestos-concrete pipe.

ORANGETOWN WPCP
ROCKLAND COUNTY, NEW YORK



BEFORE



AFTER

MANHOLE REHABILITATION
Photos courtesy of Orangetown WPCP

Ossining, New York (Westchester County)

Completed Project

Collection system upgrades completed during 2002 include the rehabilitation of the Croton and Country Club pump stations.

Projects in Progress

Facility-wide performance maintenance Phase I (\$3.5 million), an O & M procedure to maintain and extend the life of existing treatment units, started during 2002. Phase II (\$2.2 million) aspects are under design.

In order to increase remote monitoring of plant processes, Automation Phase II design is complete. Construction and installation began during 2002. This phase will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. Costs for this phase are estimated at \$1.05 million.

Estimated to cost \$8 million, a new final clarifier will be built. This project is under way.

Owls Head, New York (Kings County)

Projects in Progress

The Owls Head upgrading is a multi-phase project for the improvement of process efficiency and reliability. These actions will ensure compliance with all applicable SPDES permit requirements and Consent Orders. All phases of construction, including Consent Order required work, have been completed except for contract OH-33 — modifications to the grit and scum building, and OH-37 — plant-wide improvements. This facility is located in Brooklyn on the west shore of Upper New York Bay.

CSO abatement strategies for this drainage basin include regulator improvements which are at the preliminary design stage. Engineering studies under way include testing of the recycle flow pump station, oxidation reduction potential instrument testing for improvements to engine generators, and polymer addition to the waste activated sludge stream.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Contract OH-33, which involves modifications to the grit and scum building, is approaching design completion. Construction is scheduled to begin in FY'2004. The work includes the extension of the building to the north to accommodate the improvements to the current grit handling operations. New cyclone degritters and classifiers will be installed, and the existing primary sludge and grit pumps will be upgraded. A container handling system will be installed to accommodate the 25-cubic yard containers which will be used to load grit for transportation for disposal. The odor control system will be enhanced to better encompass and control odors from the grit and scum operation. The estimated construction cost is \$10 million and the construction period will be 36 months.

Contract OH-37 encompasses plant-wide improvements and it is presently in the design stage. Design is about 70% complete and construction is expected to begin in FY'2004. The work includes miscellaneous wrap-up work to conclude the upgrading project. It contains safety and process control improvements, equipment upgrades, reconstruction of the influent conduits, and the expansion of the administration building. The estimated construction cost is \$13.8 million with a 36-month construction period.

The Avenue V pumping station has a 30 MGD capacity. The objectives in reconstructing the pumping station and force mains are to: reduce the potential for sanitary sewer surcharge conditions upstream of the station; improve the Coney Island Creek water quality by increasing the wet weather (CSO) pumping capacity; and upgrade the station and automate for unmanned operation. The station's wet weather flow capacity will be increased

to a nominal 80 MGD to pump the sum of peak sewage flow of 34.6 MGD and necessary CSO flow of 42 MGD.

The pumping station upgrade includes construction of a wet well extension for temporary pumping, lowering the wet well slab by 4 feet, demolition of unneeded structures, replacement of tide gates and force mains, removal of old equipment, installation of six wet pit submersible pumps with VFDs and new electrical and HVAC equipment. In addition, a new network protector structure will provide service power of 480 volts. The main building has been recognized as having historic and architectural significance; the restoration will be done with the approval of the New York City Landmarks Preservation Commission and the New York State Office of Parks, Recreation and Historic Preservation.

The total cost for this project has been re-estimated at \$100.6 million (\$33 million for the station and \$67.6 million for the force mains) and will be bid as two contracts. First, the reconstruction and upgrading of the station for automated operation and expanding the pumping capacity for wet weather flow. Construction is scheduled to begin during August 2004. Secondly, construction of two new force mains: a 42-inch diameter (42"Ø) pipe (18,500 linear feet) dedicated to dry weather flow and a 48-inch diameter (48"Ø) pipe (13,100 linear feet) dedicated to wet weather flow. Construction is scheduled to begin February 2005.

Oyster Bay Sewer District, New York (Nassau County)

Completed Projects

Completed during 2002, 1,200 linear feet of new sewer main was installed on West End Avenue at a cost of \$42,500.

In New York State's FY'2000, \$106,000 was awarded to the Town of Oyster Bay for the Stehli Beach Stormwater Runoff Mitigation project. The project entailed the installation of a stormwater drainage system for the parking lot at Stehli Beach to channel contaminated runoff away from the Frost Creek wetland. The wetland is part of the Oyster Bay National Wildlife Refuge, located on Long Island Sound, and home to a diverse group of aquatic plants and animals. The construction was completed in August 2001. Pending submission of various documents, the grant project can be officially closed.

Future Project

The Oyster Bay Sewer District was awarded more than \$3.75 million from the NYS Clean Water/Clean Air Bond Act for biological nutrient removal retrofits for the Oyster Bay treatment plant. The Bond Act contract was executed. Recently, plans and specifications with bid documents were submitted to the State for final review. It is anticipated that the nitrogen removal process will be operational by August 2004.

Palisades Interstate Park Commission, Bear Mountain, New York (Rockland County)

Completed Project

Completed and on-line during this past August, the antiquated trickling filter was replaced at a final cost of over \$98,000.

Peekskill, New York (Westchester County)

Completed Project

The facility's entrance road reconstruction was completed during early 2002 at a cost of \$0.21 million.

Projects in Progress

In order to increase remote monitoring of plant processes, Automation Phase II design plans are complete. This phase will increase operator control via a SCADA telemetry control system. Ongoing construction and installations will cost \$1.25 million. Performance maintenance (\$1.8 million), an O & M procedure to maintain and extend the life of existing treatment units, is under way.

Future Project

In order to address wastewater flows that impact potable water supplies in the Croton watershed in upstate New York, preliminary studies have determined that this facility would be expanded to 15 MGD. The facility expansion would require extensive tankage to properly treat additional flows. Final plans and alternatives have yet to be determined.

Port Chester, New York (Westchester County)

Projects in Progress

To increase remote monitoring of plant processes, Automation Phase II work is in progress and will cost \$1.4 million. This phase will increase operator control via a SCADA telemetry control system; construction is planned for the 2002 winter season.

Facility-wide performance maintenance to maintain and extend the life of existing treatment units, as well as to replace outdated equipment, will cost \$2.6 million. Phase I is under construction and addresses headworks, primary settling tanks, secondary clarifiers, and odor controls. Concurrently, the variable frequency drives (VFD) for the influent and effluent pumps will be installed. Phase II (\$4.5 million) construction contracts have recently been awarded.

Port Richmond, New York (Richmond County)

Future Projects

The Port Richmond WPCP, together with the Oakwood Beach WPCP, is the subject of a joint facility planning effort initiated in 2001. As part of this effort, approximately \$6 million in priority rehabilitation needs have been identified in advance of completion of the long-term facility plan. Priority improvements will include plans for the upgrade of the two WPCPs and their pump stations within the context of system-wide planning, while addressing excessive infiltration and inflow in the sewer drainage areas, personnel facilities, structures, storage requirements, communication and personnel safety issues. The option of flow tipping from one drainage area or plant to another will also be addressed and investigated in the plan. Refer to the Oakwood Beach write-up for more information.

Within the Port Richmond drainage basin, NYS DEC will restore and enhance portions of a 50-acre degraded salt marsh system contiguous to Old Place Creek, a tributary of the Arthur Kill. The project will increase the quantity and quality of aquatic habitat for numerous species that use this wetland complex as a nursery, forage and migration stopovers. This project will be funded by a \$610,000 award from the CW/CA Bond Act. This project addresses priorities as established by the HEP CCMP.

See the Bowery Bay write-up for information on City-wide projects.

Port Washington, New York (Nassau County)

Completed Project

Operational during December 2001, a pilot plant was installed to determine the feasibility of nitrogen control by utilizing a side-stream activated sludge process which is actually a tertiary treatment step. This BNR project is designed to treat 1.0 MGD and had an estimated final cost of \$450,000. Recent data submitted by the engineer indicates that the process is achieving nitrogen reduction on the average of 82%.

Future Projects

Rescheduled to begin during the late summer season of 2003, refurbishing of two pump stations and plant-wide repairs and preventive maintenance, such as roofing and various architectural replacements, will be addressed. Costs are re-estimated at \$1.8 million.

Red Hook, New York (Kings County)

Projects in Progress

A full scale evaluation of the primary tankage and characterization of toxic chemical loading from various sources to New York Harbor is ongoing. In addition, an experimental degritting machine is being tested.

See the Bowery Bay write-up for information on City-wide projects.

Rockaway, New York (Queens County)

Completed Project

An engineering experiment completed during May 2002 involved a full scale evaluation of dual phase digestion. This experiment may be initiated again after odor control systems are in place.

Projects in Progress

Reconstruction of the heating and ventilation system, estimated at \$1.548 million, is 98% complete. A stabilization facility plan for interim upgrades is in progress and is scheduled to be finished by mid-2003. A dual phase digestion experiment is under way.

See the Bowery Bay write-up for information on City-wide projects.

Rockland County Sewer District No. 1, New York (Rockland County)

Completed Project

At a final cost of over \$569,000 sewer system rehabilitation was completed during September 2002. The work involved televising, sealing and grouting of the antiquated sewer lines.

Projects in Progress

Design and construction work is under way for the installation of principal trunk sewers, pump stations, force mains, and laterals in the Villages of Hillburn and Sloatsburg and the unincorporated portion of western Ramapo. Construction is estimated to cost \$72 million.

Recently under way, sanitary sewer extensions and repairs are being performed in the towns of Clarkstown and Ramapo. An estimate of \$12.5 million was made for all

infrastructure improvements.

As of March 2001, this entity has been participating in the siting process for a new advanced wastewater treatment plant to serve Western Ramapo. The proposed 1.5 MGD plant would utilize this flow to recharge the Ramapo River Aquifer. By diverting flow from the Mahwah Service Area of the Rockland County Sewer District, the Western Ramapo area could see a net benefit of an additional 2.0 to 3.0 MGD for recharging the aquifer.

Springvale Sewerage Corporation, New York (Westchester County)

Completed Project

At a final cost of \$3,500, a new ultrasonic flow meter was installed at this 0.13 MGD facility. The one-day upgrade was completed during October 2002.

Suffolk County Sewer District #1, Port Jefferson, New York (Suffolk County)

Projects in Progress

An in-house water quality assessment of Port Jefferson Harbor is ongoing. Preliminary engineering work is under way in anticipation of a plant upgrade and expansion in order to address the LISS Phase III nitrogen reduction targets.

The replacement of various gravity sewer lines throughout the collection system is ongoing. Installations of these new sewers will eliminate I/I problems. This work will also expand and rehabilitate the existing infrastructure. In addition, improvements are being made to several remote pump stations (\$130,000/20% complete).

Future Projects

Recently approved by NYS DEC, additional treatment units will be added to accommodate any additional flow requests from commercial and residential developments. Preliminary treatment designs propose the use of a tertiary process with a flow capacity of 1.0 MGD.

Planned to begin during 2003 with a two-year schedule, sequencing batch reactors (SBR) will be constructed in conjunction with the existing rotating biological contactors (RBC). These treatment units will enable the facility to meet LISS Phase III nitrogen reduction targets. The re-estimated \$16 million project will incorporate UV disinfection and has been awarded a grant of \$3 million from the NYS CW/CA Bond Act.

Suffolk County Sewer District #3, Southwest, New York (Suffolk County)

Completed Projects

Seven engineering studies were completed during 2002. First, a feasibility study to expand the sewer district boundaries was conducted in-house. Secondly, an odor control evaluation on the influent pump station was completed at a cost of \$12,000. Thirdly, an energy audit was performed. Fourthly, an extraneous flow reduction study was under taken. An evaluation to rehabilitate the laboratory facilities was completed and new designs are in progress (\$150,000). Finally, studies involving grit handling (\$20,000), fire suppression and a security improvements design contract was awarded (\$100,000).

Recently complete, a conversion to a dual fuel (diesel/natural gas) system incurred costs of \$300,000. A shoreline stabilization project was completed.

Projects in Progress

Equipment replacements, a laboratory expansion, new influent screens (\$400,000/ 75% complete), and infrastructure repairs are being addressed under a phased agenda at estimated costs of \$8.6 million. In addition, the blowers are being assessed for replacement. The facility's roof is being replaced at a cost of \$1 million and is 99% complete.

A building is being constructed to house scavenger waste pretreatment facilities.

Suffolk County Sewer District #6, Kings Park, New York (Suffolk County)

Project in Progress

Suffolk County was awarded \$3.1 million from the Clean Water/Clean Air Bond Act of 1996 in order to build a 1.2 MGD facility by modifying existing treatment units. The primary settling, aeration, and final settling tankage, as well as the anaerobic digesters, will be converted into equalization tanks, sludge and disinfection facilities. An amended engineering report was approved by NYS DEC. Plans are ready for Phase I construction, but initial bids were rejected and the need for a labor agreement has delayed the bidding process.

Future Projects

Construction is anticipated to begin during the 2002-2003 winter season on a \$9.9 million equipment renovation. Safety equipment upgrades will be addressed on a priority basis. SBRs, ultraviolet disinfection and sludge thickening facilities will be built in order to meet the LISS Phase III nitrogen reduction targets.

Suffolk County Sewer District #21, SUNY, New York (Suffolk County)

Projects in Progress

Preliminary engineering work has been under way since 1997 to assess BNR alternatives for the LISS Phase III nitrogen reduction requirements. A CW/CA Bond Act grant application was resubmitted for \$15.6 million. Effluent disposal options are being studied.

Anticipated to be operational during December 2002, the effluent pump station controls and pumps are being upgraded (\$50,000), as well as the emergency generator (\$50,000).

Future Project

Construction of sequencing batch reactors is planned and will increase the plant capacity by 0.5 MGD to a total design of 3 MGD. This expansion will enable this facility to comply with the LISS nitrogen loading requirements.

Tallman Island, New York (Queens County)

Completed Projects

Two engineering experiments completed during May 2002 involved a full scale evaluation of the primary tankage and alternative chemicals for disinfection.

Projects in Progress

The Tallman Island WPCP upgrade is a two-phase project to improve process efficiency, reduce manpower requirements, and improve reliability of existing treatment units. This modernization will ensure compliance with all applicable permit SPDES requirements and Consent Orders. Beginning during January 2001, an engineering experiment is investigating the benefits of polymer addition for sludge thickening enhancement.

Phase I includes an upgrade to the aeration system including new blowers and blower engines, new air piping and diffusers, aeration tank modifications and baffles, a new RAS pump station, utility tunnels, and final settling tank improvements. New site buildings will include a new combined residuals handling facility, administration and storage building and a gas compressor building to compress digester gas for use in the new blower engines and pump engines (Phase II). This phase is re-estimated to cost \$255 million, and will take four years to construct. It is scheduled to be advertised this year with construction commencing in June 2003.

The objective of the Flushing Bay CSO facility is to improve the water quality of Flushing Creek and Bay by substantially reducing combined sewer overflows (CSOs) during rainstorms. A 28-million gallon underground reinforced concrete storage tank will achieve this objective by capturing and storing combined sewage during rain events. The captured flow will be screened before entering the tank. After storms, the combined sewage will be pumped out of the tank into a nearby interceptor for treatment at the Tallman Island WPCP.

The location of the storage tank and its associated facilities is within Flushing Meadow-Corona Park. The tank will be completely underground. At the north end of the site, there will be an above ground New York City Department of Parks & Recreation (NYC DPR) and NYC DEP building. Pumps, air treatment equipment and other auxiliary equipment required for the operation of the storage facility will be located in the basement of this building. The total cost for this project is \$250 million. Four additional construction phases will follow.

This site originally had three ballfields and a parking lot, and were replaced (Phase I) at a location remote from the facility to serve the community during construction. The effluent channel (Phase II) will be used as a replacement sewer until the completion of the entire project. The effluent channel has been constructed and, after the completion of the facility, the effluent channel will serve as the overflow channel for the storage facility. Construction of the underground CSO storage facility is Phase III. An existing combined sewer located in the middle of the site must be demolished as part of the work. The storage tank will include 15 storage cells, mechanical equipment areas, and a wet well. At the present time, these three construction phases are complete or substantially complete. Phase IV of the Flushing Bay CSO includes construction of the diversion chambers and conduits; the above ground building at the north end of the site; the construction of mechanical support facilities (pump stations, air treatment systems, screening facilities, etc.); and the construction of three tide gates at the outfall. Phase IV was bid during October 2001. The total cost of the four phases is more than \$160 million.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Phase II of the Tallman Island WPCP upgrade includes BNR enhancement work including methanol, alkalinity and polymer addition, and centrate treatment. Other major items include new main sewage pumps and engine, digester improvements, and plant-wide instrumentation. In order to avoid a bypass event while replacing the main sewage pumps and suction piping, a \$6 million pump-around-system will be constructed. This three-year construction phase will commence in 2005 and, under a Consent Order, must be constructed and operational by December 31, 2009. This phase is estimated to cost \$233 million.

Phase III includes BNR enhancement work including methanol addition and centrate

treatment. This phase is estimated to cost \$23 million and will take three years to construct. At the present time, construction is scheduled to commence in 2006.

The Alley Creek CSO Project has combined the CSO issue with control of a flooding problem in the local community. Alley Creek is located at the head of Little Neck Bay, an embayment of western Long Island Sound. Phase I-Stage I will include most of the major work, including construction of new sewers parallel to existing sewers, a retention tank, minor restoration of the existing outfall, and construction of an outfall on Alley Creek. This phase will be bid in early 2002. Phase I-Stage II will include the activation of the CSO facility including the SCADA system. Upgrading the New Douglaston pumping station will ensure the pumping capacity to convey the stormwater to the Tallman Island WPCP. The Alley Creek Ecological Restoration will be bid separately, as will the Oakland Ravine Stormwater Treatment Project. These sub-projects will be bid in 2004.

A BNR alternative will receive Clean Water/Clean Air Bond Act funding and is consistent with the CCMP priorities of the LISS. A ferric chloride feed system (\$115,600 approved) will be installed.

26th Ward, New York (Kings County)

Projects in Progress

The 26th Ward WPCP upgrade is a multi-phase project to improve process efficiency, reduce manpower requirements, and improve reliability. This modernization will ensure compliance with all applicable SPDES permit requirements and Consent Orders. The Hendrix Street Canal bulkhead will be reconstructed to provide a stable grade and prevent loss of fill from the areas of the plant adjacent to Hendrix Creek, a tributary of Jamaica Bay. The project is being designed and construction is expected to commence in January 2003.

Phase I is a \$200 million, 2½-year construction phase which is currently in design. Construction is expected to commence in August 2003. The major items include construction of a new raw sewage pumping station, construction of a new process air blower building, replacement of the air header, construction of a new centrate treatment tank, construction of new electrical distribution facilities, conversion of the sludge cake storage building to a new administration building, construction of new sludge storage tanks, and installation of a distributed control system.

Phase II is also in design and will be complete in June of 2003 with construction expected to commence in April 2004. This 3¼-year construction phase includes all modifications necessary for the BNR upgrades in compliance with the nitrogen reduction Consent Order. The scope of work includes mechanical, structural and architectural work for replacement of the existing four preliminary settling tanks with six new ones, replacement of the aeration tank diffusers, alkalinity control system and mixers, construction

of a new return and waste sludge pumping station, replacement of the plant disinfection equipment, and construction of a new chemical storage facility.

Three engineering studies are ongoing which address biological nutrient removal, centrate nitrogen removal and polymer addition for sludge thickening enhancement.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Phase III of the 26th Ward upgrade is expected to begin design in 2004 and construction is expected to commence in May 2006. This 3½-year construction phase includes all work associated with the solids handling facilities, replacement of the sludge digestion process equipment, conversion of two sludge storage tanks to digesters, and replacement of the gas flare systems and construction of a new gas holder. In addition, miscellaneous site work is also included for improvements of the roadways and landscaping within the plant.

Spring Creek AWPCP was originally constructed and placed into service in the early 1970s. Its function is to capture CSO from tributary drainage areas in Brooklyn and Queens. The plant, with a capacity of 13 MG, provides for storm water detention, solids settling and disinfection contact time. A stabilization study was performed in the early 1990s and design was completed by end of 1999. Spring Creek AWPCP will be upgraded and will consist of demolishing the existing facilities, rehabilitation of various areas and equipment, and construction of new facilities. The areas to be upgraded include the overall site, pump building, basin building, and construction of a new odor control building. A 37-month construction schedule is anticipated; estimates are \$82 million for all construction phases which are expected to commence during January 2003. Through a commitment of \$200,000 of CW/CA Bond Act funds, one acre of upland will be restored to dune grassland and maritime shrubland.

Under the auspices of the CW/CA Bond Act, \$206,775 will be spent to restore 5,000 square feet of salt marsh and 24,000 square feet of upland habitat on Hendrix Creek, a tributary of Jamaica Bay. The restored marsh will create a functioning wetland which will improve water quality and habitat value. This project addresses priorities identified in the HEP CCMP.

Wards Island, New York (New York County)

Completed Project

The Wards Island upgrading is a multi-phase project to improve process efficiency, reduce manpower requirements, and improve reliability. These necessary steps will ensure

compliance with all applicable permit SPDES requirements and Consent Orders. Phase I began construction in 1996 and is in the close-out phase. Under these contracts, the existing disinfection system was demolished and replaced with a new system. The new system improves the control of the sodium hypochlorite feed with automated chlorine residual monitoring and control system. The cost of this phase was \$35 million.

Projects in Progress

Engineering studies to reduce nitrogen loadings will focus on sludge age, polymer additions, froth control and biological centrate treatment. Collectively, these pilot programs have been ongoing since 1999.

The Wards Island upgrading, Phase II, is currently being designed and is anticipated to be advertised this year. This phase includes the rehabilitation of the Manhattan and Bronx grit chambers. In addition to providing an architectural renovation for each facility, the process of grit handling will be automated. Pumps will be placed in each grit channel and will pump the grit slurry to the operating level where the grit will be removed and cleaned by cyclone degritters and grit classifiers. The electrical system, including the emergency generators, will be upgraded and equipment replaced as needed. Lastly, this phase will include odor control systems to treat the odorous off-gasses from the channel surfaces. The bid price for this work was \$90 million.

Future Projects

Phase III previously included all work necessary to provide 20 years of reliable service for the solids handling facility. Due to budget constraints, this work has been deferred until 2010. As an interim measure, a \$50 million phase (Phase III) will be designed to stabilize the solids handling facility. Improvements to the digester domes, gas handling system, and gas holder will be included. It is anticipated that construction on these improvements will commence in 2004. The major rehabilitation of the solids handling facility will be performed under Phase VIII and includes the replacement of mechanical and electrical equipment as needed. In addition, the automation will be improved, allowing reduced manpower to operate the solids handling facility. New domes will replace the leaking domes and the unstable architectural terrazzo panels will be replaced with insulated pre-cast concrete panels. Concurrently, a plant-wide monitoring and control system will be installed. This 4½ -year construction phase is scheduled to be advertised in 2010 and is estimated to cost \$331 million.

BNR related improvements will be implemented under Phases IV, V, and VI. Phase IV includes an upgrade to the blowers, so that there is sufficient air for BNR. A new blower building will be constructed under this phase. The current estimate is \$102 million. This 3-year construction phase is to be advertised in May 2003, with construction commencing in February 2004.

Phase V is the major BNR related upgrade phase as it addresses the secondary treatment facilities. It includes both mechanical and structural modifications to the aeration tanks, final settling tanks, and the RAS system. The BNR enhancement improvements include a new process air header, polymer addition, centrate treatment and froth control systems. This phase is currently estimated to cost \$451 million and is scheduled to be advertised in August 2003 with a 5½-year construction commencing in May 2004.

Phase VI, the final BNR phase, includes the centrate treatment system and the alkalinity system. This phase is currently re-estimated to cost \$78 million and is scheduled to be advertised in June 2004 with a 3-year construction commencing in March 2005. The Consent Order required work included in Phases IV, V, and VI are to be complete and operational by December 31, 2009.

Under Phase VII, personnel facilities are to be upgraded. The plant staff in the “new administration” building will be relocated after the existing Boiler Building is converted to an administration building. In addition, the existing facilities in the Pump and Blower building will be upgraded and expanded to provide sufficient facilities for the additional staff required to operate a step-feed BNR plant. Also included in this phase is the construction of a residuals handling facility. This facility will provide a combined location for the collection of residuals. This phase is currently estimated to cost \$201 million and is scheduled to be advertised in October 2007 with a 5-year construction commencing in July 2008.

Under Phase IX, a methanol addition system will be constructed. This phase has been deferred to the TMDL deadline; the system is to be implemented by August 2014. Based on that end date, this phase is scheduled to be advertised in 2011 with construction of the 2½- year phase to begin in 2012.

See the Bowery Bay write-up for information on City-wide projects.

Yonkers Joint Wastewater Treatment Plant, New York (Westchester County)

Completed Projects

Operational on September 30, 2002, \$17 million worth of capital improvements provided for an engine blower rehabilitation and pump replacement, a bulk storage silo for potassium permanganate (oxidizing agent for odor control), and chlorination/dechlorination facilities. The dechlorination facilities (over \$1.466 million CW/CA Bond Act award) met the compliance schedule, as well as received additional FY’02 Bond Act funding; this award amount was not available during the preparation of this write-up.

Projects in Progress

This facility is operating under a State Consent Order to implement the findings of an SSES and the final settling tank dye study, as well as to upgrade treatment units throughout the facility. The Order required a study of the plant's effluent mixing zone in the Hudson River; this study was completed in August 1997.

Facility-wide, eight construction and equipment upgrade projects began during May 2002. Modernization improvements include dewatering facilities, fire suppression alarm and security system, primary boiler system additions, and replacement of sludge collection and process equipment. Phase II Automation will finalize the remote plant-wide data gathering capabilities and plant process monitoring. Improvements will be made to the primary gravity thickeners, grit removal facilities and odor controls for sludge storage. Collectively, these projects will incur costs of about \$22 million.

Future Projects

Anticipated to begin construction during 2004, a new maintenance and storage building with a fire suppression system will be installed. Re-estimated to cost \$10 million, the project has a 12-month agenda.

Westchester County will receive \$3.4 million from the New York State Clean Water/Clean Air Bond Act to improve water quality in the Hudson River, redevelop the Yonkers waterfront, improve public access to the Hudson River, and expand municipal recycling programs.



Photo by P. Sattler, IEC

DREDGING OPERATIONS IN EASTCHESTER BAY, BRONX, NY

EFFLUENT AND AMBIENT WATER QUALITY MONITORING

Throughout 2002, the Commission continued monitoring effluent wastewater discharges and ambient waters throughout its District. IEC's laboratory performs analyses on samples collected at municipal, private and industrial wastewater treatment facilities, as well as on samples from ambient water quality surveys. Also, IEC conducted a special ambient monitoring program for pathogens was conducted for the second consecutive year in support of the New York-New Jersey Harbor Estuary Program.



The year 2002 marked the twelfth consecutive summer season that the Commission conducted weekly sampling to document hypoxic (low dissolved oxygen) conditions in western Long Island Sound and the upper East River; this survey was performed aboard the IEC's research vessel, the R/V Natale Colosi. This monitoring is performed in support of the Long Island Sound Study and was conducted from July through mid-September in cooperation with several other agencies. During these summer surveys, additional samples were collected, as well as in situ water quality data to support three cooperative studies. The first study involved collection and delivery of surface water quality samples to the Nassau County Health Department for phytoplankton identification. During the tenth survey run, additional water quality samples were collected for NYS DEC, Division of Marine Resources, for the detection of the presence of a toxic dinoflagellate, *Pfiesteria piscicida*. Finally, during September and continuing into October, water quality samples were collected, preserved and shipped to the University of Connecticut for the examination of the possible presence of *Pfiesteria piscicida* and *Pfiesteria shumwayae*.

National Water Monitoring Day was held on October 18th as a nationwide event to mark the 30th anniversary of the Clean Water Act. Aboard the R/V Natale Colosi, in situ measurements of dissolved oxygen, salinity, temperature, and water clarity were made at nine established water quality stations in the upper East River and Long Island Sound. All of the data were submitted to the Year of Clean Water website.

During November 2001, the R/V Natale Colosi was moved to the New Jersey State Marina at Leonardo so IEC could participate for the seventh consecutive winter-spring season in a cooperative effort with the NJ DEP and US EPA. For this survey, IEC collected surface water quality samples for the assessment of the sanitary condition of shellfish beds in western Raritan Bay. All samples were collected subsequent to storm events between December 2001 and March 2002. The Commission plans to continue this sampling program in western Raritan Bay during the 2002-2003 winter and spring seasons.

The Commission continued to support a data need of the HEP's Pathogens Work Group. IEC completed a series of 40 ambient water quality monitoring surveys between February and August, 2002, at a network of 42 stations established throughout the New York-New Jersey Harbor Complex. Each station was sampled 10 times. In situ measurements of temperature and salinity were taken, and samples were collected for analysis by the IEC laboratory for fecal coliforms, total coliforms, fecal streptococcus and enterococcus. This unique data set represents

information on intrastate and interstate waterways. It will be used for state and interstate water quality assessments, model calibrations, and TMDL development.

All analyses performed by the Commission's laboratory are in accordance with the IEC's Laboratory Quality Control Manual, Quality Assurance Project Plans, and Quality Management Plan, all of which are approved by US EPA. IEC's laboratory is certified by NJ DEP and NYS DOH and also follows US FDA procedures for sampling in shellfish waters. In January 2001, the Commission's laboratory also received certification under the National Environmental Laboratory Accreditation Program (NELAP) from both the NJ DEP and the NYS DOH. NELAP, under the auspices of the National Environmental Laboratory Accreditation Conference (NELAC), is sponsored by the US EPA. The purpose of NELAC is to foster the generation of environmental laboratory data of known and documented quality through the development of national performance standards.



Photo by W. McCormack, IEC
PATHOGEN ANALYSES AT IEC LABORATORY

Investigations of private and municipal facilities involve a six-hour period of sampling and an inspection of processes, equipment, and plant records. Investigations of industrial facilities generally involve a 24-hour period or a full day's production. Analyses are performed for the parameters specified in the facilities' National Pollutant Discharge Elimination System (NPDES) permits which contain the Commission's requirements. The data generated from these investigations are used to determine compliance with IEC's Water Quality Regulations and with each facility's SPDES discharge permit. The Commission coordinates the industrial compliance monitoring of major dischargers with the environmental departments of its member states and with US EPA.

The Commission's laboratory has been located on the campus of the College of Staten Island (CSI) since late 1993. In addition to the day-to-day analyses performed at the laboratory, the Commission, both on its own and in conjunction with the Center for Environmental Science (CES) at CSI, submits proposals for research projects whose results would benefit the environment and the citizens throughout the tri-state region. Laboratory staff have submitted research papers for publication in several environmental forums and have been involved with students enrolled in the CES Masters Degree program.

The Commission's laboratory staff continued to host and act as mentors for high school students throughout the area who are involved with environmental projects.

SPECIAL INTENSIVE SURVEYS

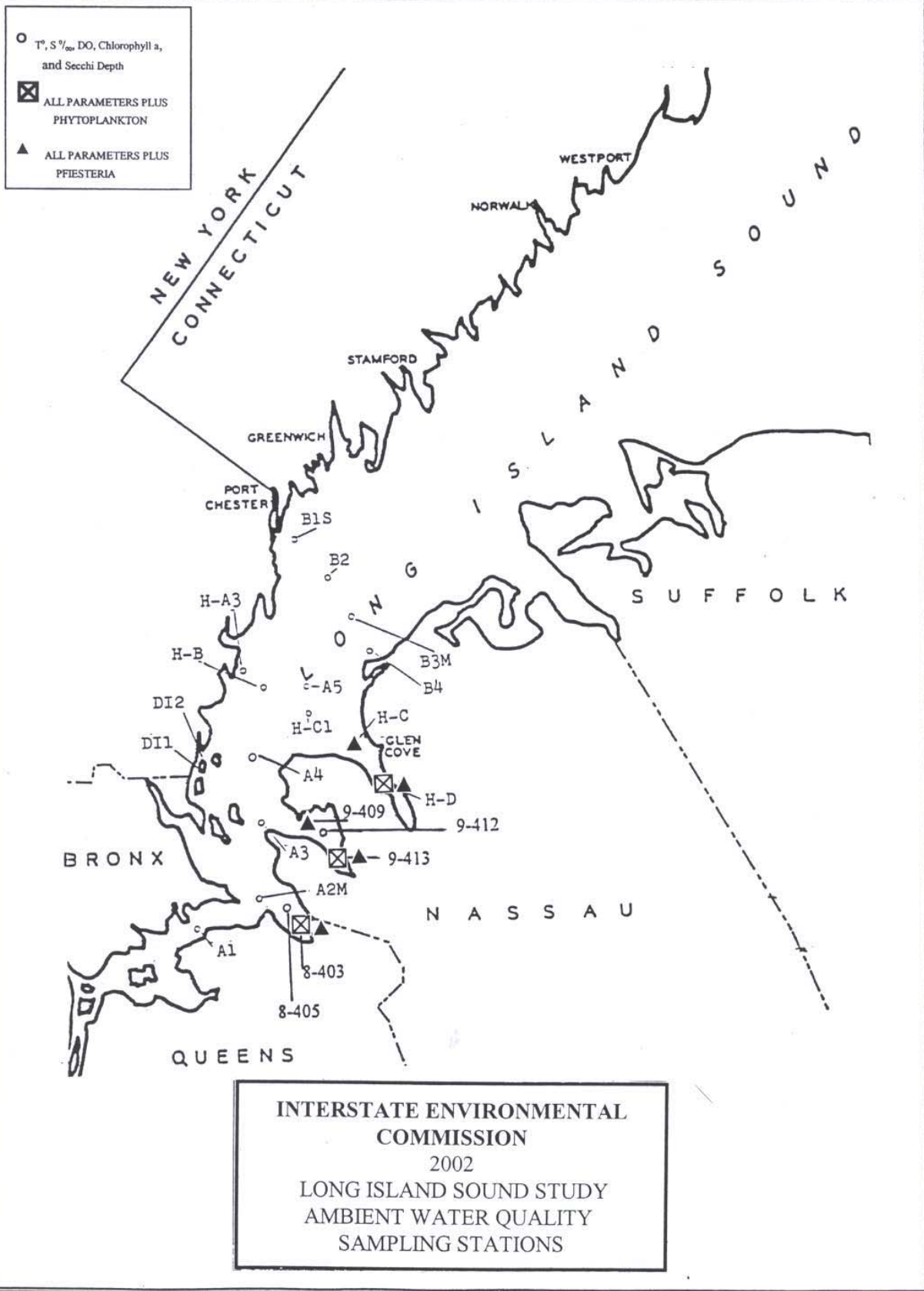
2002 Ambient Water Quality Monitoring in Long Island Sound to Document Dissolved Oxygen Conditions

There is an ongoing need to document the hypoxic conditions in Long Island Sound. The US EPA - Region 2 again requested that the Commission conduct an intensive ambient water quality survey in support of the Long Island Sound Study during 2002. For the 12th consecutive year, the IEC participated in a cooperative sampling effort with other government agencies during the critical summer season. The existing data sets have been significantly enhanced by the weekly data collected by IEC for western Long Island Sound and its embayments and the upper East River. The information will also be used to measure the effectiveness of management activities and programs implemented under the Comprehensive Conservation and Management Plan. The Commission disseminates its data on a weekly basis to give cooperating agencies and volunteer monitoring groups an immediate picture environmental conditions, as well as a basis for comparison with historic and ongoing monitoring programs.

The Commission is an active participant on the Long Island Sound Study Monitoring Work Group. It is this Group that determined and agreed to station locations, parameters, methodologies, QA/QC, data sharing, etc. A map and a listing of the 2002 station locations are on the following pages. A subset of these ambient water quality stations (those marked with an asterisk) were monitored on October 18th for National Water Monitoring Day to celebrate the 30th anniversary of the Clean Water Act. Other IEC activities regarding the Clean Water Act anniversary celebration are in the Executive Summary and other sections of this report.

As part of this year's Long Island Sound sampling, IEC again worked cooperatively with the Nassau County Health Department and the NYS DEC's Division of Marine Resources. Because of a lack of resources, Nassau County discontinued its ambient water quality monitoring program many years ago. For the fifth consecutive year, IEC collected samples for phytoplankton identification for the Nassau County Health Department at three water quality stations. Nassau County Health Department personnel met the IEC research vessel in Hempstead Harbor for sample transfer and archiving. Under an agreement between CT DEP and US EPA's Long Island Sound Office (LISO), the analysis of the 2002 samples and a subset of the archived samples is being conducted by the University of Connecticut. The sample transfer by Chain of Custody procedures was completed during September.

The lack of oxygen can be fatal to marine life if levels remain persistent and drop below the organisms' threshold to survive. Fish kills can also occur due to predation and toxic phytoplankton. During its weekly sampling cruises, the Commission has always communicated from the field with local environmental and health agencies to pass on current information about unique events. Additional monitoring in response to fish kills and beach closures has taken place in past years. Because the Commission's research vessel is available and accessible to typical western Long Island Sound trouble spots, the NYS DEC, Division of Marine Resources, requested the Commission to assist and respond to fish kills. During the 2002 summer season, there were no reported fish kills.



INTERSTATE ENVIRONMENTAL COMMISSION

2002 LONG ISLAND SOUND STUDY SAMPLING STATIONS

STATION	WATER COLUMN DEPTH (meters)	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
A1 *	26	40-48-12	73-49-36	East of Whitestone Bridge
A2M *	35	40-48-06	73-47-00	East of Throgs Neck Bridge
8-403	3	40-46-38	73-45-38	Little Neck Bay - ~0.2 nm W of yellow nun "B"
8-405	3	40-47-33	73-45-49	Little Neck Bay - ~0.15 nm North of LNB mid- channel buoy
A3 *	25	40-50-30	73-45-18	Hewlett Point South of Fl G 4 Sec "29"
9-409	4	40-49-44	73-43-05	Manhasset Bay
9-412	4	40-49-20	73-42-45	Manhasset Bay
9-413	3	40-48-26	73-42-49	Manhasset Bay
A4 *	35	40-52-35	73-44-06	East of Sands Point, mid-channel
A5 *	13	40-53-54	73-41-12	~2.6 nm East of Execution Lighthouse
B1S	15	40-56-42	73-40-00	Porgy Shoal South of Fl G 4 Sec R "40"
B2	20	40-56-06	73-39-12	Matinecock Point 1.6 nm North of Gong "21"
B3M *	19	40-55-12	73-38-42	Matinecock Point 0.7 nm North of Gong "21"
B4	15	40-54-24	73-38-06	Matinecock Point South of Gong "21"
DI1	10	40-53-33	73-46-24	Davids Island North of Nun "10A"
DI2	6	40-53-40	73-46-00	Davids Island East of Nun "4"
H-A3 *	3	40-55-24	73-43-12	Delancy Point South of Can "1"
H-B *	12	40-54-48	73-42-54	0.7 nm Southeast of Daymarker Fl R 4 Sec
H-C	8	40-51-54	73-40-30	Hempstead Harbor East of R Bell "6"
H-C1 *	11	40-53-12	73-41-42	Hempstead Harbor~ 2.0 nm East of Sands Point
H-D	7	40-50-42	73-39-36	Hempstead Harbor East of Can "9"

* In situ measurements of dissolved oxygen, salinity, temperature and water clarity conducted on National Monitoring Day, October 18, 2002.

In early September, the Commission took part in a multi-agency water quality collection effort to determine the presence of the toxic dinoflagellate, *Pfiesteria piscicida*.

As part of the LISS cooperative effort, CT DEP volunteered to have all chlorophyll a analyses performed and to bear the cost for these analyses. The samples collected by the IEC; as well as those collected by NYC DEP and CT DEP; were filtered, archived and frozen until shipped to an independent contract laboratory.

The 2002 survey consisted of 12 weekly sampling runs conducted from July through mid-September. The ambient network of 21 stations were sampled weekly for temperature, salinity and dissolved oxygen (DO); these parameters were measured in situ. Measurements were taken one meter below the surface, at mid-depth, and one meter above the bottom. For stations deeper than 15 meters, measurements were taken at five depths — the two additional depths being one equidistant between the surface and mid-depth samples, and one equidistant between the mid-depth and bottom samples. This year, the measurement of water clarity or Secchi depth was collected.

Samples for chlorophyll a, an indicator of algal production, were collected one meter below the surface on alternate runs at all stations. These were filtered, archived, frozen and subsequently shipped by overnight mail to a contract lab that also analyzed the samples collected by NYC DEP and CT DEP; this was done to ensure consistency amongst the agencies. All sampling, sample preservation and analyses were done according to procedures accepted by the US EPA. All field measurements were summarized and forwarded weekly to US EPA - Region 2's LISO, the CT DEP's Bureau of Water Management, the Nassau County Health Department, the NYS DEC Division of Marine Resources, the NYC DEP Marine Science Section, and to several volunteer monitoring groups. The data are available from the Commission office. The Long Island Sound data, as well as all Commission ambient water quality data, can be retrieved from STORET, the US EPA's national data base.

Dissolved oxygen is a measure of the ecological health of a waterbody. A dissolved oxygen concentration of 5 mg/l is considered to be protective of most aquatic life. According to IEC Water Quality Regulations, a waterbody classified as "Class A", as are all the stations included in this IEC survey, must have a minimum dissolved oxygen content of 5 mg/l at all times. Waters of this type are suitable for primary contact recreation, fish propagation and, in designated areas, shellfish harvesting. During 2001, CT DEP adopted revised DO criteria in some of the Long Island Sound waters in Connecticut. NYS DEC is also addressing this issue in Long Island Sound and other New York waters, but has not yet issued its proposed criteria. To date, NJ DEP has not proposed any revisions to their DO criteria in the New Jersey waters of the NY-NJ Harbor Complex, which also includes the IEC District. Since the interstate waters in Connecticut, New York and New Jersey are also IEC waters, whatever is done by IEC's member states in those waters is going to affect IEC and the course of action the Commission might have to take regarding its DO regulations.

A statistical representation of the dissolved oxygen data acquired during the 2002 ambient water quality monitoring in Long Island Sound is shown on the pie chart entitled "2002 Dissolved Oxygen Monitoring". Measurements of dissolved oxygen concentration in both surface and bottom

waters are separated and grouped in three categories. Dissolved oxygen concentration values that are less than three mg/l (<3.0 mg/l) reflect hypoxic conditions; under these conditions, very few types of juvenile fish can survive, many adult fishes will avoid or leave the area and those organisms not free to move (sessile) will die. For dissolved oxygen concentration values which are greater than or equal to three mg/l (≥ 3.0 mg/l) and less than five mg/l (<5.0 mg/l), marine resources surviving in this range are at threshold levels for reduced growth and abundance. The impact to marine organisms is dependent on the duration and spatial extent of hypoxia, as well as the water temperature, salinity and the distribution and behavioral patterns of resident species. Dissolved oxygen concentrations of at least five mg/l (≥ 5.0 mg/l) are considered to be protective of most aquatic life. For the second consecutive year since 1997, hypoxic conditions were measured in the surface waters of the Sound; for all stations, the range of dissolved oxygen was 0.1 to 13.6 mg/l. The waters of western LIS which tend to be stratified, were well mixed, but hypoxic. This surface low was recorded on August 14th (the 2001 surface low was measured on August 13th) and gradually increased during the remainder of the summer. Bottom waters ranged from 0.3 to 7.8 mg/l. These extremely low values were recorded all summer long. Interestingly, there were no fish kills; probably a total avoidance of the hypoxic waters. However, recreational fishing in western Long Island Sound was excellent for fluke, porgy, striped bass, bluefish and black seabass.

The 2002 monitoring season proved to be another unique year. The 2001-2002 winter season never really appeared in the northeastern United States. Rain was essentially non-existent through February with a total snowfall of less than 4 inches. This was the warmest and second driest winter ever recorded in New York City through March 1st. Any rain was intense and localized; average rainfall for 2002 through September was about 10 inches below the yearly norm. Extreme summer temperatures — 26 days over 90° F through September 12th — and abundant sunshine conditions set the stage for excellent primary recreational activities and hypoxia.

As shown on the pie charts depicting 2001 and 2002 monitoring data, the condition of the surface waters was essentially the same in both years. The 2002 surface water results for the categories of *Greater Than 5 mg/l*, *Between 3 and 5 mg/l*, and *Less Than 3 mg/l* are 73.6%, 21.3% and 5.3%, respectively. In the same category order, the results of the 2001 survey were 71.9%, 24.2% and 3.9%, respectively. The weather patterns for 2002 were more typical of past years: a mild, dry winter followed by a dry spring season and continued with a dry, calm, hot summer with localized rainstorms. The heavy localized rains in July and August caused presumptive beach closures in Nassau and Westchester Counties.

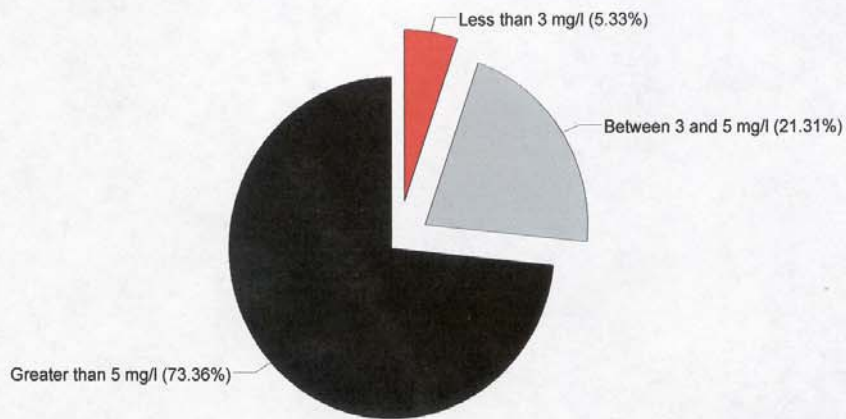
Based on the percentage of hypoxic readings, the bottom waters of the Sound in 2002 as compared to 2001 were essentially the same. As displayed in the bottom half of the pie chart entitled “2001 and 2002 Dissolved Oxygen Monitoring,” the 2002 bottom water results for the categories of *Greater Than 5 mg/l*, *Between 3 and 5 mg/l* and *Less Than 3 mg/l* are 24.1%, 32.1% and 43.7%, respectively. In the same category order, the bottom water results of the 2001 survey were 11.5%, 43.6% and 44.8%. Many different natural and anthropogenic factors (water pollution, municipal water pollution control programs, weather, circulation pattern changes, proliferation or lack of algal blooms, etc.) contribute to hypoxia and year-to-year variability. For 2002, 56% of the values measured in the bottom waters throughout the entire study area met the IEC requirement of

INTERSTATE ENVIRONMENTAL COMMISSION
LONG ISLAND SOUND STUDY

2002 DISSOLVED OXYGEN MONITORING
SURFACE AND BOTTOM WATERS

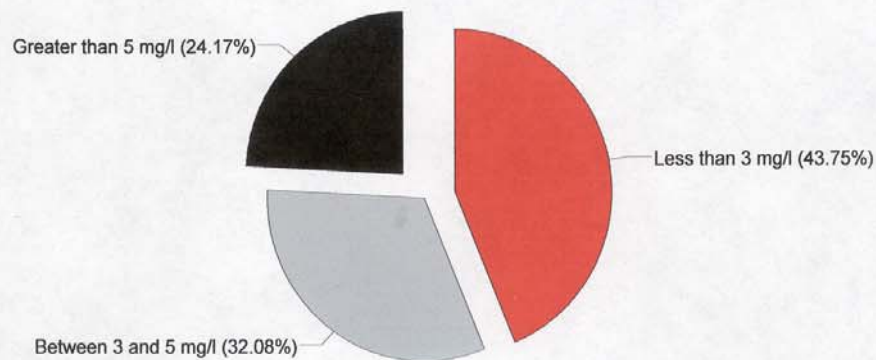
SURFACE WATERS

Range of Dissolved Oxygen Values: 0.1 to 13.6 mg/l



BOTTOM WATERS

Range of Dissolved Oxygen Values: 0.3 to 7.8 mg/l

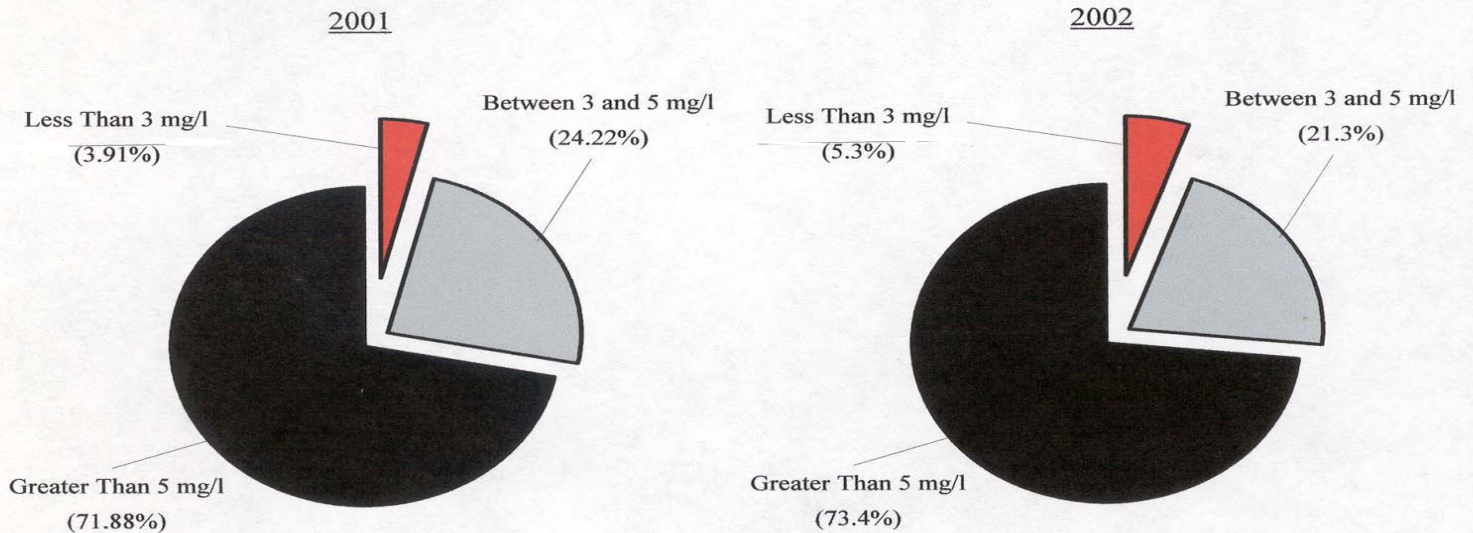


NOTE: Surface and bottom waters are shown as
240 readings, respectively. Twenty-one stations were sampled.

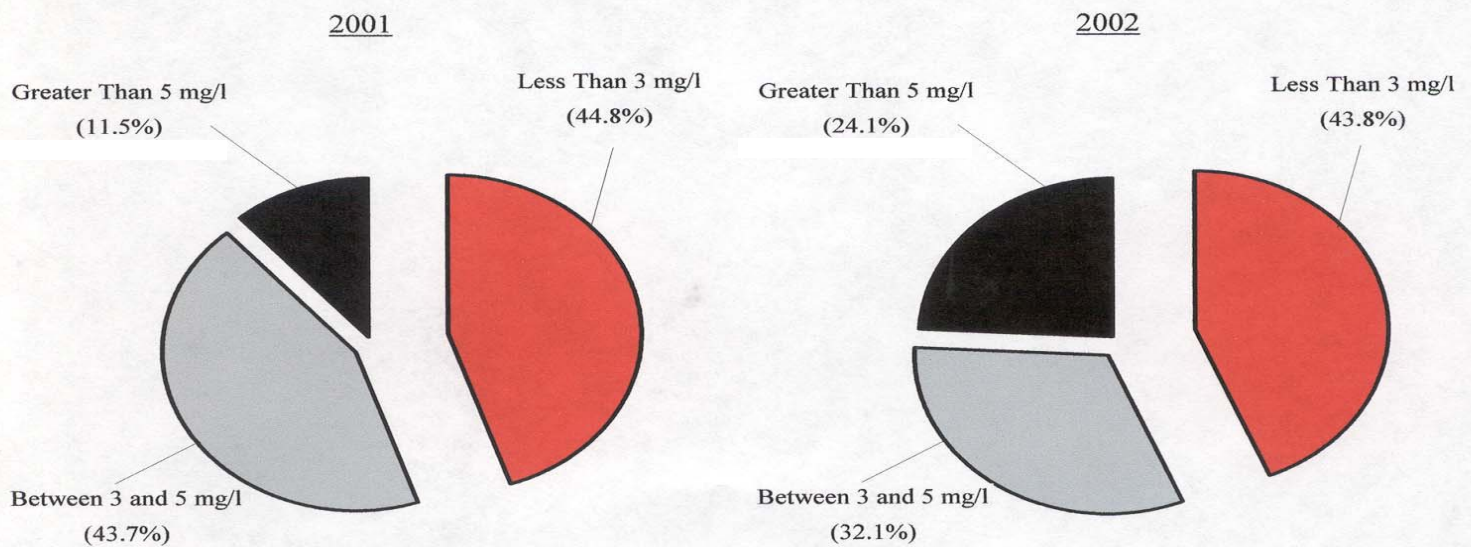
INTERSTATE ENVIRONMENTAL COMMISSION
LONG ISLAND SOUND STUDY

2001-2002 DISSOLVED OXYGEN MONITORING
SURFACE AND BOTTOM WATERS

SURFACE WATERS



BOTTOM WATERS



Note: Twenty-one (21) stations were sampled in both years.

5 mg/l for a “Class A” waterbody.

It is important to know the time period in which hypoxic conditions occur in surface and bottom waters. A display of the variation of the average dissolved oxygen concentration at all stations between weekly sampling dates is shown on the graph entitled “Surface and Bottom Waters: Average and Range of All Stations Sampled”. The averages, maximum and minimum values of surface and bottom waters for each run are displayed and represented separately. The graph indicates that hypoxic conditions were observed in surface waters during the 2002 sampling; this is the second year in a row that these conditions were observed in surface waters. Prior to 2001, the last observation by IEC of hypoxic conditions in the surface waters was in 1997. During 2002, hypoxic conditions were also observed in bottom waters throughout the summer season.

The bottom water dissolved oxygen concentration remained low from July 1st to its lowest value of 0.1 mg/l on August 5th. These values reflect extreme hypoxic conditions. Bottom water DO concentrations gradually rebounded through September. During 2002, depressed conditions were also observed in Little Neck Bay, Manhasset Bay and Hempstead Harbor. No hypoxic conditions were observed in Little Neck Bay prior to July 22nd and after September 3rd. Manhasset Bay experienced its lowest surface dissolved oxygen conditions on August 14th and then slowly recovered. The worst conditions were observed in Hempstead Harbor where the bottom values were below 2 mg/l through August 19th. During August 2002, 14 days (9 in a row) of over 90° F were recorded at Central Park, New York.

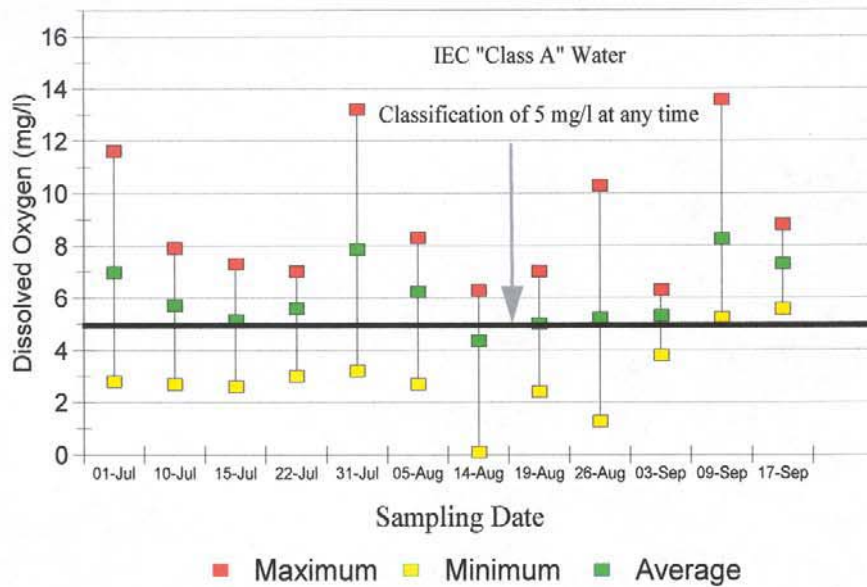
The near absence of lobster in western Long Island Sound continued this year. Lobster has been a major cash crop for this area; prior to 1999, it was the third largest producer behind Maine and Massachusetts. Dead lobsters were reported in traps in late November 1998 and by late August 1999, catches in western Long Island Sound were nearly zero. The 2002 commercial and recreational harvest in the western and central portions of the Sound started to recover, especially compared to 2000 when the dockside landings were almost nonexistent. Although a parameoba may be one cause of lobster mortality, there are other contributing stress factors including, but not limited to, climate, water temperature, hypoxia, predation and commercial fishing impacts. In July 2000, Congress approved an emergency appropriation of \$13.9 million for economic assistance. Of this amount, \$7.3 million was authorized for financial assistance to fishers, and \$6.6 million was authorized for the National Oceanic and Atmospheric Administration, to be administered by the National Marine Fisheries Service, New York and Connecticut Sea Grant. Additional funds were made available, including \$1 million from the Connecticut Bond Commission; New York State Legislature provided funds to establish a Long Island Marine Disease and Pathology Research Consortium; \$250,000 to the Atlantic States Marine Fisheries Commission; \$125,000 EPA Regional Applied Research Effort grant; EPA Coastal 2000 grants of \$300,000 each to New York and Connecticut for chemical, physical and biological monitoring; and \$100,000 to the University of Connecticut from LISS to assess the health of lobsters.

LONG ISLAND SOUND STUDY
2002 DISSOLVED OXYGEN MONITORING

SURFACE AND BOTTOM WATERS:
AVERAGE AND RANGE OF ALL STATIONS SAMPLED

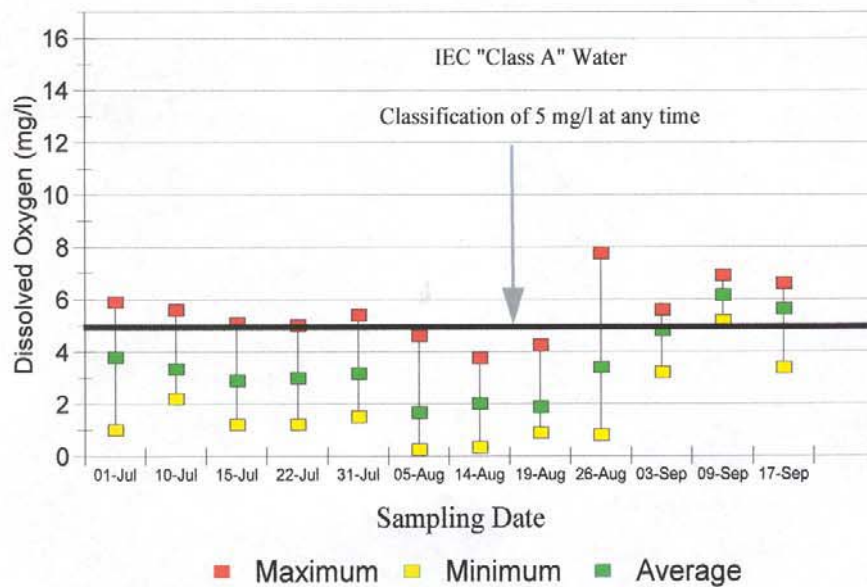
Surface

Interstate Environmental Commission



Bottom

Interstate Environmental Commission



Ambient Water Quality Cooperative Studies

The Commission has a cooperative arrangement with Nassau County Health Department since 1998. The objective is to characterize normal and excessive phytoplankton conditions in three embayments of western Long Island Sound. Excessive phytoplankton caused by nutrient enrichment in Long Island Sound can contribute to the Sound's hypoxic conditions. Due to staff and budget shortfalls, as well as West Nile Virus assessments, all samples since 1998 have been archived, awaiting analysis.

For the fourth consecutive year, during each of IEC's 12 weekly Long Island Sound sampling surveys, additional water quality samples were collected, preserved and kept on ice until delivery by sea to NCHD. The NCHD archived the samples and subsequently carried out phytoplankton species identification — dominant, most prevalent and nuisance species — on a subset of each year's samples. The water quality samples were collected at one established station in each of the three western Long Island Sound embayments: Little Neck Bay, Manhasset Bay and Hempstead Harbor.

Nassau County Health Department supplied bottles with preservative for the samples. Under a recent agreement between CT DEP and US EPA's Long Island Sound Office (LISO), the analysis of the 2002 samples and a subset of the archived samples is being conducted by the University of Connecticut (UCONN). After sample collection each week, the samples were retained at the IEC laboratory. The sample transfer by Chain of Custody procedures to UCONN was completed during September.

Pfiesteria piscicida is a toxic dinoflagellate that has been associated with fish lesions and fish kills in coastal waters from Delaware to North Carolina. Dinoflagellates are a natural part of the marine environment; they are microscopic, free swimming, single-celled organisms, usually classified as a type of alga. The most abundant organisms included in the phytoplankton are diatoms, dinoflagellates and coccolithophores. The vast majority of dinoflagellates are not toxic. Although many dinoflagellates are plant-like, others are more animal-like and acquire some or all of their energy by eating other organisms.

Discovered in 1988 by researchers at the University of North Carolina, *Pfiesteria* has a highly complex life cycle with 24 reported forms, a few of which can produce toxins. During 1998, a new DNA-probe technique for the detection of *Pfiesteria* was performed on water quality samples from coastal waters in a number of Atlantic states; *Pfiesteria* was identified in Suffolk County. Current advice from scientists suggest that conditions in the Metropolitan Area are not favorable to toxic outbreaks in which water temperatures are rarely above 80° F with salinity below 15‰.

The Commission is involved with the NYS DEC, Division of Marine Resources, and area health departments — Nassau, Suffolk, Rockland and Westchester Counties and New York City — to collect samples to verify the presence of *Pfiesteria* in New York marine surface waters, systematically characterize its distribution, and develop a contingency plan for responding to possible toxic *Pfiesteria* outbreaks. During 2001, the presence of *Pfiesteria* was detected once in

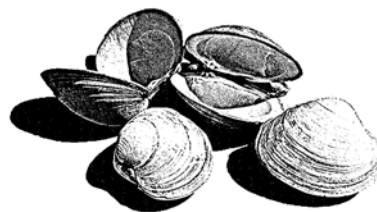
Milton Harbor in Westchester County. It was not determined if the toxic life phase was present.

During the Commission's September 3rd Long Island Sound water quality monitoring survey, additional grab samples were collected for the special DNA-probe analysis. Samples were filtered and archived at room temperature until mailed to the NYS DEC contractor. The funding for this specialized analysis is being provided by US EPA. Additional water quality data — dissolved oxygen, temperature and salinity — were recorded, as well as other general observations at the time of collection.

In conjunction with the UCONN's department of Marine Sciences at Avery Point, Connecticut, the IEC entered into a two-year cooperative water quality collection program. The main objectives include the development of gene probes for specifically identifying and quantifying *Pfiesteria piscicida* and *Pfiesteria shumwayae*. A sampling schedule and protocol of sample collection and preservation was supplied to the Commission. Aboard the R/V Natale Colosi, bi-weekly samples will be collected during the summer and early fall seasons, and bi-monthly samples in late fall and winter. Water quality samples are collected from 2 meters below the surface at two East River stations, A1 and A2M, and kept at 4⁰ C in darkness until transferred to UCONN. All bottles and preservatives are supplied by UCONN. While on station, additional water quality measurements are made including dissolved oxygen, salinity and temperature, as well as observations of ambient weather and sea conditions. Samples have been collected and shipped overnight for the period September through November 2002.

2001-2002 Microbiological Surveys in the Shellfish Harvesting Waters of Western Raritan Bay

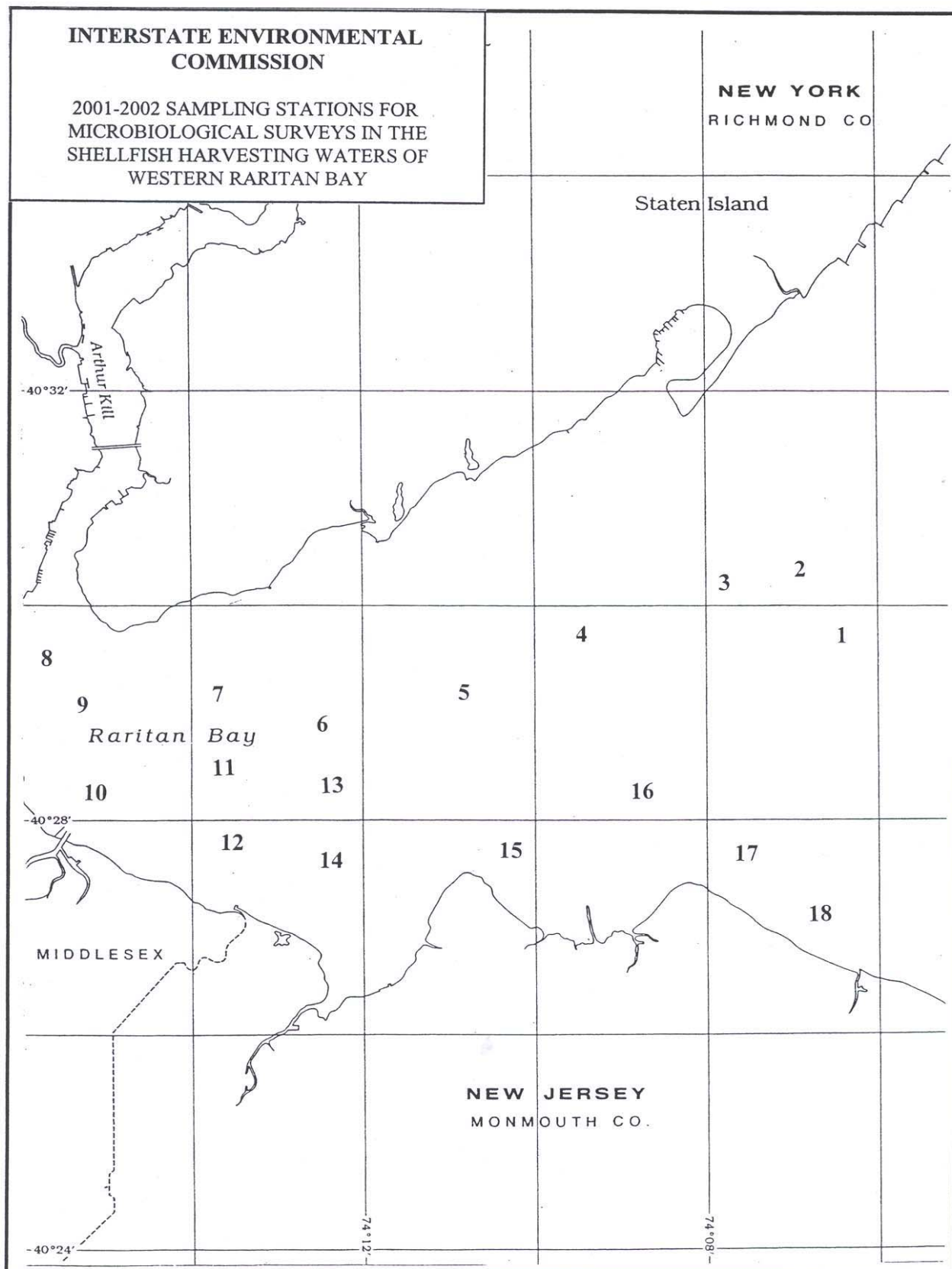
The New Jersey Department of Environmental Protection, Bureau of Marine Water Classification and Analysis (BMWCA), regularly conducts ambient water quality monitoring of the State's shellfish harvesting beds. In order to meet the increasing demands for sampling that the shellfish industry has requested, accompanied by a shortfall in staffing, the BMWCA requested the IEC, for the seventh consecutive year, to assist in sample collection in western Raritan Bay during the 2001-2002 winter and spring seasons.



Following the criteria established by the US Food and Drug Administration's National Shellfish Sanitation Program, sampling runs were planned for the purpose of collecting the data needed to assess the microbiological quality of the shellfish waters. The surveys were triggered by storm events with an intensity of at least 0.2 inch of rain. A window of 48 hours subsequent to the rain gave ample time to document the effects of the runoff. All samples were collected from surface waters at 18 sampling stations. A map and a listing of the sampling stations are on the following pages. In conjunction with the New Jersey Department of Environmental Protection/US EPA Performance Partnership Agreement, all samples were transported by IEC field personnel to the US EPA's Edison, New Jersey, laboratory for analysis of fecal and total coliform bacteria.

**INTERSTATE ENVIRONMENTAL
COMMISSION**

2001-2002 SAMPLING STATIONS FOR
MICROBIOLOGICAL SURVEYS IN THE
SHELLFISH HARVESTING WATERS OF
WESTERN RARITAN BAY



INTERSTATE ENVIRONMENTAL COMMISSION

2001-2002 SAMPLING STATION LOCATIONS

FOR MICROBIOLOGICAL SURVEYS

IN THE SHELLFISH HARVESTING WATERS OF WESTERN RARITAN BAY

SAMPLE No./ IEC WP	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1/67	50	40-28-40	74-06-42	~0.7 nm south of Can "9"
2/68	10	40-29-23	74-06-58	~0.5 nm west of Can "9"
3/69	29A	40-28-58	74-08-09	~0.5 nm west of Buoy "I"
4/70	28	40-28-45	74-09-23	~1.8 nm north of Union Beach
5/71	26A	40-28-30	74-10-38	~1.1 nm north of Conaskonk Point
6/72	24A	40-28-20	74-11-50	~1.25 nm north of Buoy "7"
7/73	18	40-28-33	74-13-26	~1.0 nm east of Ward Point Daymarker
8/74	20A	40-28-53	74-14-53	~0.4 nm south of Ward Point Daymarker
9/75	20	40-28-20	74-14-45	Cheesequake Creek
10/76	21	40-27-54	74-14-38	Cheesequake Creek
11/77	23	40-28-02	74-13-18	Seidler Beach
12/78	58	40-27-35	74-13-09	Seidler Beach
13/79	56	40-27-56	74-11-41	Keyport Harbor
14/27	61A	40-27-23	74-11-33	Keyport Harbor
15/28	62	40-27-35	74-10-23	Conaskonk Point
16/29	63B	40-27-46	74-09-05	Keansburg
17/30	86A	40-27-28	74-07-42	Point Comfort
18/31	88A	40-27-10	74-06-15	Ideal Beach

During early November 2001, the R/V Natale Colosi was moved to and berthed at the Leonardo State Marina which is operated by the NJ DEP. From December 7, 2001 until April 1, 2002, all five requested survey runs were completed. All sample collection, storage and delivery to the US EPA Edison laboratory adhered to chain of custody procedures and followed standard operating methods as outlined in the NJ DEP Field Sampling Procedures Manual. The Commission, at the request of BMWCA, will again conduct this survey over the 2002-2003 winter and spring seasons.

At a press conference held at the Leonardo State Marina in October, 2001, NJ DEP announced the opening of additional acreage for shellfish harvest subsequent to public comment. The areas to be upgraded include 5,425 acres from prohibited to special restricted in Raritan Bay including 4,441 acres in the Flynn's Knoll section off Sandy Hook and 984 acres near Union Beach. The special restricted classification denotes shellfish harvest with depuration. These areas are the waters that the IEC has been monitoring for the past years.

Great Kills Park Multi-Agency Microbiological Work Group

Great Kills Park, part of the Gateway National Recreation Area, is located on the eastern shore of Staten Island, New York, on Raritan Bay. The 1,455-acre park is maintained under the auspices of the National Park Service (NPS). In late August 1998, the NPS measured high levels of coliform bacteria and through Labor Day, closed the bathing beach for a total of 12 days. Geographically impacting a host of governmental jurisdictions, the pathogen track down necessitated the formation of the Great Kills Park Multi-Agency Microbiological Work Group. The Work Group includes IEC, NYS DEC - Region 2, NYC DEP, NYC DOH, NPS, and the College of Staten Island (CSI).

While the group tried to determine the source of the contamination over the course of three years, the Great Kills Beach was closed to bathing for a total of 26 days. During this time, the parties performed extensive monitoring including full tidal cycle and reactive sampling, gradient dye studies, avian population observations, field surveys to locate evidence of illegal dumping and/or outfalls, as well as sampling before and after the bathing season. In addition, a small tributary, Fox Creek, which discharges north of the beach into Raritan Bay was monitored in 2000.

Prior to the 2001 bathing season, a contingency plan was established including pre-bathing season monitoring by NYC DOH, reactive monitoring to elevated coliform density triggers as determined by NPS, lab support by IEC, and IEC doing coordination and weekly dissemination of NYC DOH and NPS beach water quality data, as well as oversight for the Work Group. In May 2001, a dry weather overflow was discovered by NPS. Further investigations by NYC DEP and NYS DEC determined that a cross connection existed between a sanitary and storm sewer in the vicinity of Hylan Boulevard and Ainsworth Avenue. The storm sewer flows into an unnamed creek that flows to Great Kills Harbor and Fox Creek. The situation was corrected in September 2001. The summer beach season officially closed on September 3, 2001, without any beach closure days. Although a source of contamination was discovered, the Work Group agreed to keep the contingency

plan in force during 2002.

Neither year, 2001 or 2002, had elevated numbers of fecal or total coliform; therefore no additional monitoring was needed. Prior to the 2003 bathing season, the group will discuss the necessity of implementing the contingency plan for the upcoming season. This project can be used as a model of multi-agency — federal, state, interstate, city and academia — cooperation bringing together various disciplines for a common purpose.

2002 Ambient Water Quality Monitoring for Pathogens in the New York-New Jersey Harbor Complex

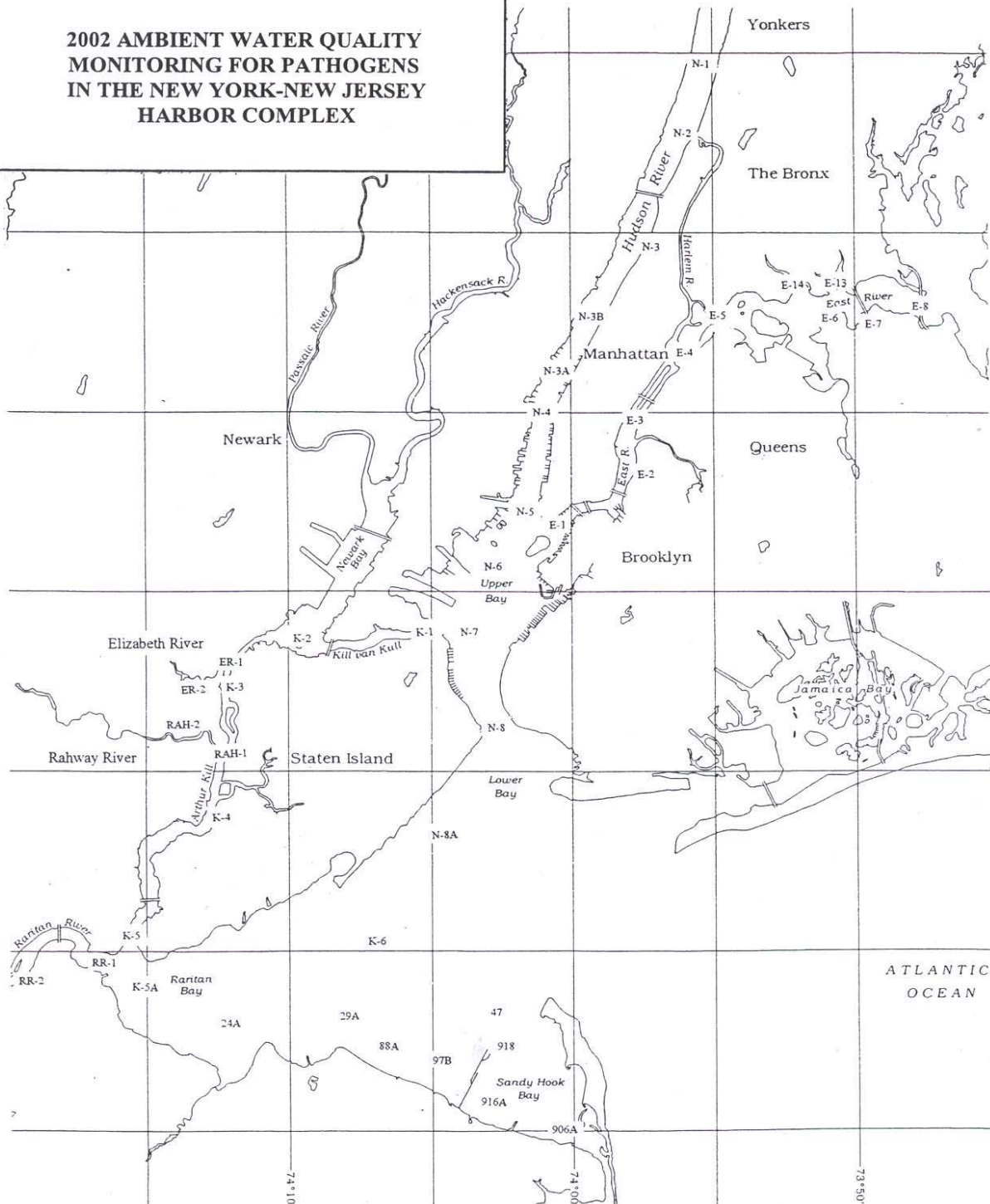
This sampling was conducted at the request of the US Environmental Protection Agency (EPA), Region 2, under the auspices of the Harbor Estuary Program's (HEP) Pathogens Work Group. The pathogens of concern are fecal and total coliform and enterococcus. This sampling was performed as a continuation of the 2001 ambient water quality monitoring program. The results were supplied and presented to contract modelers and the members of the Pathogens Work Group for refinement of the water quality model for pathogens predictions and subsequently for the development of total maximum daily loads (TMDLs). The data will be used to further calibrate and verify the model.

The map on the following page shows the sampling network, consisting of 42 stations throughout the New York-New Jersey Harbor Complex. In order to comply with required holding times for pathogen collection and initial laboratory inoculation, the Complex has been divided into four geographical collection areas: East River, Hudson River and Upper New York Harbor, Arthur Kill/Kill Van Kull and tributaries (Elizabeth River, Rahway River and Raritan River), and Raritan and Sandy Hook Bays. The four accompanying tables detail the station locations and descriptions. The station locations were supplied to the Commission by NYC DEP and NJ DEP's Bureau of Marine Water Classification and Analysis (BMWCA). The sampling stations are those recommended by the HEP modeling contractor. There is an historic data base at these established stations. To better represent the interstate characteristics of the waterways, a subset of the NYC DEP Harbor Survey stations have been moved to mid-river.

Samples for fecal and total coliforms, fecal streptococcus and enterococcus were taken at all stations. In addition, temperature and salinity measurements were made in situ. IEC contracted two boats to conduct simultaneous sampling two days per week; IEC field personnel conducted all sample collection and performed all in situ measurements aboard the contract vessels. This year, the sampling regime consisted of a sampling event where each area was sampled once per week using two boats over a two-day period. In total, there were 10 weeks of sampling at each of the 4 areas for a total of 40 sampling runs. The sampling was conducted from February to August 2002. As recommended by the HEP modeling contractor, the water samples were collected from a depth of three feet, or one meter, below the surface of the water. This sample depth is comparable with previously collected data.

**INTERSTATE ENVIRONMENTAL
COMMISSION**

**2002 AMBIENT WATER QUALITY
MONITORING FOR PATHOGENS
IN THE NEW YORK-NEW JERSEY
HARBOR COMPLEX**



INTERSTATE ENVIRONMENTAL COMMISSION

2002 SAMPLING STATION LOCATIONS

AMBIENT WATER QUALITY MONITORING FOR PATHOGENS

IN THE

NEW YORK-NEW JERSEY HARBOR COMPLEX

EAST RIVER

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	E-1	40-42-01	74-00-11	PIER 10: Mid river on a line between Pier 10, Manhattan and Pier 3, Brooklyn
2	E-2	40-44-03	73-58-04	EAST 23 RD STREET: Mid river off E. 23 rd Street, Manhattan
3	E-3	40-44-51	73-57-58	EAST 42 ND STREET: Mid river off E. 42 rd Street, Manhattan
4	E-4	40-46-57	73-55-19	HELL GATE: Mid river under Conrail Railroad Bridge
5	E-5	40-48-03	73-51-10	BARRETTO POINT: Mid river on a line between Barretto Point to the dock on Rikers Island
6	E-6	40-47-08	73-51-39	FLUSHING BAY: Mid river west of the College Point ferry slip
7	E-14	40-48-03	73-51-52	BRONX RIVER: Main channel near buoy "N2"
8	E-13	40-48-22	73-50-28	Westchester Creek: Main channel near buoy "N2"
9	E-7	40-48-18	73-49-14	WHITESTONE: Mid river on a line from Whitestone Point and the Bronx shore
10	E-8	40-47-58	73-47-13	THROGS NECK: Midway between the two forts

INTERSTATE ENVIRONMENTAL COMMISSION

2002 SAMPLING STATION LOCATIONS
AMBIENT WATER QUALITY MONITORING FOR PATHOGENS
IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX

RARITAN BAY

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	N-8A	40-35-06	74-03-18	South Beach: ~1200 yards offshore
2	K-6	40-30-37	74-06-03	~200 yards from Old Orchard Light in line with Old Orchard shoal
3	24A	40-28-20	74-11-52	Keyport Harbor
4	29A	40-28-58	74-08-11	~1.2nm n of Point Comfort
5	97B	40-26-53	74-04-51	~0.9 nm N of Port Monmouth
6	88A	40-27-10	74-06-17	Ideal Beach
7	47	40-29-05	74-04-31	~2.7 nm NW of Sandy Hook Point
8	918	40-27-41	74-02-38	~0.6nm NNE EARLE NWS (east pier head)
9	906A	40-25-15	74-00-18	~0.8 nm E of Atlantic Highlands Day marker
10	916A	40-25-49	74-03-21	Leonardo State Marina breakwater

INTERSTATE ENVIRONMENTAL COMMISSION

2002 SAMPLING STATION LOCATIONS AMBIENT WATER QUALITY MONITORING FOR PATHOGENS IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX

HUDSON RIVER

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	N-1	40-54-52	73-54-58	MT. ST VINCENT: Mid river on a line from New York shore at Mt. St. Vincent Academy to the New Jersey shore.
2	N-2	40-52-46	73-55-49	SPUYTEN DUYVIL: Mid river on a line from the center pier of the Conrail Bridge over Spuyten Duyvil Creek to the New Jersey shore.
3	N-3	40-50-11	73-57-31	155 th STREET: Mid river on a line from the Manhattan shore at West 155 th Street to the New Jersey shore.
4	N-3B	40-49-15	73-58-17	125 th STREET: Mid river on a line from the Manhattan shore at West 125 th Street to the New Jersey shore.
5	N-3A	40-47-00	73-59-40	72 nd STREET: Mid river on a line from the Manhattan shore at West 72 nd Street to the New Jersey shore.
6	N-4	40-45-22	74-00-30	42 nd STREET: Mid river on a line from the Manhattan shore at West 42 nd Street to the New Jersey shore.
7	N-5	40-42-16	74-01-36	PEIR A-THE BATTERY: Mid river on a line from the Manhattan shore to the Conrail Terminal on the New Jersey shore.
8	N-6	40-39-54	74-03-10	BELL BUOY "1G"- Gong buoy "27"
9	N-7	40-38-38	74-03-14	ROBBINS REEF: Channel buoy "24"; ~1900 yards SE of Robbins Reef
10	N-8	40-36-22	74-02-44	VERRAZANO NARROWS: Midspan under the Verrazano Narrows Bridge

INTERSTATE ENVIRONMENTAL COMMISSION

2002 SAMPLING STATION LOCATIONS
AMBIENT WATER QUALITY MONITORING FOR PATHOGENS
IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX

THE KILLS

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	K-5A	40-29-04	74-14-45	RARITAN RIVER: Fl Buoy "5"; ~800 yards NE of Middlesex County outfall.
2	RR-1	40-29-30	74-16-00	Mouth of the Raritan River.
3	RR-2	40-29-30	74-16-30	~1.0 nm upstream from mouth of Raritan River.
4	K-5	40-30-22	74-15-32	TOTTENVILLE: Midstream at the former Tottenville ferry slip at Perth Amboy.
5	RAH-1	40-35-36	74-12-30	Mouth of the Rahway River.
6	RAH-2	40-36-19	74-13-09	~1.0 nm upstream from mouth of the Rahway River.
7	K-4	40-34-01	74-12-42	FRESH KILLS: Midstream at the US Metals Refining dock in New Jersey to the middle of the southerly mouth of Fresh Kills.
8	K-3	40-38-15	74-11-45	B&O RAILROAD BRIDGE: Midstream under the B&O Railroad Bridge.
9	ER-1	40-38-36	74-11-30	Mouth of the Elizabeth River.
10	ER-2	40-38-36	74-12-03	~1.0 nm upstream from mouth of the Elizabeth River.
11	K-2	40-38-26	74-09-30	SHOOTERS ISLAND: Midstream at the former ferry slip pilings on Shooters Island to the Staten Island shore.
12	K-1	40-39-04	74-04-55	B&O COAL DOCK: Midstream at the former B&O coal dock pilings, New Brighton to the New Jersey shore.

All samples were collected by IEC personnel and were preserved on ice and delivered to the IEC laboratory where the bacteriological analyses were conducted. Fecal and total coliform, as well as enterococcus analyses were performed according to the multiple tube fermentation technique to yield results in terms of the Most Probable Number (MPN). In order to attain the range of values requested by the HEP modeling contractor, analyses were performed using a 3-tube, 4-dilution test, which yielded the range of values required (MPN values from <3 to >24,000). After data was reviewed from the 2001 boat runs, the range of values was changed at the request of the HEP Pathogens Work Group from the previous year's range (MPN values from <30 to >240,000) to better gauge compliance with the new enterococcus bathing beach standard of 35 MPN/100 ml.

To further characterize the enterococcus values, this parameter was also measured by IEC at discharges from municipal treatment facilities as part of the Commission's ongoing municipal treatment plant sampling program. For the period January through the beginning of November 2002, 33 analyses were performed on municipal discharges located throughout the District in all three member states.

The data is available from the Commission office and it is also being formatted for inclusion in STORET, US EPA's National data base.

Due to the drought-like conditions of the past two years, the majority of the data has been collected under dry weather conditions. At the request of the HEP Pathogens Work Group and the modeler, IEC has already begun a third year of pathogen collection. The ambient water quality monitoring will be wet weather reactive — that is, all sampling will be conducted within 48-hours of a wet weather event of at least 0.25 inches.

National Water Monitoring Day

Thirty years ago the nation's waters were in terrible shape. There has been great progress since then. October 18, 2002, was the 30th anniversary of the Clean Water Act. This date marks a milestone in the efforts to protect the nation's water resources. In support of this occasion, Congress, along with a number of United States governors and national organizations have proclaimed 2002 as the Year of Clean Water. National and watershed specific events were held in order to promote public involvement, provide education and outreach, support technical exchange and document the status of water quality since 1972.

National Water Monitoring Day was held on October 18th as a nationwide event created to mark the CWA anniversary. The effort was coordinated by America's Clean Water Foundation, in cooperation with several other environmental groups and governmental agencies throughout the United States. The main purpose of the event was to take a snapshot view of streams, lakes and coastal waters by inviting citizen monitors, established volunteer monitoring organizations and federal, state, interstate, Tribal and local monitoring program staff to evaluate conditions within their local watersheds. Data was entered by participants into a national data bank.

The IEC joined thousands of volunteers to sample the water quality and report their results. While comprehensive monitoring goes on throughout the year for a number of reasons, i.e., assessing bathing beach quality or the sanitary condition of shellfish beds, never before has such an event been scheduled to occur on one day across the United States. The IEC conducted in situ testing of water quality parameters at nine sites in the upper East River and western Long Island Sound, covering a distance of about 29 nautical miles aboard the R/V Natale Colosi. The ambient water quality stations represent a subset of the LISS sampling network (see the 2002 LISS Sampling Stations for specific locations). In addition to meteorological and tidal conditions, parameters collected include dissolved oxygen, salinity, temperature, and water clarity. All IEC data has been submitted to the Year of Clean Water website, www.yearofcleanwater.org.



IEC RESEARCH VESSEL
R/V NATALE COLOSI

Pathogen Track Down on the Byram River

The Byram River is an interstate waterway about 13 miles long and runs between New York and Connecticut, with Port Chester on the New York side and Greenwich on the Connecticut side where the river empties into the harbor and then to Long Island Sound. While a bacterial contamination problem in the Byram River has existed for some time, there's renewed interest because there are shellfish beds that are used for recreational purposes in Greenwich Harbor that are closed, especially after rainfall. Elevated levels of coliform bacteria prevents the safe use of the river and harbor for primary recreational activities, i.e., bathing, fishing and shellfishing. The areas around this portion of the river are highly developed with numerous potential industrial and residential sources of bacteria. Because it is an interstate waterway, the Commission was requested to coordinate and address over sight for a multi-agency track down investigation.

Besides IEC, those involved in the project are CT DEP, NYS DEC, Westchester County, Greenwich and Port Chester. Initial meetings have been held and the investigation has begun by examining potential sources by reviewing NPDES permits, shoreline surveys, consent orders and pump-out facilities. The Commission participated in an inspection of outfalls discharging into the river aboard a Greenwich Health Department boat. IEC has also begun investigating potential sources by land-based inspections.

After this initial round of inspections are completed, IEC will coordinate the development of a monitoring plan to determine the source(s) of pathogenic contamination.

World Trade Center: Ground Zero Inspections

In response to the aftermath of September 11, 2001, the IEC staff began weekly inspections of the World Trade Center site (which became known as Ground Zero), the surrounding neighborhood and adjacent waterways in order to assess receiving water impacts. With the amount of recovery and clean up work being performed, truck washing before leaving the site, and the

transfer of materials to barges for disposal, there was a potential for runoff into the surrounding waters. For the 6-month period from January through June 2002, which marked the end of the recovery effort, IEC performed 25 inspections.

In order to minimize dust in the area all vehicles were required to be sprayed down before leaving the site. There were three wash down facilities at the site, all of which were granted permits by NYC DEP. The water then flowed via gravity to the sewer system. During dry weather this wash down flows to the Newtown Creek WPCP via the 13th Street Pump Station. The Newtown Creek WPCP performed analyses on this influent flow and found no additional contaminants in the effluent discharge or sludge. As an additional precaution, the Newtown Creek sludge remained separate from other plants' sludge and was processed for disposal separately and then landfilled. Normally sludges from all plants are combined, treated and deemed for reuse and shipped to various endpoints. The practice of separating and landfilling the Newtown Creek Sludge was continued until the recovery operation was completed in June.

In addition to general observations of activities during all weekly inspections, the three CSO outfalls in the immediate area were inspected. They are located at the end of Vesey Street (north boundary of the site), Albany Street (two blocks south of the site) and Rector Street (three blocks south of the site). No dry weather discharges or abnormalities were witnessed from these outfalls during the inspections. Since this area is serviced by combined sewers, these outfalls should only discharge during wet weather events. Impacts were minimized during this inspection period due to drought conditions.

A few blocks north of the site at the foot of Harrison Street and the Hudson River, a temporary barge loading facility was accepting materials for shipment to the Fresh Kills Landfill. The debris was removed from the site on trucks with 20-cubic yard dumpsters. At the barge loading facility, the trucks were then backed onto a "scoop". This "scoop" was made out of steel and had a bottom and three walls that easily held the contents a dumpster. The truck then emptied its contents into the scoop and pulled away. The scoop then was lifted by cables (the open side first, so as to keep the debris inside the walls) from a crane and emptied out onto a barge. The barges were then transferred debris to Fresh Kills Landfill. During the inspections, the tipping operations were witnessed numerous times without any debris entering into the river.

Harbor-wide Water Quality Monitoring Activities in the New York-New Jersey Harbor Complex

As part of and in cooperation with the NY-NJ HEP, the Interstate Environmental Commission is chairing a work group to develop a harbor-wide water quality monitoring survey to be fashioned after the NYC DEP Harbor Survey. This conceptual monitoring survey would address the entire New York-New Jersey Harbor Complex which includes state and interstate waters, as well as tributaries. The work group includes IEC, US EPA - Region 2, NYS DEC, NJ DEP, NYC DEP, and PVSC. All of the aforementioned agencies have existing water quality monitoring programs within the HEP core study area. The conceptual plan is to be consistent with the existing New York City Harbor Survey so as to allow for a harbor-wide assessment of water quality.

IEC hosted two meetings for this project. The table on the following page identifies the existing harbor-wide water quality monitoring programs. It gives a quick overview on what, when, who, and where monitoring is taking place. The work group is looking at all aspects of the current and future sampling data collection programs, including the parameters of concern, waterways, monitoring scenarios, methodologies, laboratory capabilities and capacities, QA/QC and final products. This work group is seeking input from all of the HEP work groups to identify needs.

The final products of the sampling efforts will be to create a comprehensive report fashioned after the NYC DEP Harbor Survey document which would, at the very least, discuss results, status and trends, and immediate environmental conditions. Based upon the vast amount of resources necessary to monitor the entire NY-NJ Harbor Complex, a cooperative effort amongst the agencies is necessary. Funding sources have yet to be identified.

2002 BOAT INSPECTION TRIP

The Commission's 2002 boat inspection trip focused on the upper East River and Long Island Sound. The annual inspection trip provides an excellent opportunity for public officials and other parties interested in protecting the environment to view and discuss water quality issues affecting the Region. To commemorate the 30th anniversary of the Clean Water Act, the trip was dedicated to the Year of Clean Water.

The 2002 Boat Inspection Trip was held on August 7th and covered the upper East River and western Long Island Sound. On the southern side of the Sound, the trip included Little Neck Bay, Manhasset Bay, Hempstead Harbor, Oyster Bay and Huntington Harbor. Crossing the Sound to its northern shoreline, the trip covered Norwalk, Stamford and Greenwich, Connecticut, and New York's shorelines of Westchester and Bronx Counties. The following map shows the six-hour route which was traversed, covering over 70 nautical miles. The waters inspected during the trip provide for recreational powerboating and sailing; the use of canoes, kayaks and sculls; and a major sea-lane for the eastern seaboard. Other primary contact activities supported by these waters include commercial and recreational fishing, shellfishing, crabbing and lobstering; scuba diving; swimming; jet skiing; parasailing; waterskiing; and windsurfing.

IEC Commissioners, officials from all levels of government, and citizen groups viewed bathing beaches and seaside parks, commercial oyster operations, numerous party boats and small recreational vessels, sailing clubs comprised of dozens of vessels, tug and barge transports, urban and maritime industries, historical landmarks and shipwreck sites. The lobster die-off that began in the fall of 1999 and literally devastated the 2000 and 2001 harvest seasons in western Long Island Sound was still evident by the absence of lobster pot markers and lobster boats. A running dialogue of water quality issues, sights and points of interest, recommended fishing and scuba diving sites, as well as local lore dealing with lighthouses, embattlements and shipwrecks were provided throughout the trip.

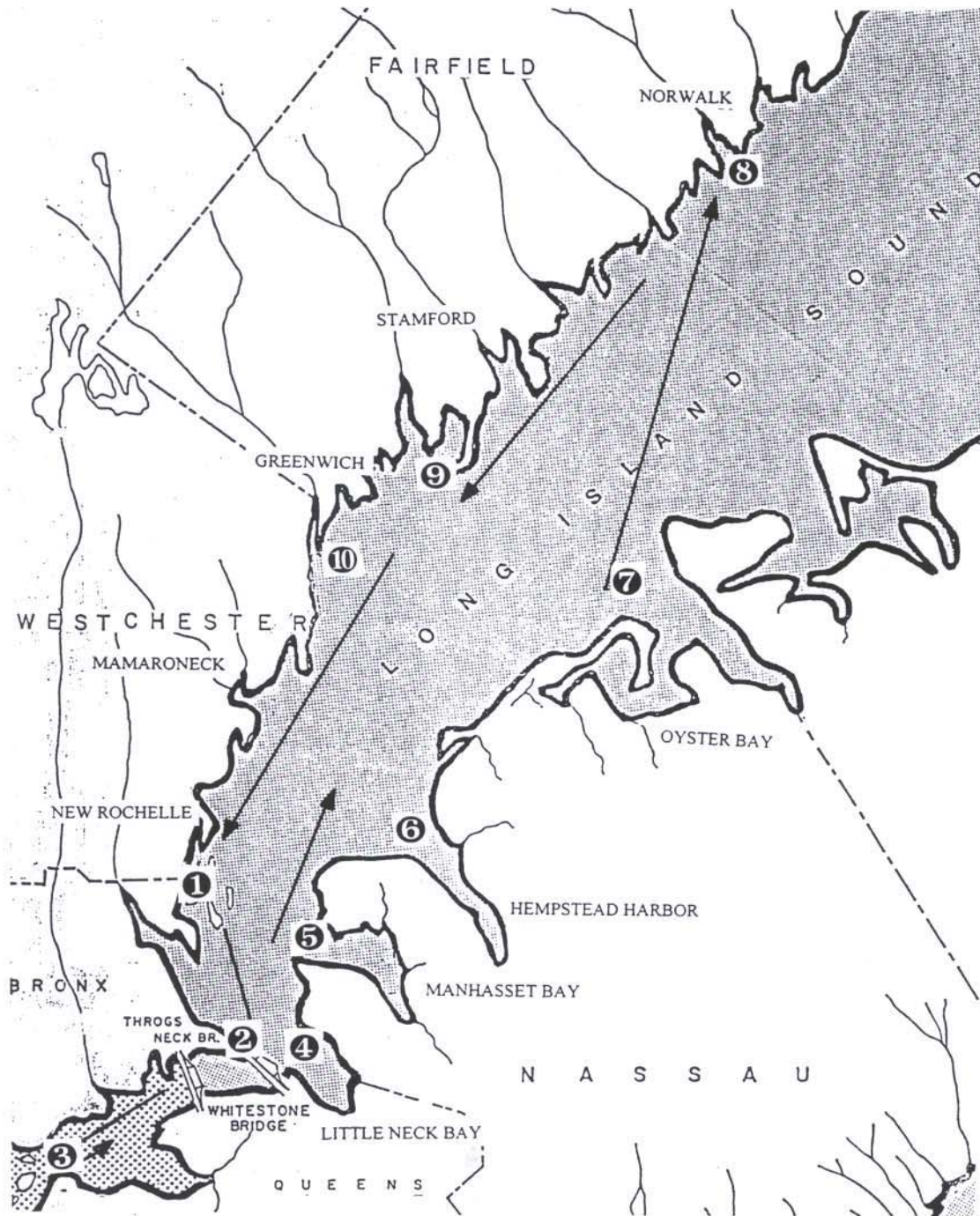
The attendees viewed ongoing waterfront development, sewage treatment plants, sludge dewatering facilities, prison facilities, electrical/steam generating stations, closed landfills (one of

EXISTING NY-NJ HARBOR WIDE WATER QUALITY MONITORING PROGRAMS

Agency	Program	Year Initiated	Waterways	Frequency	# of Stations	Type	Parameters
IEC	Pathogen	2001	East River Hudson River Arthur Kill/Kill van Kull Raritan/Sandy Hook Bays Elizabeth-Rahway-Raritan Rivers	2x / week August thru November	42	S	Temp, salinity Fecal/Total Coliform Fecal Streptococcus Enterococcus
	Great Kills Park	1999	Raritan Bay & Fox Creek	Reactive- BATHING SEASON	15	S	Fecal/Total Coliform Fecal Streptococcus Enterococcus
	Shellfish	1995	NJ waters of Raritan Bay	Reactive- WINTER SPRING	18	S	Temperature Fecal/Total Coliform
NJ DEP	Long Island Sound Study	1991	East River	July-Sept	2	5 depths	Temp, salinity, DO, Ch a
	Shellfish		Raritan/Sandy Hook Bays Navesink River Shrewsbury River	Reactive- Seasonal	Varies	S	Temperature Fecal/Total Coliform Dissolved Oxygen Nutrients Biotoxins
	Cooperative Coastal Monitoring Program	1985	Raritan/Sandy Hook Bays	Weekly		S	Pathogens
NYC DEP	Overflights	1988	HEP Core				Observations only
	Harborwide Survey	1909	All NYC Waterways and tributaries	Weekly- Year-round	52	S B	Conventional Metals Nutrients Pathogens Toxics
	Shellfish	1987	Raritan Bay	April-Nov	22, 5x /year	S	T/F Coli, Temp
PVSC	WQ Sampling	2001	Hackensack River Newark Bay Passaic River	Bi-weekly	16	S B	Conventional Fecal Coliform Nutrients
	Beach	1974	New York Bight	Weekly Weekly Semi-monthly	HEP Core 2 HEP Core 3	S	Pathogens Chlorophyll a & Phytoplankton
	Floatable Overflights	1989	NY-NJ Harbor Complex	6days/week			Observations only

PREPARED BY INTERSTATE ENVIRONMENTAL COMMISSION

S surface B bottom



INTERSTATE ENVIRONMENTAL
COMMISSION
2002 BOAT INSPECTION TRIP

which is being converted to a public golf course), and CSO outfalls in the upper East River.

Attendees enjoyed skyline views; the magnificent homes of Fairfield County; and fragile bird sanctuaries on North and South Brother Islands in the East River, on Huckleberry Island off the Westchester County shore, and on Tavern Island in Sheffield Island Harbor. The inspection trip gave the attendees a firsthand view of the progress that has been made and some of the problems that must still be addressed in the Region.

REGIONAL BYPASS WORK GROUP

The Regional Bypass Work Group was formed in 1997 to address the issue of unplanned bypasses of raw and partially treated sewage, i.e., treatment plant upsets, broken pipes due to age, or construction mishaps. The RBWG has members from the three states' environmental and health departments, IEC, US EPA, US FDA, NYC DEP, US Coast Guard, National Park Service and county health officials. The Work Group has been using the Regional Bypass model to predict which areas may be affected by a particular bypass. Specifically, the quick predictions can determine whether a discharge occurring at a certain point will affect another area, and if there should be concern as to whether a beach or a shellfish area should be closed. In addition, regional notification protocols were put in place and updated annually.

For the first four full calendar years that the model and notification protocols have been in place, 1998 through 2001, the Commission received 94, 97, 99 and 115 e-mail messages, respectively, with regards to unplanned spills within the Interstate Environmental District. Originally, the focus of identifying bypass events was raw sewage; the focus has expanded to address any type of spill, i.e., chemical, fuel, sludge and treatment reductions. The 84 bypass events reported for the period January to December 1, 2002, are as follows:

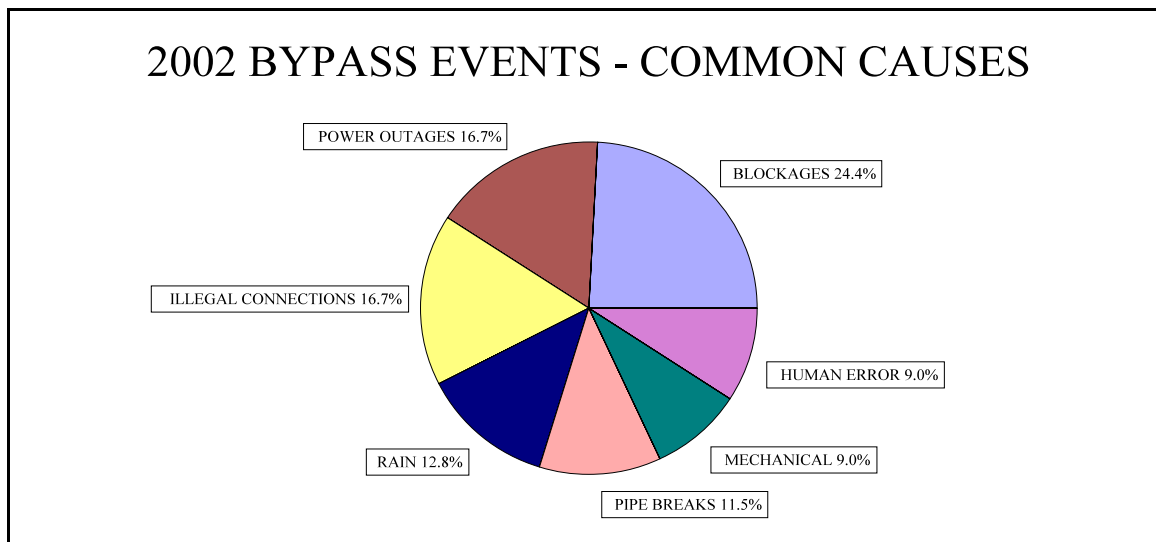
	Total Events in 2001	% of Total	Total Events in 2002	% of Total
Connecticut	10	8.7%	8	9.5%
New Jersey	7	6.1%	2	2.4%
New York	98	85.2%	74	88.1%

The 2001 totals are included for a basis of comparison, as well as to report all bypass events for the past full calendar year.

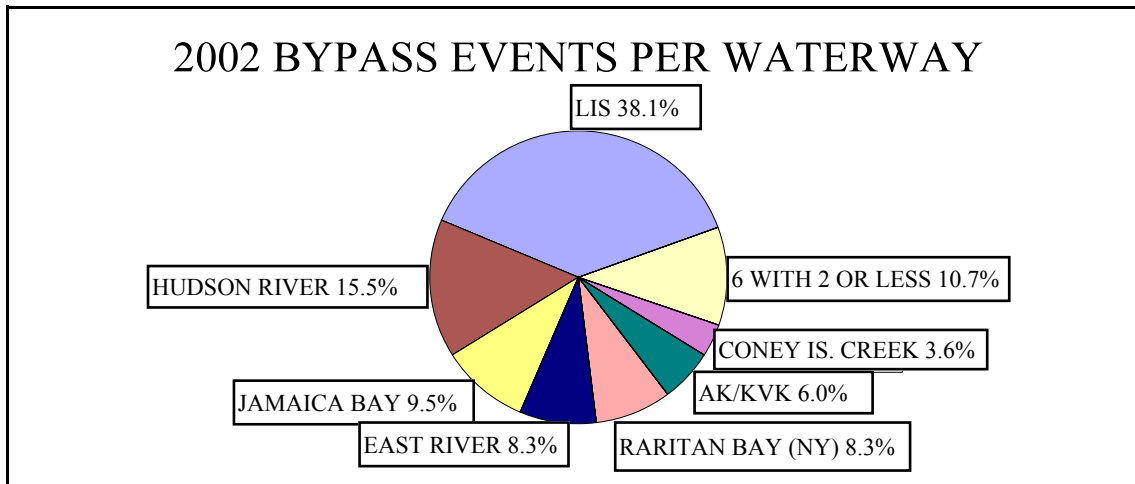
Although the majority of the bypass events occur in NYS DEC - Region 2, which encompasses the five New York City boroughs, it should be noted that the majority of the treatment facilities, pump stations, regulators and gravity sewers and force mains that exist in this region are in New York City. A more detailed breakdown of the bypass events in New York were:

	Total NY Events in 2001	Total NY Events in 2002
Region 1 (Nassau/Suffolk)	4	1
Region 2 (5 NYC Boroughs)	67	58
Private Plants (Richmond)	5	0
Region 3 (Westchester/Rockland)	22	15
(Region 3 also includes the counties of Putnam, Dutchess, Orange, Ulster and Sullivan)		

During the reporting period, all bypass event details were disseminated in a timely fashion either by e-mail only. For the most part, any missing data from the event was reported subsequent to repairs. Minor events or ongoing investigations of illegal discharges were reported by mail. Volumes bypassed ranged from as little as 400 gallons of sewage lasting minutes to 24 MG lasting days. During 2002, the common causes for bypass events were pipe breaks and regulator blockages (28), power outages (13), mechanical failures at pump stations(7), human error (7) and disinfection and other treatment unit failures (4); this breakdown is displayed on the pie chart below. Intensive, localized storm events caused 10 bypasses and subsequently required local health officials to close Long Island Sound bathing beaches in Westchester County for a total of 14 days. The 84 bypass events were comprised of raw sewage (56), illegal connections (13), treatment reduction (8), sludge (5), chemical (1), and raw with disinfection (1).



Most significantly, during the period May 26 through September 3, 2001, which represents the “official” bathing season (Memorial Day to Labor Day) 32 releases or 41% of the total occurred. Compared to the bathing seasons for the prior two years, 37 events or 42% of the total occurred in 2000, and 30 events or 29% of the total in occurred in 2001. During 2002, the waterways impacted by bypass events are shown below:



CLEAN WATER ACT SECTION 305(b) WATER QUALITY ASSESSMENT

Under Section 305(b) of the federal Clean Water Act, States, Territories, the District of Columbia, Interstate Water Commissions, and participating American Indian Tribes assess and report on the quality of their waters. The results of a 305(b) assessment are not raw data, but rather statements of the degree to which each waterbody supports the uses designated by water quality standards. The IEC has made submissions since the inception of this reporting format which began in 1984. Each State and Tribe aggregates these assessments and extensive programmatic information in a 305(b) report which is a comprehensive document, usually involving information from multiple agencies. US EPA then uses these individual 305(b) reports to prepare a biennial National Water Quality Inventory Report to Congress.

The goals for 305(b) reporting include comprehensive coverage characterizing all waters in the Interstate Environmental District which adds to the extensive national coverage; reducing paperwork while increasing the amount of assessed waters; annual electronic updates of key information for all assessed waters during the previous year; geo-referencing 305(b) information to identify and map specific waterbodies, including whether they meet water quality standards, and to enable long-term tracking of trends; and more rapid, real-time public availability of water quality information.

Since 1998, the IEC has been providing 305(b) reports both as an annual electronic report and an abbreviated narrative report. The abbreviated narrative report contains only the information that has changed from the last report, and a simple reference to that report. IEC reporting format conforms to the US EPA guidelines. The following table summarizes the individual supporting uses of the IEC's nearly 797 square miles of estuarine waters. The Commission is presently preparing the 2002 electronic 305(b) report. The assessment is based on the Commission's data collected from its ambient and effluent monitoring programs. It is supplemented with information from the Commission's member states' environmental and health departments dealing with information on

2001 INDIVIDUAL USE SUPPORT IN THE
INTERSTATE ENVIRONMENTAL DISTRICT

Designated Use	Percent			
	Good (Fully Supporting)	Good (Threatened) Supporting)	Fair (Partially Supporting)	Poor (Not Supporting) Attainable)
ESTUARIES (Total Square Miles = 797.55)				
AQUATIC LIFE				
	35.91	30.25	20.85	12.99
	387.04		79.21	0.00
FISH CONSUMPTION				
	16.93	0.00	3.86	0.00
	797.55			
SHELLFISH CONSUMPTION				
	37.45	0.00	21.08	41.47
	75.79			0.00
PRIMARY CONTACT				
		0.00	4.71	11.23
	797.55			8.27
SECONDARY CONTACT				
	100.00	0.00	0.00	0.00
	797.55			

Total Square
Miles Surveyed

water quality, health advisories, fish kills, shellfish closure areas, and beach closings.

STORET

Throughout its history, the Commission has amassed a huge data base of ambient and effluent water quality data. These data have been collected for a variety of reasons which have been highlighted throughout this report, previous Annual Reports, and in special reports. The Commission has been a depository and advocate of water quality data collection, analysis and dissemination for the tri-state region. Originally under the auspices of the Public Health Service, the US EPA took responsibility in the 1960s for the computerized National Water STOrage and RETrieval (STORET) database for housing and managing saline and freshwater quality data. The system promotes data sharing among federal, state, interstate, and local agencies, as well as the private sector. Commission data as far back as 1974 and as recent as 2001 exists in the STORET system. The 2002 data set is being prepared for input.

The original database underwent a modernization and overhaul between 1991 and 1998. The Commission is currently up to date in supplying its water quality data in the latest STORET format. The Commission's input to the modernized STORET is represented by nearly 39,000 parametric recordings, which include dissolved oxygen, temperature, salinity, chlorophyll a, and fecal and total coliform bacteria. The modernized version of STORET has been enhanced to contain ancillary information such as climatological and tidal data, type of monitoring instrumentation, personnel expertise and visual observations.

PROPOSED REVISIONS TO DISSOLVED OXYGEN SURFACE WATER QUALITY STANDARDS FOR MARINE WATERS

In November 2000, US EPA issued the final guidance document *Ambient Aquatic Life Water Quality Criteria for Dissolved Oxygen (Saltwater): Cape Cod to Cape Hatteras*. This document recommended guidelines for revising water quality criteria for dissolved oxygen (DO). As a result of the release of this document, all three member States of the Commission, as well as the Commission, have or are considering revisions to current DO standards. In May 2001, US EPA - Region 1, approved Connecticut's proposed revisions and Connecticut adopted revised dissolved oxygen requirements in certain portions of Long Island Sound.

As of November 2002, New York State is finalizing proposed revisions as planned approach for marine DO standards. Since the proposal is only in draft form and has not been approved for release, specific details are not yet available. It is anticipated that during 2003 a public comment period will be established once the proposal is released as a Notice of Proposed Rulemaking. The Commission is closely monitoring these activities in its three member states to determine a course of action for the IEC.

NATIONAL ESTUARY PROGRAM

The National Estuary Program was established in 1984 and provides assistance to estuaries of national significance which are threatened by pollution, development or overuse. The NEP provides federal assistance to develop a Comprehensive Conservation and Management Plan (CCMP) for designated estuaries. There are 28 estuaries located along the Atlantic, Pacific and Gulf of Mexico coastlines, as well as in Puerto Rico, that are developing or implementing CCMPs. Within the Interstate Environmental District, Long Island Sound and the New York-New Jersey Harbor Estuary have been receiving funding under this program since 1985 and 1988, respectively. The overall coordination for the Long Island Sound Study (LISS) is being done by the US EPA - Regions 1 and 2. The New York-New Jersey Harbor Estuary Program (HEP) is being coordinated by the US EPA - Region 2.

During 2002, the Commission continued its active participation as a member of the Management Committees and various work groups for the LISS and the NY-NJ HEP. The New York Bight Restoration Plan, which was required by Congress in 1987, was incorporated into the HEP because the two systems are linked within the larger ecosystem. The Dredged Material Management Plan has also been incorporated into the HEP. The Commission has been involved with these plans since their inception.

The Governors of New York and Connecticut and the Administrator of the US EPA signed the final CCMP for the LISS in September 1994. In October 1996, the Governors of New York and Connecticut met to re-affirm their commitment to the actions set forth in the CCMP. In September 2000, the LISS Policy Committee convened to make a commitment to develop a Long Island Sound Agreement which would update the previous agreement. The LISS 2001 Agreement more clearly defines desired outcomes of the CCMP actions in measurable, trackable terms, proposes a better link between monitoring/research and environmental indicators to established goals and results, promotes implementation, and addresses new issues. It affirms targets for nitrogen reduction and habitat restoration. In addition, schedules are being set for other major CCMP actions such as Phase IV nitrogen reductions from out-of-basin sources, pathogens, toxics, watershed protection, living marine resources, open space and access, public education and involvement and partnership agreements. The Agreement was finalized on December 4, 2002, by the Regional Administrators of US EPA, Regions 1 and 2, and the Commissioners of CT DEP and NYS DEC.

The Governors of New York and New Jersey and the US EPA Administrator signed the final CCMP for the HEP in August 1997. The plan addresses habitat and living resources, toxic contamination, dredged material, pathogen contamination, floatable debris, nutrients and organic enrichment, rainfall-induced discharges, and public involvement and education. Simultaneous with the 1997 closure of the Mud Dump Site in the Atlantic Ocean, the site and surrounding areas that have been used historically as disposal sites for dredged materials was designated as the Historic Area Remediation Site (HARS). The Commission took an active role by serving on the MDS/HARS Work Group. The final CCMP was amended to reflect the accelerated implementation schedule.

During 1999, IEC became a member of the newly established HEP Management Committee Work Group (MCWG). The primary purpose of the Work Group is to facilitate the actions of the Management and Policy Committees with the charge of developing agendas, work plans, and budgets, as well as to interact with other estuary programs. Through a series of public meetings, conferences, workshops, and program meetings; the HEP has gathered input from the public and scientific community on harbor-related issues of utmost concern. The program is now incorporating those issues into a series of goals and targets to focus future efforts.

The Nutrients, Pathogens and Toxics Work Groups are addressing the modeling and water quality issues with the intent of ultimately developing total maximum daily loads (TMDLs). Schedules for developing and implementing TMDLs are currently being developed. IEC has been involved with these meetings and will assist in the process, especially for the interstate waters within IEC's jurisdiction. Refer to the water quality surveys for pathogens that is detailed in this report.

Following the example of the Chesapeake Bay Program, the HEP Policy Committee has charged each of the work groups with developing targets and goals that can be incorporated into a multi-year work plan. The purpose of the targets and goals is to better focus the future efforts of the HEP. These goals will reviewed yearly to gauge their progress. IEC is a member of the committees that are developing these targets and goals which address the CCMP implementation issues of fishing and swimming, habitat and ecological health, public access, clean sediment and dredging, and stewardship.

COMBINED SEWER OVERFLOWS AND MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Since the passage of the CWA and the implementation of secondary treatment, the quality of the region's waters has improved dramatically. However, waterbodies are still negatively impacted by urban and suburban stormwater runoff. Combined sewer overflows (CSOs) municipal separate storm sewer systems (MS4s) are major sources of pollution and are allowed to discharge only during wet weather.

The Commission's continuing activities with combined sewer overflows include in-house programs, as well as its participation in the National Estuary Programs in the region. In 2002, the Commission maintained an active dialogue with its member states, US EPA and POTWs to keep abreast of the status of CSO abatement activities in the District.

The Commission has an ongoing program of inspecting CSOs to determine whether they are discharging during dry weather. When dry weather discharges are discovered, the incident is reported to the appropriate State environmental department for their action. The Commission then works with that department to determine the most expeditious manner to alleviate the violation. During the 12-month period ending September 30, 2002, a total of 58 outfalls were inspected during dry weather. These outfalls were located in two different drainage basins in New York; none had any discharge during the IEC's inspections.

IEC has been deeply involved for many years in the issue of CSOs. Because they remain a major source of water pollution that must be controlled in order to achieve significant improvements in water quality, IEC is committed to an active involvement with the elimination and/or amelioration of the adverse effects of CSOs. During the past year, CSO projects in Connecticut municipalities that discharge to the IED include Bridgeport, New Haven and Norwalk. During the past year, CSO projects in New Jersey municipalities that discharge to the IED include Bayonne, Edgewater, Elizabeth, Hoboken, Jersey City, Rahway and West New York. Since 1987, New York City has been addressing CSOs and their impacts in 14 drainage basins. Refer to the specific State plant write-ups in the Water Pollution Control section of this Report.

Recently, interest in the operation and control of municipal separate storm sewer systems has intensified. Phase I of the US EPA's stormwater program (1990), administered as NPDES permit requirements, addresses medium and large municipal separate storm sewer systems, construction activities, and industrial activities. Phase II is an effort to preserve, protect, and improve the nation's water resources by implementing programs and practices to control polluted stormwater runoff. In September 2002, the Commission took part in the Phase II Stormwater Regulatory Workshop in Farmingdale, New York, aimed at preparing Long Island (Nassau and Suffolk Counties) communities to meet requirements of the new Phase II Stormwater Program announced by NYS DEC on September 18, 2002. Among the documents released by NYS DEC were two draft Phase II general SPDES permits — one for small municipal separate storm sewer systems and one for construction activities. According to the draft permits, all New York regulated entities (communities with stormwater discharges from MS4s and construction activities) are required to apply for coverage by SPDES permits by March 10, 2003. Communities with MS4s are then required to proceed with preventing pollution using appropriate technologies and management practices outlined in the permit. The permittees are then expected to report annually to the NYS DEC and fully implement their proposed program by March 2008.

The Commission has been asked by US EPA - Region 2 to investigate the feasibility of locating dry weather MS4s in the District, somewhat like the ongoing CSO program described above. IEC recently received some information on MS4s and will start to investigate the feasibility of performing outfall inspections on MS4s much like the Commission's CSO outfall inspection program. If such a program is deemed feasible, the Commission shall coordinate with its member states for appropriate enforcement action in cases where MS4 outfalls are discharging during dry weather.

CONFERENCES AND TECHNICAL EXCHANGES

New York Water Environment Association's Legislative Forum

For the second consecutive year, the Commission and its interstate counterparts with New York membership co-sponsored the New York Water Environment Association's Legislative Forum in Albany, New York. Meeting in New York's capitol gave the six interstate commissions the opportunity to emphasize to the New York Legislature the scope of the combined agencies' efforts

being undertaken to promote water pollution control and carry out water pollution abatement activities.

Collectively, the Delaware River Basin Commission, the Great Lakes Commission, the Interstate Environmental Commission, the New England Interstate Water Pollution Control Commission, the Ohio River Valley Water Sanitation Commission, and the Susquehanna River Basin Commission represent 20 states, the federal government and the Canadian provinces of Ontario and Quebec. Presented at the forum, the agencies expounded on their successes and continued vigilance in Protecting New York's Waters - The Role of The Interstate Commissions. The highlighted topics included drought management, water quality, basin planning, and environmental education. An evening program hosted by the interstate agencies was very well attended by the forum participants as well as by many members of the State Legislature.

Celebrating the Clean Water Act: 30 Years of Success in New York Harbor

On October 3 and 4, 2002, the Commission was a co-sponsor of the Hudson River Environmental Society's technical conference to celebrate the 30th Anniversary of the Clean Water Act. The focus was New York Harbor and adjacent waterways that have been targets of monumental Clean Water Act activities, demonstrating improvements in water quality and health of aquatic ecosystems. The agenda included a regulatory overview, engineering solutions, pollution reduction, ecosystem improvements and future issues, both national and regional. Commission staff assisted in coordination, reception, audio/visual presentations and maintained a display at the information booth. IEC also made a presentation giving a regional perspective of the issues of concern.

PUBLIC EDUCATION AND OUTREACH

The Commission continues its commitment to participating in an active public involvement, education and outreach program. IEC continues to lecture at local schools and colleges on a variety of environmental topics and Commission activities. In addition to the Commission's day-to-day activities, the remainder of this section outlines some of the IEC's involvement in this area.

Long Island Sound Water Monitoring Work Group

The Long Island Sound Water Monitoring Work Group is a networking partnership of citizen organizations and government agencies working to increase coordination between water quality monitoring programs in Long Island Sound on the local, state and regional levels. During 2002, the group changed the format for reporting findings. The report, formerly known as the State of the Sound, Dissolved Oxygen Summary, is being revamped as a water quality directory and educational tool. An established database exists with 12 entities, sampling sites and water quality data. The data set includes physical, chemical and biological water quality parameters, as well as meteorological and tidal information. A locator map will allow users to identify areas of concern and interact directly with group members.

Board of Cooperative Educational Services (BOCES)

The Environmental Studies Academy is an educational program for high school juniors and seniors interested in pursuing careers in natural or environmental studies. Students participate in learning activities to develop an understanding and appreciation of natural systems. A large facility on the BOCES campus in Valhalla, NY, provides hands-on opportunities for high school seniors to work in a greenhouse and operate farm machinery for landscaping and agricultural career motivation. The Commission is involved with the BOCES of Southern Westchester and stresses IEC's regional focus on water quality issues affecting the Hudson River and Long Island Sound. The Commission serves on the advisory committee.

Law Student Internships

In the aftermath of September 11th, IEC Legal looked for appropriate ways to provide needed services. It was learned that New York Law School, given its location in lower Manhattan, was a beacon for inquiries and a source of information about available services. The law school sought to establish a link with the Commission to utilize IEC's expertise. The result was a dedicated fellowship with New York Law School. This new partnership led to the hiring of a second-year student for an eight-week period during the summer of 2002. IEC Legal reached out to another member state, Connecticut, and participated in Quinnipiac Law School's recruitment program. An offer was extended to a student for the summer of 2003.

IEC remains a part of the Pro Bono Students America/New York and New Jersey (PBSA/NY & NJ) database which is a program that the Commission has been involved with since 1992. The database includes a network of more than 300 organizations including not-for-profits, government, courts and private firms. PBSA is one of the primary groups organizing the development of pro bono programs. The IEC is also listed with area law school career placement offices and has drawn on that resource over the years attracting well over a dozen students. Law students appreciate the opportunity to apply the skills which they learn in the classroom with the real legal experience they are offered at the Commission.

Our World Underwater

Our World Underwater is a non-profit corporation focusing on educational opportunities for young people going into various fields of marine science, such as marine biology and oceanography. The Commission has a long involvement with this group, including its Scholarship Society program to support a gifted student for a year to study, experience, and interact with a wide range of professionals. Since the Commission began its relationship with Our World Underwater in 1989, all scholarship recipients have enjoyed a hands-on experience. Since none of the recipients hosted by IEC have been from this region, their experience is compounded by this being their first visit to the Northeast, as well as by them also being afforded the opportunity to view this urban environment from the water.

III. AIR POLLUTION

GENERAL

Originally dealing only with matters concerning water pollution, in the late 1950s the Commission published a report called *Smoke and Air Pollution*, and a supplement that identified the problems of the region regarding interstate air pollution. As a result, in 1962, after passage of supplemental statutes in New York and New Jersey, the Commission's air program was initiated. Connecticut passed legislation mirroring its member states in 1969, extending the IEC's air investigation and study authority.

The first Air Pollution Warning System was put into operation in 1964 and, through coordination by the Commission with its member states, has been periodically updated and strengthened in the light of accumulating knowledge of air pollution abatement practices. In April 1970, the Commission was designated as the coordinating agency for the New Jersey-New York-Connecticut Air Quality Control Region under the federal Air Quality Act. Pollutant values and meteorological conditions did not warrant activation of the High Air Pollution Alert and Warning System during 2002.

The Commission has maintained round-the-clock response for air pollution complaints since the late 1960s. New York City's Borough of Staten Island remains as the source of more citizens' complaints than any other area in the Interstate Environmental District. To better serve the needs of the public by faster response to complainants, a field office was established on Staten Island in 1982 and remained in operation until 1986 when odor complaints reported to the Commission peaked at nearly 3,500 complaints affecting 63 different neighborhoods throughout Staten Island. The number of complaints received by the IEC has significantly declined over the years and no garbage odors were reported to the Commission for the third consecutive year.

AIR POLLUTION COMPLAINTS

Within the Interstate Environmental District, Staten Island remains as the source of more citizens' complaints than any other area in the Commission's jurisdiction. Historically, many of the complaints come from the western portion of Staten Island in the vicinity of the New York-New Jersey border and from the neighborhoods closest to the Fresh Kills Landfill. However, during the 2002 reporting period, complaints were minimal and were received from only 4 different neighborhoods.

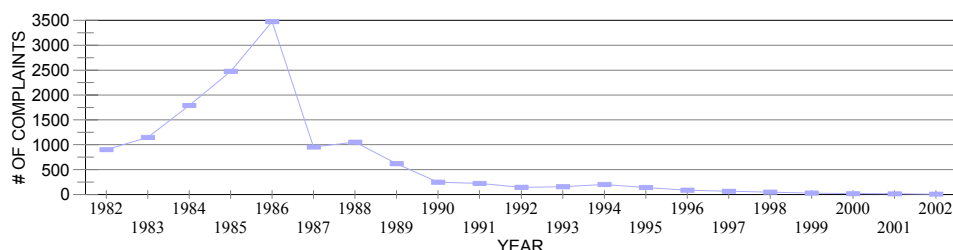
Since budget cuts in 1989 necessitated the closure of IEC's Staten Island field office, the Commission still maintains a 24-hours-a-day, 7-days-a-week answering service (718-761-5677) to receive complaints. Complainants are contacted during regular office hours by IEC staff and, when available, IEC personnel are dispatched to investigate ongoing complaints. When warranted, Commission personnel are contacted during non-office hours. The IEC also contacts and works

closely with the appropriate enforcement agencies and health departments in New York and New Jersey to perform follow-up.

For the 12-month period ending September 30, 2002, the Commission received a total of 6 complaints — all from Staten Island. This continues the pattern of a decreasing number of complaints since the 1986 peak of nearly 3,500 complaints from 63 different Staten Island neighborhoods

AIR POLLUTION COMPLAINTS

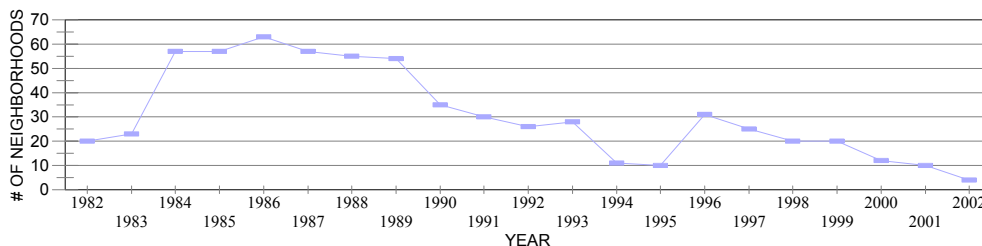
1982 - 2002



Only four Staten Island communities were the source of these six complaints. It should be noted that this is the least amount of neighborhoods reporting odor complaints since detailed records have been kept; 63 communities were impacted in 1986. Over the years, the majority of the complaints received by the IEC tend to come from the same group of neighborhoods. This year, the reporting neighborhoods were throughout Staten Island.

COMMUNITIES IMPACTED BY ODORS

1982 - 2002



This year, the odors were identified as sulfur(2), petroleum (1), sewage (1) and other (2). The “other” category reflects those “nonspecific” descriptions, i.e., bad or awful or nauseating. Citizen complaints are the most frequent source of firsthand information about poor air quality. The odors are usually detected by persons who do not have special knowledge or training in identifying problem emissions; it is their accurate odor descriptions that could lead to the sources of odors. This is the third time in that many years that the nuisance odor category of “garbage” was not registered.

OZONE HEALTH MESSAGE SYSTEM

For the fifteenth consecutive year, the Ozone Health Message System was activated to alert the public of unhealthy levels of ozone in the atmosphere of the Metropolitan Region. The system was developed as a cooperative effort by the Commission and environmental and health representatives from the States of New Jersey, New York and Connecticut; New York City; and the US EPA. It serves as a central source of precautionary advice on ozone to the Region during the warm weather months (May to September) when higher concentrations of ozone occur. Ozone irritates the respiratory system and may cause decreased lung function. Adverse effects may include shortness of breath, chest pain, throat and eye irritation, and wheezing. It especially affects the elderly and those with pre-existing lung disease. Healthy adults and children may feel these effects during high ozone days. Whenever ozone reaches unhealthy levels, the public is advised against strenuous outdoor activities and physical exertion such as jogging, ball playing, and running.



During 2002, the Commission continued to participate in this program. IEC took an active role in alerting the public to unhealthful conditions. During the warm weather months, when elevated levels of ozone existed in parts of the Metropolitan Area, the IEC relayed “health advisory” messages to the appropriate government environmental and health agencies. The IEC received 38 ozone and eight fine particulate (soot and dust) advisories from the New Jersey Department of Environmental Protection between June 7th and September 10th. This period of poor air quality began one month later than in 2001. Individual states issue their own health messages which identify specific counties where ozone levels are a special health threat. During 2002, it was not necessary for IEC to issue a region-wide Ozone Health Message.

REGIONAL AIR POLLUTION WARNING SYSTEM

The IEC is the coordinator of the New Jersey-New York-Connecticut Air Quality Control Region’s High Air Pollution Alert and Warning System. Based on high pollutant concentrations or stagnation advisory reports, the Commission may activate this system. The pollutant levels and stagnation advisory reports did not warrant activation of the system during this past year.

IV. LEGAL ACTIVITIES

The Office of Legal Counsel is proactive in risk assessment and analysis and in assigning priorities. More often than not, issues arise in a day-to-day context that appear to require the response of Legal Counsel. Invariably, after some time has passed, it is apparent that a matter or issue in controversy may resolve itself without the necessity for invoking formal legal action. A proactive Legal Counsel, however, should be well equipped to address any case or controversy and, with the addition of appropriate staff, should and will take steps in that direction. The summary of legal activities that follows is by no means meant to be all inclusive, but rather highlights significant legal activities.

Legal carries out numerous functions of which ensuring compliance with those statutory responsibilities granted to the Commission is the most compelling. In some instances, but notably fewer than are anticipated, ensuring statutory compliance could necessitate the commencement of administrative proceedings or court cases. In significantly more instances, the Commission's regulatory authority is recognized through negotiation and advice accepted by the regulated community. At times, informing the public about the Commission's functions has the benefit of answering questions before they are asked. Some of the work that Counsel is called upon to do falls into a less visible, but not less significant arena — that of enforcing Commission policy in water and air pollution abatement as part of general housekeeping. An example of this type of work is Counsel's role, albeit behind the scenes, to provide information, background and history to advocacy groups and to those conducting public hearings.

The re-opening of the Fresh Kills Landfill following September 11, 2001, and its closure in May 2002, will have Legal continue to examine contractual issues and other issues related to the adequacy and appropriateness of the debris control measures and the protocols followed there. As the parties were poised to consider whether and under what circumstances to scale down the monitoring at the landfill, to agree on debris control measures, and to fashion a stipulation to terminate the landfill litigation, debris from the World Trade Center began to be shipped to the landfill. The transport of debris to the landfill ceased in May 2002, but issues regarding proper closure remain.

This year, the Commission celebrated a long fought victory for its regulatory authority in prevailing against the Passaic Valley Sewerage Commissioners (PVSC) in the Appellate Division of the New Jersey Superior Court. A later application by PVSC for permission to appeal the decision to the New Jersey Supreme Court was denied.

The litigation in both federal and state court over nitrogen impacts to the Long Island Sound and East River was settled with substantial penalties. The parties are poised to receive grant applications for projects that will benefit the environment. Both judicial and administrative Orders to upgrade Newtown Creek were also finalized this year. Everyone can look ahead to a Newtown Creek Sewage Treatment Plant embracing the Clean Water Act's requirement for secondary

treatment.

LITIGATION TO MITIGATE NEGATIVE EFFECTS OF NEW YORK CITY'S OPERATION OF THE FRESH KILLS LANDFILL

Since the events of September 11, 2001, when the debris unloading operation at the landfill resumed, the parties have engaged in several conferences and the independent expert (IE) has participated with the parties in several visits to the landfill. This scaled back activity from previous levels recognized that if consensus can be reached on an approach to scaling down the level of monitoring, on completing a clean up of the shoreline, and on addressing a satisfactory approach to actual closure of the landfill and this case, this matter could be resolved. Significantly, contracts for both the IE and the plaintiffs' representative on the interim monitoring team expired by operation of law, the landfill closure law, on December 31, 2001. Early in 2002, following a recommendation from the IE to the City that only one entity needed to continue monitoring, the City extended the independent expert's contract for an additional year. The independent monitor and the plaintiffs' representative on the interim monitoring team were of the view that their work should continue. The plaintiffs took the view that this action by the City was a unilateral modification of the federal court Order and made this view known to the federal Court in a communication to the judge. This summary fulfills the parties' obligation under the Order to provide an annual review to the Court.



The Commission continued to participate in visits to the landfill conducted by the IE. Apart from some lapses in the area around the composting facility and the area around the unloading platforms, the quality of the debris did not appear to pose a significant problem through midsummer. In addition to activities at the landfill, Commission staff carried out regular visits to Ground Zero where activity was monitored. Those visits ceased the last week of May when Ground Zero closed.

The shoreline remains the area of most significant concern for floatable debris identified in the IE report for a May 29th site visit. The IE report showed that most areas had minor amounts of floatable debris. However, when the report focused on areas behind the catwalks, Shoreline Area "A" and Shoreline Area "B," it indicated that Shoreline Area A contained significant amounts of debris, and the debris was recent. The debris was characterized as small food wrappers, single servings of soda, brightly colored labels, and the like. No observations of debris were made inboard of the perimeter fencing. Little debris was observed along Shoreline Area B. Shoreline Areas A and B are the areas closest to the catwalks. The entire shoreline has been divided into sections designated A-E. The IE reported that all shorelines were to be cleaned before the end of the summer. Some minor floatable debris was observed on the shoreline behind the West Catwalk.

The IE made several suggestions that could be considered by the parties looking toward closure. Among them was a suggestion to look to the protection of the Arthur Kill so long as the

booms (Superboom and Outerboom) remain in place, however, if and when these booms are removed, additional attention might be required. This remains a concern as it has been established that some amount of imbedded debris along these shorelines and these areas remain a clear potential for the loss of material to the waterway. The IE suggested that this might be an item for the final Consent Order. He further urged that the NYS DEC be encouraged to consider and approve the City's application for approval for a plan for shoreline stabilization. The City's revised plan called for using gabion baskets filled with crushed rock and placed in such a way as to prevent erosion. Comments were submitted to NYS DEC and the Army Corps of Engineers at the beginning of the year. Finally the compost facility remains a concern as plastic pieces and shreds from garbage bags escape and are subject to removal by hand.

The IE is contemplating one last inspection tour, after which a site visit will be scheduled for the parties with the intention of reaching agreement that the site has been properly closed. At that time, stipulations and a final Consent Order approved by the Court would be appropriate. This assumes that the shoreline stabilization would be complete at that point in time.

Toward the latter part of the year, the plaintiffs contacted the City inquiring about several items of concern, among those items are the following: the Superboom remaining in the open position since early October; the reduction in the monitoring schedule by the WQMT from five days a week to three days a week; and the failure of the City to report any modification to the Administrative Order between the State of New York and the City regarding monitoring. The City replied that they were in agreement with the independent expert that given the cessation of waste disposal operations at the landfill, the monitoring level was appropriate. The City further stated that they are of the belief that the modification to the WQMT schedule is not contravened by the Order on Consent between New York State and the City, and lastly, they referred the plaintiffs to the independent expert reports for updates on the status of Department of Sanitation efforts to secure a State permit for shoreline stabilization, noting that they were hopeful that a permit would issue in the near future and that the plaintiffs would be notified accordingly. The plaintiffs are not in agreement with the City and will take steps to make their views heard.

The plaintiffs continue to be concerned about the lack of any long term closure plan. In the fall of 2002, the City announced a plan for waste disposal, which involves each of the five boroughs of New York City in retrofitting transfer stations in order to enable garbage to be barged using containerization. There are eight transfer stations in the City of which two are located in Manhattan. One is in the vicinity of Gracie Mansion, the Mayor's official residence. Predictably, residents have already begun to voice complaints about the prospect of having to condemn space for retrofitting transfer stations and about the number of trucks that could be found idling in their neighborhoods, an unfortunate by-product of using transfer stations. Destinations for the City's garbage could include venues as far as the Caribbean. The plan has not specified final drop-off points for garbage.

One of the Commission's charges is to protect against the escape of debris into the waterways surrounding the landfill. One means of ensuring that this concern is addressed is by monitoring plans for the cleanup of the shoreline. During the course of operating the landfill, debris

accumulated along the shoreline and may have even been deliberately placed in some sections of the landfill along the shoreline. Under certain conditions when it is rainy or windy, conditions are conducive for erosion. These factors can contribute to debris becoming dislodged and ending up in the water. Another item that concerns the plaintiffs that remains to be resolved is the continued viability of the Super boom and Outer boom as the last protections against debris escaping from the landfill.

The earlier references herein to the IE and IMT are found in a September 1997 Court Order mandating their hire. Both were fully operational in 1999 and have continued to perform despite the City's contract hold-ups and other impediments, such as requiring special passes for landfill entry. While the IE presumably works for the parties, the IMT was meant, in the Court's view, to establish eyes and ears for the City and the plaintiffs. The Court saw fit to maintain the independent monitor as part of the team. At the end of 1997, the Court had relieved the City of its obligation to build a single-barge enclosed unloader contingent upon the City's implementing certain measures, among which were the IMT and the IE. The failure on the part of the City to implement certain measures could result in an immediate return to court and the rendering of a judgement that the City begin construction on the single-barge enclosed unloader immediately. In any event, the long-term solution could be revisited on an annual basis. The most recent November 2000 submittal with its appendices included an overview to the Court of all the Orders prior to 2000.

The genesis of this landfill case was a 1979 lawsuit, relating to the waterborne debris that enters the District's waters as a result of the garbage unloading operations at the Fresh Kills Landfill (Township of Woodbridge v. City of New York, Civil No. 79-1060). Located on the Arthur Kill shoreline in the western portion of Staten Island, New York, the majority of New York City's municipal solid waste was transported to the Fresh Kills Landfill by barge.

In 1986, the IEC intervened in an action in New Jersey federal District Court which was initiated in 1979 by the Township of Woodbridge, New Jersey. Approximately 13 Court Orders were issued in the intervening years prior to IEC's cross-motion for contempt in September 1987. After investigations were conducted by Commission field inspectors, it was determined that in spite of the Orders issued and the steps taken by the City, the problem of debris from the landfill operations entering adjacent waterways persisted in contravention of the IEC's Water Quality Regulations. IEC sought and succeeded in obtaining a Contempt Citation.

In order to find a solution to the Region's waterborne garbage problems, the parties to the suit entered into a Consent Order. That Consent Order required the City of New York to implement water cleanliness procedures; the installation of interim remedial equipment, including the Superboom; and the hiring of an independent monitor. The Order also provided for an Independent Consultant to evaluate the effectiveness of the interim equipment and procedures, and to recommend alternative long-term measures by January 1, 1990. Reports issued by the Independent Consultant in 1990 recommended containerization and a single-barge enclosed unloading system as alternatives. The City concluded that of the final alternatives reviewed, the single-barge enclosed unloading facility presented the most effective and practical method to comply with the Consent Decree and

proposed to implement it. The IEC submitted a revised Consent Decree to the parties in January 1991. During 1992, the Commission's request for assurances that there are monies set aside and dedicated solely to the design and construction of the single-barge enclosed unloading system were met. With only a minor adjustment in compliance dates, a draft Consent Decree was accepted by the parties in the spring of 1993. A final Consent Decree was filed in the United States District Court on June 15, 1993, and a fully executed copy was received by the Commission on June 28, 1993. Although the City was seemingly compliant after the 1993 revised Consent Decree was entered, 1995 saw the disbursement of technical assistance funds held by the Court. Litigation resumed during 1996 when Woodbridge initiated an action seeking relief from medical waste washing up on its shores. Ultimately, a monitor determined that while debris, including medical waste, escaped from the landfill, evidence was insufficient to establish the landfill as the sole source. During 1996, the City let it be known that following the passage of laws mandating closure of the landfill by the year 2001, they were considering filing a motion to be relieved of their obligation to build an enclosed barge unloader.

The enclosed barge unloader had been selected by the City and agreed upon among all the parties as the permanent solution for keeping floatable debris from entering the waterways in and around the landfill. When the City sought relief from building the enclosed unloader subsequent to the 1996 passage of laws mandating that no garbage be brought to the landfill for disposal after the end of 2001, the Commission was willing to consider appropriate alternative solutions that offered the same safeguards as those of the enclosed barge unloader. The Commission was committed in 1996, and remains committed today, to ensuring that floatable debris is prevented from entering the waterways around the landfill.



Photo by W. McCormack, IEC

SKIMMER BOAT OPERATING AT FRESH KILLS LANDFILL

ADDRESSING NITROGEN IMPACTS OF SOME NEW YORK CITY SEWAGE TREATMENT PLANTS

Both the federal district court case and the state court case against the City for violations relating to excessive nitrogen discharges were settled in 2002. After being found liable for violating the regulations governing the discharge of nitrogen into the water, substantial penalties were assessed against the City. The City was required to pay \$500,000 to the New York State Marine Resources Account and \$500,000 to the Hudson River Foundation. An additional \$4 million, to be earmarked for environmental projects, was reviewed and approved by the United States Department of Justice. Apart from monetary penalties, the stipulation of settlement noted that the City had ceased violating nitrogen limits since June 1998 for the East River and since October 1999 for Jamaica Bay.

By the end of the summer of 2002, three judicial Orders had been signed and were finalized. Only an Administrative Order for nitrogen upgrades at the Newtown Creek WPCP awaited sign-off by the Attorney General. The state and federal Court Orders and a modification to the Newtown Creek judicial Order were agreed to by all parties, the United States Department of Justice and the federal court. The parties to the litigation are poised to meet to decide on the specifics of environmental projects. The City has paid the agreed upon monies and the funds are lodged with an escrow fund manager. Those deserving environmental benefit projects will be examined and approved by the parties and funds disseminated. Given the Commission's early role as friend of court, IEC has been invited to recommend worthy projects to the parties.

This matter commenced with a citizen suit against the City in federal court, and the State of New York suing the City in state court. In settling the cases, the State has dictated that three consent orders be executed by the City within 75 days of their signing, after which they will go out for public comment. The three consent orders involve a consent order for the Newtown Creek facility on the lower East River; one for Jamaica Bay; and a separate order for the design, construction and operation of the upper East River facilities to remove nitrogen at Bowery Bay, Tallman Island, Wards Island and Hunts Point.

In the case of Newtown Creek, the order modifies an existing order that dealt with an upgrade. The Newtown Creek order works in conjunction with the order for the upper East River facilities. Newtown Creek will ultimately be upgraded to full secondary treatment and will have nitrogen removal consistent with the Tallman Island demonstration project, that will be accomplished not by removing nitrogen at the Newtown Creek facility, but by removing it further up on the East River. The State agrees with the City that they can make up the difference of the nitrogen that is not being removed at Newtown Creek by building a facility on the upper East River. The City has satisfied the State in a research demonstration project, that the City can meet secondary treatment in a different process mode at Newtown Creek than had been originally anticipated. With respect to Jamaica Bay, the City would reconstruct the 26th Ward treatment plant which discharges into Jamaica Bay, and do a major comprehensive study looking to outfall relocation as a possibility, since treatment alone may fall short of meeting the water quality standards in Jamaica Bay.

The Commission had not participated as a party in either case, but did file an *amicus curiae*, friend of court brief, in the state case in 1999 and participated in the oral argument. Immediately following the filing in federal Court, the Commission was asked to provide guidance to the State of Connecticut when they intervened in the lawsuit filed by the Long Island Soundkeeper, the Hudson Riverkeeper, and others. Throughout, the Commission has maintained a presence in both matters, aiding with providing historical data, data on the Long Island Sound Study's "no net increase policy," and making available the comprehensive records kept by the Commission comparing Connecticut's permits to those in New York.

The nitrogen settlement is a consequence of two lawsuits filed in 1998, one in the Eastern District Federal Court, which is in Brooklyn, and the other in a New York State Court. The Brooklyn federal Court was selected because most of the sewage treatment plants alleged to be in violation of nitrogen permit limits are located in that federal district. The NYS DEC filed an action against the City in State Court. The Long Island Soundkeeper, Inc.; the Riverkeeper, Inc.; John Cronin, the Hudson Riverkeeper; the American Littoral Society; Andrew Willner, the Baykeeper; and other private citizens alleged in federal Court that for every month since January 1996, when nitrogen limits were imposed (using aggregates), the City has consistently been in violation of those limits. In a decision as early as 1994, the NYS DEC Commissioner had approved the nitrogen permit conditions for incorporation into the SPDES permits.

The permit conditions set aggregate effluent limits for nitrogen discharges for two groups of four plants discharging into the upper reach of the East River and into Jamaica Bay, respectively. Before these limits were to take effect in 1996 and 1997, the City was required to make operational and process changes to maximize nitrogen removal in the existing plant units, and also conduct extensive pilot work to test new processes and technologies. The City and NYS DEC were then to jointly determine the most appropriate new systems to implement in order to meet specified nitrogen reduction goals. In the long-term, a Nitrogen Control Feasibility Plan would have comprehensively analyzed additional methods to meet much greater levels of nitrogen reduction for future discharges. It was because neither the limits nor the Nitrogen Control Feasibility Plan were implemented that litigation ensued.

Both actions alleged that these violations of the nitrogen loading limits contributed to the severe hypoxic conditions in Long Island Sound and Jamaica Bay, and caused damage to those ecosystems. The proximate location of these plants which had discharged pollutants into the East River and Jamaica Bay in violation of the permitted effluent limit of the SPDES permits, and the likely impact on Long Island Sound, accounted for the concern on the part of the State of Connecticut. The Commission, as an interstate agency, was uniquely situated as an advisor and participant in this matter.

ADJUDICATORY HEARING CONCERNING THE DELETION OF IEC'S REGULATIONS FROM THE PASSAIC VALLEY SEWERAGE COMMISSIONERS' DISCHARGE PERMIT

The Interstate Environmental Commission reached the final phase of challenges to IEC's jurisdiction in the New Jersey State courts, and successfully prevailed against the Passaic Valley Sewerage Commissioners. PVSC had maintained that they were exempt from IEC's regulations and further maintained that IEC's regulations should be removed from their NJPDES permit. NJ DEP removed IEC's regulations from PVSC's discharge permit and there began IEC's challenge.

The case was argued in the New Jersey Superior Court Appellate Division in January 2002 before a three judge panel, and in February, an opinion of the whole court found that NJ DEP had the authority to include IEC's regulations in PVSC's NJPDES permit under a New Jersey statute, the New Jersey Water Pollution Control Act. They further found that under a specific New Jersey regulation, N.J.A.C. 7:14A-2.3 (b), it states that as part of New Jersey's permitting requirements:

The Delaware River Basin Commission Water Quality Regulations, including all amendments and supplements thereto, and the **Interstate Sanitation Commission Water Quality Regulations**, (emphasis supplied) including all amendments and supplements thereto, are incorporated into this chapter by reference unless the context clearly indicates otherwise.

The Court further found that IEC's statute exempting PVSC had no impact whatsoever on NJ DEP's regulatory power and that NJ DEP could validly exercise its power by incorporating IEC's standards into the permit. The Court refused to examine the argument that IEC's statute had been rendered obsolete by later federal and state laws. As is common, the New Jersey courts used New Jersey law and statute to give credence to the regulations of an interstate body without reaching federal law. They declined to address the issue of IEC's independent jurisdiction flowing from the Clean Water Act. Nonetheless, the decision was a decided win for the Commission.

Following the Appellate Division decision, in March 2002 PVSC filed a petition for certification, i.e., they asked for permission to appeal the Appellate Division decision to the New Jersey Supreme Court. By June, the New Jersey Supreme Court had refused to hear PVSC's petition.

As the IEC had prevailed in both the Appellate Division and the Supreme Court, the Commission was entitled to seek court costs. Court costs were awarded to the IEC from both the Appellate Division and the Supreme Court.

The appeals to the New Jersey courts followed IEC's successful challenge in administrative proceedings before the New Jersey Office of Administrative Trials.

The administrative proceeding in 2000 granted IEC's and NJ DEP's motions for summary judgement, concluding that the IEC has authority to regulate effluents in the IEC District, including

effluent from PVSC. It further recognized that NJ DEP should have included the language referencing IEC's Water Quality Regulations in the final permit as it had been included in the draft permit.

The decision recognizes that the Clean Water Act (CWA) provides the IEC with an independent mechanism to have more stringent effluent limitations for its entire district. The ALJ refused to accept PVSC's insistence that the only means of dealing with Article XII of IEC's Compact was to repeal it. The decision states that the federal government, through the CWA, has decided on a method of ensuring clean water and established a nationwide program which superseded the stipulation of 1910, referred to in Article XII of the IEC's Compact. It goes on to say that the new federal schemes recognized the authority of interstate agencies to provide more stringent regulations over waters in their districts. The decision recognized that the 1910 Stipulation, embodied in Article XII of the IEC's Compact, provided what is now considered a rudimentary method of pollution control. The CWA history demonstrates that Congress specifically repealed any jurisdictional limitation on PVSC, based upon federal enforcement actions like the 1910 Stipulation, in favor of its legislative scheme which relied on state and interstate action.

The Final Decision rendered by the NJ DEP Commissioner in May of 2000, which adopted the ALJ's final decision, were both outgrowths of a mid-1996 Commission filing of a Notice of Intent to Request an Adjudicatory Hearing with the NJ DEP. The resulting hearing contested the deletion of IEC's Regulations from the discharge permit issued for the treatment plant of the Passaic Valley Sewerage Commissioners. Since the early 1980s, when NJ DEP specifically insisted that the Commission's regulations be included in the permit, they have always been part of the PVSC permits. The draft permit contained references to the IEC Water Quality Regulations and included them under "Special Conditions." The June 27, 1996, final permit issued to PVSC deleted any reference to provisions of the IEC, citing Article XII of the IEC's "Tristate Compact for Pollution Abatement," as authority for the removal of the Commission's Regulations. The final permit contained adjustments made to accommodate comments made by consultants for PVSC during the draft permit process. All IEC parameters were removed, as were references to IEC in four other sections.

The language of Article XII of IEC's Compact deals with controlling future pollution, abating existing pollution, and working in cooperation with the surrounding states, and is not meant to be read alone. The applicable language reads as follows:

The provisions of this act shall not affect the discharge from the outfall pipes of the Passaic Valley sewerage system into the water of New York harbor; provided, however, that said discharge shall be in accordance with the terms and provisions of the stipulation entered into on April fourteenth, one thousand nine hundred and ten, between the United States of America and Passaic Valley Sewerage Commissioners.

The IEC Article is meant to be read in conjunction with the 1910 Stipulation. The

Stipulation does not in any manner whatsoever suggest that PVSC does not come under the jurisdiction of the IEC, nor does it suggest that PVSC is not subject to IEC's Regulations.

Historically, concerns about discharges from the area around Passaic Valley surfaced as early as 1896, when a series of commissions were appointed by the Governor of New Jersey and the New Jersey Legislature to study the problem created by the drainage of 84 percent of the Passaic River's polluted water into Upper New York Bay. The reports of these commissions resulted in the creation of the Passaic Valley sewerage district, and PVSC, with a directive to cease disposing of sewage into the Passaic River and to prepare plans and specifications for the construction of a trunk sewer to dispose of sewage. The act authorizing the construction provided for further study to ascertain whether or not the discharge polluted the waters of New York State so as to create a nuisance. Two studies were conducted, one by New Jersey and one by New York. New Jersey's study found that the discharge did not pollute so as to create a nuisance; New York's study found that the discharge did pollute so as to create a nuisance. The failure to reach a compromise resulted in the first case of New York suing New Jersey, which was dismissed without prejudice after the 1910 Stipulation was filed. The United States government, which intervened in the lawsuit as a co-plaintiff, believed that PVSC's plans were so indefinite and inadequate that navigation would be obstructed and waters would be unhealthy. The intervention of the federal government resulted in a more thorough and comprehensive method of treatment that was ultimately adopted in the 1910 Stipulation.

Even though screening, sedimentation and dispersal were the approved methods of disposing of sewage in large volumes, the Stipulation mandated two additional items: 1) compliance with the requirements of the Stipulation, or 2) requisite additional lawful arrangements. Moreover, the Stipulation permitted the government to have unrestricted opportunity to inspect the inner workings of the facilities, and full compliance with the Stipulation was an express condition of any permit issued for construction or operation of the sewer system.

The inclusion of the Stipulation within Article XII when IEC's Compact was adopted in 1936 was, no doubt, deemed necessary, recognizing the rudimentary state of technology that existed for sewage treatment at that time. The Stipulation called for the requirement of certain screens through which waste matter was to have passed; it called for self-cleaning mechanical screens having clear openings; sedimentation basins were required; tanks of a prescribed capacity were required; scum basin boards were required; the sewage and waste thus screened and settled was to flow into a pump well, and then pumped under pressure through a tunnel to a point in New York Bay where it would be dispersed through a series of outlets forty feet or more below the surface of the water at a mean low tide.

In 1910, no doubt, when no secondary treatment existed, there had to be a concern about the quality of PVSC's discharges. Accordingly, the War Department of the United States Government granted PVSC permission to discharge sewage into the harbor providing certain terms were met to protect vessels and fish life.

In 1903, PVSC recommended to the legislature an intercepting sewer along the west bank

of the Passaic River from the Great Falls at Paterson to a pumping station on the Newark meadows. The sewage was to be pumped through a steel main under Newark Bay into a main sewer across Bayonne to an outfall in New York Bay near Robbins Reef Light. Following a thorough investigation in 1905 and 1906, the New York Bay Pollution Commission reported upon this adversely. When the report suggesting the discharge of the sewage from this large and rapidly growing district into New York Bay was made public, there was criticism concerning the discharge of the sewage in its raw form into the harbor. PVSC applied to the War Department for permission to construct the outlet sewer into the harbor. New York State sought an injunction to prevent the discharge of the Passaic Valley sewage into the harbor. The United States Government intervened in the suit as co-plaintiff. The War Department granted PVSC permission to discharge sewage into the harbor providing certain terms were met to protect fish life. That agreement (the 1910 Stipulation) did not terminate the suit between the State of New York and PVSC.

In fact, the United States government took the position that they were not essentially interested in the pollution of the waters as affecting health conditions surrounding the City of New York. Its interest in the matter concerned the health of the troops and government employees. The interests of the City of New York in the effects of harbor pollution were and remain vastly greater than those of the United States Government.

IEC's request for an administrative hearing seeking to maintain its jurisdiction over PVSC resulted in an Order granting the administrative hearing and citing case law for the proposition that federal statutes have supplanted the arrangements contemplated in the 1910 Stipulation. The Order further supported the conclusion that NJ DEP had authority to impose conditions on discharges from PVSC's plant well above and beyond those provided in the 1910 Stipulation.

From the first administrative decision in 1997, to the administrative proceeding and finally the Commissioner's Final Decision in the year 2000, NJ DEP's authority to include the stricter water quality requirements of the Interstate Environmental Commission has been recognized. The 2002 decision of the Appellate Court of the Superior Court of New Jersey duly acknowledged and further supported the regulatory power of the State of New Jersey.

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS

2002

	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
PLANT									
CONNECTICUT									
Fairfield County									
Bridgeport - East Side	B-1	2001+	7.2	12.0	Secondary (AS)	1,000 (4)	-	Incineration	45,000
- West Side	B-1	1996+	24.5	30.0	Secondary (AS)	3,000 (4)	-	Incineration	112,500
Fairfield	A	2002+	6.5	9.0	Secondary (AS)	20,000	20	Compost	45,000
Greenwich (Grass Island)	A	1993+	7.6	12.5	Secondary (AS)	6,888	14	Landfill	38,000
Norwalk	B-1	2000+	11.2	20.0	Secondary (AS)	56,000	5	Landfill	80,000
Stamford	B-1	1991+	17.2	20.0	Secondary (AS)	14,400	23.5	Landfill	100,000
Stratford	A	1992+	6.8	11.5	Secondary (AS)	32,333	6.5	Landfill	50,000
Westport	A	1975+	1.6	2.9	Secondary (AS)	13.17	3 to 6	Incineration (2)	14,800
New Haven County									
Milford - Beaver Brook	A	1996+	1.6	3.1	Secondary (AS)	904	14.2	Incineration (2)	19,000
- Housatonic	A	1996+	5.4	8.0	Secondary (AS)	2,851	16.5	Incineration	56,000
New Haven - East Shore	B-1	1997+	26.7	40.0	Secondary (AS)	58,724	22.4	Incineration	200,000
West Haven	B-1	1996+	6.3	12.5	Secondary (AS)	8,700	27	Incineration	53,000
NEW JERSEY									
Bergen County									
Edgewater	B-1	1989+	2.8	6.0	Secondary (PO)	12,484.56	6.37	Beneficial Reuse (2)	16,000
Essex County									
Passaic Valley Sewerage Commissioners	B-1	1988+	240.4	330.0	Secondary (AS)	94,848	50	Landfill Cover	1,400,000
Hudson County									
North Bergen M.U.A. - Woodcliff	B-1	1991+	4.1	2.9	Secondary (TF)	7,724	7.98	Incineration (2)	22,500
North Hudson Sewerage Authority									
- Adams Street (Hoboken)	B-1	1994+	10.1	24.0	Secondary (TF)	3,145.8	17.3	Incineration	80,000
- River Road (West New York)	B-1	1992+	8.4	10.0	Secondary (TF)	5,095	22	Incineration	63,500
Middlesex County									
Middlesex County Utilities Authority	A	1996+	105.6	147.0	Secondary (AS)	218,534	24.6	Beneficial Reuse	750,000
Union County									
Joint Meeting of Essex & Union Counties	B-2	2001+	55.9	85.0	Secondary (AS)	20,698	33.2	Land Application	500,000
						2,039	92.5		
Linden Roselle Sewerage Authority	B-2	1989+	10.9	17.0	Secondary (AS)	45,000	4.9	Beneficial Reuse	65,000
Rahway Valley Sewerage Authority	B-2	1991+	25.4	40.0	Secondary (AS)	19,384	21.4	Land Application/Composting	300,000
					A-1				

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS

2002

	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>PLANT</u>									
<u>NEW YORK</u>									
<u>Nassau County</u>									
Bay Park	A	1992+	50.2	70.0	Secondary (AS)	35,064	22.39	Compost	525,000
Belgrave Sewer District	A	1995+	1.5	2.0	Secondary (TF)	2,827	4.35	Trucked out to Bay Park	12,000
Cedar Creek	A	1997+	54.8	72.0	Secondary (AS)	45,412.5	18.08	Compost	550,000
Cedarhurst	A	1968+	0.7	1.0	Secondary (TF)	-	8	Compost	6,000
Glen Cove	A	1981+	3.3	8.0	Secondary (AS)	3,846.3	24.3	Landfill	28,000
Greater Atlantic Beach Water Reclamation District (Formerly - West Long Beach Sewer District)	A	2001+	0.5	1.5	Secondary (TF)	38 (6)	4.5	Trucked to Bay Park	5,000
Great Neck Sewer District	A	1990+	2.6	3.8	Secondary (TF)	200 (4)	22 to 30	Landfill	13,400
Great Neck Village	A	1996+	0.8	1.5	Secondary (TF)	91.5 (5)	6.3	Landfill	9,000
Jones Beach	A	1990+	0.1	2.5	Secondary (TF)	-	-	Trucked Out	Seasonal
Lawrence	A	1983+	1.1	1.5	Secondary (TF)	24.6 (6)	7	Compost(30%)/Trucked Out(70%)	5,500
Long Beach	A	1994+	4.9	7.5	Secondary (TF)	1,983	3	Landfill	37,000
Oyster Bay Sewer District	A	1992+	1.0	1.8	Secondary (TF)	35 (5)	4	Trucked Out	8,500
Port Washington Sewer District	A	1991+	2.7	4.0	Secondary (TF)	550 (4)	30	Incineration	35,000
<u>New York City</u>									
<u>Bronx County</u>									
Hunts Point	B-1	1977+	104.0	200.0	Secondary (AS)	101,736.6	27.5	Land Application/Landfill Cover	629,927
<u>Kings County (Brooklyn)</u>									
Coney Island	A	1994+	92.0	100.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	602,097
Newtown Creek	B-1	1967	229.0	310.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	1,039,294
Owls Head	B-1	1996+	101.0	120.0	Secondary (AS)	(3)	-	Land Application	761,479
Red Hook	B-1	1987	30.0	60.0	Secondary (AS)	10,846.9	22	Landfill	192,215
26th Ward	A	1975+	58.0	85.0	Secondary (AS)	61,473.6	26	Land Application/Landfill Cover	271,240
<u>New York County (Manhattan)</u>									
North River	B-1	1986	127.0	170.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	584,192
Wards Island	B-1	1979+	179.0	250.0	Secondary (AS)	135,497.5	26.7	Land Application	1,004,213
<u>Queens County</u>									
Bowery Bay	B-1	1978+	105.0	150.0	Secondary (AS)	46,884.5	24.6	Land Application/Landfill Cover	727,117
Jamaica	A	1978+	71.0	100.0	Secondary (AS)	27,498.3	26	Land Application/Landfill Cover	632,148
Rockaway	A	1978+	19.0	45.0	Secondary (AS)	(3)	-	Land Application	94,471
Tailman Island	B-1	1979+	50.0	80.0	Secondary (AS)	23,534.8	23.3	Land Application/Landfill Cover	388,214

A-2

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS

2002

	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>PLANT</u>									
<u>NEW YORK (con't)</u>									
<u>Richmond County</u>									
<u>(Staten Island)</u>									
Atlantic Village*	A	1985	-	0.075	Secondary (AS)	-	-	-	-
Elmwood Park Condominiums*	B-1	1974	-	2.0	Primary	-	-	-	20,000
IS-7	A	1964	0.01	0.021	Secondary (AS)	-	-	-	1,000
Mount Loretto Home-Plants #1 & #2*	A	1962	0.04	0.041	Septic Tank	-	-	-	1,000
Oakwood Beach	A	1979+	25.0	40.0	Secondary (AS)	36,552.9	24.9	Landfill	151,585
Point East Condominiums*	A	1986	-	0.16	Extended Aeration w/ Sand Filtration	-	-	-	300
Port Richmond	B-2	1978+	31.0	60.0	Secondary (AS)	(3)	-	Landfill	172,268
PS-3	A	1969	-	0.004	Extended Aeration	-	-	-	1,000
PS-42	B-2	1967	-	0.002	Secondary (AS)	-	-	-	1,100
Saint Joseph's School*	A	1963	0.04	0.02	Septic Tank with Sand Filtration	-	-	-	1,200
Treetop Village*	A	1985	-	0.25	Extended Aeration w/ Sand Filtration	-	-	-	-
<u>Rockland County</u>									
Joint Regional Sewerage Board - Town of Haverstraw	A	1998+	3.7	8.0	Secondary (AS)	4,167.15	20.4	Composting	35,000
Orangetown Sewer District	A	1996+	8.2	12.75	Secondary (TF)	4,962	25	Composting	50,000
Palisades Interstate Park - Bear Mountain Plant	A	1967+	0.1	0.3	Secondary (TF)	-	-	-	20,000
Rockland County Sewer District # 1	A	1995+	18.5	28.9	Secondary (RD)	2,346.10 (6)	26	Composting	160,000
Stony Point	A	1985+	0.9	1.0	Secondary (AS)	1,008	16	Composting	12,000
<u>Suffolk County</u>									
Huntington Sewer District	A	1988+	1.7	2.5	Secondary (TF)	2,291	17.1	Landfill	25,000
Northport	A	1972+	0.3	0.34	Secondary (AS)	31.3 (5)	2.5 to 3	Incineration (2)	3,500
Suffolk County Sewer District # 1	A	1988+	0.8	0.85	Secondary (RBC)	228 (5)	2.6	Incineration (16%), Landfill (84%)	12,000
Suffolk County Sewer District # 3	A	1989+	21.6	30.0	Secondary (AS)	64,148	24.1	Incineration (16%), Landfill (84%)	280,000
Suffolk County Sewer District # 6	A	1973+	0.3	2.0	Secondary (AS)	81 (5)	1.3	Incineration (16%), Landfill (84%)	6,000
Suffolk County Sewer District # 21	A	1989	1.9	2.5	Tertiary	360.5 (5)	1.6	Incineration (16%), Landfill (84%)	20,000
					A-3				

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS

2002

PLANT	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>NEW YORK (con't)</u> <u>Westchester County</u>									
Blind Brook (Rye)	A	2000+	2.6	5.0	Secondary (AS)	500.8 (6)	<0.5	Pumped to Port Chester	30,000
Buchanan	A	1999+	0.2	0.5	Secondary (AS)	2,000	10	Trucked Out	2,100
Coachlight Sq. Condo. Asso. Inc.*	A	1992+	0.03	0.05	Secondary (AS)	-	25	Trucked Out	210
Mamaroneck	A	1993+	12.6	20.6	Secondary (AS)	2,674 (5)	0.17	Pumped to New Rochelle	80,000
New Rochelle	A	1997+	12.7	13.6	Secondary (AS)	2,800 (4)	-	Landfill	80,000
Ossining	A	1981	5.2	7.0	Secondary (AS)	32,985	3.4	Incineration	40,000
Peekskill	A	1980	6.0	10.0	Secondary (AS)	680	2.1	Incineration at Ossining	35,000
Port Chester	A	1990+	4.9	6.0	Secondary (RD)	1,647.89 (5)	4.34	Incineration/Landfill	25,000
Springvale Sewerage Corporation*	B-1	1992+	0.1	0.13	Secondary (RBC)	131.59 (5)	3	Trucked Out	1,700
Yonkers Joint Treatment	A	1988+	77.3	92.0	Secondary (AS)	30,000	28	Landfill	500,000

Federal and Military

Camp Smith (Westchester County)	A	1997+	0.05	0.24	Secondary (TF)	5 (5)	-	Trucked Out	2,400
Veterans Administration Hudson Valley Healthcare System (Westchester County)	A	1982+	0.1	0.4	Secondary (TF)	-	-	Trucked Out	Patient Count
Gateway National Recreation Area (Floyd Bennet Field, Kings County)	A	1981+	-	1.0	Secondary (TF)	-	-	Landfill	5,000

NOTE: Except for the IEC Receiving Water Classification, all information and data are supplied by the operating entities and are published as supplied.

- (+) Year of major additions or reconstruction.
- (*) Private or institutional sewage treatment plant.
- (-) Denotes no information.
- (1) Except where indicated, all volumes represent wet tons per year rounded to the nearest ton.
- (2) Disposal method occurs off-site.
- (3) Transferred by sea to dewatering facility for processing.
- (4) Reported as dry tons per year.
- (5) Estimated volume.
- (6) Metric dry tons.

(AS) Activated Sludge (BO) Biochemical Oxidation (OD) Oxidation Ditch
(RBC) Rotating Biological Contractor (PO) Pure Oxygen (RD) Rotating Disc (TF) Trickling Filter

**INTERSTATE ENVIRONMENTAL COMMISSION
FINANCIAL STATEMENT FY 2002**

The Commission's accounting records are maintained on a cash basis and are audited annually. The following is a statement of cash receipts and disbursements for fiscal year July 1, 2001 to June 30, 2002:

CASH BOOK BALANCE AS OF JUNE 30, 2001 **\$1,109,528.66**

RECEIPTS

Connecticut - FY'02	\$ 86,250.00
New York - FY'02	388,000.00
New Jersey - FY'02	388,000.00
EPA - FY'01	313,100.00
EPA - FY'02	399,800.00
Pass-through funds	10,000.00
Interest	32,046.40
Miscellaneous Receipts	<u>5,328.30</u>

TOTAL RECEIPTS 1,622,524.70

Sub-Total \$2,732,053.36

DISBURSEMENTS

TOTAL DISBURSEMENTS 1,461,444.25

CASH BOOK BALANCE ON JUNE 30, 2002 **\$1,270,609.11**
=====

U.S. Treasury Bills	\$ 1,166,210.31
Insured Money Market Accounts	95,220.88
Checking Accounts	<u>9,177.92</u>
	<u>\$ 1,270,609.11</u> =====

GLOSSARY

ACP	asbestos concrete pipe
ALJ	administrative law judge
AWPCP	auxiliary water pollution control plant
BLRA	Bayonne Local Redevelopment Authority
BMWCA	Bureau of Marine Water Classification and Analysis
BNR	biological nutrient removal
BOCES	Board of Cooperative Educational Services
CCMP	Comprehensive Conservation and Management Plan
CES	Center for Environmental Science
CSI	College of Staten Island
CSO	combined sewer overflow
CT	Connecticut
CWA	Clean Water Act
CW/CA	Clean Water/Clean Air Bond Act
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DPR	Department of Parks and Recreation
DO	dissolved oxygen
DOH	Department of Health
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FY	fiscal year
HARS	Historic Area Remediation Site
HEP	Harbor Estuary Program
HVAC	heating, ventilating and air conditioning
IE	Independent Expert
IEC	Interstate Environmental Commission
IED	Interstate Environmental District
IMT	interim monitoring team
I/I	infiltration/inflow
ISC	Interstate Sanitation Commission
LIS	Long Island Sound
LISO	Long Island Sound Office
LISS	Long Island Sound Study
MCUA	Middlesex County Utilities Authority
MCWG	Management Committee Work Group
MG	million gallons
MGD	million gallons per day
MUA	Municipal Utilities Authority
NCHD	Nassau County Health Department
NELAC	National Environmental Laboratory Accreditation Conference

GLOSSARY

(continued)

NELAP	National Environmental Laboratory Accreditation Program
NEP	National Estuary Program
NHSA	North Hudson Sewerage Authority
NJPDES	New Jersey Pollutant Discharge Elimination System
NPDES	National Pollutant Discharge Elimination System
NPS	National Parks Service
N/PDES	National/State Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
NYC	New York City
NYS	New York State
NWS	Naval Weapons Station
O & M	operation and maintenance
PBSA/NY & NJ	Pro Bono Students America/New York & New Jersey
PVSC	Passaic Valley Sewerage Commissioners
QA/QC	quality control/quality assurance
RAS	return activated sludge
RBC	rotating biological contactor
RBWG	Regional Bypass Work Group
R/V	research vessel
SBR	sequencing batch reactors
SCADA	supervisory control and data acquisition system
SCSD	Suffolk County Sewer District
SOP	standard operating procedure
SPDES	State Pollutant Discharge Elimination System
SSES	sewer system evaluation survey
SSO	sanitary sewer overflows
STORET	<u>ST</u> Ore and <u>RE</u> Trieve, EPA's national water quality data base
STP	sewage treatment plant
SUNY	State University of New York
SWEM	system-wide eutrophication model
TMDL	total maximum daily load
TSS	total suspended solids
UCONN	University of Connecticut
USA	Use and Standards Attainment Project
USCG	United States Coast Guard
UV	ultraviolet
VFD	variable frequency drive
VOC	volatile organic carbon
WHEAT	West Harlem Environment Action
WMWG	Water Monitoring Work Group
WPCA	Water Pollution Control Authority
WPCP	water pollution control plant