INTERSTATE SANITATION COMMISSION

1975

NEW YORK NEW JERSEY CONNECTICUT

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R E P O R T

of the

INTERSTATE SANITATION COMMISSION

on the
Water Pollution Control Activities
and the
Interstate Air Pollution Program

INTERSTATE SANITATION COMMISSION

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January 24, 1976

To His Excellency, Brendan T. Byrne
His Excellency, Hugh L. Carey
Her Excellency, Ella T. Grasso
and the Legislatures of the States
of New Jersey, New York, and Connecticut

Your Excellencies:

The Interstate Sanitation Commission respectfully submits its report for the year 1975.

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,

Natale Colosi

For the State of New York — Chairman

John B. Dioguardi

For the State of Connecticut — Vice Chairman

Louis J. Fontenelli

For the State of New Jersey — Vice Chairman

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C O N T E N T S

I L L U S T R A T I O N S

I. SUMMARY OF ACTIVITIES

The Interstate Sanitation Commission was created by Compact between the States of New York, New Jersey, and Connecticut for the abatement of existing water pollution and the control of future water pollution in the tidal waters of the New York Metropolitan Area. In 1962, air pollution was added to the scope of the Commission's activities, and in 1970 the Commission was designated as the official Planning and Coordinating Agency for the New Jersey-New York-Connecticut Air Quality Control Region.

This report, which is prepared each year, provides a record of the water and air pollution activities of the Interstate Sanitation Commission on technical assistance, planning, laboratory analysis, monitoring, and coordination of interstate problems which promote the construction of water pollution control projects within the Interstate Sanitation District.

WATER POLLUTION

The Commission's activities in water pollution abatement continued this year, providing assistance in the coordination of approaches to regional pollution problems. Priorities in water pollution include: elimination of oil discharges into District waters, pretreatment of industrial wastes, compliance monitoring, thermal pollution, enforcement, and combined sewer overflows. More than $4.5 billion dollars is allocated for wastewater treatment improvements in the next several years. These funds are designated for the upgrading and expansion of existing wastewater treatment systems to provide a minimum of secondary treatment.

Of major concern in the Interstate Sanitation District is the large and ever-increasing quantities of sludge produced at municipal wastewater treatment plants. The Commission is responsible for managing a two-year, three-phase program to develop a coordinated system for sewage sludge disposal in the New York-New Jersey Metropolitan Area by the third quarter of 1976. The Phase 1 report was published in June 1975. This report concluded that dewatering of sewage sludge followed by pyrolysis is the best alternative to ocean disposal. A limited quantity of sludge was also recommended for land disposal.

The Commission continued to operate its remote water quality monitoring system using its own equipment as well as

equipment leased from the U.S. Environmental Protection Agency. Graphs of the monthly maximum, minimum, and average values of temperature, dissolved oxygen, pH, and conductivity for each monitor location are presented elsewhere in this report.

In order to assist the States in meeting their water monitoring requirements, the Commission expanded its routine water quality surveys to 59 stations. The schedule of the runs, stations, and parameters analyzed for are given in the report. The Commission also has initiated a biological monitoring program to systematically and comprehensively monitor biological conditions in the Interstate Sanitation District.

To provide an analytical basis for the States to allocate wasteloads, the Commission has, at the request of and through funding provided by the U.S. Environmental Protection Agency, completed administration of a contract to model the entire New York Harbor area. A description of this effort is included in this report.

The Commission has continued its cooperation with the States and other enforcement agencies. This included being an active member of the Technical Advisory Committees of the 208 Agencies throughout the Region, assisting the States in certification of discharges into District waters, performing laboratory analyses for state and federal enforcement agencies, and carrying out compliance monitoring efforts.

AIR POLLUTION

In addition to continuing coordination of the Air Pollution Warning System in the New Jersey-New York-Connecticut Air Quality Control Region, the Commission's air pollution activities focused on three areas: characterization of photochemical oxidants, coordination of "Control of Suspended Particulates" project, and an investigation of rural sulfates.

To characterize photochemical oxidants, the Commission, in cooperation with the States of New York, New Jersey, and Connecticut, conducted an extensive program of aerial surveillance of ozone and its precursors over the region. An extensive three-day study characterizing the diurnal variation of the vertical ozone profile was accomplished with the assistance of the three states. The Commission also initiated a regional ozone quality assurance program to maintain a uniform calibration of monitors in the Northeast.

The results of these programs, which indicated that a common photochemical oxidant problem exists in the northeastern part of the United States, are being utilized by the States to evaluate the feasibility and effectiveness of various control strategies based upon these studies having shown that the oxidant problem extends throughout the eastern United States.

The Commission was awarded a second year grant from the U.S. Environmental Protection Agency to coordinate the regional "Control of Suspended Particulates" study. In addition, the Commission and New York State, with assistance from the State of New Jersey, conducted a rural sulfate particulate sampling study in the two states. This was supplemented by rainfall pH data obtained from a rainfall collection network established in the New York Metropolitan Area.

II. WATER POLLUTION

GENERAL

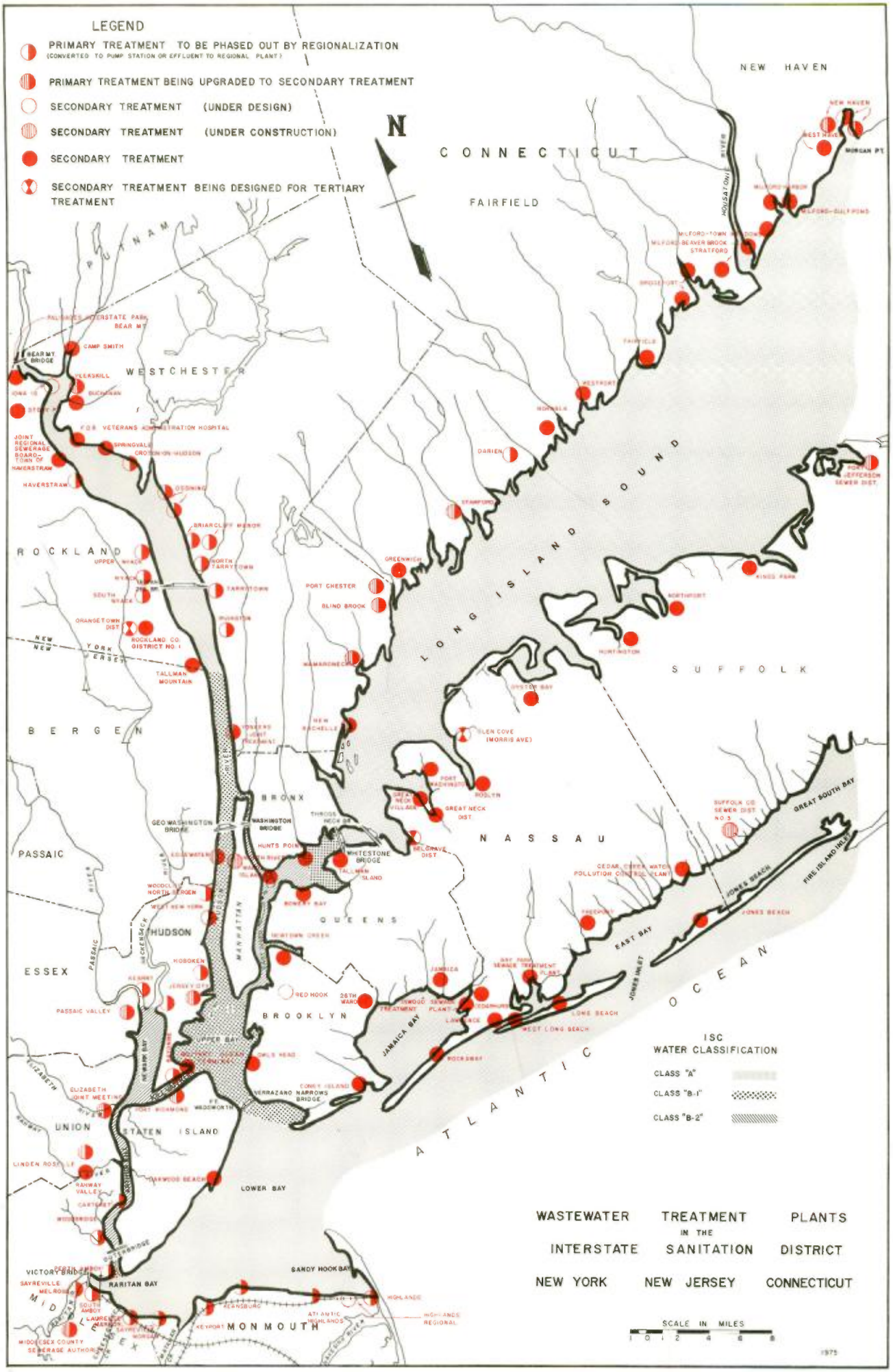
Construction for a total of 160 water pollution control projects was completed, continued, commenced, or was being evaluated for expansion of capacity or upgrading of treatment within the Interstate Sanitation District during 1975.

Funding for these projects totaled more than $4.6 billion, of which $101 million was for 27 projects completed this year, $2.7 billion for 52 projects under construction, and $1.8 billion for 81 future projects. These expenditures of federal, state, and local funds are for construction of new wastewater systems and expansion and upgrading of existing facilities that will treat, to a high degree, effluents discharging into the District waterways.

The funding summarized above does not include large sums spent by industries for their own water pollution control programs.

The Commission has obtained the technical and fiscal information for the water pollution control projects described in the following section from responsible persons within state and local government agencies, sewage authorities, and consulting engineering firms. The information in this section is that which was available through October 1975.

A map of the Interstate Sanitation District on the following page shows the locations of wastewater treatment plants which discharge into the District waterways, the type of treatment and status of each plant, and the Commission's water classifications. Information pertaining to flows, tributary population, and date of construction for these plants is contained in the Appendix.


LEGEND
PRIMARY TREATMENT TO BE PHASED OUT BY REGIONALIZATION
(CONVERTED TO PUMP STATION OR EFFLUENT TO REGIONAL PLANT)
PRIMARY TREATMENT BEING UPGRADED TO SECONDARY TREATMENT
SECONDARY TREATMENT (UNDER DESIGN)
SECONDARY TREATMENT (UNDER CONSTRUCTION)
SECONDARY TREATMENT
SECONDARY TREATMENT BEING DESIGNED FOR TERTIARY TREATMENT
N
CONNECTICUT
NEW HAVEN
FAIRFIELD
WESTCHESTER
ROCKLAND
BERGEN
PASSAIC
HUDSON
ESSEX
UNION
BRONX
QUEENS
BROOKLYN
STATEN ISLAND
NASSAU
SUFFOLK
MONMOUTH
MIDDLESEX
LONG ISLAND SOUND
ATLANTIC OCEAN
RARITAN BAY
SANDY HOOK BAY
LOWER BAY
UPPER BAY
JAMAICA BAY
EAST BAY
GREAT SOUTH BAY
ISC
WATER CLASSIFICATION
CLASS "A"
CLASS "B-1"
CLASS "B-2"
WASTEWATER TREATMENT PLANTS
IN THE
INTERSTATE SANITATION DISTRICT
NEW YORK NEW JERSEY CONNECTICUT
SCALE IN MILES
0 1 2 4 6 8
1975

CONNECTICUT WATER POLLUTION CONTROL PROJECTS

Bridgeport East Side Plant, Connecticut

Project Under Construction

This secondary treatment plant was completed in 1973. The sludge incineration facilities received final acceptance testing this year and are now in operation. The chemical treatment unit and computer system have not yet received acceptance testing. A consulting engineer is evaluating the system to determine what changes to the original design are required.

This plant has a design flow of 24 million gallons per day with removals of 90% biochemical oxygen demand and suspended solids and will cost $9.8 million.

Bridgeport West Side Plant, Connecticut

Completed Project

This secondary treatment plant was completed in 1973 and is capable of 90% removals of biochemical oxygen demand and suspended solids. The conversion of one of the former settling tanks to a storm water storage tank was completed this year.

The cost for expanding and upgrading this 60 million gallons per day plant was $13.676 million.

Darien, Connecticut

Projects Under Construction

The conversion of this plant to a pumping station discharging to the Stamford Treatment Plant was completed November 1, 1975. Four sewage lift stations were completed and connections were made to the Stamford Treatment Plant at a cost of approximately $700,000.

Approximately 95% of the sewer construction associated with the plant has been completed. The total cost is expected to be $900,000.

The Stony Brook pumping station is being upgraded and the Glenbrook pumping station is being eliminated,

its flow being diverted by gravity to Stamford's Norton River interceptor.

Fairfield, Connecticut

Project Under Construction

The construction of sewers to expand the area served by this plant continued this year.

Future Projects

A major new pumping station and system of sewers and trunk lines are planned. This construction is scheduled to start in 1977.

Greenwich, Connecticut

Future Projects

The project to sewer the Hillside Drive and Byram Shore Road area, which will include three new pumping stations, is in the design stage. The estimated cost of this project is $1.25 million.

A federal grant application has been made for funds to prepare a facilities plan including an infiltration/inflow analysis which is required by the U.S. Environmental Protection Agency. It is expected to begin in the spring of 1976 and cost $135,000.

A major sewer construction project is planned, including an interceptor in the North Mianus area. This project is expected to cost approximately $2.5 million and be completed in June 1979.

Milford-Beaver Brook, Connecticut

Completed Projects

Three new pumping stations were completed during this past year at a cost of $700,000.

Project Under Construction

The construction of new sewers, expanding the plant's tributary area, continued this year. The total cost

of this project is estimated at $4.5 million.

Future Projects

One additional pumping station is planned.

A facilities study program which will evaluate all the existing Milford treatment plants and other sanitary facilities is also planned. This program will include infiltration/inflow studies and studies of future needs for expansion of sewer systems and treatment facilities.

Milford-Gulf Pond, Connecticut

Project Under Construction

Two new secondary clarifiers and associated piping are presently being constructed.

Future Projects

A contract has been awarded for the Anderson Avenue pumping station. Future plans are to build three additional pumping stations, further expanding the plant's drainage area.

This plant has been designated to receive the sewage from the Town of Orange if and when it is determined that the town requires a sewage collection system.

This plant is included in the facilities study program for all Milford plants discussed under Beaver Brook.

Milford-Harbor, Connecticut

Project Under Construction

This plant is slated for abandonment with its flow to be diverted to the Beaver Brook Treatment Plant. Excess flows are presently being diverted through the Rogers and Mayflower Avenues pumping stations to the Beaver Brook Treatment Plant.

Future Project

This plant is included in the facilities study program for all Milford plants discussed under Beaver Brook.

Milford-Town Meadows, Connecticut

Future Project

This plant is included in the facilities study program for all Milford plants discussed under Beaver Brook.

New Haven-Boulevard, Connecticut

Future Project

It was originally planned to construct a secondary treatment plant at this site which would treat primary effluent from both the East Street and Boulevard plants.

This project is temporarily stalled, as is described under New Haven-East Street.

New Haven-East Shore, Connecticut

Project Under Construction

Expansion and upgrading of this primary plant to a secondary treatment plant with a design flow of 40 million gallons per day began this year. Construction is continuing and is expected to take 30 months at an expected cost of $35 million.

Future Project

The engineering studies for the planned 54" diameter sewer from the south bank of the Quinnipiac River to the plant have been completed. It is expected to cost $3.1 million.

New Haven-East Street, Connecticut

Future Project

It was originally planned to convey the primary effluent from this plant to the New Haven-Boulevard plant when that plant's secondary treatment facilities were completed. However, the U.S. Environmental Protection Agency disapproved this plan and engineering was halted. The U.S. Environmental Protection Agency's position is that the secondary treatment plant should be at the East Street site. The matter is now in litigation.

When the location for the secondary treatment plant is settled on, the plants will be connected such that one will provide primary treatment and convey its effluent to the other, where it will receive secondary treatment.

Norwalk, Connecticut

Completed Project

The upgrading and expansion of this plant to secondary treatment with a peak flow of 30 million gallons per day at 95% removals of biochemical oxygen demand and suspended solids was completed in January 1975 at a cost of $8 million.

Projects Under Construction

Two 36" diameter syphons across the Norwalk River and a 60" diameter main line to the plant are presently under construction. This project should cost $2.5 million.

Previously unsewered sections of Norwalk continue to be added to the plant drainage basin.

Future Projects

It is planned to add Wilton, Connecticut, to the area that is tributary to this plant.

A supplemental plant for the treatment of excess flow due to rainfall will probably be put up for bids in 1976. This 75 million gallons per day plant will treat the combined sewage with microstrainers, followed

by chlorination. During dry periods, the effluent from the Norwalk plant will be passed through the micro-strainers as a final step to treat the remaining 5% of biochemical oxygen demand and suspended solids.

The estimated cost of this project is $4 million.

Stamford, Connecticut

Completed Projects

The Cove Island pumping station has been modified to accept the flow from Darien.

The Soundview Avenue interceptor has been completed.

Project Under Construction

The upgrading of this plant to secondary treatment and expansion to 20 million gallons per day continued. Construction is expected to be completed by June 1976 at a cost of $15 million.

The former Darien treatment plant is being converted to a pumping station. When this work is completed, the plant drainage basin will include most of Darien.

Stratford, Connecticut

Completed Project

Two pumping stations and associated sewer lines in the northeast area of the town were completed at a cost of $1.5 million.

Projects Under Construction

A flood control dike is being built around the plant at an estimated cost of $2.5 million.

Additional sewer construction is underway to service areas previously not sewered and to relieve overloaded existing lines.

ADDITIONAL SETTLING BASINS UNDER CONSTRUCTION FOR THE STAMFORD WASTEWATER TREATMENT PLANT EXPANSION.

CONSULTING ENGINEERS: HAYDEN, HARDING, and BUCHANAN

Future Projects

Two additional pumping stations are presently in the design stage.

West Haven, Connecticut

Completed Projects

Three and one-half miles of sewer were constructed at a cost of $397,000.

The Oyster River and Cove River pumping stations were put into service in December 1974. Their construction costs were $778,400 and $759,000, respectively.

Project Under Construction

Construction of the Jones Street ejector station is underway. Completion is expected by January 1976 at a cost of $55,000.

Future Project

Bids are expected to be let in 1976 for the extension of the Oyster River trunk sewer line.

Westport, Connecticut

Completed Project

Expansion of the plant to treat flows ranging from 2.8 to 9 million gallons per day with 95% removals for biochemical oxygen demand and suspended solids was completed in March 1975 at a cost of $8 million.

One pumping station was upgraded and the new Center Street pumping station was built.

Project Under Construction

The existing sewer system expansion to serve previously unsewered areas is continuing.

Future Projects

A new pumping station and associated sewer lines are planned for the Compo Beach area and upgrading of two pumping stations is planned at a cost of approximately $500,000.

NEW JERSEY WATER POLLUTION CONTROL PROJECTS

Atlantic Highlands, New Jersey (Monmouth County)

Future Project

This plant will be converted to a pumping station which will convey its flow to the Highlands-Atlantic Highlands Regional Sewerage Authority Treatment Plant which will be built to accept the flows from Atlantic Highlands and Highlands.

Bayonne, New Jersey (Hudson County)

Future Project

Bayonne comprises the entire Facilities Planning Area II of the Hudson County Regional Sewerage Authority. It is hoped that the plan will commence this year and take 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority elsewhere in this report.

Bayshore Regional Sewerage Authority Treatment Plant, New Jersey (Monmouth County)

Future Projects

Flows from the Keansburg, Keyport, and Matawan treatment plants will be diverted to this regional activated sludge plant via pumping stations and gravity sewers. As these plants are connected, the flow to the Bayshore Regional Plant will reach the design level of 6 million gallons per day.

Carteret, New Jersey (Middlesex County)

Future Project

This primary treatment plant is to be converted to a pump station which will discharge its flow to the Middlesex County Sewerage Authority Treatment Plant. Plans have been submitted to the U.S. Environmental Protection Agency and approval is expected soon.

Earle Naval Ammunition Depot-U.S.N. Leonardo, New Jersey (Monmouth County)

Completed Project

This plant was converted to a pumping station this past September. Its flow is discharged to the Middletown Sewerage Authority Treatment Plant.

Edgewater, New Jersey (Bergen County)

Completed Project

A pilot plant utilizing the "Bio-Surf" method for achieving secondary treatment continued in operation. This study will be completed in the spring of 1976.

Future Project

The feasibility of using the "Bio-Surf" process as secondary treatment will depend upon economic considerations and its ability to achieve 90% removals of biochemical oxygen demand and suspended solids. The estimated cost of upgrading this plant is $3.2 million.

An alternate plan consists of pumping the sewage from this plant to the Bergen County Sewerage Authority Treatment Plant at Little Ferry.

Elizabeth Joint Meeting, New Jersey (Union County)

Project Under Construction

Upgrading of this primary plant to secondary treatment using activated sludge has begun. The plant will have a capacity of 75 million gallons per day and will remove 90% of the biochemical oxygen demand and total suspended solids. Construction will cost approximately $50 million and the project is scheduled for completion in June of 1978.

Highlands, New Jersey (Monmouth County)

Future Project

This treatment plant will be converted to a pumping station which will discharge to the proposed Highlands-Atlantic Highlands Regional Sewerage Authority Treatment Plant.

Highlands-Atlantic Highlands Regional Sewerage Authority, New Jersey (Monmouth County)

Future Project

This plant will be built to treat the sewage now treated at the Highlands and Atlantic Highlands treatment plants which will be converted to pumping stations. Design flow is 2 million gallons per day, with removals of 85% of biochemical oxygen demand and suspended solids. The effluent from this plant will be discharged to the Monmouth County Bayshore Outfall Authority ocean outfall. Sludge will be incinerated using the Dorr-Oliver F-S system.

Construction of this plant is being held up pending U.S. Environmental Protection Agency approval of a force main location. A decision is expected soon.

The total construction cost for the new plant, conversion of the existing plants to pumping stations, and installation of force mains will be approximately $4 million.

Hoboken, New Jersey (Hudson County)

Future Project

Hoboken is within Facilities Planning Area III of the Hudson County Regional Sewerage Authority. Work on this plan is expected to commence this year and take 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority.

Hudson County Regional Sewerage Authority, New Jersey (Hudson County)

Future Project

Hudson County has been divided into three planning areas, for each of which a facilities plan will be prepared. It is hoped that work on these plans will begin this year and be completed 9 to 12 months later.

The municipalities in the planning areas are:

Facilities Planning Area I: Jersey City, Western North Bergen, Kearny Point, Western Slope of Union City, and Secaucus

Facilities Planning Area II: Bayonne

Facilities Planning Area III: Hoboken, Weehawken, Eastern Slope of Union City, West New York, Guttenberg, Eastern Slope of North Bergen (Woodcliff)

One consultant will be retained for each planning area along with one environmental consultant for all three.

The cost for this project is estimated to be $300 million with an additional cost of $1.5 million for the facilities plan.

Jersey City East Side, New Jersey (Hudson County)

Future Plan

Jersey City is within Facilities Planning Area I of the Hudson County Regional Sewerage Authority. Work on the plan is expected to begin this year and take 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority elsewhere in this report.

Jersey City West Side, New Jersey (Hudson County)

Future Project

Jersey City lies within Facilities Planning Area I of the Hudson County Regional Sewerage Authority. Planning is expected to begin this year and take 9 to 12 months to complete.

Refer to the write-up of the Hudson County Regional Sewerage Authority elsewhere in this report.

Keansburg, New Jersey (Monmouth County)

Future Projects

This treatment plant will be converted to a pumping station discharging to the Bayshore Regional Sewerage Authority Treatment Plant. Bids will be returned and construction begun by the end of this year, with completion expected by the end of 1976, at a cost of $950,000.

A federal grant is expected for 75% of the cost of sewer repairs to correct infiltration problems.

Kearny, New Jersey (Hudson County)

Future Project

Kearny lies within Facilities Planning Area I of the Hudson County Regional Sewerage Authority. Work on this plan is expected to commence this year and take from 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority elsewhere in this report.

Keyport, New Jersey (Monmouth County)

Future Projects

This plant will be abandoned upon completion of necessary gravity sewage lines to the Bayshore Regional Sewerage Authority Treatment Plant.

Construction of a new 14" diameter force main from the new Keansburg pumping station to the existing West Keansburg

pumping station is expected to begin in December 1975 and be completed in December 1976. The approximate cost will be $160,000.

Linden-Roselle Sewerage Authority, New Jersey (Union County)

Future Project

Construction is expected to begin in February 1976 on the upgrading of this primary plant to an activated sludge secondary treatment plant. The plant will have a capacity of 17 million gallons per day and remove 85% of biochemical oxygen demand and settleable solids. The additional land required for plant expansion has been acquired.

A U.S. Environmental Protection Agency grant of $17.885 million has been received. The total cost of construction plus engineering, etc., will be approximately $25 million.

Madison Township Sewerage Authority - Laurence Harbor, New Jersey (Middlesex County)

Future Project

The existing plant will be converted to a pumping station which will deliver its flow to the Middlesex County Sewerage Authority Treatment Plant.

Middlesex County Sewerage Authority, New Jersey (Middlesex County)

Project Under Construction

Construction work at this plant continued this year. The plant will be expanded to 120 million gallons per day and utilize an activated sludge process with pure oxygen to attain 90% removal of biochemical oxygen demand and 85% removal of suspended solids. Sludge will be digested aerobically and disposed of by barging to sea until alternatives are required.

Construction should be completed in 1977 at a cost of $110 million.

Future Project

The primary treatment plants at South Amboy, Sayreville-Morgan, and Sayreville-Melrose will be converted to pumping stations which will convey their flows to this plant via interceptors and force mains. The conversion costs for these 3 plants will be approximately $4.2 million.

Plans have also been made for the Carteret, Madison Township Sewerage Authority, Perth Amboy, and Woodbridge treatment plants to be converted to pumping stations with their flows going to the Middlesex County Sewerage Authority Treatment Plant.

Passaic Valley Sewerage Commissioners (Essex County)

Project Under Construction

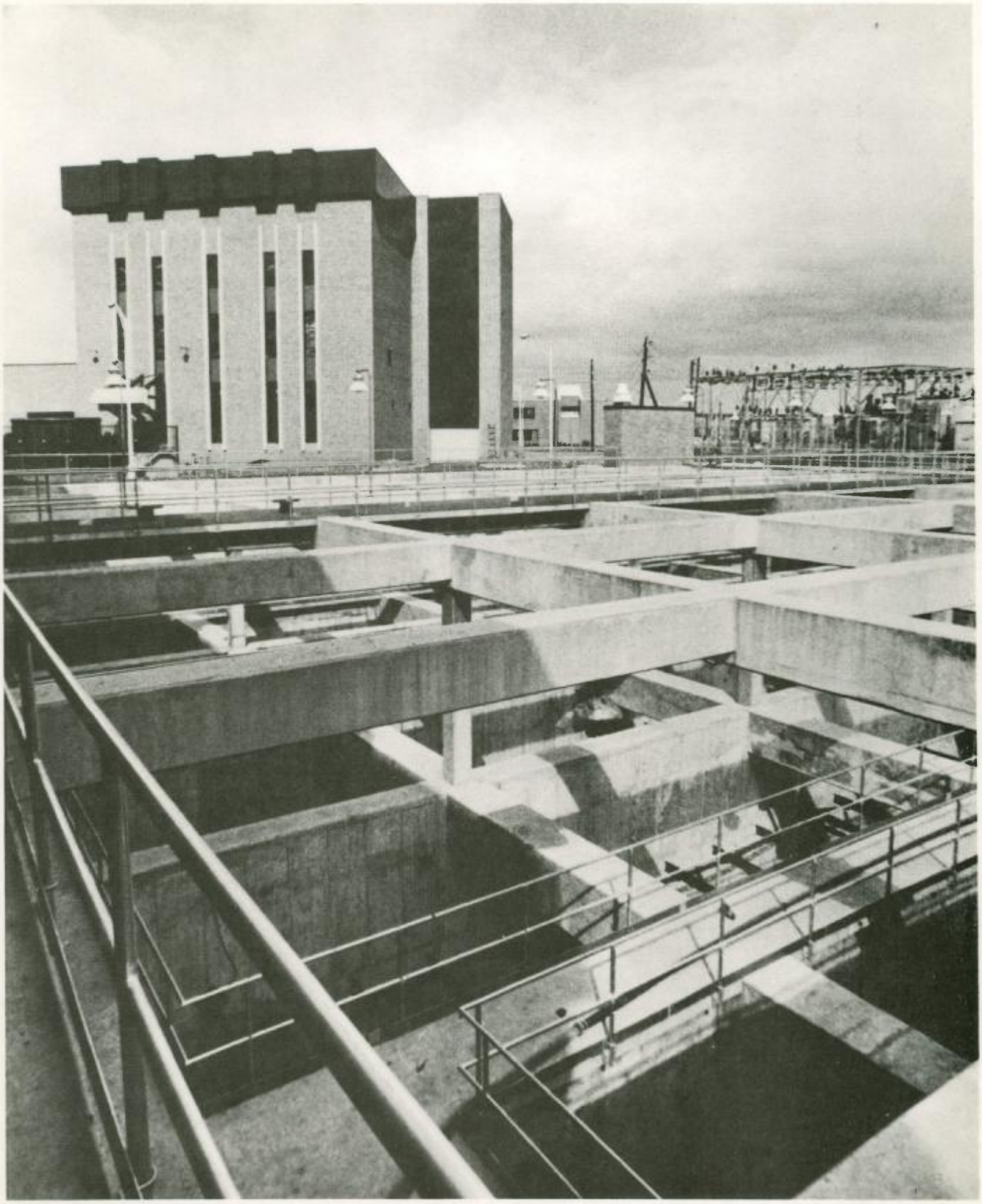
The head end facilities, the trash racks, and the grit chambers are 99% completed, as well as the incinerator. The incinerator will burn screenings, matter collected in the grit chambers, and scum.

Future Projects

Final plans and specifications for the new influent pumping station, sludge handling facilities and refurbishment of the existing pumping station were approved by the New Jersey Department of Environmental Protection and are presently awaiting approval by the U. S. Environmental Protection Agency. The remainder of the Phase 1 work, the oxygen system, clarifiers and power station were submitted for approval in December 1975.

When the Phase 1 work is completed, the plant will provide secondary treatment for 720 million gallons per day, removing 83-85% of biochemical oxygen demand and suspended solids. Upon completion of Phase 2, the rebuilding of the primary facilities, removals of 93% of biochemical oxygen demand and suspended solids will be achieved.

Phase 1 construction, consisting of Part A-Main Treatment Plant and Part B-Thermal Sludge Treatment Facilities, will be accomplished without interruption



HEAD END FACILITIES AND RECENTLY COMPLETED INCINERATION BUILDING AT THE PASSAIC VALLEY SEWERAGE COMMISSIONERS WASTEWATER TREATMENT PLANT. - CONSULTING ENGINEER: CHARLES A. MANGANARO
PHOTO COURTESY OF: PASSAIC VALLEY SEWERAGE COMMISSIONERS

of the existing primary treatment plant and will be completed in 1978. When this work is completed, Phase 2 (which includes new primary clarifiers, a bridge over Doremus Avenue, landscaping, dock modifications, and renovation of existing sludge facilities) will begin. While construction is going on, the new secondary facilities will be utilized for treatment.

The estimated construction costs are as follows: Phase 1, Part A - $184 million; Phase 1, Part B - $85 million; Supervision during construction - $12 million; Total cost for Phase 1 - $281 million; Phase 2 - $51 million.

Perth Amboy, New Jersey (Middlesex County)

Future Project

This plant will be converted to a pumping station which will convey its flow to the Middlesex County Sewerage Authority Treatment Plant. Approval for an infiltration/inflow study and assessment of the impact of force main routes has been obtained from the State of New Jersey. Approval from the U.S. Environmental Protection Agency is expected by the end of this year, at which time a grant would be made to conduct the study.

The construction cost for the conversion of the existing plant to a pumping station and installation of the force main will be approximately $3.5 million. In addition, Perth Amboy's proportionate share of the work to get to the Middlesex County Sewerage Authority Treatment Plant, to be shared with Woodbridge and Carteret, will be approximately $1 million.

Sayreville-Melrose, New Jersey (Middlesex County)

Future Project

The primary plant will be converted to a pumping station which will deliver its flow to the Middlesex County Sewerage Authority Treatment Plant. Flows from the Sayreville-Morgan and South Amboy plants will be delivered to this new pumping station.

Sayreville-Morgan, New Jersey (Middlesex County)

Future Project

The existing primary treatment plant will be converted to a pumping station which will convey its flow to Sayreville-Melrose and thence to the Middlesex County Sewerage Authority Treatment Plant.

South Amboy, New Jersey (Middlesex County)

Future Project

The effluent from this primary plant will be pumped to Sayreville-Melrose, thence to the Middlesex County Sewerage Authority Treatment Plant.

West New York, New Jersey (Hudson County)

Future Project

West New York lies within Facilities Planning Area III of the Hudson County Regional Sewerage Authority. Work is expected to begin this year and take from 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority elsewhere in this report.

Woodbridge, New Jersey (Middlesex County)

Future Project

This plant will be converted to a pumping station which will convey its flow to the Middlesex County Sewerage Authority Treatment Plant.

The total cost for construction at the Keasby and Woodbridge plants, including connection to the Middlesex County plant, will be approximately $13 million.

Woodcliff-North Bergen, New Jersey (Hudson County)

Future Project

The area tributary to this plant lies within Facilities Planning Area III of the Hudson County Regional

Sewerage Authority. Work on the plan is expected to begin this year and take from 9 to 12 months to complete.

Refer to the write-up on the Hudson County Regional Sewerage Authority elsewhere in this report.

NEW YORK WATER POLLUTION CONTROL PROJECTS

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

Project Under Construction

The 201 Facilities Plan report for this plant is to be issued soon, followed by a public hearing, probably in December 1975. This plan will evaluate various alternative proposals for expansion and upgrading of this plant and its tributary sewer system.

Belgrave Sewer District, New York (Nassau County)

Project Under Construction

A polymer evaluation program is currently being conducted.

It is planned to utilize the existing secondary clarifiers to increase the percent removals of both biochemical oxygen demand and solids by the addition of chemical coagulant.

The cost for the initial pilot plant program is approximately $4,000. If successful, polymer addition will cost $20,000 per year in operating expenses.

Future Project

The plant's capacity is expected to be exceeded by the year 1985. In the future, a plan will be submitted to insure that these flows will receive adequate treatment through plant expansion.

Blind Brook, New York (Westchester County)

Future Projects

Final plans and specifications for upgrading this plant to a 7 million gallons per day secondary plant will be submitted to the State by the end of December 1975. The 201 Facilities Plan has already been submitted to the State.

The first phase of the infiltration/inflow study has been approved. A public hearing on the project was held on October 22 and 23, 1975.

Bowery Bay, New York (Queens County)

Project Under Construction

This plant will ultimately have the capacity to treat 150 million gallons per day by step aeration with a minimum removal efficiency of 90% for biochemical oxygen demand and suspended solids.

The construction necessary to upgrade and expand the present plant has been 57% completed and is anticipated for completion in June 1977.

The total estimated development cost for this project is $90 million.

Briarcliff Manor, New York (Westchester County)

Future Project

An engineering report is being prepared in relation to diverting the flows from River Road and Scarborough Dock to the future county plant at Ossining by installing pumping stations.

Buchanan, New York (Westchester County)

Future Project

Sludge is presently being removed by a private contractor and disposed of at the Yonkers Joint Meeting plant. The planned sludge drying beds will be built in a few years, pending availability of funds.

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

Projects Under Construction

Construction of new sewers and interceptors in previously unsewered areas is underway.

The ocean outfall for this plant has been completed. Construction is underway on the diffuser section. The total construction cost for the outfall and diffuser is estimated at $54 million.

Future Project

Engineering is almost complete on the design of the tertiary treatment section of this plant. This plant will then be capable of nitrogen removal. Construction is expected to start in late 1976 and cost approximately $20 million.

City-Hart Island, New York (Bronx County)

Completed Project

The primary treatment plant was abandoned on April 7, 1975, and replaced with a pumping station which discharges to the Hunts Point Plant for treatment.

Coney Island, New York (Kings County)

Future Project

Federal and State funds have been reserved for the upgrading of this treatment plant pending the results of an infiltration/inflow analysis to conform with the requirements under the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500. Such analysis is scheduled to begin upon approval of the scope of work by the State and the U.S. Environmental Protection Agency.

The upgrading will convert the present modified 110 million gallons per day plant to step aeration. The new plant will accomplish greater than 90% removals of both biochemical oxygen demand and suspended solids.

Croton-on-Hudson, New York (Westchester County)

Future Project

A pumping station and interceptor sewer will be built to replace this primary plant. Sewage will be conveyed to the proposed Westchester County Treatment

Plant at Ossining.

Field testing commenced this year and construction may start in the spring of 1976.

F.D.R. Veterans Administration Hospital, New York (Federal & Military)(Westchester County)

Completed Project

The installation of a roto skimmer and scum pit to handle solids from the secondary clarifier at this 200 thousand gallons per day secondary trickling filter plant was completed and the units were placed in operation this year. Construction cost was $16,000.

Future Project

Bids are being taken for an emergency generator to be installed some time in 1976. It is expected to cost from $25,000 to $30,000.

Additional funds are being sought to make improvements in the preliminary treatment facilities. These improvements are expected to cost $100,000.

Freeport, New York (Nassau County)

Project Under Construction

A television survey of sewer lines is in progress at an approximate cost of $4,500. Sections will be relined where necessary at an estimated cost of $64,500.

Future Project

This plant will be phased out with its flow being diverted to the Cedar Creek Water Pollution Control Plant. All of the existing pumping stations will be upgraded before the diversion takes place, which is expected some time next year.

The cost for this project is estimated at $4.5 million.

Glen Cove, New York (Nassau County)

Completed Project

The Dock Place and Danas Highway lift stations on Morgan Island were completed at a cost of $110,000 and $257,000, respectively. The Dock Place station pumps to the Danas Highway station which in turn pumps to the Glen Cove Treatment Plant. Force main work for these two stations cost $406,000.

Project Under Construction

The Southland Drive lift station on Morgan Island is being renovated at a cost of $89,000. Construction is 90% completed.

Future Project

Plans for the expansion and upgrading of the plant are being reviewed by the New York State Department of Environmental Conservation. The new facility will be an activated sludge plant with de-nitrification, which will achieve removals of 90% of biochemical oxygen demand and suspended solids. Flow capacity will be 8 million gallons per day. The development cost of these new facilities will be $22 million.

An alternate plan is to pump the flow from Glen Cove to the Cedar Creek Treatment Plant. This plan is being reviewed by the U.S. Environmental Protection Agency.

Great Neck Sewer District, New York (Nassau County)

Future Projects

Phase 1 plans for the improvement of the sludge digestion system, expansion of laboratory facilities, and the connection of a new water main are being reviewed by the U.S. Environmental Protection Agency. The existing sludge digesters will be modified, a new digester added, and a new vacuum filter added. Funding for this project is $1.8 million.

Phase II plans, which include expansion of the plant to 4.5 million gallons per day and the construction of an outfall, are being held up pending the results of the Nassau-Suffolk 208 planning effort.

Great Neck Village, New York (Nassau County)

Completed Project

An Operations and Maintenance Report was completed in June which recommended coagulant addition, when required, to meet effluent requirements.

A new sludge pump was put in service this year and a pump was added at each of the two pumping stations.

Project Under Construction

A contract was awarded in November to repair 1400-1700 feet of interceptor sewer at a cost of $80,000.

Haverstraw, New York (Rockland County)

Future Project

This primary plant is to be abandoned and replaced with a pumping station which will divert the flow to the Joint Regional Sewerage Board - Town of Haverstraw for treatment. Construction is to begin in 1975 or early 1976 and is expected to cost $1 million.

Huntington Sewer District, New York (Suffolk County)

Completed Project

Sewer lines in low-lying areas were cleared and inspected for infiltration using television cameras at a cost of $32,500.

Future Project

Expansion of the plant tributary area by adding sewer lines to serve newly-built homes is underway.

Hunts Point, New York (Bronx County)

Completed Project

The pump stations at Orchard Beach, Hart Island, and City Island have been completed and are now operating and sending their flows to the Hunts Point plant.

Project Under Construction

Construction on the upgrading and expansion of the plant is expected to be completed in February 1976. The 200 million gallons per day step aeration plant is presently about 90% completed.

The total cost for these projects is estimated at this time to be $68 million.

Iona Island State Park, New York (Rockland County)

Future Project

Design is underway for an 80 thousand gallons per day bio-disc treatment plant for this facility. A request for funding for construction of this plant has been submitted for 1976 in the amount of approximately $600,000.

An NPDES permit has been obtained for the discharge to the Hudson River. Both the plant and the park it will serve are expected to be in operation by late 1978.

Irvington, New York (Westchester County)

Project Under Construction

Construction of the pumping station and intercepting sewers required to divert the flow from this plant to the Yonkers Treatment Plant continued through this year. Completion is anticipated at the end of 1976.

An infiltration/inflow study of the tributary sewer system is in progress.

Jamaica, New York (Queens County)

Project Under Construction

The upgrading of facilities at this plant to provide full step aeration treatment will achieve 90% removal efficiency for biochemical oxygen demand and suspended solids. Construction is 85% complete and the proposed completion date is October 1976.

The total cost of this project is estimated at $45 million.

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

Future Projects

Phase 2 construction, the abandonment of the Village of Haverstraw Treatment Plant and its replacement with a pumping station that will divert flow to the Joint Regional Sewerage Board Plant is expected to begin in 1975 or early 1976. It is expected to cost $1 million.

Phase 3 construction, the expansion of the tributary sewer system, will take place in 1976, if funding is available. The approximate cost for this is $900,000.

Phase 4 construction, the expansion of plant capacity from 4 to 8 million gallons per day will begin in 1976, if funds are available. This plant will also receive flows from Pomona, Stony Point, and Ramapo. The estimated cost of this phase is $3.5 million.

Kings Park State Hospital, New York (Suffolk County)

Future Project

This plant will be taken over by Suffolk County, probably in 1976.

Lawrence, New York (Nassau County)

Project Under Construction

A new cover is being installed on the primary digester at a cost of $100,000.

Long Beach, New York (Nassau County)

Future Project

The extent of upgrading and expansion of this plant depends upon the results of a Nassau County 201 Facilities Study now in progress. Two of the possible alternatives are upgrading and expansion or conversion to a pumping station discharging its flow to the Bay Park Plant. No decision on this plant will be made until the study is completed.

Project Under Construction

The results of an infiltration/inflow study are expected in the near future.

Longwood Harbor Apartments, New York (Suffolk County)

Future Project

This plant will divert its flow to the Suffolk County Southwest Sewer District Plant when that plant is completed.

Mamaroneck, New York (Westchester County)

Future Project

Plans call for the conversion of this plant to an activated sludge plant. The feasibility study has been completed and the plan of study has been submitted to and approved by New York State. Hazen and Sawyer will do the 201 Facilities Plan (engineering study), environmental assessment and infiltration/inflow study which should be completed in 1977. Design details should be worked out in 1976 and construction should commence in 1976.

New Rochelle, New York (Westchester County)

Future Project

This plant is scheduled for upgrading to secondary treatment at a cost of $22 million. State approval of plans has been received and U.S. Environmental Protection

Agency approval is being awaited. Bids will be out by the end of 1975 and construction is scheduled to begin in 1976.

Newtown Creek, New York (Kings County)

Completed Project

A flow of 170 million gallons per day of sewage will be conveyed from the Manhattan pump station to the 310 million gallons per day Newtown Creek Plant as a result of repairs to the interceptor sewer in September 1975. The Manhattan pump station has a drainage area of 4162 acres and includes the lower West Side up to 11th Street and the East Side up to 72nd Street.

Project Under Construction

Two pilot plant studies are associated with this facility. One will evaluate the rotating disc method of wastewater treatment. Tertiary system removals are anticipated on nitrates and phosphates.

The second pilot study evaluated a pure oxygen system on a 20 million gallons per day flow. Preliminary results indicate removals of 85%, 90%, and 80% for suspended solids, biochemical oxygen demand, and chemical oxygen demand, respectively.

Future Project

This plant is scheduled to be upgraded to step aeration treatment at an anticipated cost of $300 million unless one of the alternate methods mentioned above proves itself more feasible. The Phase I plan of study has been submitted to the State and is awaiting approval.

North River, Manhattan (New York County)

Completed Projects

Construction of all interceptors for this project has been completed.

Project Under Construction

The foundation for this 220 million gallons per day step aeration plant is now 80% complete.

Future Project

The superstructure is to be constructed in phases. The start of construction is anticipated for the first quarter of 1977 and completion expected by the second quarter of 1984.

The cost of the entire project is expected to be approximately $900 million.

North Tarrytown, New York (Westchester County)

Project Under Construction

This primary plant will be abandoned upon completion of construction of the Tarrytown pumping station. The flow will be diverted to the Tarrytown pumping station and then to the Yonkers Treatment Plant. Construction is 90% complete.

Future Project

Construction of the intercepting sewers is due to begin this year with completion expected in December 1976.

Nyack, New York (Rockland County)

Project Under Construction

Conversion of this primary plant to a pumping station which will divert its flow and the flows from South Nyack and Upper Nyack to the Orangetown Sewer District Treatment Plant continued through this year. Construction of the pumping station and force main is complete except for the installation of the pumps and emergency generator. The cost of the pumping station work is approximately $636,000 and for the force main work approximately $1.28 million.

Oakwood Beach, New York (Richmond County)

Project Under Construction

Thirty-three percent of the construction has been completed on the treatment plant portion of the project to increase this plant's capacity from 15 to 40 million gallons per day. The treatment process is also being upgraded to step aeration.

The total project cost for this phase of the project is approximately $54 million.

Contracts were recently awarded for an interceptor sewer and the plant outfall at costs of $29.7 million and $8.7 million, respectively.

Future Projects

An additional three interceptors, the plant sludge force main, and two pumping stations are planned and applications for financial aid have been submitted to New York State for approval.

Orangetown Sewer District, New York (Rockland County)

Completed Project

A pumping station for new sewer lines was put in service this year. It was built at a cost of $50,000.

Future Project

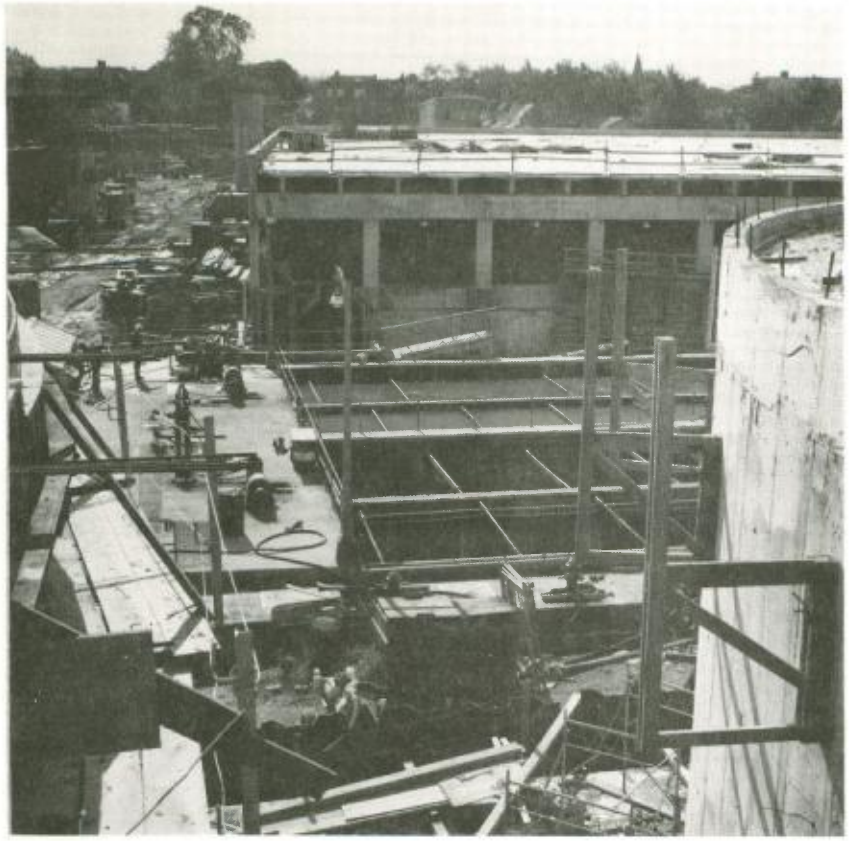
The flow from the three Nyack plants should be diverted to this plant by January 1976. Estimated cost of this project is $5 million.

Orangetown presently has a bio-disc and trickling filter plant in operation to treat its flow.

Orchard Beach, New York (Bronx County)

Completed Project

This seasonally operated primary treatment plant has been abandoned and replaced with a pumping station which discharges to the Hunts Point Treatment Plant.



CONSTRUCTION AT THE PORT RICHMOND WATER POLLUTION CONTROL PLANT, STATEN ISLAND, NEW YORK

CONSULTING ENGINEERS:

MALCOLM PIRNIE, INC.
and
ALEXANDER POTTER ASSOCIATES

CONSTRUCTION AT THE OAKWOOD BEACH WATER POLLUTION CONTROL PLANT, STATEN ISLAND, NEW YORK

CONSULTING ENGINEERS:

GREELEY AND HANSEN ENGINEERS

Ossining Correctional Facility, Ossining, New York (Westchester County)

Future Project

Field testing began this year in connection with construction of the new plant at Ossining and intercepting sewers. The Ossining Correctional Facility Plant will be converted to a pumping station which will divert its flow to the new County plant.

Ossining, New York (Westchester County)

Future Project

The two existing Ossining plants, the Briarcliff Manor plants, and Croton-on-Hudson as well as the Ossining Correctional Facility are scheduled to divert their flows to the new secondary plant to be built at Ossining. The land at the northwest corner of the Ossining Correctional Facility has been purchased from New York State. Plans are complete and scheduled to go to the State for approval by year's end.

About five miles of interceptor sewers and three pump stations are included in this $34 million project.

Owls Head, New York (Kings County)

Future Project

A plan of study has been submitted to New York State and the U.S. Environmental Protection Agency and awaits approval. It is proposed to follow this approval with a plan for an inflow/infiltration study.

Including pump stations and interceptors, the anticipated development cost of this project is $210 million.

Oyster Bay, New York (Nassau County)

Completed Project

An infiltration/inflow study was completed, and it was determined that an infiltration problem does exist.

Additional work is contemplated in order to define the scope of the problem. This additional work is being discussed with the New York State Department of Environmental Conservation.

Peekskill, New York (Westchester County)

Future Project

This facility is scheduled to be upgraded to an activated sludge plant and incorporated into the Westchester County Environmental Facilities System. The plant design has been completed and approved by the State and awaits approval from the U.S. Environmental Protection Agency. Eleven miles of new sewers, two new pump stations, and one pump station renovation are included in this $36 million project.

It is expected that bids will be advertised in the first quarter of 1976.

Penn Central Railroad, Croton, New York (Westchester County)

Completed Project

An additional lagoon was built this year to handle flows resulting from heavy rains.

Future Project

It is proposed that the effluent from this plant be diverted to the Westchester County plant at Ossining. No firm plans have yet been made.

Port Chester, New York (Westchester County)

Future Project

Plans call for the upgrading of the existing plant to a 5.8 million gallons per day activated sludge plant. The effluent from this plant will go to Rye for discharge through the new outfall from the Blind Brook plant.

The new plant will dispose of both its own sludge and the sludge from the Blind Brook plant.

Port Jefferson, New York (Suffolk County)

Completed Project

Sections of sewer were cleaned, sealed, and inspected by television for infiltration.

Future Project

The U.S. Environmental Protection Agency has approved the plan of study for this facility and agreed to fund the facilities plan which will take approximately 18 months to complete. This study will determine the design flow which may be up to 10 million gallons per day. The new plant will be sited on the existing plant property.

Port Richmond, New York (Richmond County)

Projects Under Construction

The East Branch Interceptor System is substantially complete and will be fully completed by July 1976. In January 1977, this plant will treat 60 million gallons per day by step aeration to provide 90% removals of suspended solids and biochemical oxygen demand.

The construction of the Hannah Street Pump Station, a part of the East Branch Interceptor System, is 88% complete with a target completion date of June 1976.

The development cost for the entire Port Richmond expansion and upgrading is estimated to run $170 million.

Port Washington, New York (Nassau County)

Future Project

A construction program plan for this facility is under review by the New York State Department of Environmental Conservation. Included in this plan are activated sludge units, a new pumping station at the plant, new force mains, primary settling tanks, a sludge thickener, pumps, and a chlorine contact tank. It is no longer contemplated to pump the flow from the Roslyn Treatment Plant to Port Washington.

The estimated cost for this work is $3.9 million.

Red Hook, New York (Kings County)

Project Under Construction

Construction was started in May 1975 on an interceptor to serve the proposed new treatment plant. The construction cost is to be $11 million.

Future Projects

An application is currently being reviewed by New York State for the construction of the Gowanus Pump Station. The expected cost of this project is $11 million.

An application for the construction of the Red Hook Treatment Plant has been submitted to and approved by the State and awaits approval by the U.S. Environmental Protection Agency. Plans and specifications have been completed and have been submitted to the State for approval.

The sludge will be treated by the wet air oxidation process with ultimate disposal at a sanitary landfill site.

The estimated cost of the project including the treatment plant, pumping station, and intercepting sewers is $400 million.

Rockaway, New York (Queens County)

Project Under Construction

The existing 30 million gallons per day plant will be expanded to 45 million gallons per day and will be upgraded to step aeration to improve removal efficiency of biochemical oxygen demand and suspended solids.

The construction is approximately 75% complete with the anticipated total project cost expected to be $50 million.

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

Completed Project

Phase I of an infiltration/inflow study was completed this year. It was determined that there are problems

with both infiltration and inflow. A Phase II study is being negotiated to determine the magnitudes of the problems.

Future Projects

Funding for the expansion of this activated sludge plant to 10 million gallons per day is currently being held up. The U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation are involved in litigation over allocation of funds for construction. The current estimate of construction cost for plant expansion is $19 million.

Other system improvements, including construction of five pumping stations and thirty miles of force mains and interceptors to serve previously unsewered areas, are also being held up by this litigation. The total construction cost estimate for plant expansion and system improvements is $50 million.

Roslyn, New York (Nassau County)

Future Project

An application has been made to Nassau County to allow the flow from this plant to be diverted to the Nassau County Sewer District No. 3. This plant would be abandoned and replaced with a pumping station.

South Nyack, New York (Rockland County)

Project Under Construction

The conversion of this plant to a pumping station which will deliver its flow to the Nyack Treatment Plant continued this year. Work is 90% complete and will cost $100,000.

The Nyack Treatment Plant is also being converted to a pumping station which will pump its flow and that of South Nyack and Upper Nyack to the Orangetown Sewer District Treatment Plant. The estimated cost for these two conversions is $5 million.

Stony Point, New York (Rockland County)

Future Project

Engineering investigation is planned for the expansion of this plant's collection system. Funds have not yet been released for this work.

Suffolk County (Southwest) Sewer District No. 3, New York (Suffolk County)

Projects Under Construction

The construction of trunk and lateral sewer lines continued this year. Construction is 50%-60% complete and is expected to cost $567 million.

Design is in progress for the Awixa Creek pumping station which will pump the bulk of the flow to the plant.

Construction of the 30 million gallons per day activated sludge treatment plant has begun and is now 15% complete. It is expected to take two more years to fully complete and will cost approximately $68 million.

The contract for the ocean outfall has not yet been re-bid, pending determination of whether an environmental impact statement is required. Construction is expected to cost $60 million.

All construction for this treatment system is expected to be complete in late 1978.

Tallman Island, New York (Queens County)

Projects Under Construction

Construction to improve treatment and expand the capacity of the plant from 60 to 80 million gallons per day is now 67% completed. Step aeration treatment will provide at least 90% suspended solids and biochemical oxygen demand removals.

The plant upgrading should be completed by February 1977 at an estimated development cost of $43 million.

Tarrytown, New York (Westchester County)

Project Under Construction

This primary plant will be abandoned upon completion of a new pumping station which will convey a flow of 5.8 million gallons per day to the Yonkers Treatment Plant. The flow will be from the present Tarrytown and North Tarrytown Treatment Plants. Construction is now 90% complete.

Construction of intercepting sewers is in progress.

26th Ward, New York (Kings County)

Completed Project

The expansion of this plant from a design flow of 76 million gallons per day to an 85 million gallons per day step aeration plant was completed in May 1975 at a cost of $49 million.

Upper Nyack, New York (Rockland County)

Project Under Construction

Conversion of this plant to a pumping station that will divert its flow to the Orangetown Sewer District Treatment Plant via the Nyack pumping station is complete except for the installation of an emergency generator.

Completion is expected in November 1975 at a cost of approximately $250,000.

Wards Island, New York (New York County)

Project Under Construction

The upgrading and expansion of the present plant from a design capacity of 220 million gallons per day to a 290 million gallons per day step aeration plant is now 69% complete.

The expected completion date is January 1977 with a total project cost of $117 million.

West Long Beach, New York (Nassau County)

Projects Under Construction

A study is underway to determine the need for dual media filtration as a final treatment process.

A report has been prepared dealing with the rehabilitation of the digestion system at this plant. The Plan of Study has been submitted to the New York State Department of Environmental Conservation for review. It is to be determined whether an infiltration/inflow study must be conducted as part of this work. Estimated cost for this rehabilitation is approximately $400,000.

Yonkers Joint Meeting, New York (Westchester County)

Project Under Construction

The new 93 million gallons per day treatment plant is now 60% complete, with completion anticipated for late 1976 or early 1977 at an estimated cost of $100 million. Construction is under way on the associated pump station at Irvington.

At Tarrytown, a pump station and interceptor are under construction at a cost of $7.1 million and the pump station and force main, now 10% complete, at Irvington will cost $2 million.

Future Project

When the pump station and force main are completed, the present Irvington plant is scheduled for abandonment.

WATER QUALITY MONITORING

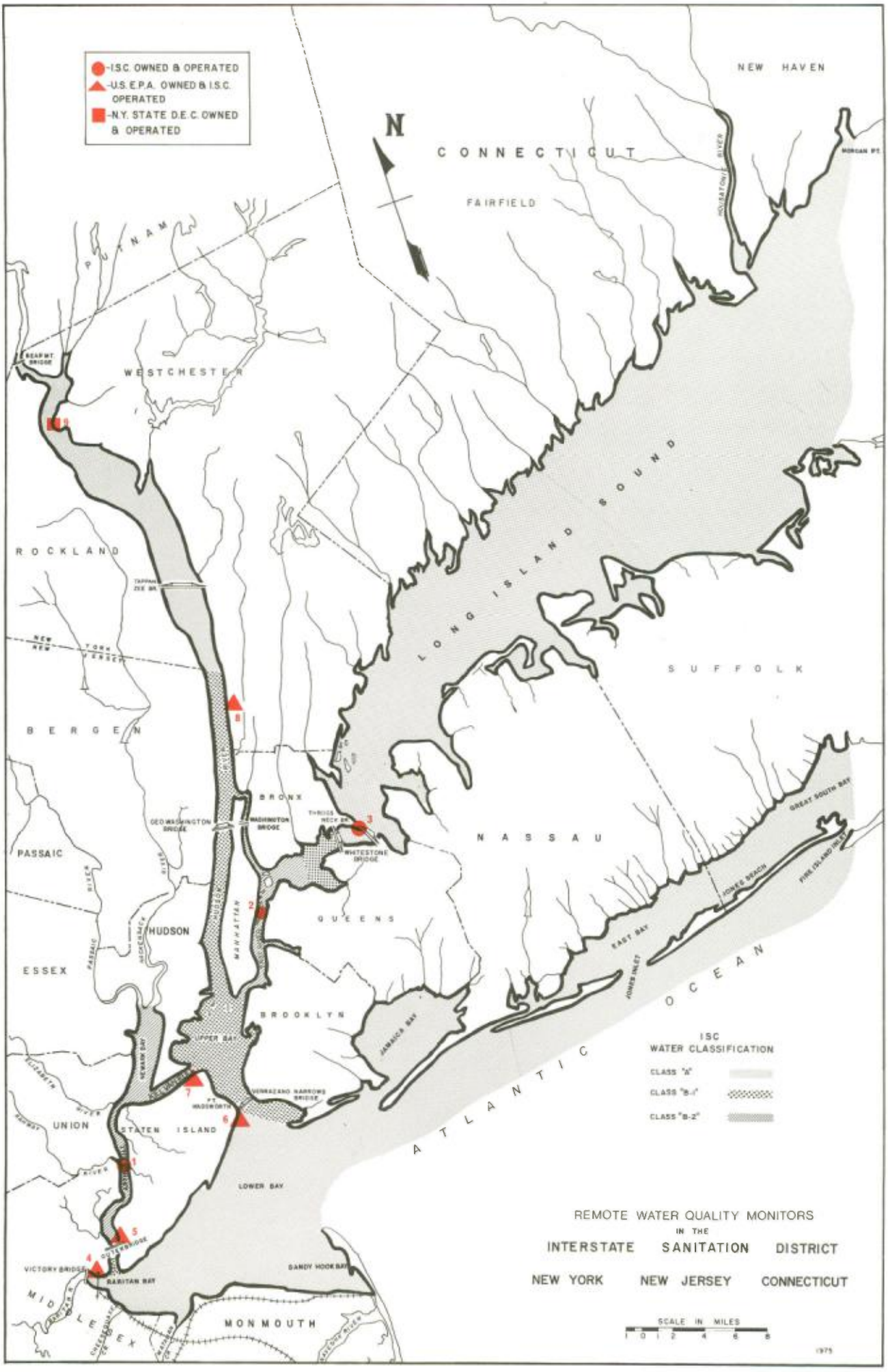
The Commission's water quality monitoring of District waters is accomplished through two programs - remote automatic water quality monitoring and boat surveys.

Remote Automatic Water Quality Monitoring System

The remote automatic water quality monitoring system is made up of Commission-owned monitors and monitors leased from the United States Environmental Protection Agency. Once an hour each remote unit telemeters the following data to a central receiver at the Commission office: temperature, conductivity, dissolved oxygen, and pH.

The remote automatic water quality monitoring data are summarized daily and reports are sent to the appropriate state and federal agencies. At the end of each month, the hourly values for that month are written to magnetic tape and are also sent to the state and federal agencies. The New York State Department of Environmental Conservation, which monitors the Hudson River at Verplanck, New York, transmits the data from that station to the Commission on a daily basis.

Shown on the following pages are a location map and a listing of the remote automatic water quality monitors in the Interstate Sanitation District. The listing is followed by graphs which show, for each parameter at each station, the monthly minimum (the single lowest value for the month), the monthly maximum (the single highest value for the month), and the monthly average (the average of the daily average values for the month). Dotted lines on the graphs indicate that less than 10 days' data were available for that month.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U.S.E.P.A. OWNED & I.S.C. OPERATED
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CONNECTICUT
FAIRFIELD
PUTNAM
WESTCHESTER
ROCKLAND
BERGEN
PASSAIC
HUDSON
ESSEX
UNION
BRONX
NASSAU
SUFFOLK
QUEENS
BROOKLYN
STATEN ISLAND
MONMOUTH
LONG ISLAND SOUND
ATLANTIC OCEAN
UPPER BAY
LOWER BAY
RARITAN BAY
SANDY HOOK BAY
JAMAICA BAY
EAST BAY
GREAT SOUTH BAY
GEO. WASHINGTON BRIDGE
WHITESTONE BRIDGE
VERRAZANO NARROWS BRIDGE
VICTORY BRIDGE
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WATER CLASSIFICATION
CLASS "A"
CLASS "B-1"
CLASS "B-2"
REMOTE WATER QUALITY MONITORS
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REMOTE AUTOMATIC WATER QUALITY MONITORING STATIONS IN THE INTERSTATE SANITATION DISTRICT

INTERSTATE SANITATION COMMISSION OWNED AND OPERATED

1. Arthur Kill - Consolidated Edison Arthur Kill Generating Station, Staten Island, New York

2. East River - Consolidated Edison Ravenswood Generating Station, Long Island City, New York

3. East River - Throgs Neck Bridge, Fort Schuyler, Bronx, New York

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OWNED AND INTERSTATE SANITATION COMMISSION OPERATED

4. Raritan River - Victory Bridge, Perth Amboy, New Jersey

5. Arthur Kill - Outerbridge Crossing, Staten Island, New York

6. The Narrows - Fort Wadsworth, Staten Island, New York

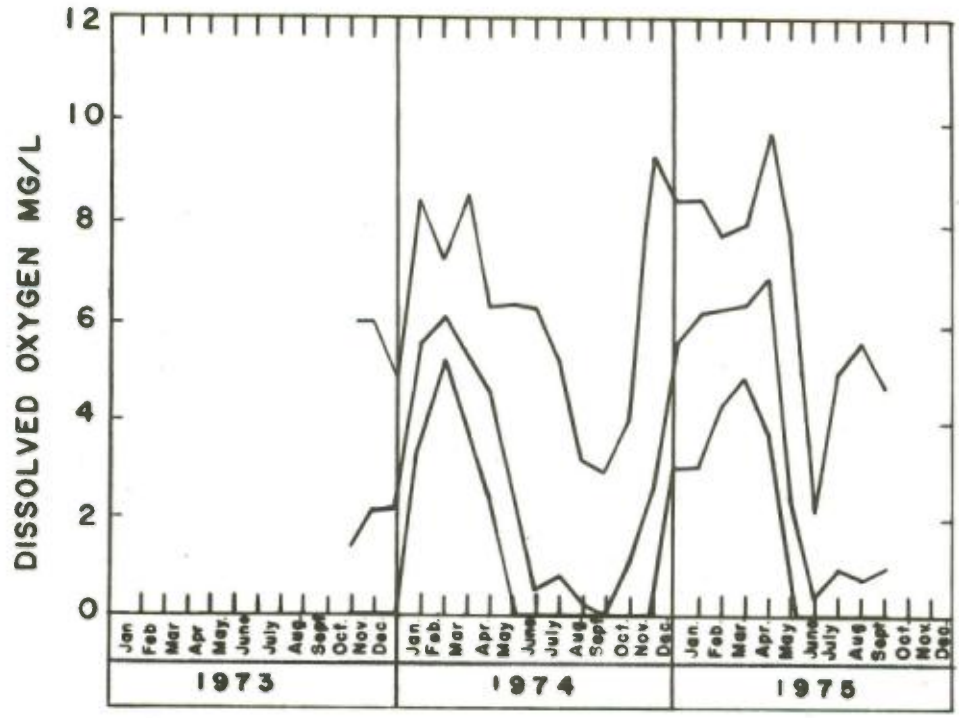
7. Kill Van Kull - U.S. Gypsum Company, Staten Island, New York

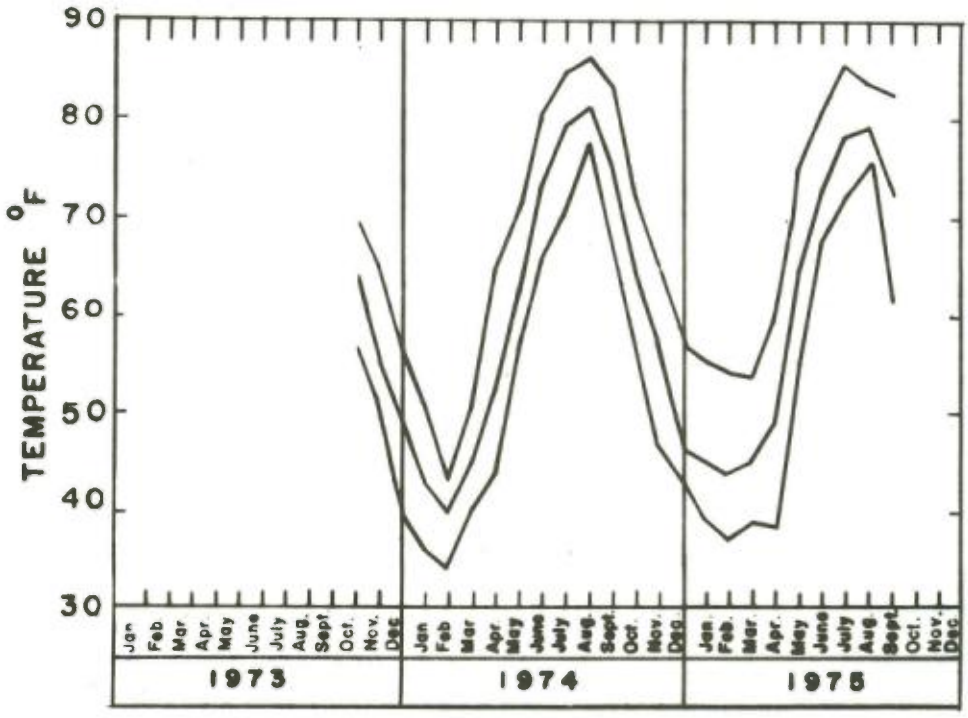
8. Hudson River - Consolidated Edison Glenwood Generating Station, Yonkers, New York

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION OWNED AND OPERATED

9. Hudson River - Verplanck, New York

ARTHUR KILL - CON ED.
station no. 1



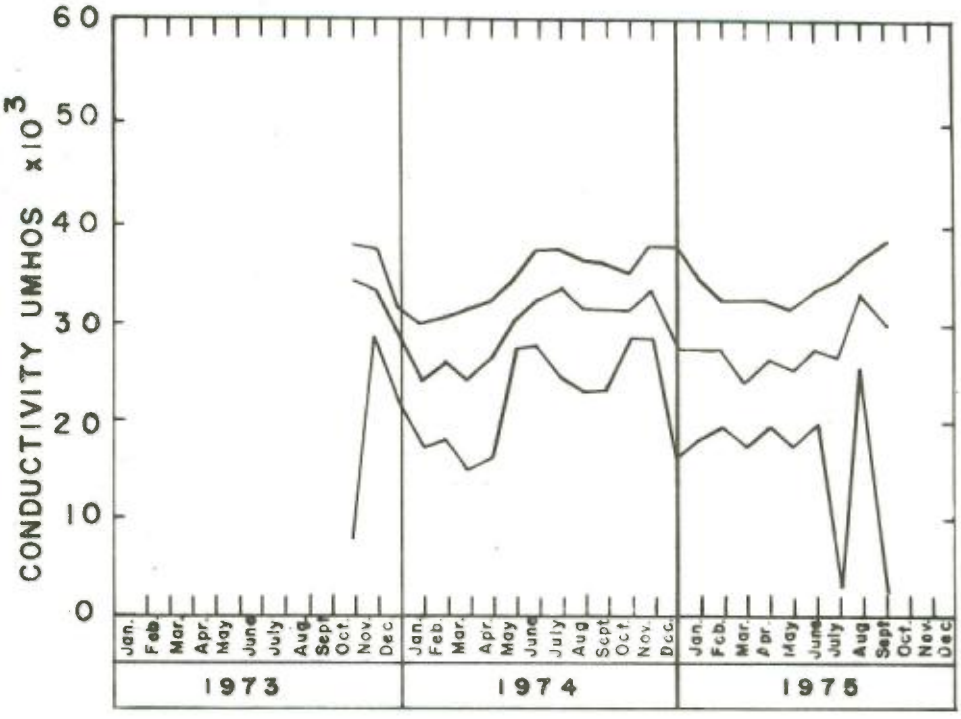


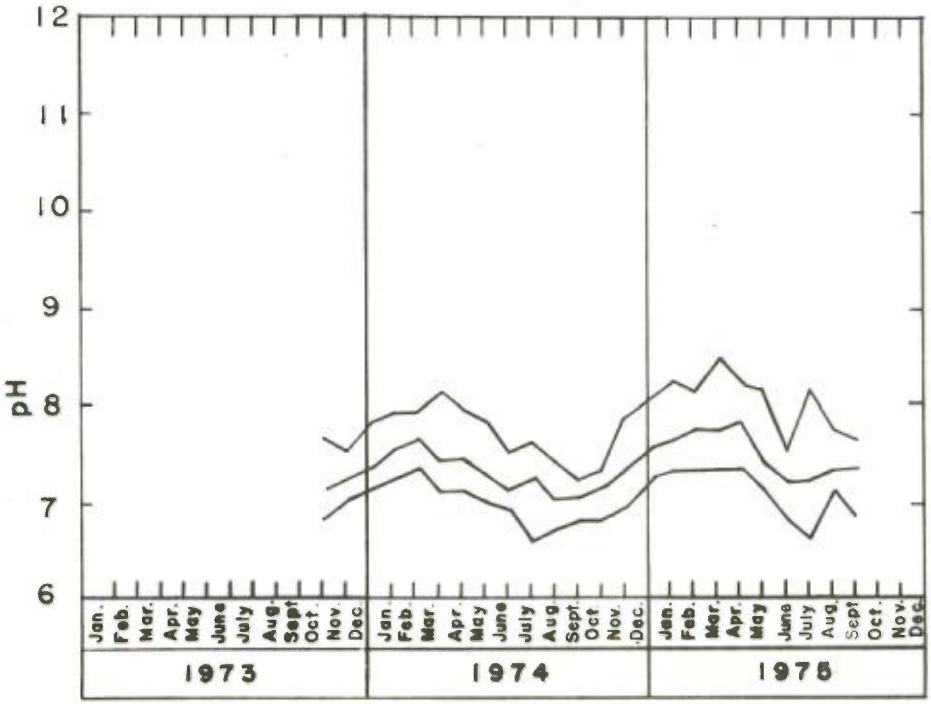
TOP LINE: MAXIMUM MONTHLY VALUE

CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

ARTHUR KILL - CON ED.
station no. 1



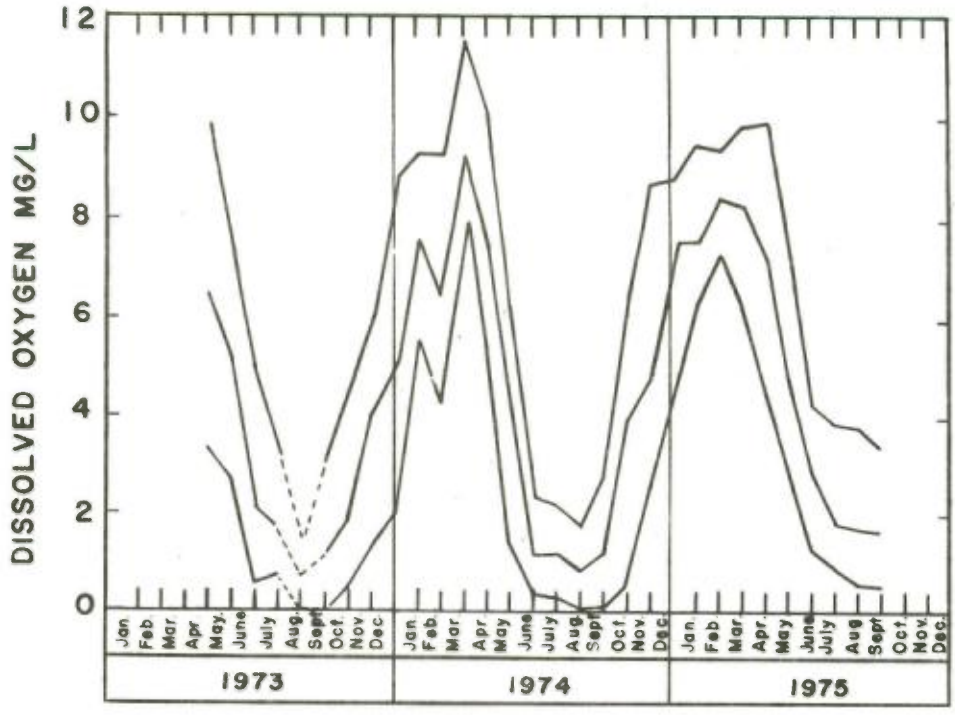


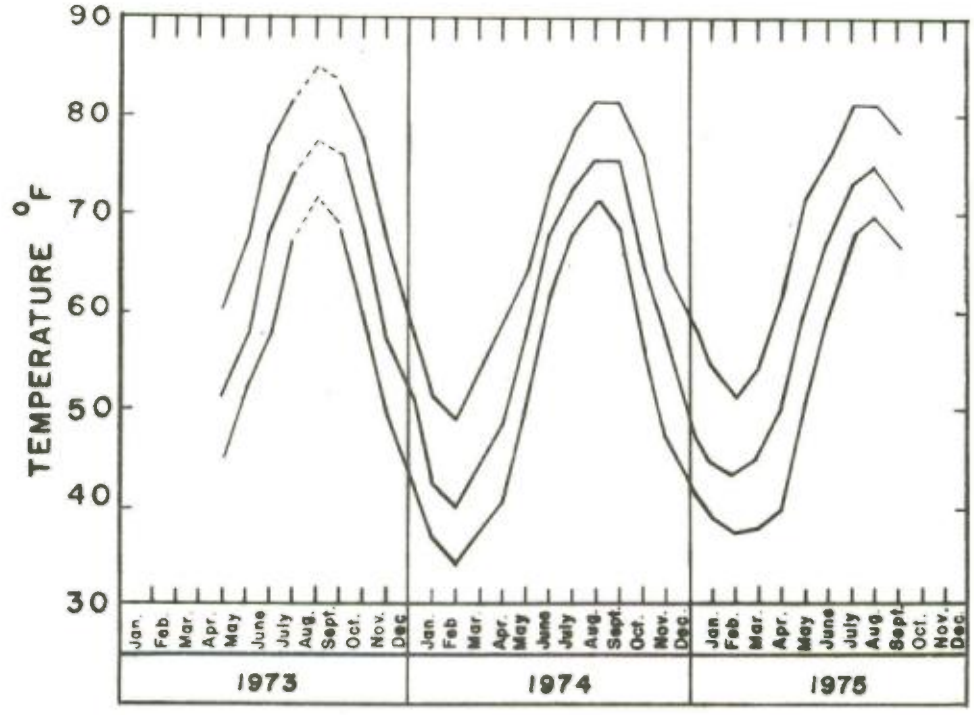
TOP LINE: MAXIMUM MONTHLY VALUE

CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

EAST RIVER - CON ED.
station no. 2



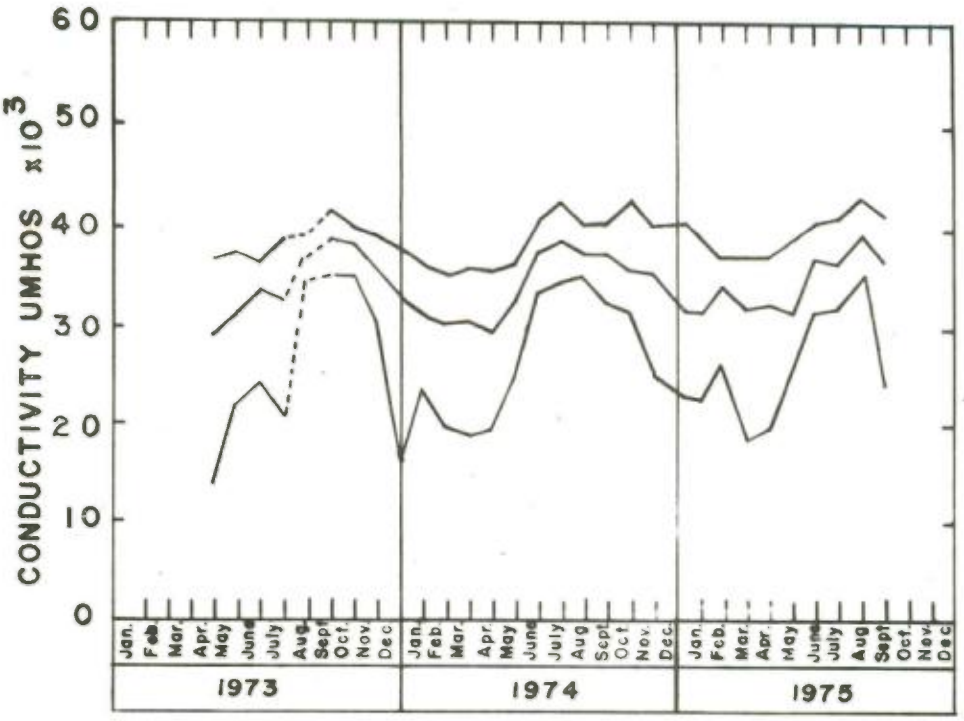


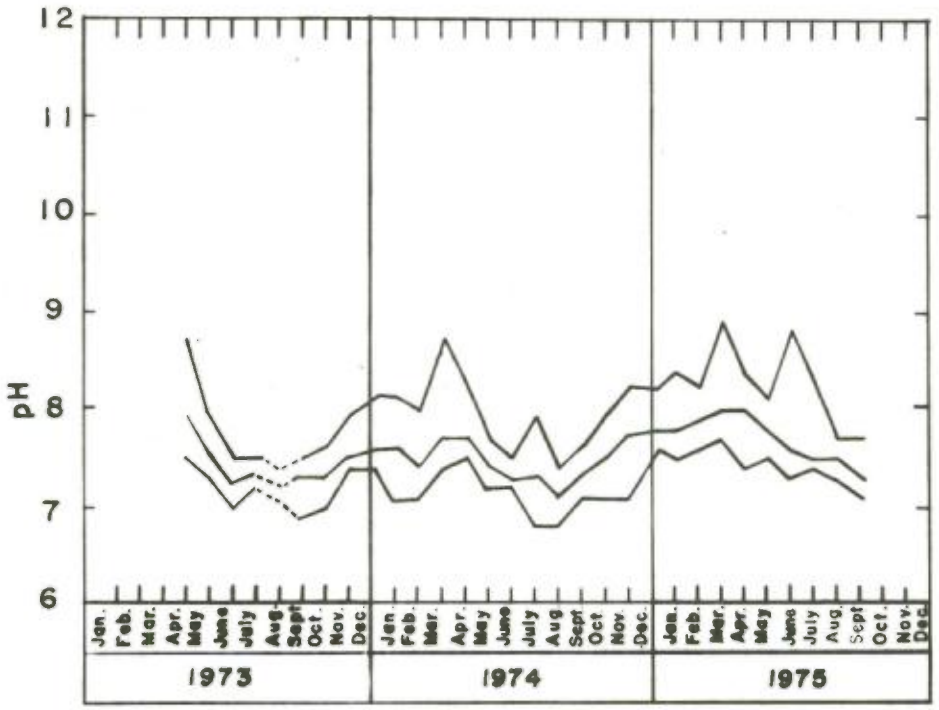
TOP LINE: MAXIMUM MONTHLY VALUE

CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

EAST RIVER - CON ED.
station no. 2





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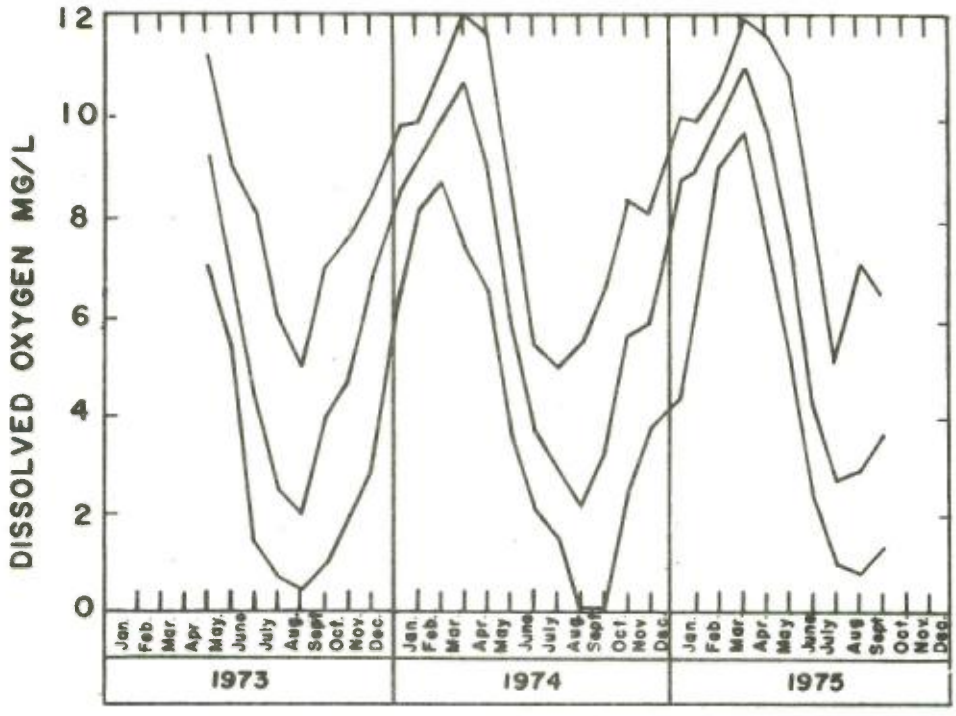
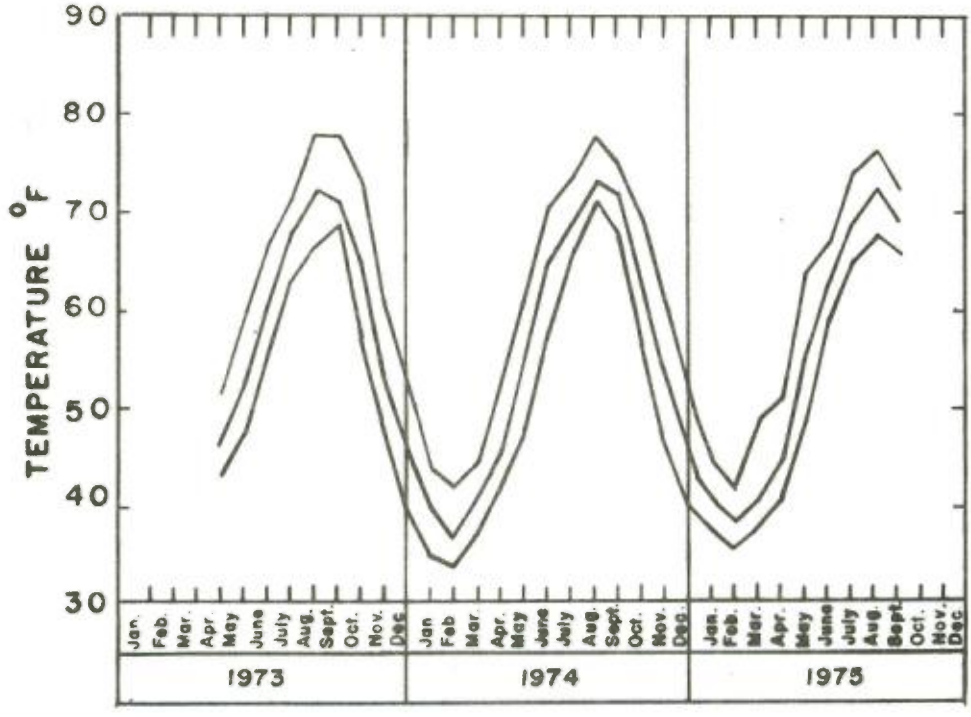
BOTTOM LINE: MINIMUM MONTHLY VALUE

EAST RIVER–THROGS NECK
station no. 3





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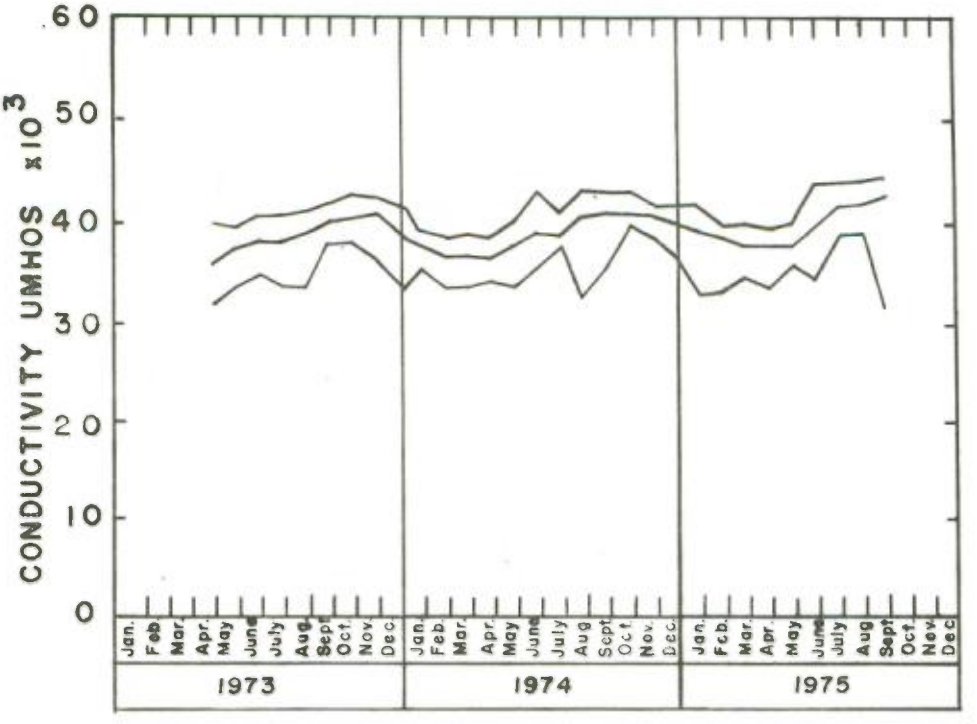
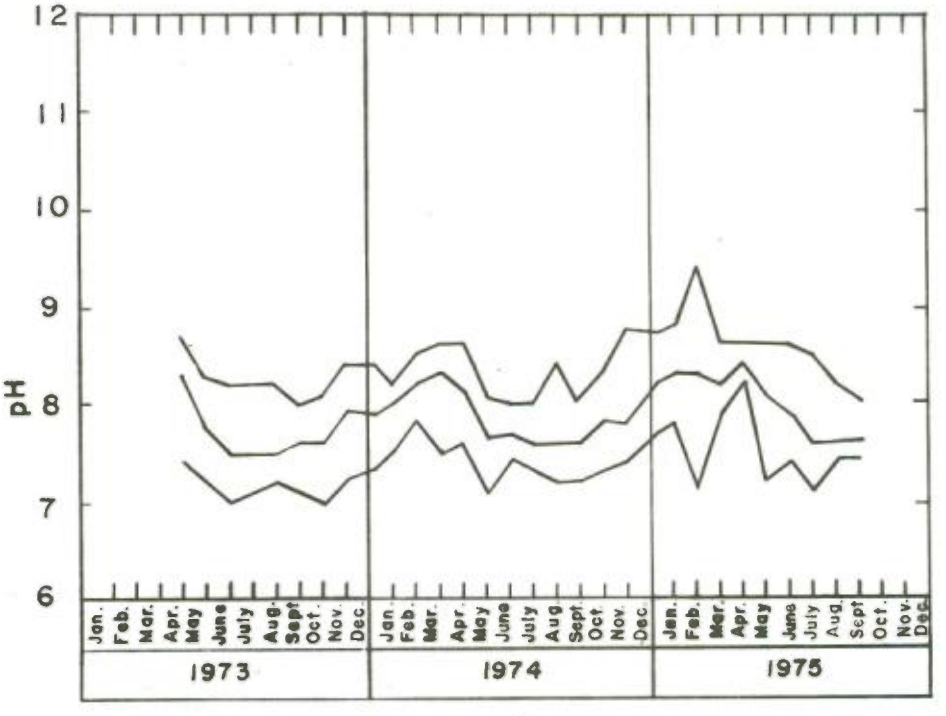
EAST RIVER-THROGS NECK
station no. 3





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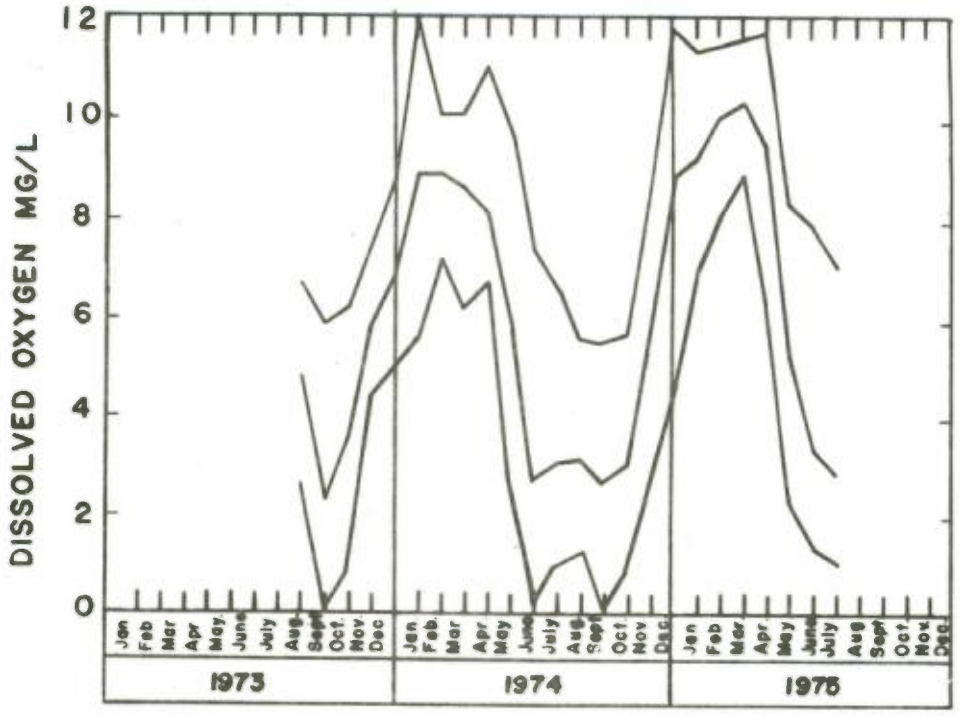
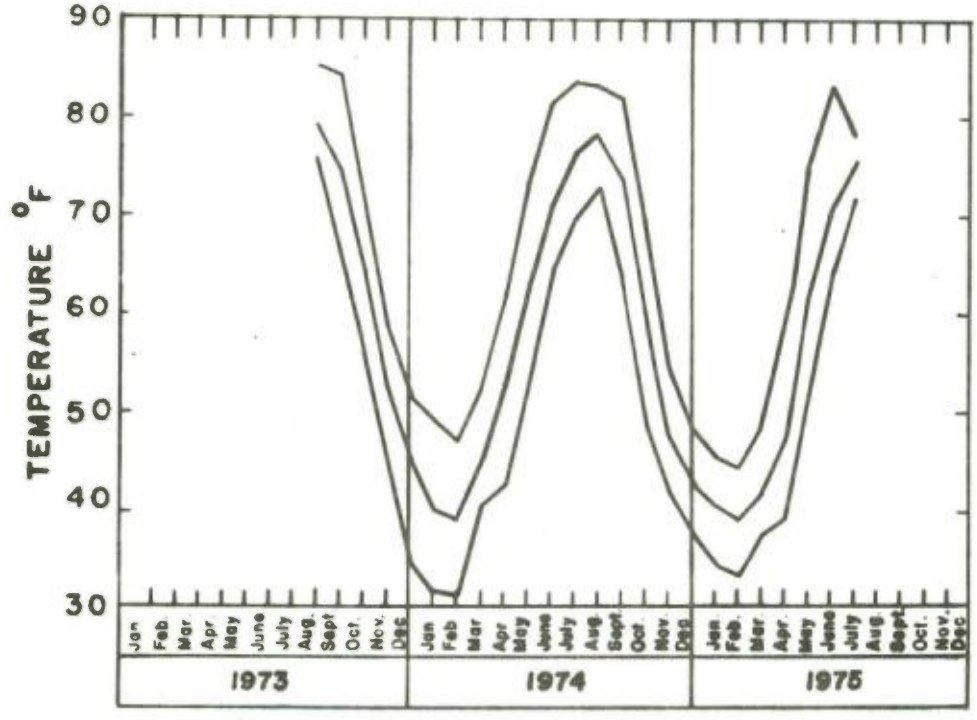
CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

RARITAN RIVER—VICTORY BRIDGE
station no. 4





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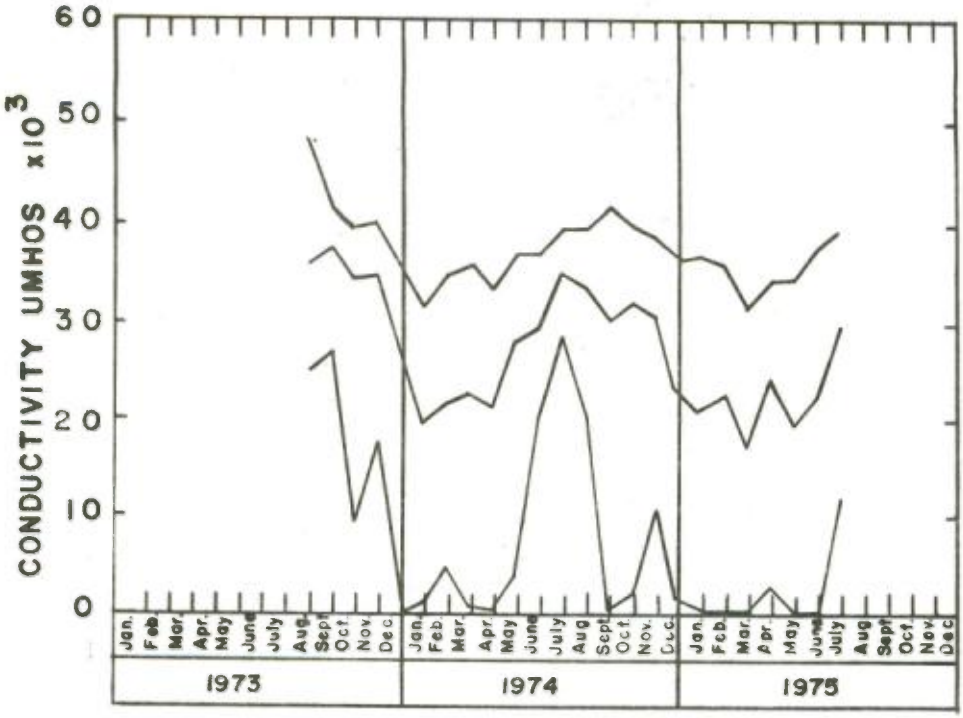
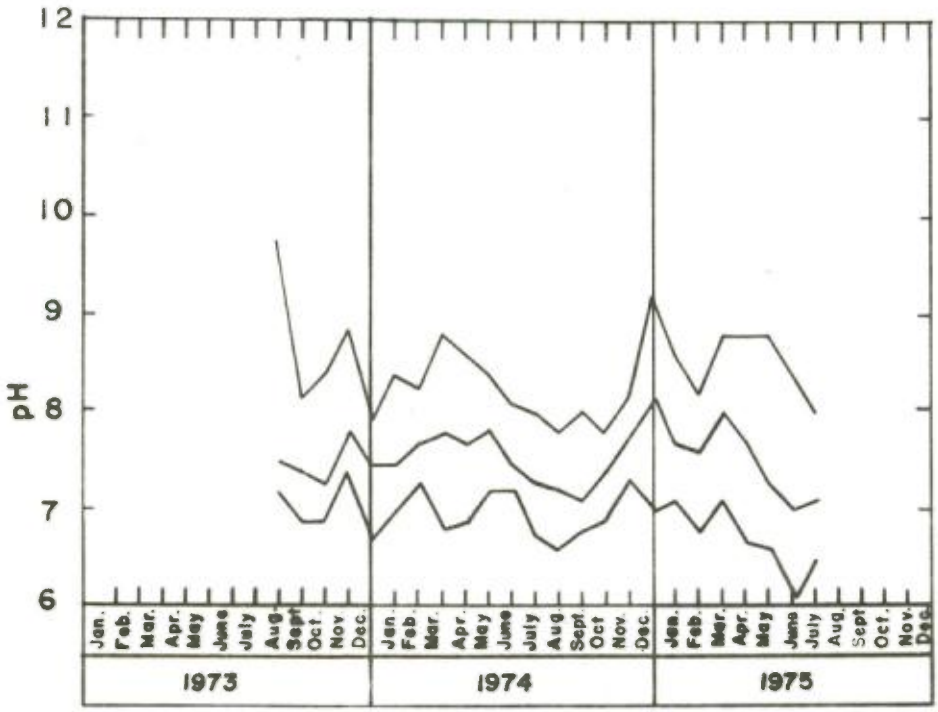
CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

RARITAN RIVER - VICTORY BRIDGE
station no. 4





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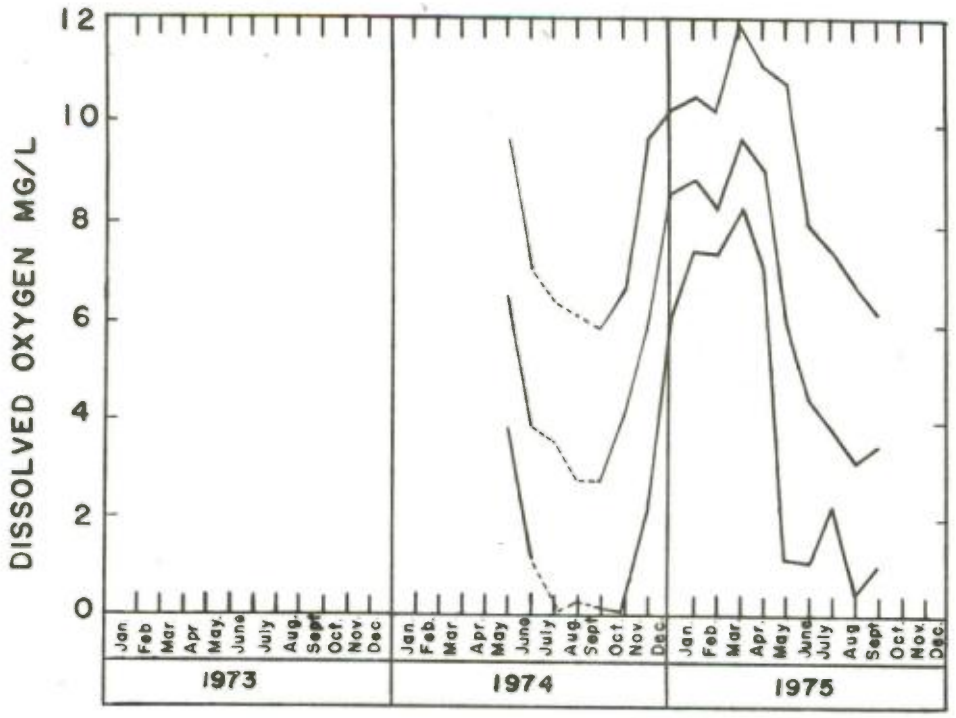
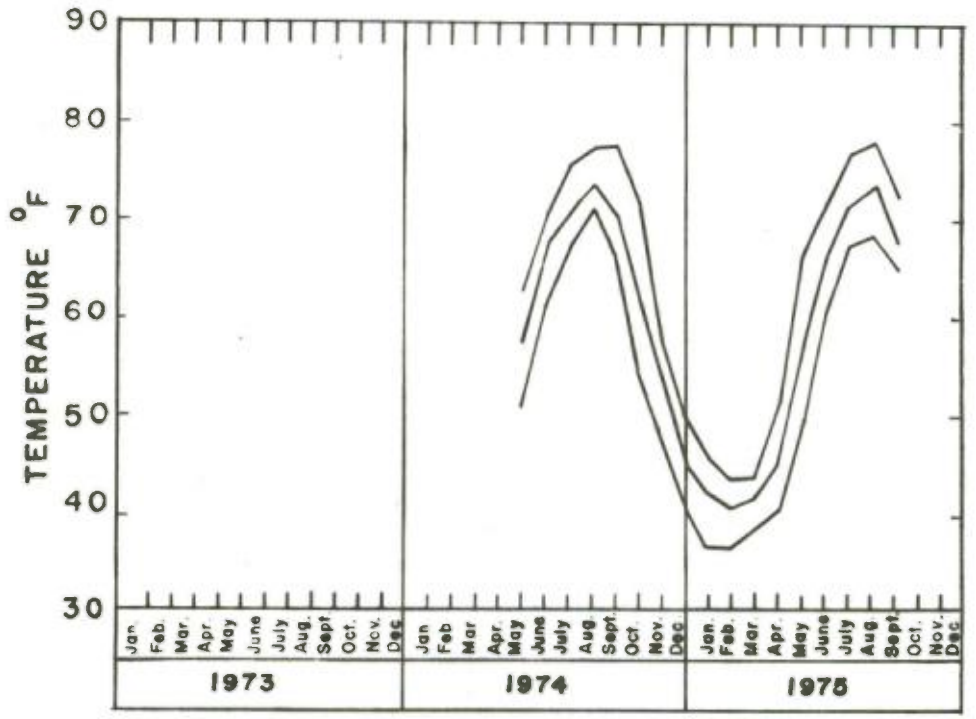
CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

THE NARROWS - FT. WADSWORTH
station no. 6





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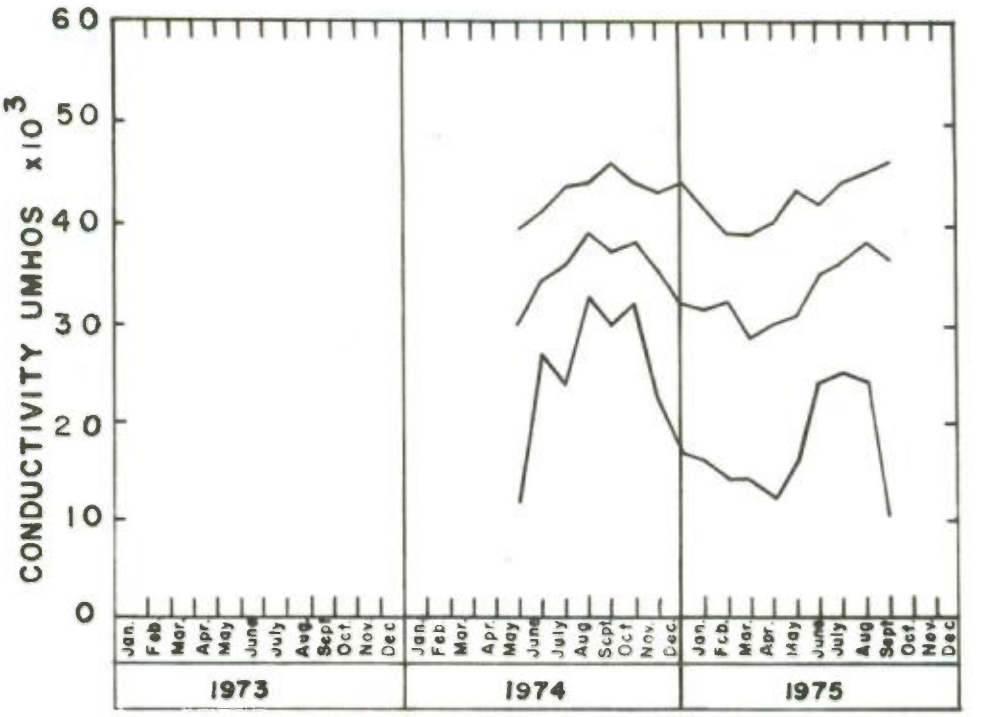
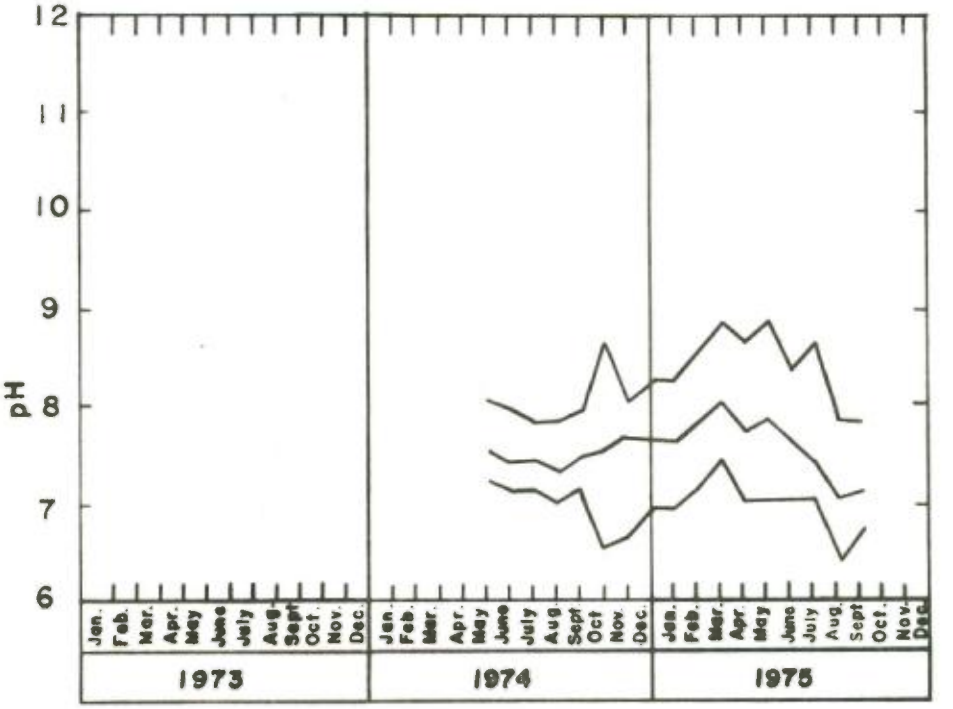
CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

THE NARROWS-FT. WADSWORTH
station no. 6



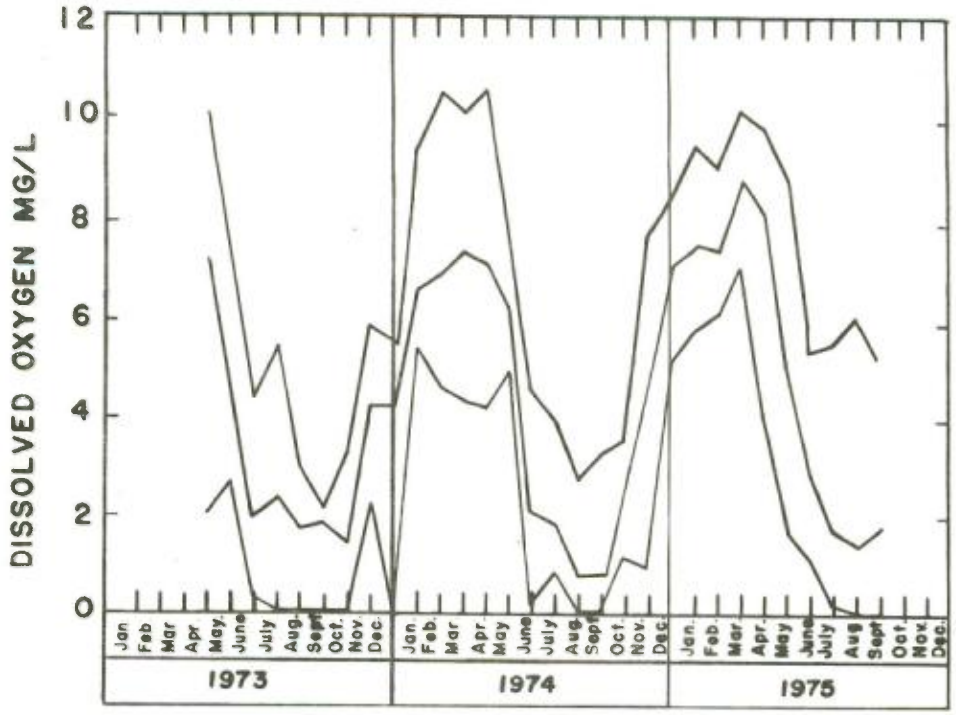


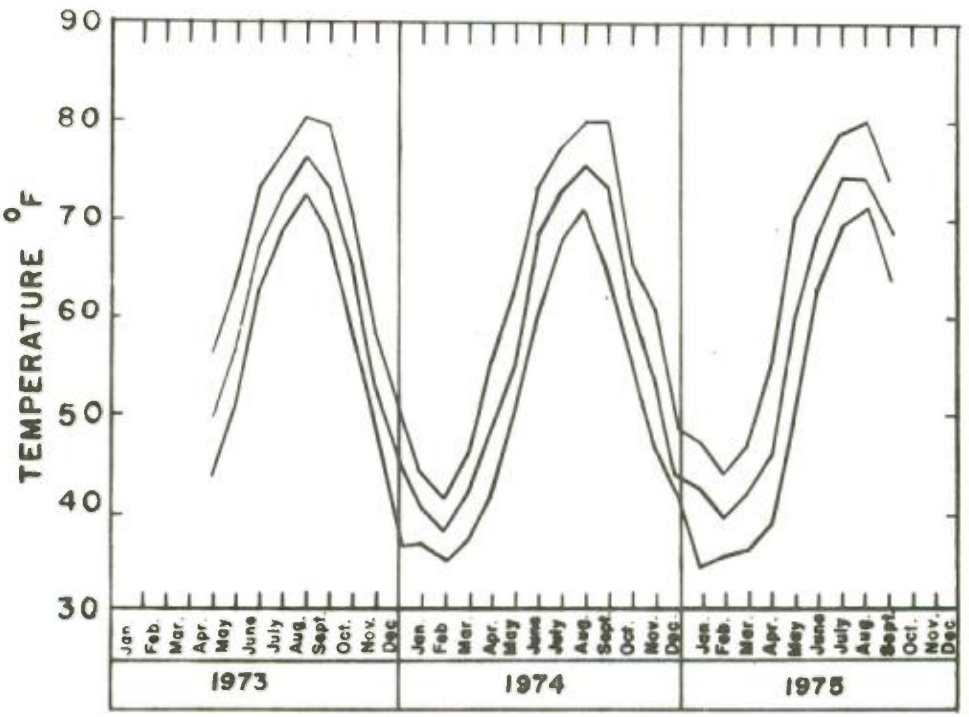
TOP LINE: MAXIMUM MONTHLY VALUE

CENTER LINE: AVERAGE OF THE DAILY AVERAGE VALUES

BOTTOM LINE: MINIMUM MONTHLY VALUE

KILL VAN KULL - U.S. GYPSUM
station no. 7





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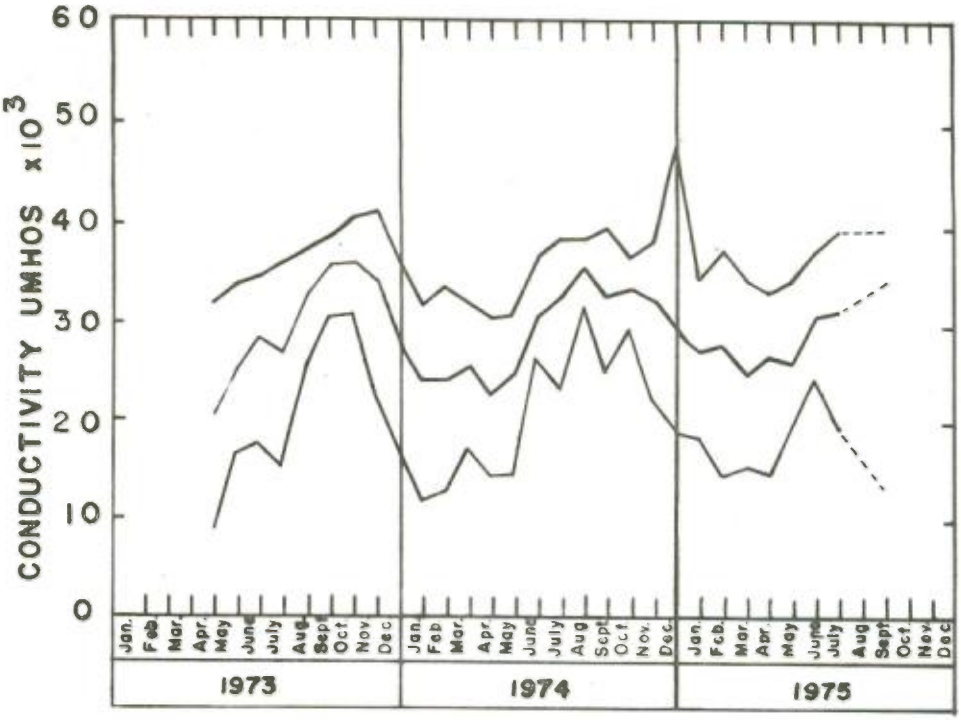
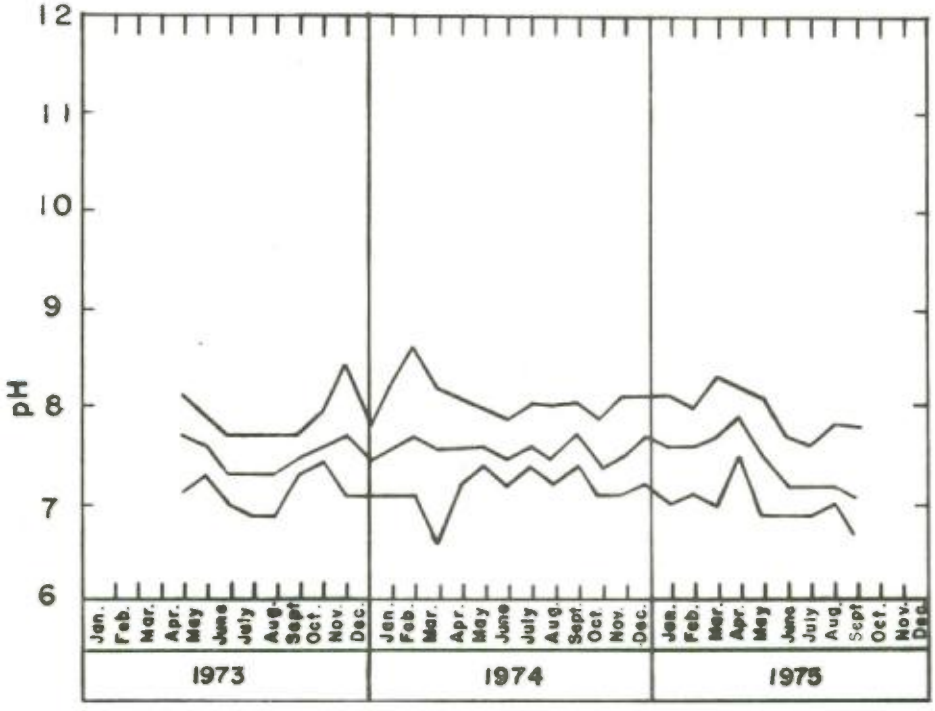
KILL VAN KULL – U.S. GYPSUM
station no. 7





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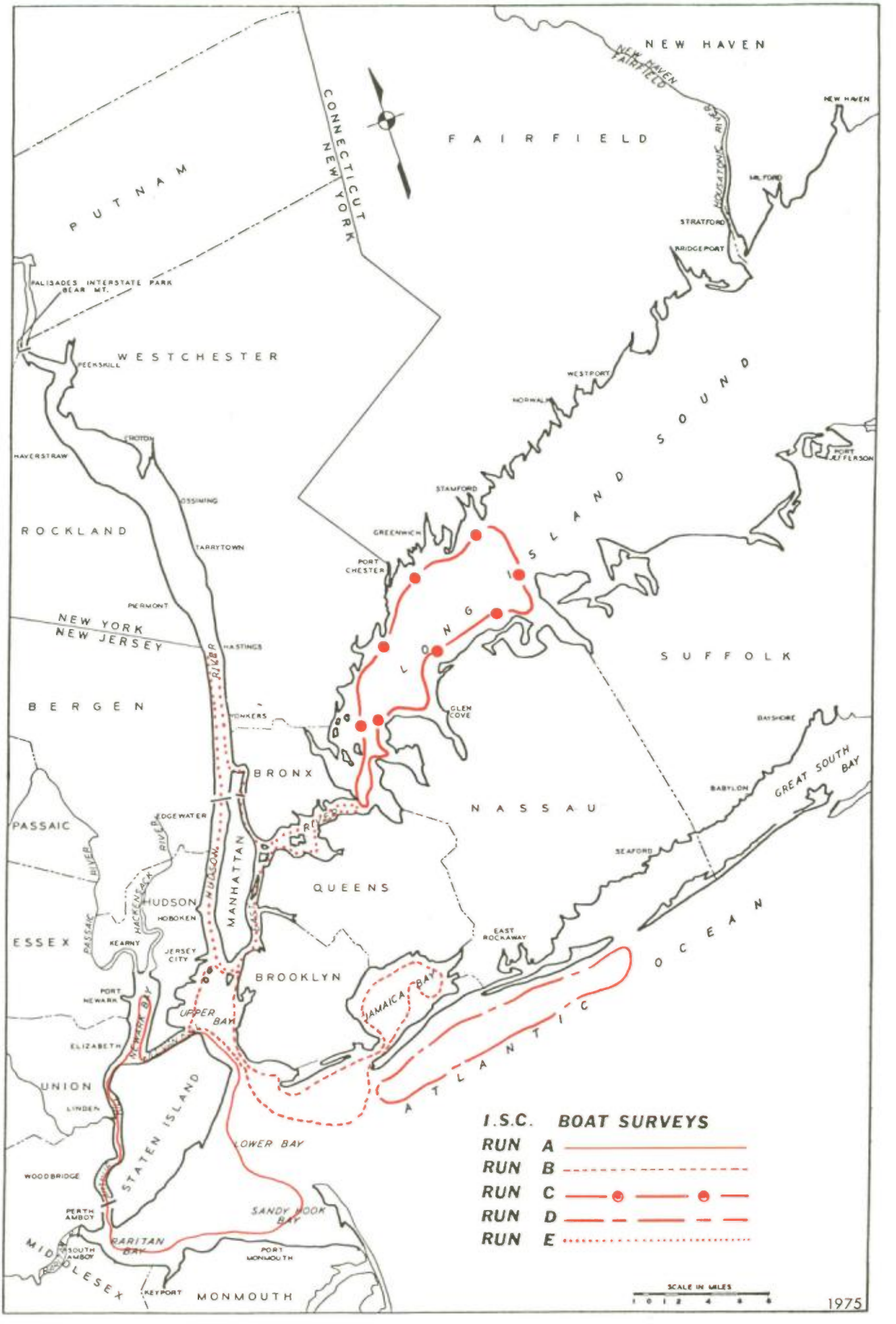
Boat Surveys

This year, the Commission has expanded its routine water quality surveys to 59 stations in Interstate Sanitation District waters. These surveys are scheduled once a month except during June, July, and August, when they are scheduled twice. These stations are designated Runs A, B, C, and E on the Boat Run Map and on the station descriptions shown on the following pages. Additionally, the Commission conducted two samplings at 9 stations (designated Run D on the Boat Run Map and the station descriptions) at the request of the New York State Department of Environmental Conservation. This run is expected to be incorporated into the routine water quality surveys in 1976.

The samples collected on the boat surveys are analyzed for the parameters shown on the table following the station descriptions. Unless otherwise noted in the station descriptions, all samples are taken 5 feet below the surface. The Commission has started a data bank with all boat survey data collected in 1974 and 1975. All future boat survey data will be incorporated into this data bank, and the data prior to 1974, although not computerized, is available at the Commission office. Arrangements are being made for boat survey data to be supplied to the States and the U.S. Environmental Protection Agency for inclusion in the STORET System on a routine basis.


NEW HAVEN
NEW HAVEN
FAIRFIELD
FAIRFIELD
CONNECTICUT
NEW YORK
PUTNAM
HOUSATONIC RIVER
MILFORD
STRATFORD
BRIDGEPORT
PALISADES INTERSTATE PARK
BEAR MT.
WESTCHESTER
PEEKSKILL
WESTPORT
NORWALK
LONG ISLAND SOUND
PORT JEFFERSON
HAVERSTRAW
CROTON
STAMFORD
OSSINING
ROCKLAND
GREENWICH
TARRYTOWN
PORT CHESTER
PIERMONT
NEW YORK
NEW JERSEY
HASTINGS
SUFFOLK
BERGEN
YONKERS
GLEN COVE
BAYSHORE
BRONX
BABYLON
GREAT SOUTH BAY
NASSAU
PASSAIC
EDGEWATER
QUEENS
SEAFORD
HUDSON
HOBOKEN
MANHATTAN
ESSEX
KEARNY
JERSEY CITY
EAST ROCKAWAY
BROOKLYN
PORT NEWARK
UPPER BAY
JAMAICA BAY
ATLANTIC OCEAN
ELIZABETH
UNION
LINDEN
STATEN ISLAND
LOWER BAY
WOODBRIDGE
PERTH AMBOY
SANDY HOOK BAY
RARITAN BAY
SOUTH AMBOY
PORT MONMOUTH
MIDDLESEX
KEYPORT
MONMOUTH
I.S.C. BOAT SURVEYS
RUN A
RUN B
RUN C
RUN D
RUN E
SCALE IN MILES
1 0 1 2 3 4 5 6
1975

INTERSTATE SANITATION COMMISSION
BOAT RUN "A"

SAMPLING STATION	LATITUDE	LONGITUDE	DESCRIPTION
AK-18	40° 30'24"N	74°15'34"W	Mid-channel of Ward Point Bend (west) and opposite Perth Amboy Ferry Slip
RB-10	40° 29'07"N	74° 15'38"W	Qk Fl G "3" Buoy
RB-14	40° 28'05"N	74°11'20"W	Buoy C "3" off Conaskonk Point at channel entrance to Keyport Harbor
RB-8	40° 27'10"N	74° 04'30"W	E-W: Line of Nun Buoy N "2" at channel entrance to Compton Creek & standpipe on Pt. Comfort. N-S: Approximately 200 yds west of Pews Creek
RB-7	40° 27'35"N	74° 02'45"W	Flashing Red Buoy R "4" off the tip of Leonardo (U.S.N.) Pier
LB-1	40° 30'44"N	74° 06'03"W	500 feet from Old Orchard Light in line with the beacon at Old Orchard Shore
LB-2	40° 33'45"N	74°04'20"W	B.W. Bell off Midland Beach
UH-13	40° 36'26"N	74° 02'45"W	Middle of channel in Narrows under Verrazano Bridge
UH-11	40° 39'05"N	74° 05'10"W	Located in the Kill Van Kull, in mid-channel & directly opposite Fl G & Black Buoy #3
NB-5	40° 38'47"N	74° 09'10"W	Midway between Flashing Red Buoy #14 and Buoy N "2A"
NB-3	40° 39'20"N	74° 08'45"W	Northside of C.R.N.J. Bridge over the Newark Bay South Reach channel (mid-channel)
NB-12	40° 41'57"N	74° 07'10"W	Newark Bay North Reach at mid-channel northside of LVRR Bridge
AK-3	40° 38'18"N	74° 11'45"W	At the center of & on the north side of the B&O R.R. Bridge
AK-7	40° 35'35"N	74° 12'22"W	Middle of mouth of Rahway River and in line with shoreline along Tremley Reach
AK-13	40° 33'02"N	74° 15'00"W	Mid-channel between Flashing Red Buoy #12 & Flashing Green, Black Buoy #1

INTERSTATE SANITATION COMMISSION
BOAT RUN "B"

SAMPLING STATION	LATITUDE	LONGITUDE	DESCRIPTION
LB-3	40° 34'03"N	73° 59'00"W	200 feet south of Steeplechase Pier at Coney Island - N "2S"
LB-4	40° 35'00"N	74° 00'51"W	1/4 mile northeast of Norton Point, near the white nun Buoy
UH-13	40° 36'26"N	74° 02'45"W	Middle of channel in Narrows under Verrazano Bridge
UH-22	40° 38'25"N	74° 02'50"W	In mid-channel of Bay Ridge channel. E-W:Flashing Red Beacon on 69th St. Ferry Dock (Brooklyn). N-S: Fl G Bell Buoy #3 & Fl R Gong Buoy #22
UH-29	40° 42'17"N	75° 59'54"W	Mid-channel of East River in line with Pier #11 (Manhattan) & Pier #1 (Brooklyn)
UH-28	40° 42'20"N	74° 01'36"W	Mid-channel of Hudson River; N-S: Line of black buoys; E-W:Fire boat pier (NY) & railroad pier (NJ)
UH-21	40° 40'23"N	74° 02'28"W	Main ship channel 10 yds to the west of Fl R Bell Buoy #30
UH-3	40° 39'14"N	74° 03'35"W	Passaic Valley Outfalls - E-W: Robbins Reef Light & forward water tower on Naval Dock. N-S: Statue of Liberty & Black Bell Buoy #1-G
AO-1	40° 31'47"N	73° 56'37"W	Flashing Red R "2" Gong (4 sec.)
RI-1	40° 34'00"N	73° 55'51"W	As near the outfall structure of the Coney Island plant as safety permits
RI-2	40° 34'24"N	73° 53'08"W	Under center of bridge from Barran Island to Rockaway
JB-8	40° 36'20"N	73° 48'56"W	Under center of R.R. Trestle
JB-5	40° 35'45"N	73° 48'40"W	At center pier of bridge over Beach Channel-Hammels
JB-7	40° 38'52"N	73° 49'20"W	At mouth of Bergen Basin, southeast of the sludge storage tank
JB-3	40° 37'37"N	73° 53'00"W	In channel 400 ft south of the end of Canarsie Pier
JB-2	40° 36'27"N	° 53'09"W	Mill Basin - at east end of channel

INTERSTATE SANITATION COMMISSION
BOAT RUN "C"

SAMPLING STATION	LATITUDE	LONGITUDE	DESCRIPTION
LI-15	40° 47'58"N	73°47'38"W	Middle of Throgs Neck Bridge
LI-17	40° 49'43"N	73° 46'46"W	500 yds off Stepping Stone, north of Fl G "12" M Horn
LI-19	40° 51'33"N	73° 45'03"W	Off Bell "27" @ Gang Way Rock
LI-24	40° 53'57"N	73° 44'27"W	@ New Rochelle outfall approximately 500 yds south of R "2"
LI-25	40° 55'25"N	73° 42'01"W	Mamaroneck Fl 4 Sec. Bell R "42"
LI-26	40° 58'47"N	73° 38'59"W	Port Chester off N "2"
LI-27	41° 00'08"N	73° 36'04"W	Captain's Harbor - Newfoundland Reef Fl R "4"
LI-28	40° 59'42"N	73° 33'58"W	Greenwich Point R N "34"
LI-29	41° 00'54"N	73° 32'14"W	Stamford between E int G 8M Horn and Fl R
LI-30	40° 59'26"N	73° 30'49"W	Stamford N-S: "32" Fl 4 Sec. Bell & Fl 4 Sec. "15" Bell; E-W: "32A" whistle R N "28"
LI-31	40°53'29"N	73° 30'11"W	Oyster Bay Gong "1"
LI-32	40° 54'39"N	73° 38'07"W	Matinecock Pt. "21" Fl G. 4 Sec. Bell
LI-33	40° 51'42"N	73°40'07"W	Hempstead Harbor midway between R 6 Bell & Fl 4 Sec. "1"
LI-34	40° 50'00"N	73°44'02"W	Manhasset Bay Fl G 4 Sec. "1"

INTERSTATE SANITATION COMMISSION

BOAT RUN "D"

SAMPLING STATION	LATITUDE	LONGITUDE	DESCRIPTION
W-1	40°35'03"N	73°34'33"W	100 ft east of Red Buoy #6 at entrance to Jones Inlet
W-2 A&B	40°33'51"N	73°35'42"W	1 mile south of water tower & building on shore and 1/2 mile & 100 ft out from tip of jetty
W-3 A&B	40°34'05"N	73°33'30"W	1/2 mile east of jetty & 1 mile from shore on a line with the Coast Guard Station
W-10 A&B	40°33'54"N	73°39'12"W	1 mile off shore on a line with edge of apt. bldg. & gas tank. High water tower to East
W-4 A&B	40°31'12"N	73°39'12"W	3 miles off shore south of point W10
W-9 A&B	40°34'24"N	73°44'18"W	Gas tank on shore & red gong buoy R4 off jetty about 1/2 mile west
W-8	40°35'18"N	73°45'27"W	50 ft west of red buoy #6 1/2 mile off shore
W-6 A&B	40°32'36"N	73°51'54"W	South of main bldg. with Twin Towers at Riis Park approximately 1½ miles from shore
W-5 A&B	40°31'18"N	73°48'15"W	A heading of 112° East of point W6 opposite seven high apt. bldgs. on shore approximately 2½ miles out

NOTES: (1) Station designations are those used by NYSDEC

(2) Sampling Depths (below the surface):

10 feet - W-2 A, W-3 A, W-10 A, W-9 A, W-8, W-6 A
15 feet - W-1
18 feet - W-4 A, W-5 A
20 feet - W-2 B, W-3 B, W-10 B, W-9 B, W-6 B
35 feet - W-4 B, W-5 B

INTERSTATE SANITATION COMMISSION
BOAT RUN "E"

SAMPLING STATION	LATITUDE	LONGITUDE	DESCRIPTION
ER-1	40° 42'24"N	73° 59'27"W	Under Manhattan Bridge - Mid-channel
ER-2	40°42'48"N	73° 58'20"W	Under Williamsburg Bridge-Mid-channel
ER-3	40°44'05"N	73° 58'05"W	Mid-channel of East River; E-W:Pier #73 (School Ship) Manhattan with open pier, ft. of Greene St., Brooklyn; N-S: Poorhouse Flats Range
ER-4	40° 45'22"N	73°57'11"W	Under Queensboro Bridge - East Channel
ER-9	40°47'26"N	73° 54'53"W	Mid-channel of East River; E-W: Fl R Bell Beacon on Wards Island with tall stack on Con Edison's Astoria Plant
ER-11	40°47'50"N	73° 52'02"W	Mid-channel of East River; E-W: Fl R Beacon (College Pt.) with stack on Rikers Island; N-S: Line from center of Sanitation Pier (Hunts Pt.) with Fl R #4 Buoy (Station approx. 250 yds S.E. of #4 Buoy)
HA-1	40°48'40"N	73°56'02"W	Third Bridge after Triboro Bridge
HA-2	40°50'44"N	73° 55'45"W	Hamilton Bridge (middle bridge of 3)
HR-1	40°42'20"N	74°01'36"W	Mid-channel of Hudson River; N-S:Line of black buoys; E-W: Fire boat pier (NY) and railroad pier (NJ)
HR-2	40°45'17"N	74°00'58"W	Mid-channel of Hudson River; E-W: Heliport (NY) & Seatrain pier (NJ)
HR-3	40°47'41"N	73° 59'09"W	Mid-channel of Hudson River; E-W: Soldiers & Sailors Monument (NY) and Circular apartment bldgs. (NJ)
HR-4	40° 51'04"N	73° 57'04"W	Mid-channel of Hudson River; Under George Washington Bridge
HR-5	40°52'40"N	73° 55'02"W	Mid-channel of Spuyten Duyvil Creek; Under Henry Hudson Bridge
HR-7	40° 56'51"N	73° 54'27"W	Mid-channel of Hudson River; E-W: Opposite Phelps Dodge (Yonkers)

INTERSTATE SANITATION COMMISSION
ANALYSES PERFORMED ON BOAT SURVEY SAMPLES

Analyses Performed Every Run

Color	Dissolved Oxygen	Total Carbon
Odor	Conductivity	Total Organic Carbon
Water Temperature	Turbidity	pH

Analyses and Their Frequency of Performance (Times Per Year)

Copper (8)	Fecal Coliforms*
Zinc (8)	Biochemical Oxygen Demand (6)
Chromium (8)	Oil and Grease (4)
Lead (8)	Ortho Phosphate-P (7)
Nickel (8)	Total Phosphate-P (7)
Cadmium (8)	Ammonia-N (7)
Aluminum (2)	Nitrite-N (7)
Iron (2)	Nitrate-N (7)
Silver (2)	Total Kjeldahl Nitrogen (7)
Cobalt (2)	Pesticides (1)
Tin (2)	Chlorophyll a (3)
Arsenic (2)	Chlorophyll b (3)
Mercury (5)	Chlorophyll c (3)
Phenols (2)	Biological Analyses on Water Column (3)
	Chemical and Biological Analyses on Sediments (1)**

*PERFORMED ON EVERY OTHER RUN EXCEPT ON EVERY RUN DURING JUNE, JULY, AND AUGUST

**AT SELECTED STATIONS

THE COMMISSION LABORATORY

The laboratory of the Interstate Sanitation Commission increased its activities during the past year to accommodate expanded sampling programs.

A biological monitoring program was instituted in 1975 in order to give the Commission and the States baseline information. Detailed information is given below.

In support of the National Pollutant Discharge Elimination System (NPDES), the Commission conducted 12 sampling investigations to monitor compliance with the newly-issued discharge permits. This included permit review, plant investigation, plant sampling on a 24-hour continuous basis, and appropriate laboratory analyses. The Commission's mobile laboratory proved to be of immense help in carrying out the difficult logistics involved in this sampling and analyses program.

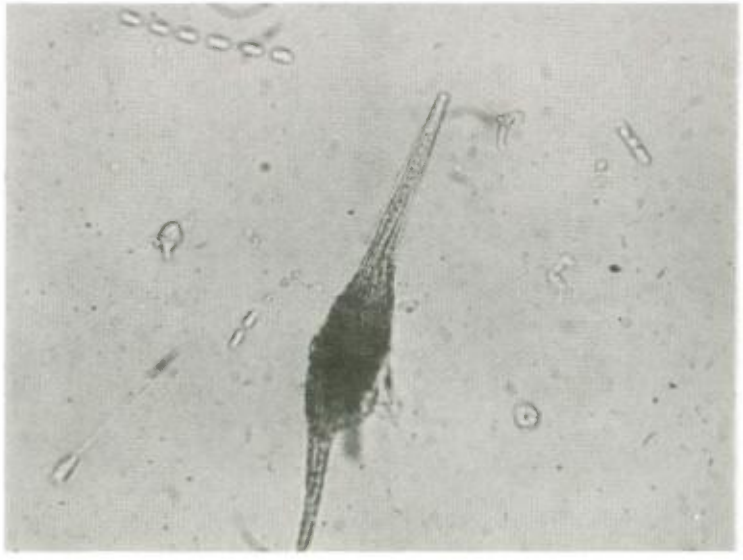
Biological Monitoring Program

During 1975, a biological monitoring program was undertaken. Water and sediment samples were taken in Interstate Sanitation District waters at the stations shown on the Boat Run Map on page 63 and the accompanying station descriptions. The program was designed to monitor phytoplankton, zooplankton, and benthic invertebrates with regard to their identification, abundance, diversity, and biomass. In the future, it is hoped to relate these findings to water chemistry data in order to form a picture of the dynamics occurring in District waters.

In the past, the Commission has done limited phytoplankton analyses from three areas near the mouth of the Raritan River. This year, phytoplankton was collected in a plastic sampler at a depth of five feet during the spring, summer, and fall. The species are presently being identified and photographed, with counting of the samples to be completed in 1976. The majority of the species so far identified are diatoms, such as Skeletonema costatum and Asterionella japonica A large number of dinoflagellates, such as Ceratium spp., have been identified, as well as larval and juvenile macroinvertebrate forms such as the crustacean nauplius larva. At the present time, more than 30 species have been identified and further work is expected to uncover additional species. Photographs of four of the species identified are shown on the following page.

SKELETONEMA COSTATUM (225X)
(4/16/75 AT STATION RB-14)

ASTERIONELLA JAPONICA (225X)
(4/24/75 AT STATION LI-34)



CERATIUM SPP. (225X)
(4/16/75 AT STATION RB-7)

NAUPLIUS LARVA (100X)
(4/24/75 AT STATION LI-34

Prior to this year, chlorophyll determinations were made from samples at selected sites in District waters. This year, chlorophyll determinations were expanded to cover all stations. The experimental procedure includes sample filtration aboard the sampling vessel, grinding of filters, maintenance of complete darkness while pigments are extracted, and the use of the SCOR-UNESCO equations for the calculation of chlorophyll a, chlorophyll b, and chlorophyll c. A value for the amount of pheopigments in the samples has been calculated to give an estimate of the chlorophyll a actually in use by the phytoplankton. It has been found that pheopigment values are generally low, indicating that almost all of the chlorophyll contained in the phytoplankton samples is "working" chlorophyll. The chlorophyll data shown on the following two pages include pheopigments.

A dry weight, ash-free weight method for the measurement of phytoplankton biomass has been successfully used on preliminary samples; biomass data should be available in 1976.

The zooplankton portion of the biological sampling program was begun in October 1975 using a 0.5 micron diameter plankton net, No. 10 mesh, with a Nansen release and digital flowmeter. Preliminary samples have been analyzed for species identification, with more extensive sampling and analyses expected in the coming year.

Sediment sampling for the analysis of benthic invertebrates began in April. In order to obtain information on community composition and sediment types, 22 preliminary samples were taken with a Birge-Ekman dredge during April, May, June, and July. The majority of stations supported some type of benthic community. However, samples from three stations (at the mouth of the Raritan River, in Lower New York Bay, and in the lower Arthur Kill) contained no benthic community at all -- only mud, and in some cases, oily mud.

In August, a Ponar dredge was used to sample one site in Sandy Hook Bay having a sand community, one site in Upper New York Bay having a mud community, one site in Jamaica Bay having a silty-sand community, and two sites in Long Island Sound -- one sand community near the Connecticut shore and one mud community near the New York shore. Six grab samples were taken at each station, five for biological analyses and one for chemical analyses. In addition, one Ponar grab sample was taken for chemical analysis at the three previously

INTERSTATE SANITATION COMMISSION
1975 CHLOROPHYLL DATA

STATION	MARCH-APRIL CHLOROPHYLL a	b	c	MAY-JUNE CHLOROPHYLL a	b	c	JULY-AUGUST CHLOROPHYLL a	b	c	OCTOBER CHLOROPHYLL a	b	c
RB-10	0.046	0.009	0.010	0.103	0.001	-	0.012	0.005	0.010	0.005	0.004	0.010
RB-14	0.066	0.003	0.001	-	-	-	0.036	0.010	0.000	0.004	0.001	0.005
RB-8	0.060	0.003	-	0.065	0.006	0.001	0.030	0.005	0.000	0.006	0.003	0.006
RB-7	0.033	0.003	0.004	-	-	-	0.040	0.008	-	0.005	0.001	0.008
LB-1	0.041	0.006	0.005	-	-	-	0.029	0.004	-	0.009	0.001	0.002
LB-2	0.055	0.006	0.002	-	-	-	0.020	0.008	0.016	0.005	0.000	-
UH-13	-	-	-	-	-	-	0.013	0.006	0.016	0.004	0.000	0.000
UH-11	-	-	-	-	-	-	0.022	0.010	0.023	0.003	0.001	0.003
NB-5	-	-	-	-	-	-	0.023	0.007	0.014	0.003	0.002	0.005
NB-3	-	-	-	-	-	-	0.031	0.009	0.040	0.003	0.002	0.003
NB-12	-	-	-	-	-	-	0.022	0.006	0.010	0.004	0.005	0.010
AK-3	-	-	-	-	-	-	0.033	0.015	0.018	0.002	0.002	0.007
AK-7	-	-	-	-	-	-	0.020	0.008	0.013	0.003	0.000	0.001
AK-13	-	-	-	-	-	-	0.029	0.007	0.014	0.004	0.001	0.002
AK-18	-	-	-	-	-	-	0.020	0.004	0.004	0.005	0.002	0.003

NOTE: All values are either single values or averages of 2 values except July-August for Station UH-13 which are averages of 3 values. Values are given in mg/l.

(Continued)

STATION	MARCH-APRIL CHLOROPHYLL a	b	c	MAY-JUNE CHLOROPHYLL a	b	c	JULY-AUGUST CHLOROPHYLL a	b	c
LB-3	-	-	-	-	-	-	0.007	0.001	0.004
LB-4	-	-	-	-	-	-	0.002	0.000	0.000
UH-22	-	-	-	-	-	-	0.002	0.000	0.000
UH-29	-	-	-	-	-	-	0.005	0.006	0.012
UH-28	-	-	-	-	-	-	0.002	0.000	0.000
UH-21	-	-	-	-	-	-	0.008	0.000	0.013
UH-3	-	-	-	-	-	-	0.001	-	0.005
RI-1	-	-	-	-	-	-	0.007	0.003	0.016
RI-2	-	-	-	-	-	-	0.061	0.003	0.003
JB-8	0.091	0.014	0.025	0.024	0.006	0.012	0.020	0.001	0.003
JB-5	0.082	0.015	0.016	0.031	0.015	0.035	0.012	0.000	0.004
JB-7	0.075	0.009	0.011	0.017	0.007	0.010	0.015	0.006	0.013
JB-3	0.072	0.020	0.038	0.022	0.006	0.006	0.033	0.003	0.005
JB-2	0.082	0.019	0.032	0.038	0.013	0.016	0.029	0.002	0.003
LI-15	-	-	-	0.024	0.014	0.034	0.008	0.005	0.010
LI-17	-	-	-	0.016	0.014	0.040	0.022	0.003	0.002
LI-19	-	-	-	-	-	-	0.023	0.002	-
LI-24	0.020	0.016	0.029	0.017	0.014	0.033	0.010	0.000	-
LI-25	-	-	-	0.011	0.008	0.018	0.021	0.004	-
LI-26	0.014	0.007	0.006	0.027	0.018	0.045	0.019	-	-
LI-27	-	-	-	0.011	0.010	0.033	-	-	-
LI-28	-	-	-	0.019	0.013	0.031	0.014	-	-
LI-29	-	-	-	0.007	0.009	0.024	0.016	0.003	-
LI-30	0.007	0.005	0.004	0.022	0.019	0.049	0.015	0.002	0.002
LI-31	-	-	-	0.008	0.009	0.021	0.006	0.005	-
LI-32	0.010	0.003	0.001	0.021	0.018	0.045	0.007	0.001	0.001
LI-33	-	-	-	0.015	0.007	0.018	0.020	0.014	-
LI-34	0.036	0.003	-	0.028	0.017	0.043	0.044	0.003	0.000

NOTE: All Values are either Single Values or Averages of 2 Values.
Values are given in mg/l.

mentioned sites where no benthic community was found. Sorting, counting, and biomass studies are currently in progress. Preserved type specimens are being kept for reference.

A diversity of organisms has been found in most of the sediment samples. These include hydrozoans (related to jellyfish), polychaetes (type of segmented worms), crustaceans, gastropods (snails), bivalves (clams), and echinoderms (mostly starfish). Even in greatly enriched and polluted areas, communities of more than five benthic species have been found while in relatively cleaner areas, communities of more than 20 benthic species have been found.

The biological sampling program was undertaken to systematically and comprehensively monitor biological conditions in the Interstate Sanitation District.. Through development of this baseline data on the biological communities existing in Interstate Sanitation District waters and updating this data, it is hoped that this program will lead to a better understanding of the effects of pollution on the biological communities present.

NEW YORK-NEW JERSEY METROPOLITAN AREA SEWAGE SLUDGE DISPOSAL MANAGEMENT PROGRAM

Much of the sewage sludge in the New York-New Jersey Metropolitan Area is presently disposed of by barging to sea. The current uncertainties about the future of this means of disposal and the tripling of sewage sludge volume expected within the next several years because of the construction of secondary wastewater treatment plants pose a tremendous problem. This problem has created a real need to focus on how to dispose of this sewage sludge on a regional basis.

The Commission is now in the second year of a two-year study of sewage sludge disposal management. The initiation of this project was based upon meetings between the States of New York and New Jersey, the U.S. Environmental Protection Agency - Region II, and the Interstate Sanitation Commission. It was agreed upon that the Commission be funded by the U.S. Environmental Protection Agency-Region II for a two-year, three-phase project in which the Commission would be responsible for developing a sewage sludge disposal management program in the New York-New Jersey Metropolitan Area by the latter part of 1976. In developing the program, the Commission was directed to keep in mind the following U. S. Environmental Protection Agency-Region II policies:

(1) new sludge incinerators at each individual waste treatment plant were not to be considered;

(2) disposal techniques must not contaminate groundwaters;

(3) it was to be assumed that there would be removal of heavy metals and other toxic materials before wastes are delivered to municipal systems; and

(4) early in the conduct of the Phase 1 work, it became an objective desired by the U.S. Environmental Protection Agency to phase out ocean disposal by 1981.

The Commission instructed its consultant to proceed in light of these premises and assumptions.

The overall project consists of three phases: Phase 1 was a State-of-the-Art investigation of alternatives to ocean disposal of sludge and the recommendation of a limited number

of the most feasible alternatives for in-depth investigation in Phase 2.

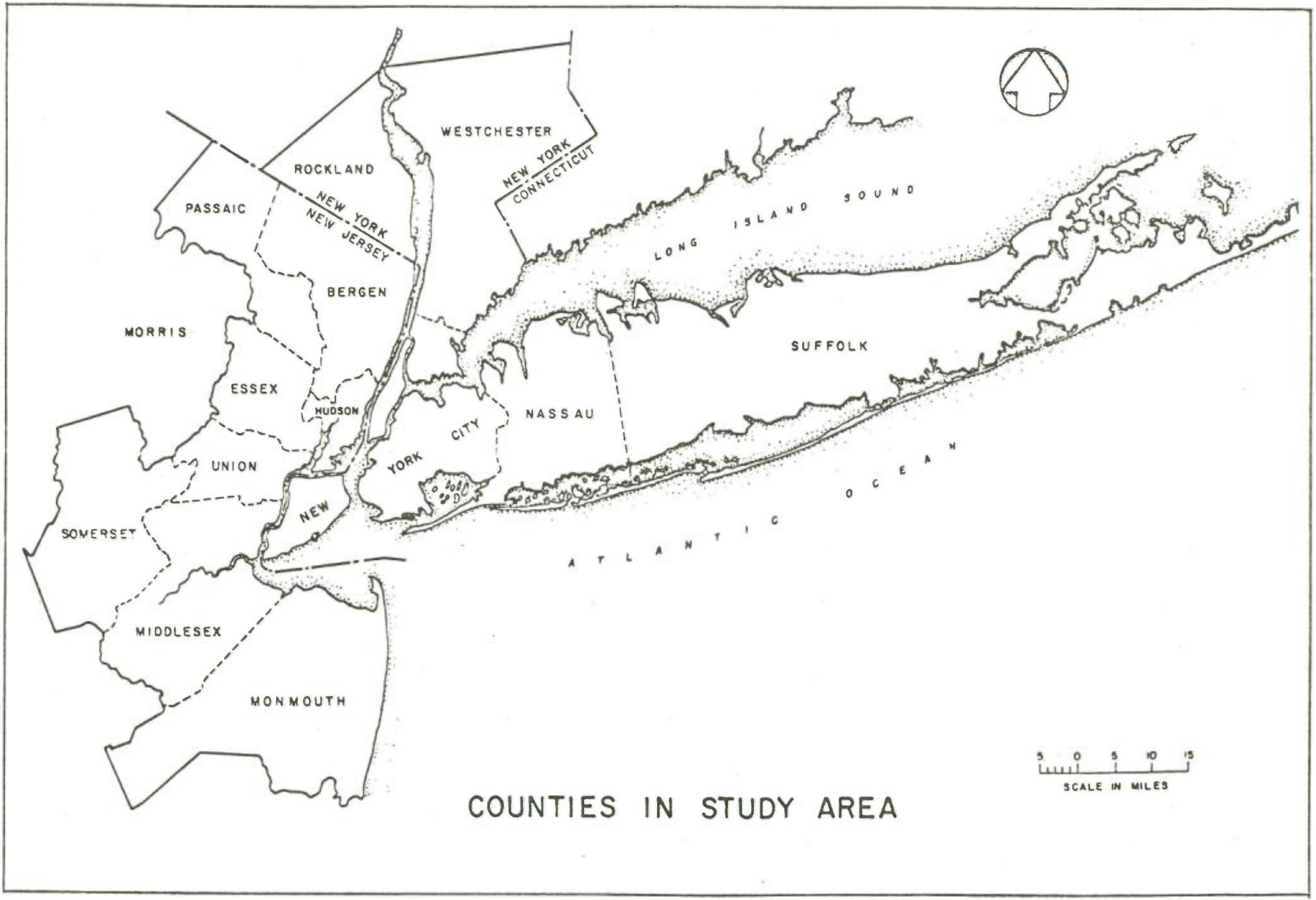
In order for the three-phase program to be successful and so that all sectors affected or potentially affected by the results of the program could be kept informed and be able to make an input to the program, the management of the program was developed for two-way communication. While the Commission is responsible for overall management of the development program, an Executive Committee was established composed of a representative from the State of New York, the State of New Jersey, the U.S. Environmental Protection Agency-Region II, the waste treatment agencies operating in New Jersey, the waste treatment agencies operating in New York, and the Interstate Sanitation Commission. This committee advises the Interstate Sanitation Commission concerning the conduct of the investigation. Technical advisory sub-committees have been established both by the New Jersey and the New York waste treatment agencies. These sub-committees advise and present their views to the waste treatment agencies' representatives on the Executive Committee and thus provide an input to the entire program. Several meetings were also held with the sub-committees for direct communication with the Commission and its consultant.

The alternatives studied in Phase 2, and the study being conducted by the U.S. Environmental Protection Agency and the National Oceanic and Atmospheric Administration (NOAA) on ocean disposal, will all be considered in formulating the Commission's recommendation for a regional sludge management program. Concurrently with these two phases, a legal-institutional Phase 3 investigation is proceeding to determine the requirements for the administration of a coordinated sludge management system for the region.

The subject of Phase 1 was examination and comparison of alternative methods of sludge disposal, not including ocean dumping. The counties included in the study area are shown on the map on the following page. Investigated under Phase 1 were the following techniques:

(1) land alternatives - sanitary landfill, spreading as soil conditioner and fertilizer, various sludge solidification processes, and drying and selling for fertilizer and soil conditioner;

(2) treatment by combustion - incineration of sludge, incineration in combination with solid wastes, and



COUNTIES IN STUDY AREA

incineration to include power or steam generation;

(3) treatment by pyrolysis; and

(4) treatment by wet combustion.

Based upon the Phase 1 report entitled PHASE 1 REPORT OF TECHNICAL ALTERNATIVES TO OCEAN DISPOSAL OF SLUDGE IN THE NEW YORK-NEW JERSEY METROPOLITAN AREA by Camp, Dresser and McKee (technical consultants for this part of the study), the Commission has concluded that the Phase 2 technical work should concentrate most heavily on the practicability of pyrolysis. Pyrolysis is a heating process in the absence of air which decomposes the sludge and produces gases, liquids and solid residues which may be used as fuels. Also being considered are methods of land disposal, where feasible, and methods of disposal of residues.

The results of the Phase 1 investigation indicate that if ocean disposal of sludge is to be discontinued by 1981, the most practical method of treating the bulk of the region's sludge - with due consideration of environmental and economic factors - is incineration. However, this method presents severe difficulties. Consequently, the examination of pyrolysis, although implementation might be somewhat longer delayed, is a desirable course to emphasize in Phase 2. The total cost of facilities to handle 2000 tons of sludge per day by the year 2000 is estimated at $400-$500 million in 1975 dollars for either pyrolysis or incineration.

In order to determine to what extent and how rapidly pyrolysis could become the major method of sludge treatment, the Commission is working with the U.S. Environmental Protection Agency-Cincinnati to obtain engineering design and criteria values in time to be considered in the Phase 2 technical report and the immediately subsequent formulation of the program which will be recommended by the Commission.

The costs of all alternatives other than those dismissed for substantial technical reasons are presented in the Phase 1 report.

In considering land disposal alternatives, the application rate of sludge used in Phase 1 was ten dry tons per acre per year. This projected land application rate is based on relationships developed by English agronomists and the proposed U.S. Environmental Protection Agency guidelines. The ten tons/acre/year

is recommended by agronomists and soil scientists in order that the nitrogen applied does not exceed its utilization rate with the result that the mobile nitrate forms would get into surface and ground waters. This application rate is about ten times the rate that would actually be permissible in view of the average heavy metal content of the sludge in the study area.

In this connection, it should be noted that the U.S. Environmental Protection Agency guidelines which are supposed to govern pretreatment of heavy metals entering municipal systems have not appeared. Consequently, the Commission and its technical consultant may find it necessary to consider the likelihood that, in fact, the assumption of heavy metal removal in the near future will prove to be significantly inaccurate or erroneous. In such an event, the allowable rate of land application for sludge would have to be very much lower than that which the study has thus far used.

The Phase 2 portion of the study is under way, and the recommended alternatives in Phase 1 will be studied in more depth. Camp, Dresser and McKee are the Phase 2 consultants. By the third quarter of 1976, the Commission will recommend a regional sludge management program for the New York-New Jersey Metropolitan Area.

Phase 3 of the investigation is concerned with the development of a legal-institutional framework to implement regional sludge management. The work is being done concurrently with the technical phases so that the Commission's report can contain the necessary recommendations as to organizational structure and authority.

Throughout most of the first year of the investigation, it appeared that the most feasible alternative to ocean disposal for treatment of the bulk of the region's sludge would prove to be incineration, with other methods used in supplemental fashion. Accordingly, preliminary research and plan development were done on that assumption. However, it now appears that pyrolysis may be a more satisfactory long-range approach.

While the recommendation of any preferred principal method, and certainly the presentation of a desirable combination of methods, must await the conclusion of the technical work, the Phase 3 investigation is proceeding on the premise that it may be appropriate to include legal-institutional materials which

will be sufficient for use in connection with either major reliance on incineration or pyrolysis and with either or both in combination with other methods which may be employed by given sub-areas of the region.

NEW YORK HARBOR MODEL

Hydroscience, Inc., under a contract let by the Commission at the request of and through funding provided by the U.S. Environmental Protection Agency, has developed a water quality model of the entire New York Harbor complex. This model gives the States an analytical basis for management decision-making and planning for wasteload allocations.

During the course of the project, Hydroscience held two training seminars attended by the States, the U.S. Environmental Protection Agency, and the 208 Agencies in the Metropolitan New York area, as well as by the Commission. These seminars included the background material on the model development and instruction on the operation of the computer programs developed. The computer programs submitted to the Commission were sent to the States of New York and New Jersey, the U.S. Environmental Protection Agency, and the Tri-State Regional Planning Commission.

The following text is excerpted from the report entitled "Development of a Steady State Water Quality Model of the Interstate Sanitation District Waters" which was submitted to the Commission by Hydroscience.

INTRODUCTION

Over the past fifteen years the water quality of the New York Harbor region has been the subject of many engineering studies. Recently, many investigators have applied mathematical models to the simulation of water quality conditions as affected by present and estimated future levels of waste discharges. Most models were developed for specific portions of the system, generally for the purpose of developing discharge regulations. The accuracy of simulation results of such models was often limited by estimation of constituent concentrations at model boundaries, values in actuality affected by the very system being modeled.

To organize these individual models so as to improve accuracy, this comprehensive model of New York Harbor was developed. The intent of this project was

to develop such a model, using previous models wherever possible; to verify the model against several sets of existing water quality data; to make recommendations concerning weaknesses of the model and necessary additional work; and to transfer the model to the Interstate Sanitation Commission for its use as a planning tool.

The resulting model is a steady state, finite section, vertically-mixed, one-and-two dimensional water quality model, capable of simulating single conservative (non-reactive) or reactive substances (e.g., chloride, coliforms, respectively) or two coupled reactive substances (e.g., BOD and DO, NH_3-N and NO_3-N).

The study area includes:

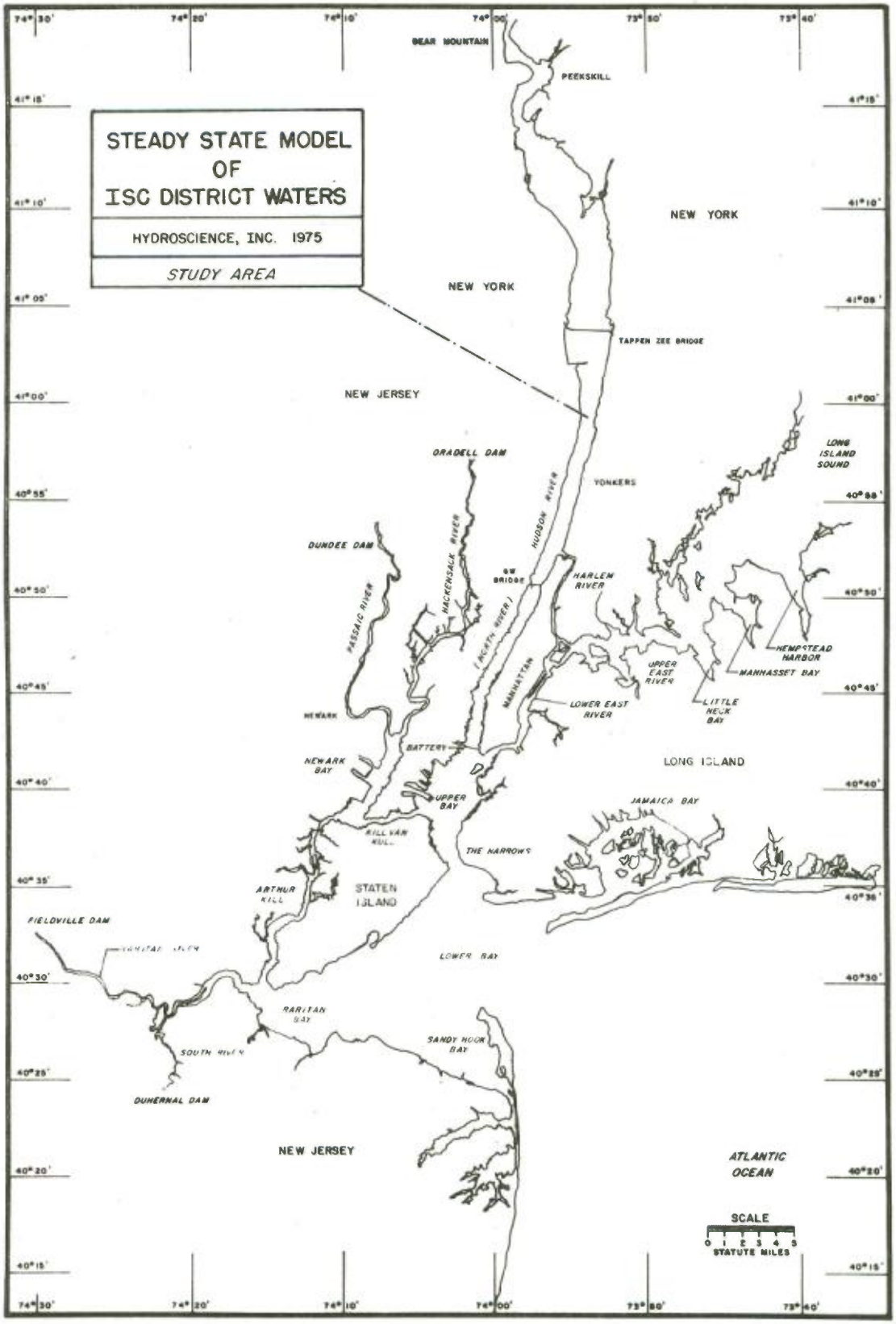
1. Hudson and North Rivers
2. Hackensack River
3. Passaic River
4. Newark Bay
5. Kill Van Kull
6. Arthur Kill
7. Raritan River
8. South River
9. Harlem River

STUDY AREA

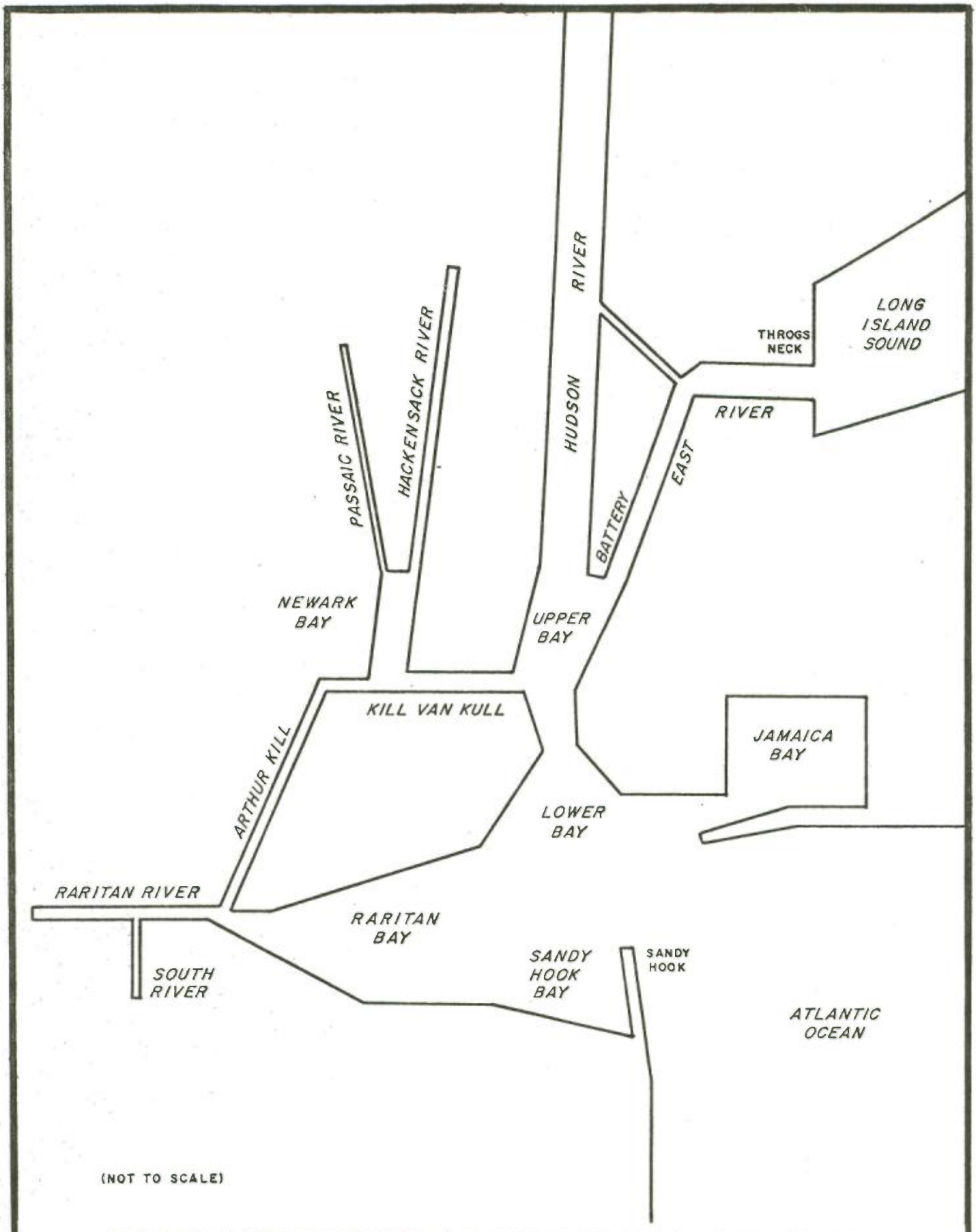
Physical Description of Study Area

The study area is predominantly a densely-populated urban region centered upon New York Harbor. It includes the City of New York, portions of three adjacent New York counties - Nassau, Westchester, and Rockland - and portions of eight counties of northeastern New Jersey. A map of the study area is presented on the following page.

A diagrammatic representation of New York Harbor estuarine waters (shown after the study area map) provides a ready visualization of the various components of the system. The Harbor is a complex network of estuarine waters, tidally driven by both the Atlantic Ocean and Long



MAP OF STUDY AREA



DIAGRAMMATIC REPRESENTATION OF NEW YORK HARBOR

Island Sound. Freshwater enters the system predominantly from the Hudson River in the north, and also from four New Jersey rivers -- the Hackensack, the Passaic, the Raritan and the South. In addition, water is transported from outside the study area via water supply systems and is discharged as wastewater in either untreated or treated form from municipalities and industries throughout the area. Runoff from lands within the study area enters the water body as urban stormwater via stormwater drains and overflows from combined sewers and as rural to semi-urban runoff from less populated regions.

SUMMARY

(1) A steady-state water quality model has been developed for the tidal waters in and contiguous to the New York City metropolitan area. The model incorporates the effects of fresh water flow, tidally induced dispersion, and reactions associated with various water quality constituents. The model is applicable to simulate the distributions of a variety of water quality characteristics including chlorides and salinity, carbonaceous BOD (CBOD), nitrogenous BOD (NBOD), ammonia and nitrate nitrogen, dissolved oxygen, total and fecal coliforms, water temperature, and other conservative or first order reactive variables. The model is fully documented for use by regulatory personnel for planning purposes and engineering control of the water resource.

(2) The New York Harbor water quality model is designed to accept the inputs from and calculate the water quality effects of a variety of sources of waste-water discharges. Wastewater loadings from municipal and industrial point sources and various non-point sources including untreated sewage, combined sewer overflows, storm drainage, surface runoff, and other background effects can be included in model application. In dissolved oxygen, the effects of the oxygen demand of bottom materials and any photosynthesis and respiration can also be computed. The effect of these

sources individually or cumulatively can be computed. In this manner, the model can be used to determine the effects of different classes of waste loadings on water quality, and further, the individual effects of particular sources within each class. The model is therefore useful to identify the most important factors and sources affecting water quality in New York Harbor for input to water quality management.

(3) The New York Harbor model has been tested with multiple sets of observed water quality data primarily for the distributions of chlorides and dissolved oxygen in the component waterways of the system. Carbonaceous BOD, ammonia nitrogen and nitrate nitrogen comparisons have also been accomplished as part of the dissolved oxygen testing. Additionally, simulations have been performed for baseline point source fecal coliform distributions and thermal discharges. The model can be considered verified for its transport characteristics on the basis of testing with chloride data. For dissolved oxygen, the model is verified in a preliminary manner. Additional comprehensive data are required for final verification to fully define the relative effects of point and nonpoint sources and the degree of nitrification in New York Harbor. The model is partially calibrated for fecal coliforms and temperature, due primarily to data deficiencies. The sensitivity of the model to parameter variations have been performed and important sub-systems of New York Harbor have been identified.

(4) Calculated dissolved oxygen profiles generally reproduce the major features of the observed data in each waterway. On a preliminary basis, point sources of carbonaceous BOD may account for approximately 75% of the calculated dissolved oxygen deficits at critical locations in the Hudson, East and Hackensack Rivers and in the Arthur Kill. The combination of the point source CBOD and NBOD discharges, including

upstream conditions at Fieldville Dam, also causes approximately 75% of the observed deficit in the Raritan and South Rivers. The balance of the dissolved oxygen depression in these areas is due to non-point sources such as untreated discharges, storm loadings, benthal demands and other background effects. Oxygen depression in the Passaic River is caused by both point and non-point sources.

(5) Although carbonaceous point sources have been calculated to produce a major portion of the dissolved oxygen deficits at several critical locations, these results must be considered tentative as a significant number of the discharges have been estimated, or are apparently subject to considerable variation. Further, nitrogenous BOD loadings are estimated for most significant discharges, including those for untreated sewage, due to lack of data. Distributed carbonaceous inputs, benthal demands, and kinetic rates for CBOD and NBOD are preliminary and subject to confirmation. It is possible that the calculated relative contributions of point and non-point sources, carbonaceous and nitrogenous BOD effects, and that due to benthal demands, may be altered pending additional information on wastewater loadings and water quality. Such alterations could have a significant impact on the selection of appropriate engineering procedures for effective management of the water resources. As a result, the model should be tested further with additional comprehensive data before application to final planning.

(6) Fecal coliforms in the municipal effluents and raw sewage discharges were used to calculate bacterial concentrations in the waterways. Significant discharges were assigned effluent concentrations on the basis of engineering judgement due to lack of available data. Calculated bacterial levels in many of the rivers are less than observed. This result is due to a combination of factors including unaccounted non-point

sources, storm water effects, and the lack of loading data for significant point sources. As with dissolved oxygen, additional data and analysis are required for model confirmation.

(7) On the basis of available data and this analysis, the primary water quality problems at the present time in the ISC waters are low dissolved oxygen and bacterial contamination, both on a harbor-wide scale. Engineering solution of both problems depends on reliable identification of the magnitude and effects of all point and non-point sources. The New York Harbor model prepared as the primary task of this study is well suited for this purpose, particularly for dissolved oxygen and other water quality parameters of an intermediate time scale which are adequately simulated by steady state analysis. The model is also applicable for simulation of base case coliform distributions from continuous point sources and can serve to screen these effects from storm related discharges. The preparation of this model provides a detailed framework for immediate application to specifically define additional technical steps and data requirements necessary to planning functions. This procedure would lead to quantitative identification of all factors affecting the oxygen balance and bacterial distributions, and facilitate selection, evaluation and implementation of engineering procedures for control of the water resource.

III. AIR POLLUTION

GENERAL

During 1975, the Interstate Sanitation Commission's air pollution activities included the following programs:

The "Control of Suspended Particulates" project, funded by a Demonstration Grant from the U.S. Environmental Protection Agency, was extended for a second year. The participating agencies include the States of New Jersey and New York, the City of New York, Mount Sinai School of Medicine, the Polytechnic Institute of New York, and the Cooper Union for the Advancement of the Arts and Sciences.

Early in the year, a detailed analysis of the 1974 study of photochemical oxidants in the New York, New Jersey, and Connecticut area was completed. Based on this analysis, the Commission, in cooperation with the three States, intensified its efforts during the summer of 1975. This phase is still in progress.

The U.S. Environmental Protection Agency conducted an extensive photochemical oxidant study in New England during the summer. To complement this effort, the U.S. Environmental Protection Agency provided the Commission with funds for sixty hours of flight time. Ozone, hydrocarbons, and condensation nuclei were measured on these flights over an area extending from Bridgeport, Connecticut, to Newark, Delaware. These flights were manned by personnel from the States of New Jersey and Connecticut and the Interstate Sanitation Commission. In addition, the Commission provided analytical equipment and personnel for flights in support of aerial ozone surveys conducted by the States of New York and New Jersey.

An extensive study of the diurnal variations in the vertical ozone profile was conducted at High Point, New Jersey, during the month of July. The States of New Jersey, New York, and Connecticut supported the Commission in this study by providing personnel and analytical assistance.

The Commission laboratory served as the focal point for a joint hydrocarbon study with the States of New York and New Jersey. Both ground level and aerial hydrocarbon samples were collected across the tri-state area and analyzed at the Commission laboratory.

In support of a sulfate study being conducted by New York State, the Commission obtained rural sulfate and total suspended particulate and respirable particulate data at High Point, New Jersey, during the months of July and August.

During the summer, the Commission's ozone generator served as a reference calibrator for ozone monitors in the Northeast. The Commission was able to provide this service by calibrating its unit several times during the summer at the National Bureau of Standards. Several aspects of the ozone calibration methods were jointly investigated by the Commission and the National Bureau of Standards.

A rainfall sampling network was established during the year by the Commission in the New York Metropolitan Area, with the samples analyzed for pH.

The Commission continues to maintain its 24-hour-a-day answering service to assist in the investigation of air pollution complaints which may be of an interstate nature.

REGIONAL AIR POLLUTION WARNING SYSTEM

The Interstate Sanitation Commission coordinates the New Jersey-New York-Connecticut Air Quality Control Region Air Pollution Warning System. During 1975, the meteorological conditions were such that it was not necessary to activate the System. However, several procedures were implemented to improve the System, including modification of computer procedures and establishment of a series of periodic mock alerts.

There are 30 telemetry stations operating in the New Jersey-New York-Connecticut Air Quality Control Region. An updated list of the stations and a map of the station locations are shown on the following pages.

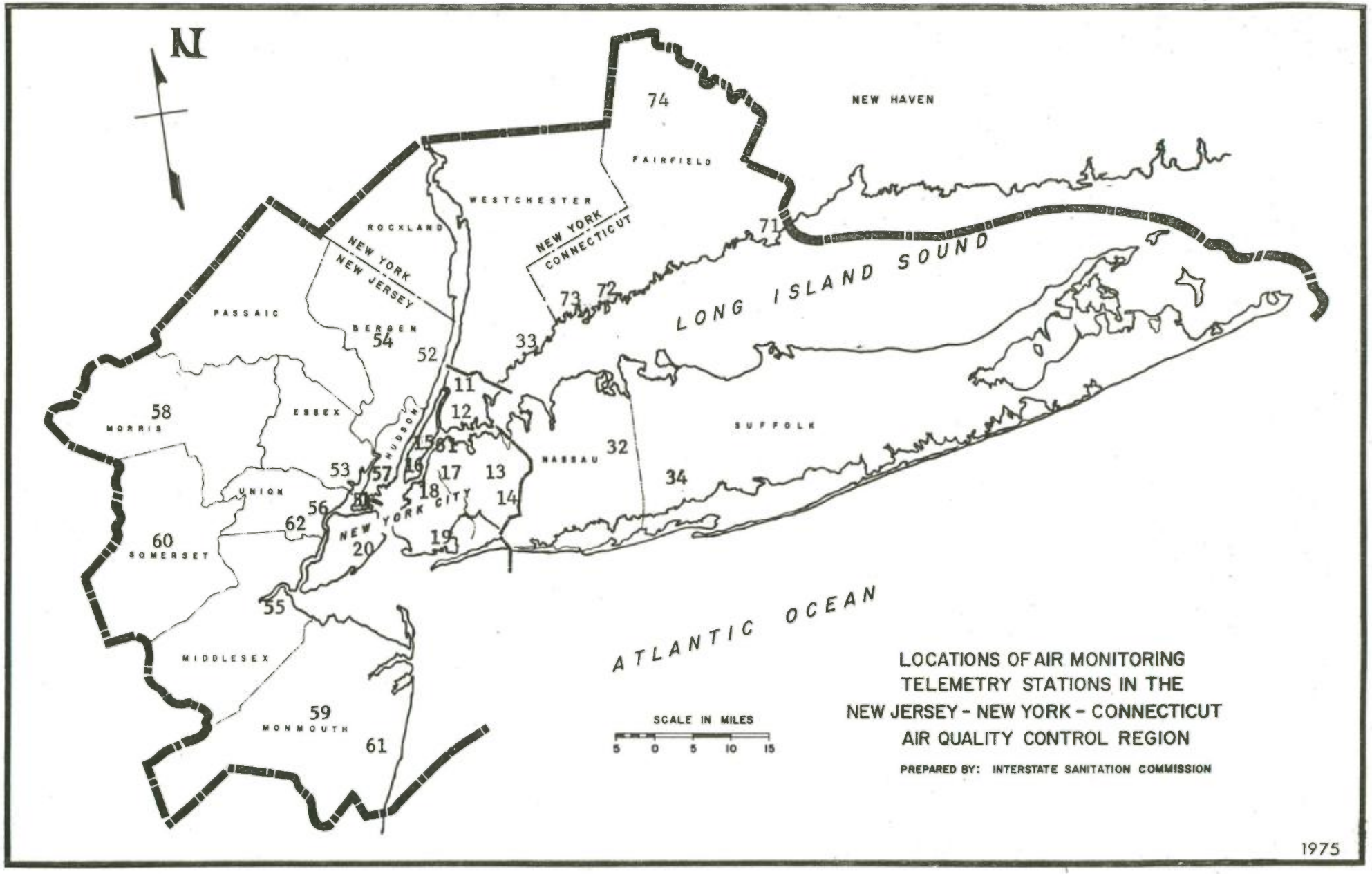
PHOTOCHEMICAL OXIDANT STUDY

In 1974, the Commission, in cooperation with New York State, coordinated the efforts of two on-going photochemical oxidant projects. One was a cooperative effort of the New York State Department of Environmental Conservation, New Jersey Department of Environmental Protection, Connecticut Department of Environmental Protection, New York City Department of Air Resources, and the Interstate Sanitation Commission (which acts as coordinator for the effort), investigating ozone

AIR MONITORING TELEMETRY STATIONS
IN THE
NEW JERSEY-NEW YORK-CONNECTICUT
AIR QUALITY CONTROL REGION

ISC NO.	BOROUGH	CITY	STATE
11	Bronx	New York	New York
12	Bronx	New York	New York
13	Queens	New York	New York
14	Queens	New York	New York
15	Manhattan	New York	New York
16	Manhattan	New York	New York
17	Brooklyn	New York	New York
18	Brooklyn	New York	New York
19	Brooklyn	New York	New York
20	Staten Island	New York	New York
31		New York	New York
32		Hempstead	New York
33		Mamaroneck	New York
34		Babylon	New York
51		Bayonne T (1)	New Jersey
52		Hackensack	New Jersey
53		Newark T (1)	New Jersey
54		Paterson	New Jersey
55		Perth Amboy	New Jersey
56		Elizabeth	New Jersey
57		Jersey City	New Jersey
58		Morristown	New Jersey
59		Freehold	New Jersey
60		Somerville	New Jersey
61		Asbury Park	New Jersey
62		Elizabeth T (1)	New Jersey
71		Bridgeport	Connecticut
72		Stamford	Connecticut
73		Greenwich	Connecticut
74		Danbury	Connecticut

(1): T represents comprehensive laboratory trailers. Other stations are fixed in buildings.


N
74
NEW HAVEN
FAIRFIELD
WESTCHESTER
ROCKLAND
NEW YORK
CONNECTICUT
NEW YORK
NEW JERSEY
71
LONG ISLAND SOUND
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PASSAIC
BERGEN
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MORRIS
ESSEX
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SUFFOLK
NASSAU
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UNION
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NEW YORK CITY
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SOMERSET
NEW
YORK
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19
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ATLANTIC OCEAN
MIDDLESEX
59
MONMOUTH
61
SCALE IN MILES
5 0 5 10 15
LOCATIONS OF AIR MONITORING
TELEMETRY STATIONS IN THE
NEW JERSEY - NEW YORK - CONNECTICUT
AIR QUALITY CONTROL REGION
PREPARED BY: INTERSTATE SANITATION COMMISSION
1975

transport within the New York-New Jersey-Connecticut Metropolitan Area. The other was a continuation of efforts by the New York State Department of Environmental Conservation to investigate high rural ozone concentrations. The results of these two studies have been integrated towards providing answers to the common problem of high ozone concentrations. The conclusions of the 1974 study are summarized below.

1. During the summer months, high levels of ozone are associated with certain air masses. Urban and rural stations located within the same air mass generally experience similar ambient ozone concentrations.

2. Both aerial and surface ozone measurements indicate that the air mass entering the tri-state region already contains ozone levels which exceed the Federal Ambient Air Quality Standards on certain days.

3. Rural ozone measurements on days with certain wind directions (e.g., northwest) have shown that high ozone levels at these sites are not a consequence of transport from anthropogenic precursor sources from the New York Metropolitan Area or the Philadelphia-Camden Metropolitan Area.

4. A flight on August 1, 1974, indicated the existence of urban ozone plumes downwind of both the Philadelphia-Camden Complex and the Northeastern New Jersey-New York City Complex. Within this plume over Connecticut, the ozone levels increased to 45% above the background levels observed on this day.

5. The highest levels of ozone in the Region were generally found in Connecticut.

6. There was little difference between the summertime ozone levels for 1973 and 1974.

7. A disproportionate number of elevated ozone levels were experienced when the wind speed was 11-15 mph, as compared to ozone levels with lower wind speeds. This indicates that low wind speeds are not a prerequisite for elevated ozone episodes.

8. There appears to be a strong relationship between ozone levels and temperature. As the temperature increases, the frequency of elevated ozone occurrences increases.

9. There is no apparent relationship between the afternoon mixing height and the maximum afternoon ozone levels.

10. Conclusions 7, 8, and 9 support the theory of the presence of ozone-rich air above the early morning inversion under certain meteorological conditions. As the solar radiation heats the earth's surface, the ozone-rich layer aloft mixes with the surface air. The greatest mixing generally occurs during the hours when the wind speed and temperature are the highest.

11. Ozone levels recorded in areas of high traffic density are not representative of values in the surrounding areas due to the rapid destruction of ozone from local sources of nitric oxide.

Based on the foregoing 1974 study findings, the 1975 study focused on three areas: the impact of urban sources within the Region, the diurnal variation of the vertical ozone profile, and the role of hydrocarbons.

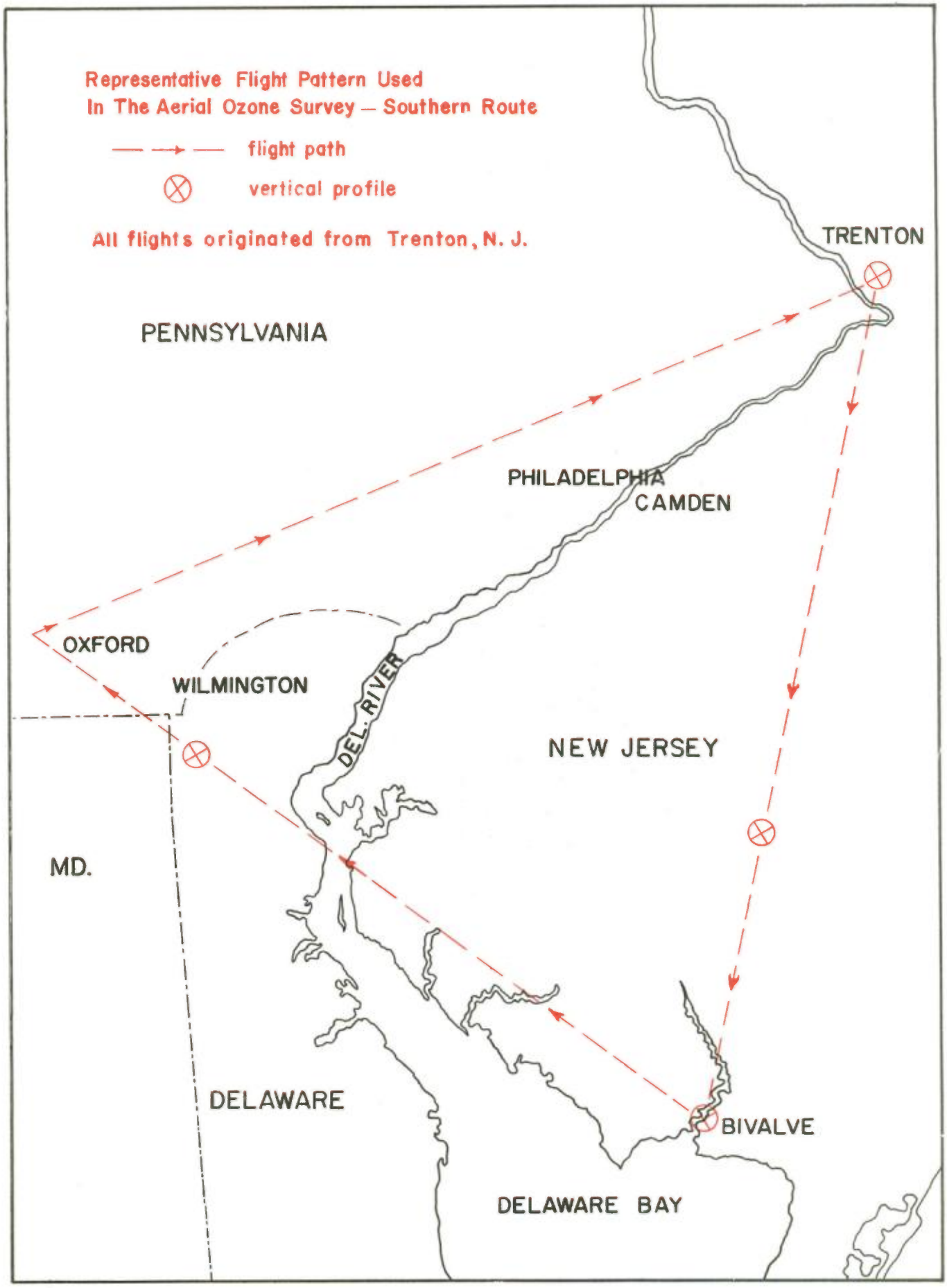
The study included approximately 120 hours of aerial ozone sampling. In addition, hydrocarbon, condensation nuclei, and temperature data were collected on the flights. The area encompassed during the sampling included western Connecticut, New York City, Long Island, southeastern New York State, New Jersey, eastern Pennsylvania, northern Delaware, and northeastern Maryland. Typical flight patterns are shown on two maps on the following pages.

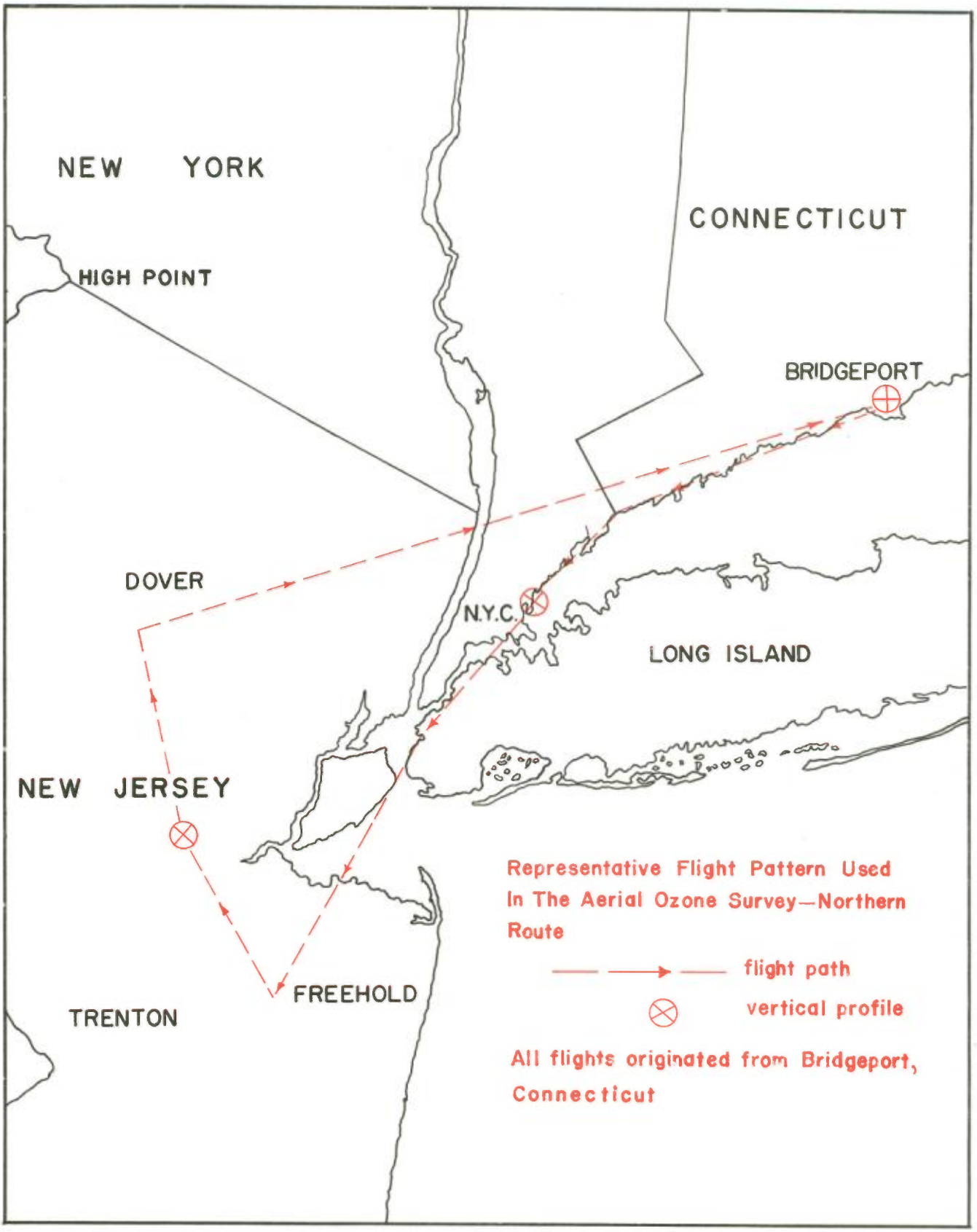
Although the data are still being analyzed, the following preliminary results seem to be indicated:

1. Ozone levels exceeding the Federal air quality standard occur frequently over a wide area of the Northeast.

2. Downwind of the two major metropolitan areas (New York-northeastern New Jersey-southeastern Connecticut and Philadelphia-Wilmington-Camden), the ozone concentrations were generally higher than the upwind concentrations.

3. Above the nocturnal inversion, concentrations of ozone comparable to the maximum ozone observed on the surface


Representative Flight Pattern Used
In The Aerial Ozone Survey – Southern Route
flight path
vertical profile
All flights originated from Trenton, N. J.
TRENTON
PENNSYLVANIA
PHILADELPHIA
CAMDEN
OXFORD
WILMINGTON
DEL. RIVER
NEW JERSEY
MD.
DELAWARE
BIVALVE
DELAWARE BAY


NEW YORK
CONNECTICUT
HIGH POINT
BRIDGEPORT
DOVER
N.Y.C.
LONG ISLAND
NEW JERSEY
FREEHOLD
TRENTON
Representative Flight Pattern Used In The Aerial Ozone Survey—Northern Route
flight path
vertical profile
All flights originated from Bridgeport, Connecticut

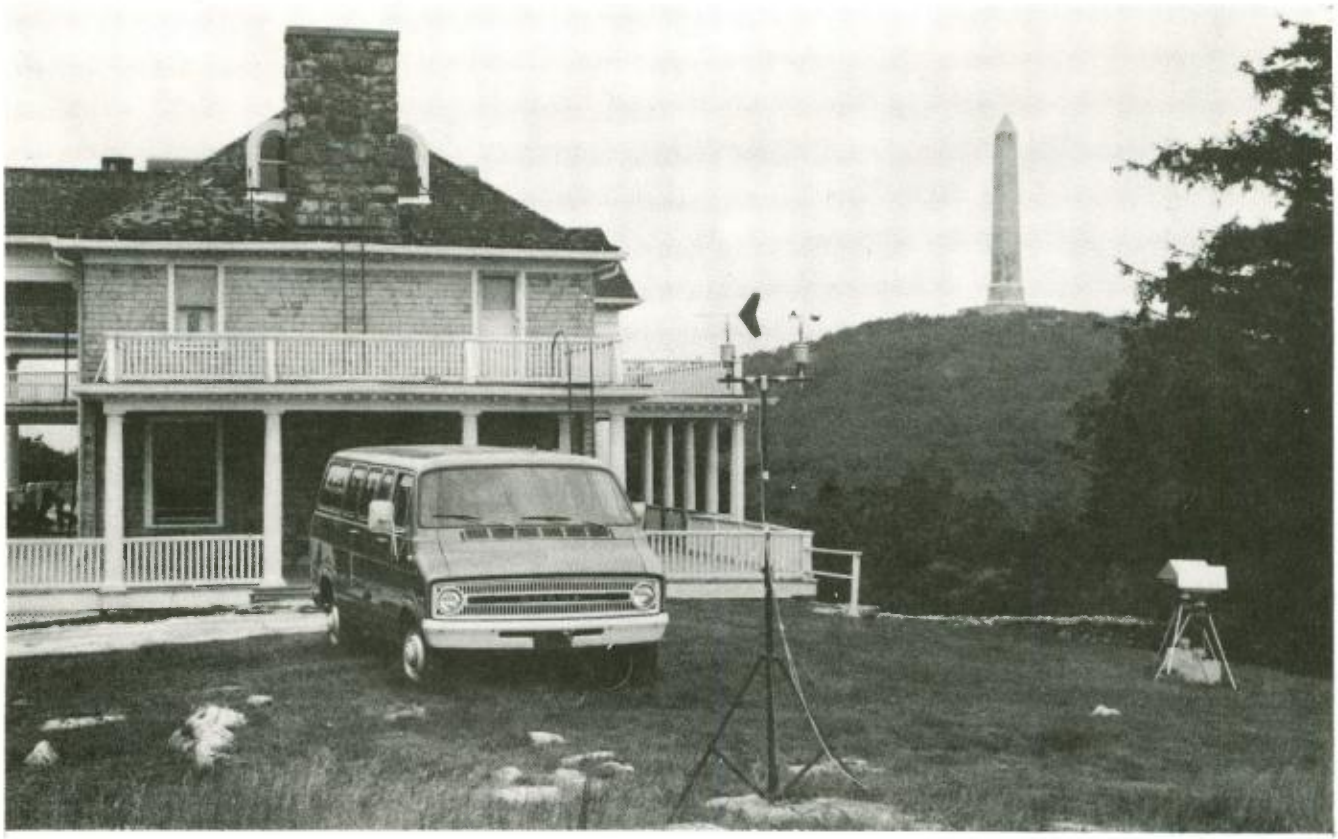
the afternoon of the pervious day persist through the night.

In addition to the aerial flights, a special study was conducted by the Commission in cooperation with the three States to investigate the diurnal pattern of ozone. Past researchers have noted that the classical diurnal variations in ozone concentrations observed in urban areas were not found at elevated non-urban mountain sites. At such sites, little diurnal variation was observed and the ozone maximum occurred between the hours of 11 p.m. and 3 a.m. rather than during the afternoon.

High Point Mountain (elevation 1803 ft.), located in the northwest corner of New Jersey near the New York State border, was the site of an experiment designed to characterize the vertical ozone distribution as a function of meteorological conditions and time of day. This was accomplished by both ground-based and aerial measurements. Personnel and equipment were jointly furnished by the Commission and the States of New York, New Jersey, and Connecticut.

Preliminary results indicate that when the height of the nocturnal inversion layer remains below the top of the mountain, the ozone concentrations at the peak remain high (in the range of the maximum ozone measured at lower elevations in the afternoon). However, below the evening inversion, the ozone concentrations approach zero. As the inversion is destroyed by the morning sunlight, the ozone-rich air aloft at the top of the mountain mixes with the ozone depleted air below the inversion. This results in an increase in the ozone concentration at the lower elevation in the early morning. Essentially, this means that the ozone at higher elevations appears to be conserved above the inversion layer during the night. When the inversion is destroyed, the higher concentrations are transported downwind.

In conjunction with the ozone study, the Commission and the States of New York and New Jersey cooperated this summer in a joint hydrocarbon sampling program. Hydrocarbon samples were collected in Tedlar bags at selected sites in New York City and New Jersey. Additional samples were obtained on the aerial ozone flights. Samples were analyzed at the Commission laboratory and at the Trenton laboratory of the New Jersey Bureau of Air Pollution Control. The measurements included hydrocarbons to C-6, aldehydes, and peroxyacel-nitrates. This data is presently being analyzed.



MOBILE SAMPLING STATION AT HIGH POINT, NEW JERSEY

OZONE DAMAGE TO TOBACCO PLANT AFTER ONE WEEK'S EXPOSURE AT HIGH POINT, NEW JERSEY

REGIONAL OZONE QUALITY ASSURANCE PROGRAM

At the beginning of the 1975 ozone study, it was realized that a uniform calibration of all ozone generators within the three States was essential. To accomplish this goal, the Commission calibrated an ozone generator with the neutral buffered potassium iodide technique at the National Bureau of Standards. On April 24, 1975, a collaborative calibration was completed on the ozone generators belonging to the States of New York, New Jersey, and Connecticut, the City of New York, and the U.S. Environmental Protection Agency-Regions I & II. The calibrated New Jersey ozone generator was then used to calibrate the equipment of other agencies including Virginia, Pennsylvania, and Maryland. In order to maintain the calibration on the Commission's generator, it was returned to the National Bureau of Standards for recalibration during July and October.

In addition to the routine ozone calibrations, the Commission, with the analytical support of the National Bureau of Standards, completed a study comparing the potassium iodide calibration method with that of gas phase titration (ozone vs. nitric oxide). This was an attempt to investigate the discrepancies of greater than 20% observed by the Commission and New York State in ambient values for ozone, using instruments calibrated by the respective techniques. The results of this study indicated that there is a significant difference between ozone calibration using potassium iodide and gas phase tritration. The difference in detected ozone concentrations was from 12-20% under laboratory conditions. At this time, the cause of the difference is not understood. However, the Commission will continue to examine the problem.

SULFATE SAMPLING PROGRAM

During the months of July and August in 1975, the Commission participated in an ambient sulfate study with the States of New York and New Jersey. The study included collecting daily high volume samples and measuring particles in the respirable size range with a continuous light-scattering particle detector. This was completed at the Commission's rural site at High Point, New Jersey. The high volume filters were analyzed for total suspended particulates and sulfates.

Preliminary comparisons of total suspended particulate matter, respirable particles, and ozone at High Point indicate:

1. Variations in particulate loading appear to be associated with certain kinds of air masses.

2. The daily variation in respirable particle concentration and total particulates was usually coincidental with the diurnal variation of ozone..

ACID RAIN MONITORING NETWORK

In response to the recent concern about the increasing acidity of rain water, the Commission instituted a rainfall collection network in April 1975 to assess the problem in the New York Metropolitan Area. Rainfall collectors are located in New Jersey in Caldwell, Cranford, Piscataway, and High Point and in New York State in Manhattan, The Bronx, and Port Chester. The results of the pH analyses are shown below.

Site	Dates	Minimum pH[2]	Maximum pH[3]	Average pH[3]
Caldwell	4/75-10/75	3.7(6/3)	6.1(7/6)	4.3
Piscataway	4/75-10/75	3.9(7/10)	5.9(9/12)	4.4
High Point[1]	6/75-10/75	4.0(9/5-9/10)	5.6(6/12-6/16)	4.4
Port Chester	4/75-7/75	4.3(5/6)	6.2(7/15)	4.8
Bronx	4/75-10/75	3.4(9/12)	6.8(7/16)	4.5
Manhattan	8/75-10/75	3.9(9/26)	4.7(9/12)	(4)

[1]Composite samples obtained at High Point
[2]Numbers in parentheses indicate date of occurrence
[3]Computed from the average hydrogen ion concentration
[4]Insufficient data to compute average.

During 1976, the Commission plans to expand the monitoring network and to assess the accuracy of various collection systems.

CONTROL OF SUSPENDED PARTICULATES STUDY

The Commission is continuing its involvement in a project to characterize the sources and the reentrainment of suspended particulates. The Commission is coordinating and administering the program while the sampling and analysis are being conducted by the States of New Jersey and New York and the City of New York. Other organizations involved in the study are the Mount Sinai School of Medicine, the Cooper Union, and the Polytechnic Institute of New York. The project is being funded by a Demonstration Grant from the U.S. Environmental Protection Agency and is in its second year. The goals of the project are to:

1. determine the elemental composition and particle size distribution of particulates from each major type of particulate source which are found in the Region. This will provide a "fingerprint" of each source.

2. determine the elemental composition and particle size distribution of ambient suspended particulates. The contribution of each source will be determined by comparing results of the analysis of the ambient samples with the source "fingerprints."

3. characterize and quantify the impact of reentrainment on ambient levels of suspended particulates.

4. characterize the organic fraction of suspended particulates.

A report of the first year's efforts has been completed which focuses primarily on:

1. procurement of equipment and development of analytical procedures;

2. calibration;

3. collection of source samples and initial sample processing;

4. collection of resuspended and ambient particulates via a number of methodologies.

The ambient and source samples have been and are presently being analyzed for total weight, particle size (aerodynamic

and optical), chemical composition (inorganic and organic), and spacial and temporal distribution. In addition, there are efforts to (a) define a "fingerprint" from an incinerator under a variety of loading conditions based on the distribution of organic content, and (b) determine the impact of particle reentrainment by vehicular traffic using total particulate loading, traffic counts, and meteorological conditions. The analytical systems were described in the Commission's 1974 Annual Report.

IV. LEGAL ACTIVITIES

During 1975 litigation, administrative proceedings, and review of permit applications dominated the legal affairs of the Commission. Some of these activities were interrelated.

Permits: Oil and Grease

Under the Federal Water Pollution Control Act Amendments of 1972, the U.S. Environmental Protection Agency has been in the process of issuing permits covering effluent discharges into virtually all of the Nation's waters. The permit process can be turned over to a state, if it meets certain conditions specified in the Act. In the Interstate Sanitation District, however, the permit program has so far been administered by the U.S. Environmental Protection Agency.

In such circumstances, the state or an interstate agency may make certifications to the U.S. Environmental Protection Agency as to the probable effect of proposed discharges on the quality of water bodies into which the discharges are proposed to be made. An adverse certification is to bring about a modification of the relevant permit conditions.

The Interstate Sanitation Commission has agreements with the water pollution control agencies of its member states under which they make the certifications. For waters of the Interstate Sanitation District, the Commission provides data and analyses on the basis of which the internal state agency can act in making the certification. The state water pollution control agencies also observe the provisions of the Tri-State Compact and the requirements of the Interstate Sanitation Commission as parts of the governing law which they apply in making the determinations underlying their certification action.

The Compact provides that the waters of the District shall be put and maintained in such condition as will "permit the maintenance of major fish life, shellfish and marine life in waters now available or that may by practicable means be made available for the development of such fish, shellfish or marine life; to prevent oil, grease or solids from being carried on the surface of the water; to prevent the formation of sludge deposits along the shores or in the waters, ...". In implementation of this provision, the Commission requires that effluent discharges into the waters of the Interstate Sanitation District have as close to zero content of oil and grease as possible, but in no event to exceed one milligram

per liter (1 mg/l) of oil and grease.

In commenting on certain permit conditions for oil terminals in the New Jersey portion of the Interstate Sanitation District, the State Department of Environmental Protection asserted its own requirement, consistent with that of the Interstate Sanitation Commission, to be 1 mg/l as a maximum. Accordingly, the U.S. Environmental Protection Agency permits for the affected installations were issued with the 1 mg/l limitation.

The permittees have contested the New Jersey certification on procedural grounds and also allege that 1 mg/l is an unreasonably stringent limitation.

On August 1, 1974, the EXXON Corporation, later joined by BP, commenced suit in the New Jersey courts against the State of New Jersey and the Interstate Sanitation Commission. The purpose of the suit was to obtain a withdrawal of the certification which might then allow a less stringent oil and grease discharge limitation in the permits issued by the U.S. Environmental Protection Agency. In related action, the permittees have filed directly with the U.S. Environmental Protection Agency for adjudicatory hearings on the permits. The U.S. Environmental Protection Agency, upon receiving the petitions for adjudicatory hearings, stayed the application of its permits pending the holding of the hearings. None have yet been held.

During the last months of 1974 and the first half of 1975, the suit went through its preliminary phases. These eventuated in a decision of the New Jersey Department of Environmental Protection to hold an administrative hearing to clarify its oil and grease regulations.

The Interstate Sanitation Commission participated in this New Jersey hearing held on August 13-14, 1975, by offering testimony of its own and by securing the testimony of additional expert witnesses in support of the 1 mg/l requirement. In addition, a number of citizen groups gave testimony in support of the Commission's position. The hearing record was ordered held open until September 15, 1975. At the present writing, New Jersey Department of Environmental Protection has not issued any further or clarifying regulations.

Meanwhile, the U.S. Environmental Protection Agency has received a steady stream of petitions for adjudicatory hearings

on permits from all manner of dischargers. The Commission has reviewed these petitions, as conveyed by notices from the U.S. Environmental Protection Agency. Of interest have been the permit conditions relating to all of the Commission's requirements, and response has been made whenever permit content seemed to be such as to merit Commission participation in the proceedings. However, the Commission has been especially cognizant of oil and grease permit requirements because of the attacks on the 1 mg/l limitation. Accordingly, the Commission is now a party to many adjudicatory hearings which may be held by the U.S. Environmental Protection Agency at some future date. Furthermore, requests from permittees for adjudicatory hearings on oil and grease provisions and many other matters continue to multiply. The Commission continues to examine each situation as it arises and to request party status in those proceedings which appear to warrant it.

As previously noted, no actual adjudicatory hearings have yet been held by the U.S. Environmental Protection Agency. There have been some pre-hearing meetings called by the U.S. Environmental Protection Agency, and the Commission has participated in those involving permit proceedings to which it is a party.

Byram River Litigation

As reported last year, the Commission is involved in a suit brought by certain individuals and organizations in Connecticut over discharges from the Village of Port Chester into the Byram River.

During the 1960s, the Commission prosecuted a successful court action against the Village of Port Chester to compel improvement in the municipal treatment plant. However, there have continued to be questions as to the operation of the facility built at that time. Of even greater moment, the institution of secondary treatment requirements under federal and state law have made further measures at Port Chester necessary.

Following the Commission prosecuted litigation and certain follow-up actions of the Commission, New York State undertook to press its own compliance proceedings. While the Commission continued to follow the matter, its long-standing policy of deferring to state enforcement action whenever the state envinces an intent to proceed, the recent

course of events has been in the hands of New York State.

The situation became complicated some years ago by the development of a county liquid waste treatment system in Westchester County. The Port Chester facilities are supposed to be integrated into that system. The Commission's original proceedings did not include the County because, at that time, the Village had the entire responsibility for treatment of its wastes. Accordingly, the Commission has in recent years attempted to lend its support to the New York State proceedings, which have included the County in the belief that they were further along than any new proceeding that the Commission could commence. Consequently, it has been thought that diligent prosecution of any such efforts could yield a speedier result than a new proceeding which the Commission would have to start from the very beginning.

In its initial stages, the Commission sought to employ the litigation brought against it and the New York Department of Environmental Conservation, Port Chester and Westchester County as a vehicle for securing progress on the joinder of Port Chester to the Westchester County treatment system -- the approach selected by Port Chester in 1969 and presumably the one apparently now intended by the local and state authorities. For this reason, the Commission did not join the other defendants in seeking dismissal of the suit.

However, when the litigation was transferred from the the U.S. District Court for the District of Connecticut to the Southern District of New York, it appeared to the Commission that the relief being sought by the plaintiffs was in actuality against the state to facilitate the availability of federal construction funds and against the local jurisdictions to proceed with necessary work on treatment facilities. Accordingly, the Commission, when the other defendants all moved for dismissal on various grounds, also moved for dismissal. It was the Commission's view that the suit could serve a useful purpose only if all the defendants, including those who could perform the funding and construction, were before the Court.

During the year, the Court refused dismissal with respect to all defendants, except the State Department of Environmental Conservation. However, this left the Commissioner of that Department as a defendant. This means that for all practical purposes, all parties remain in the litigation. The suit

continues and the Commission will do what it can to encourage progress toward upgrading of the facilities which serve the Village of Port Chester.

Other Matters

As in past years, much of the work of Counsel has been to advise the Commission and its staff in the day-by-day administration of its programs and in its internal operations. During 1975, this has involved the usual kinds of concerns. Worthy of special notice, however, is the work which has resulted from the increased activity of the Commission in the performance of special projects funded by the U.S. Environmental Protection Agency. These have gone forward in the fields of air and water quality. Counsel has participated in grant and contract negotiations for these projects.

WASTEWATER TREATMENT PLANTS
Discharging into the
INTERSTATE SANITATION DISTRICT WATERS
1 9 7 5

Plant	ISC Receiving Water Classification	Date of Const.	Flow MGD Average	Flow MGD Design	Type of Treatment	Estimated Population Served (1974-75)
CONNECTICUT						
Fairfield County						
Bridgeport - East Side	B-1	1973+	7.3	24.0	Secondary (AS)	47,000
- West Side	B-1	1973+	31.0	60.0	Secondary (AS)	109,000
Darien	A	1956+	1.2	1.2	Primary	20,400
Fairfield	A	1967+	5.4	8.0	Secondary (AS)	45,000
Greenwich - Central	A	1964+	7.9	8.5	Secondary (AS)	55,000
*Handy & Harmon	A	1973	-	0.25	Physical/Chemical	Industrial
Norwalk	B-1	1974	10.1	30.0	Secondary (AS)	62,000
Stamford	B-1	1943+	15.8	10.0	Primary	72,000
Stratford	A	1974	7.9	11.5	Secondary (AS)	40,000
Westport	A	1973+	1.1	2.8	Secondary (AS)	10,000
New Haven County						
Milford - Beaver Brook	A	1970	1.2	3.1	Secondary (AS)	-
- Gulf Pond	A	1960	2.8	2.4	Secondary (AS)	6,000
- Harbor	A	1937	0.7	0.52	Secondary (AS)	4,000
- Town Meadows	A	1954	1.0	1.2	Secondary (AS)	10,000
New Haven - Boulevard	B-1	1959+	13.0	13.0	Primary	76,000
- East Shore	B-1	1953+	7.8	12.5	Primary	54,100
- East Street	B-1	1966+	16.6	22.5	Primary	66,200
West Haven	B-1	1973+	9.0	25.4	Secondary (AS)	57,000
NEW JERSEY						
Bergen County						
Edgewater	B-1	1958+	2.3	4.0	Primary	5,000
Hudson County						
Bayonne	B-2	1954	12.7	20.0	Primary	73,000
Hoboken	B-1	1958	18.0	20.0	Primary	70,000
Jersey City - East Side	B-1	1967+	33.9	45.4	Primary	160,000
- West Side	B-2	1967+	22.0	36.0	Primary	110,000
Kearny	B-2	1955	2.6	4.0	Primary	30,000
West New York	B-1	1953	7.3	7.5	Primary	50,000
Woodcliff - North Bergen	B-1	1962	1.5	4.4	Primary	14,740
Middlesex County						
Carteret	B-2	1953	3.2	3.0	Primary	21,000
Madison Township Sewerage Authority (Laurence Harbor)	A	1963+	1.2	1.4	Primary	8,000
Middlesex County Sewerage Authority	A	1965+	81.5	78.0	Primary	525,000
Perth Amboy	A	1934	5.4	10.0	Primary	41,000
Rahway Valley Sewerage Authority	B-2	1973+	31.4	35.0	Secondary (AS)	215,000
**Sayreville - Melrose	A	1949	0.04	0.1	Primary	1,450
- Morgan	A	1951	0.3	0.3	Primary	4,500
South Amboy	A	1940	1.0	1.0	Primary	9,400
Woodbridge	B-2	1954	4.9	10.0	Primary	55,000
Monmouth County						
Atlantic Highlands	A	1928	0.6	0.6	Primary	5,000
Highlands	A	1928	0.5	1.2	Primary	5,000
Keansburg	A	1964+	2.3	2.0	Primary	9,800
Keyport	A	1962+	0.8	1.0	Primary	8,300
Union County						
Elizabeth Joint Meeting	B-2	1958+	68.6	75.0	Primary	500,000
*Exxon Company (Bayway Refinery)	B-2	1970	13.0	15.0	Intermediate (AS)	Industrial
Linden-Roselle	B-2	1952	12.8	17.5	Primary	60,000
Essex County						
**Passaic Valley	B-1	1937+	250.0	-	Primary	2,899,000

WASTEWATER TREATMENT PLANTS
Discharging into the
INTERSTATE SANITATION DISTRICT WATERS
1 9 7 5

Plant	ISC Receiving Water Classification	Date of Const.	Flow MGD Average	Flow MGD Design	Type of Treatment	Estimated Population Served (1974-75)
NEW YORK						
Nassau County						
Bay Park	A	1962+	65.4	60.0	Secondary (AS)	600,000
Belgrave Sewer District	A	1965+	1.6	2.0	Secondary (TF)	17,000
Cedar Creek	A	1974	9.1	45.0	Secondary (AS)	60,000
Cedarhurst	A	1967+	0.8	1.0	Secondary (TF)	7,500
Freeport	A	1960+	3.9	4.0	Secondary (TF)	42,000
Glen-Cove - Morris Avenue	A	1965+	5.9	6.0	Secondary (TF)	27,000
Great Neck Sewer District	A	1962+	2.8	2.7	Secondary (TF)	20,000
Great Neck Village	A	1948+	1.0	1.5	Secondary (TF)	11,000
Inwood	A	1961	1.3	2.5	Secondary (TF)	9,000
Jones Beach	A	1951	0.09	1.0	Secondary (TF)	Seasonal
Lawrence	A	1966+	0.8	1.5	Secondary (TF)	6,500
Long Beach	A	1953+	6.9	6.4	Secondary (TF)	35,000
*Long Island Lighting Company (Glenwood Landing)	A	1929	-	-	3-Septic Tanks	Industrial
Oyster Bay Sewer District	A	1965+	1.5	1.2	Secondary (TF)	7,100
Port Washington Sewer District	A	1952+	3.2	3.2	Secondary (TF)	32,000
*Quantitative Biology Laboratory	A	1965	-	0.008	Imhoff Tank Plus Sand Filter	40
Roslyn	A	1950+	0.4	0.45	Secondary (TF)	4,500
West Long Beach Sewer District	A	1960+	0.7	1.5	Secondary (TF)	10-25,000
NEW YORK CITY						
Bronx County						
Hunts Point	B-2	1965+	114.7	150.0	Secondary (AS)	770,000
Kings County (Brooklyn)						
Coney Island	A	1965+	91.0	110.0	Secondary (AS)	535,000
Newtown Creek	B-2	1967	158.3	310.0	Intermediate (AS)	2,500,000
Owls Head	B-1	1952	91.6	160.0	Intermediate (AS)	750,000
26th Ward	A	1951+	73.8	85.0	Secondary (AS)	385,000
New York County (Manhattan)						
Dyckman Street	B-1	1917	5.0	7.5	Screening	39,000
Wards Island	B-2	1948+	141.2	220.0	Secondary (AS)	1,470,000
Queens County						
Bowery Bay	B-2	1958+	111.5	120.0	Secondary (AS)	1,000,000
Jamaica	A	1965+	88.2	100.0	Secondary (AS)	415,000
Rockaway	A	1961+	20.3	30.0	Secondary (AS)	90,000
Tallman Island	B-1	1964+	63.2	60.0	Secondary (AS)	251,000
Richmond County (Staten Island)						
*Arden-Sano	A	1972	-	1.0	Extended Aeration	3,000
*Elmwood Homes	B-2	1968	0.37	1.0	Extended Aeration	4,000
*Heartland Village	B-2	1967	0.35	1.0	Extended Aeration	4,000
*Mount Loretto Home - Plant #1	A	-	-	-	Septic Tank	-
- Plant #2	A	-	-	-	Septic Tank	-
*Nassau Smelting & Refining	B-2	1973	-	0.43	Physical/Chemical	Industrial
Oakwood Beach	A	1956	18.6	15.0	Secondary (AS)	85,000
Port Richmond	B-2	1953	18.4	10.0	Primary	60,000
*Public School #7	A	1965	-	-	Extended Aeration	2,200
*Richmond Memorial Hospital	A	1936	-	-	Septic Tank	-
*Saint Joseph's School	A	1965	-	-	Septic Tank with Sand Filtration	910
Rockland County						
*Clevepak Corporation	A	1954+	0.8	3.0	Secondary	Industrial
Haverstraw	A	1940	0.8	1.0	Primary	6,000
Joint Regional Sewerage Board-Town of Haverstraw	A	1971	1.9	4.0	Secondary (AS)	10,000
*Kay-Fries Chemicals, Inc.	A	1966	-	0.01	Neutralization	Industrial
Nyack	A	1940	1.0	1.0	Primary	6,000
*Orange & Rockland Utilities	A	-	-	-	Secondary (AS)	Industrial
Orangetown Sewer District	A	1967+	6.1	8.5	Secondary (TF)	55,000

WASTEWATER TREATMENT PLANTS
Discharging into the
INTERSTATE SANITATION DISTRICT WATERS
1 9 7 5

Plant	ISC Receiving Water Classification	Date of Const.	Flow MGD Average	Flow MGD Design	Type of Treatment	Estimated Population Served (1974-75)
NEW YORK (continued)						
Rockland County (continued)						
Palisades Interstate Park						
(Bear Mountain Plant)	A	1951+	0.10	0.3	Secondary (TF)	Seasonal
(Tallman Mountain Plant)	A	1969	Seasonal	0.024	Extended Aeration	Seasonal
Rockland County Sewer District #1	A	1968	14.6	10.0	Secondary (AS)	60,000
**South Nyack	A	1941	0.3	0.6	Imhoff Tank	3,500
Stony Point	A	1969	0.8	1.0	Secondary (AS)	1,500
**Upper Nyack	A	1953	0.17	0.1	Imhoff Tank	1,500
Suffolk County						
Huntington Sewer District	A	1957+	1.7	2.0	Secondary (TF)	20,000
*Kings Park State Hospital	A	1974+	0.7	2.0	Secondary (AS)	7,000
*Longwood Harbor Apartments	A	1968	0.04	0.1	Extended Aeration	-
Northport	A	1973+	0.2	0.3	Secondary (AS)	2,000
Port Jefferson Sewer District	A	1963+	0.8	2.5	Primary	5,500
Westchester County						
*American Yacht Club (Rye)	A	-	Seasonal	-	2-Septic Tanks	Seasonal
Briarcliff Manor - River Road	A	1951+	-	-	Septic Tank	200
- Scarborough Dock	A	1926+	-	-	Imhoff Tank	1,500
Buchanan	A	1962	0.15	0.55	Secondary (AS)	2,500
*Coach Light Square Condominiums	A	1971	0.04	0.06	Secondary (AS)	800
Croton-on-Hudson	A	1951	0.9	0.75	Primary	7,000
*Fee Oil Terminal	A	1954	-	-	Septic Tank	-
Irvington	A	1950	1.1	1.0	Primary	6,000
North Tarrytown	A	1940+	1.6	1.7	Primary	8,300
Ossining - Liberty Street	A	1939	0.6	1.0	Imhoff Tank	5,000
- Water Street	A	1940	1.8	5.0	Primary	18,000
*Ossining Correctional Facility	A	1950+	0.3	0.6	Primary	-
Peekskill	A	1953	2.9	4.0	Primary	19,000
*Penn C.R.R. Harmon Shop (Croton)	A	1973+	0.17	0.7	Physical/Chemical	Industrial
Port Chester	B-1	1965+	4.5	6.0	Primary	26,000
*Shenerock Shore Club (Rye)	A	-	Seasonal	-	Septic Tank	Seasonal
Springvale	A	1959	0.1	0.1	Secondary (TF)	1,000
Tarrytown	A	1940+	2.1	1.5	Primary	9,500
Westchester County D.P.W.						
Blind Brook (Rye)	A	1963+	2.5	5.0	Primary	15,000
Mamaroneck	A	1965+	18.1	70.0	Primary	95,000
New Rochelle	A	1955+	15.0	15.0	Primary	60,000
Yonkers Joint Treatment	B-1	1960+	77.2	60.9	Primary	550,000
FEDERAL & MILITARY						
**Camp Smith - (Westchester Co.)	A	-	0.06	0.24	Secondary (TF)	-
FDR Veterans Administration Hospital (Westchester Co.)	A	-	0.2	0.4	Secondary (TF)	-
Gateway National Park (Floyd Bennett Field, Kings Co.)	A	1942+	-	0.4	Secondary (TF)	500
Military Ocean Terminal (Hudson Co.)	B-1	1972+	0.18	0.18	Secondary (AS)	2,200

\+ Year of major additions or reconstruction

* Private, institutional or industrial sewage treatment plants

** Estimated Flows

(AS) Activated Sludge

(TF) Trickling Filter