INTERSTATE SANITATION COMMISSION

1979

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

A TRI-STATE ENVIRONMENTAL AGENCY

10 COLUMBUS CIRCLE • NEW YORK, N.Y. 10019

AREA CODE 212-582-0380

January 24, 1980

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 1979.

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,

For the State of New York — Chairman

For the State of Connecticut — Vice Chairman

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

In 1936, the Interstate Sanitation Commission was formed by a compact between the States of New York and New Jersey for the abatement of existing water pollution and the control of future water pollution in tidal waters of the New York Metropolitan Area. The State of Connecticut joined the Commission in 1941. In 1962, air pollution was added to the scope of the Commission's activities. 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 to promote the construction of water pollution control projects within the Interstate Sanitation District.

WATER POLLUTION

The Commission's program plan for water pollution abatement has continued to provide assistance in effectively coordinating the approach to regional problems. Priorities receiving attention include: minimizing the effects of combined sewers, pretreatment of industrial wastes, enforcement, thermal pollution, and removal of oil from District waters.

A great deal of planning and construction is underway which provides for the abatement of pollution from municipal and industrial wastewaters discharging into District waters. It is estimated that more than $3 billion has been allocated by municipalities in the District for this purpose.

The Commission continued operation of its remote automatic water quality monitoring system. This system is made up of both Commission owned equipment and equipment leased from the U.S. Environmental Protection Agency. This report contains graphs showing the monthly minimum, maximum, and average values for temperature, conductivity, dissolved oxygen, and pH for each monitor location. In addition to the remote automatic water quality monitoring system, the Commission continued its water quality boat survey program in the District. This program is intensified during the critical summer months when two surveys per month are conducted. In conjunction with the boat surveys, biological sampling programs were conducted. The data obtained from both the monitoring system and the boat runs are presented. These data show that although there was a general improvement over the previous 12 months, District waters are still plagued by low dissolved oxygen values. High bacterial contamination and

high temperatures also occur. The waters are also fouled by oil and grease and heavy metals.

As part of an ongoing program, the Commission continued to cooperate with the states and other enforcement agencies. The Commission acted as an active member of the Task Forces of the 208 agencies throughout the region, and supplied these agencies with both technical assistance and data for input to their studies. Other areas of cooperation included: monitoring municipal and industrial plants to check compliance with N/SPDES permits, performing laboratory analyses for state and federal agencies, and assisting the states in certifying discharges into District waters.

A study funded by the U.S. Environmental Protection Agency to compare incineration to pyrolysis on a multiple hearth furnace to determine the potential heavy metals emissions of the two processes was completed. The conclusions in the contractor's Phase II report are included.

AIR POLLUTION

In addition to continuing the 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 the following: initiation of a project for a pollution response program for incidents of spills of hazardous substances and the development of a uniform manifest for transportation of hazardous wastes, monitoring of ambient benzene over the metropolitan area, and working with state personnel to reduce the incidents of odor complaints.

Based upon a large increase in the number of odor complaints the Commission has met with representatives of New York and New Jersey to increase the effort to alleviate the cause of the odors.

In response to requests from its member states, the Commission has undertaken a study to result in a hazardous incident response plan that will include preparation of a report describing the administrative, legal, and physical resources for handling hazardous substances; recommendations of actions which could be taken in the region to minimize the risks of storage handling and transporting substances. In a related matter, the Commission has started to develop a uniform manifest system relating to the transportation of hazardous substances with the cooperation of the Northeastern states.

Due to the concern of much of the region over the potential health effects of benzene in the atmosphere, the Commission in cooperation with the Environmental and Health Departments of its

member states is undertaking a study to determine the levels of benzene in the ambient atmosphere within the region and to make recommendations concerning them. This study is expected to continue into the latter part of 1980.

II. WATER POLLUTION

General

During 1979, 93 water pollution control projects in the Interstate Sanitation District were completed, were underway or were in the planning stage. A total of $3.0 billion was allocated for this work in the following manner: $724 million for 17 completed projects; $2.02 billion for 33 projects underway; and $250.7 million for 43 future projects. These expenditures are being used to construct new facilities and to upgrade existing facilities and should improve the quality of the effluents being discharged into District waters. These figures do not include the monies being spent by industries for pollution control.

The Commission obtained the information on water pollution projects presented in this section from officials in the respective state and local governmental agencies, sewerage authorities, or consulting engineering firms.

The map of the Interstate Sanitation District on the following page shows the locations of wastewater treatment plants discharging into District waters, the type of treatment at each plant, and the Commission's water classifications. Additional information on each plant is listed in Appendix A.


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
ESSEX
HUDSON
UNION
MIDDLESEX
MONMOUTH
BRONX
MANHATTAN
QUEENS
BROOKLYN
STATEN ISLAND
NASSAU
SUFFOLK
LONG ISLAND SOUND
ATLANTIC OCEAN
HOUSATONIC RIVER
HUDSON RIVER
PUTNAM
NEW YORK
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
1979

CONNECTICUT WATER POLLUTION CONTROL PLANTS

Bridgeport - East Side Plant, Connecticut

Project in Progress

Comments found under engineering studies for the West Side Plant also apply to this plant.

Bridgeport - West Side Plant, Connecticut

Project in Progress

The $20 million Trumbull interceptor begun last year is at present about 50% complete.

The 201 engineering study will identify problems and recommend remedies to problems which have existed since the 1973 upgrading. The study will also evaluate the existing sewer system.

Fairfield, Connecticut

Project in Progress

Construction, which began last year, to expand the plant's drainage basin continued on schedule this year. Five additional contracts were started. This major sewering project will include three new interceptors totaling 6 miles and 29 miles of new laterals. $6 million have already been received on this $18 million project.

Future Project

Bids are being accepted for a three part study under a 201 Step I grant of $0.25 million. This study will include sludge dewatering, an infiltration/inflow study, and examination of the integrity of the plant outfall line.

Greenwich Central, Connecticut

Project in Progress

Phase II of the 201 Facilities Plan, which was begun last year, continues on schedule. The study will evaluate the data from Phase I to determine if the existing sewers need any work. There may also be proposals to modify the final tanks. The cost of the Phase II study should be about $0.5 million.

The Byram Shore Road sewer project, which began in

spring of 1979, is about 40% complete and is expected to cost $2.7 million.

Engineering work on the North Mianus sewer project continues. When complete, the project will have sewered about 200 properties as well as the industrial waste (filter backwash) of the North Mianus water filter plant. This project includes two tunnels (600′ & 900′) and is expected to cost $2.8 million.

Milford - Beaver Brook, Connecticut

Future Project

As the result of a 201 study completed last year the plant is to be upgraded to 3.2 MGD and will include scum decanting facilities as well as other modifications. This project is expected to cost approximately $0.5 million.

Milford - Gulf Pond, Connecticut

Completed Project

Step I of a 201 Facilities Plan has called for the phasing out of all existing Milford plants (except Beaver Brook).

Future Project

A single plant will be constructed on the Housatonic River in the northwest section of town. The Step II grant application has been submitted and awaits federal and State approval.

Milford - Harborside, Connecticut

Future Project

Refer to description of project at Milford - Gulf Pond.

Milford - Town Meadows, Connecticut

Future Project

Refer to description of project at Milford - Gulf Pond.

New Haven - Boulevard, Connecticut

Future Project

The final report of an environmental assessment study

by a consultant will propose to abandon both this plant and the East Street plant and convey all flows to the new 40 MGD East Shore plant.

Plans recommending the above action have been submitted to and await the approval of both the U.S. Environmental Protection Agency and the State of Connecticut Department of Environmental Protection. When this approval is received Step II funds will be requested.

New Haven - East Shore, Connecticut

Project in Progress

The new 40 MGD secondary plant being built at this location is about 95% complete. The new plant is a secondary activated sludge plant which will remove 95% of both BOD and TSS. The existing primary plant will be abandoned when the new facility is operational. The estimated cost of the new facility will be approximately $33 million.

The Phase I Facilities Plan study continues and will recommend cost effective solutions to existing sewer problems.

New Haven - East Street, Connecticut

Refer to New Haven - Boulevard discussion.

Norwalk, Connecticut

Project in Progress

The construction of a supplemental treatment facility (microscreening and chlorination) to treat excess stormwater flows over 30 MGD is about 90% complete. The 75 MGD facility should go on-line soon and will cost approximately $5.3 million.

Stamford, Connecticut

Project in Progress

As a result of an in-house engineering study two belt dewatering presses have been installed to dewater sludge prior to incineration in the municipal incinerator.

The Rippowom River interceptor project proceeded on schedule.

Future Project

Several pump stations are scheduled for upgrading and and/or rebuilding in the near future.

Stratford, Connecticut

Completed Project

The Avon pump station has been completed at a cost of $1.2 million and accepted by the town.

Project in Progress

Several existing pump stations are being refurbished at a cost of $0.4 million. Two new pump stations at Short Beach and Oak Bluff are under construction at a cost of $1.5 million. The Lordship interceptor and associated pump stations that were started last year are progressing on schedule and will cost $2.3 million.

Future Projects

Final approval is still awaited to start the installation of a new gravity thickener and screw press dewatering facility. The estimated cost of this project is $1.9 million.

There is future funding ($0.6 million) for a land based sludge disposal study.

West Haven, Connecticut

Project in Progress

An engineering study is in progress to study the need for outfall line upgrading.

Westport, Connecticut

Completed Project

The Sasco Creek pump station was completed and accepted in April at a cost of $275,000. The Compo Beach pump station was completed in September at a cost of $330,000.

Project in Progress

A sewer system evaluation study is in progress at an expected cost of $84,000.

NEW JERSEY WATER POLLUTION CONTROL PLANTS

Atlantic Highlands, New Jersey (Monmouth County)

Refer to Atlantic Highlands/Highlands Regional Sewerage Authority.

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

Completed Project

A sewer system rehabilitation survey was completed and approved by the New Jersey Department of Environmental Protection. The State has recommended that the U.S. Environmental Protection Agency approve a grant for $462,000 for this work.

Future Project

Facilities planning documents have been submitted to the New Jersey Department of Environmental Protection for a new 1.75 MGD secondary activated sludge plant. The plant would handle the flows now being treated at the Atlantic Highlands and Highlands plants. The cost of this project is estimated to be $4.5 million. The plans are presently under review by the State.

Bayonne, New Jersey (Hudson County)

Future Project

As a part of the Hudson County Regional Sewerage Authority expansion this 10 MGD primary plant will be upgraded to an 11 MGD activated sludge plant.

Also refer to the Hudson County Regional Sewerage Authority write-up.

Carteret, New Jersey (Middlesex County)

Future Project

As part of the expansion of the Middlesex County Sewerage Authority drainage basin the existing plant will be abandoned and a pump station built. The expected cost of this project (pump station and force main) is $15.1 million.

Edgewater, New Jersey (Bergen County)

Project in Progress

The rotating biological contactors formerly used in a pilot plant study are presently providing secondary treatment in one of the primary tanks.

Federal monies are still pending to fund a Phase I Facilities Plan 201 study.

Future Project

The 201 study proposes to upgrade and expand the plant. The new plant will probably use rotating biological contactors and have a capacity of 4 MGD.

Highlands, New Jersey (Monmouth County)

Refer to Atlantic Highlands/Highlands Regional Sewerage Authority.

Hoboken, New Jersey (Hudson County)

Refer to Hudson County Regional Sewerage Authority.

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

Project in Progress

The Step II (plans and specifications) phase under the 201 Facilities Plan is nearly complete. The three drainage basins under the regional authority will use the following water pollution control methods:

Area I will have a 56 MGD secondary activated sludge plant located at the present site of the Jersey City East Side plant. The secondary, trickling filter plant at Secaucus will remain unchanged.

In Area II an 11 MGD secondary activated sludge plant will be built in Bayonne. In Area III a deep trickling filter plant will be built in Hoboken.

The estimated cost of the entire project is $185 million.

Jersey City - East, New Jersey (Hudson County)

Refer to Hudson County Regional Sewerage Authority.

Jersey City - West, New Jersey (Hudson County)

Refer to Hudson County Regional Sewerage Authority.

Joint Meeting of Essex and Union Counties, New Jersey (Union County)

Future Project

An engineering study is planned to determine the sludge dewatering and solids handling needs of the plant.

Kearny, New Jersey (Hudson County)

Refer to Hudson County Regional Sewerage Authority.

Linden Roselle Sewerage Authority, New Jersey (Union County)

Project in Progress

The construction to upgrade and expand the existing 12 MGD primary plant to a 17 MGD secondary activated sludge plant is almost 85% complete. New units include: primary tanks, roughing filters, secondary aeration tanks (submerged air), final clarifiers, sludge thickeners and digesters.

The cost of the project is $26 million and is expected to be in operation by mid-1980.

Middlesex County Sewerage Authority, New Jersey (Middlesex County)

Project in Progress

An engineering study is in progress to investigate land based alternatives for sludge disposal.

Future Project

It is expected that several Middlesex County communities will tie into this recently upgraded plant. The trunk lines and interceptors for the tie-in of additional plants is progressing on schedule. The estimated cost of the sewering project is $85.5 million.

Old Bridge Township, New Jersey (Middlesex County)

Future Project

Conversion of the present primary plant to a pump station is proposed. The flow will be conveyed to the Middle-

sex County Sewerage Authority.

Passaic Valley Sewerage Commissioners, New Jersey (Essex County)

Project in Progress

Passaic Valley Sewerage Commissioners have embarked upon a major construction program to enlarge and upgrade their waste treatment plant. As of November 1, 1979, construction valued at approximately $312 million was underway. This first phase of the construction program, which is about 44% complete, includes the secondary portion of a pure oxygen activated sludge plant, a wet air oxidation sludge treatment system and a new main pumping station. The secondary phase of the plant will be placed into operation in 1981, at which time the existing primary settling basins are to be demolished and new primary clarifiers are to be constructed by mid-1984. It is expected that the total cost of the program will approximate $400 million.

Future Project

Work is proceeding for development of an effective land based sludge management program in order to meet the federal requirement to eliminate ocean disposal of sludge by December 31, 1981. The contract for purchase and installation of sludge filter presses was awarded in April and the design of the structure for these presses is underway. The Facilities Plan for sludge management was completed in the spring of 1979 and was the subject of a public hearing in June. A proposal for the construction of a fluidized bed incinerator with energy recovery is currently pending before the federal and State regulatory agencies.

Perth Amboy, New Jersey (Middlesex County)

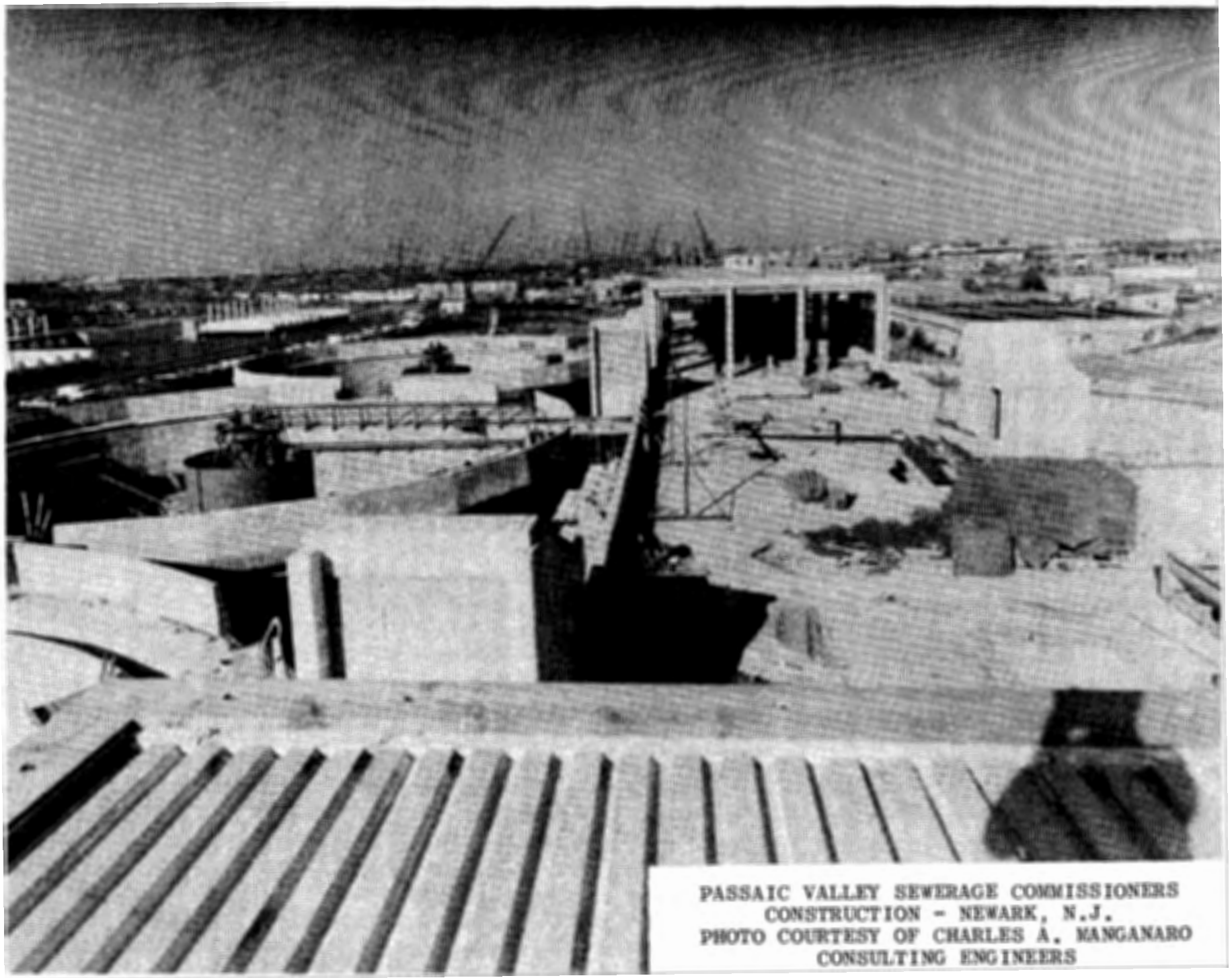
Future Project

This plant is scheduled to be converted to a pump station and will send its flow to the Middlesex County Sewerage Authority. The pump station and sewer will cost about $21.4 million.

Rahway Valley Sewerage Authority, New Jersey (Middlesex County)

Project in Progress

An engineering study (infiltration/inflow) is being done to determine methods of reducing flow to the plant.



PASSAIC VALLEY SEWERAGE COMMISSIONERS
CONSTRUCTION - NEWARK, N.J.
PHOTO COURTESY OF CHARLES A. MANGANARO
CONSULTING ENGINEERS

Future Project

Plans are being made for a $12 million sludge dewatering installation. Belt filter presses will be used in this project.

Sayreville - Melrose and Morgan Plants, New Jersey (Middlesex County)

Future Project

Both plants in the borough of Sayreville will be converted to pump stations which will convey these flows to the Middlesex County Sewerage Authority plant.

South Amboy, New Jersey (Middlesex County)

Future Project

This plant is one of those scheduled to be connected to the expanded Middlesex County Sewerage Authority system. The existing plant will either be abandoned or converted to a pump station.

The cost of this project is included in the $23 million figure given for the Woodbridge project.

West New York, New Jersey (Hudson County)

Future Project

Refer to Hudson County Regional Sewerage Authority.

Woodbridge, New Jersey (Middlesex County)

Future Project

Plans are to convert the existing plant to a pump station. This work is to be coordinated with similar jobs in Perth Amboy and Carteret. The flows from these plants will go to the Middlesex County Sewerage Authority plant.

The total expected cost of this project is $23 million.

Woodcliff - North Bergen, New Jersey (Hudson County)

Future Project

Refer to Hudson County Regional Sewerage Authority.

NEW YORK WATER POLLUTION CONTROL PLANTS

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

Completed Project

The new covers on the primary tanks have been installed.

Project in Progress

The sludge flotation building is being updated and the project is about 80-90% complete. The existing digesters are to receive new covers and this contract is out for bids.

Future Project

As a result of the 201 Facilities Plan Study the entire plant is to be rehabilitated at a proposed cost of $24 million. The facility will receive the following: grit tanks, primary tanks, digestion and storage tanks and a fluidized bed unit (10 MGD). The entire plant will handle 60 MGD with removal efficiency of 85%.

There is also a proposed sewer rehabilitation project of $6.5 million resulting from the 201 study.

Bowery Bay, New York (Queens County)

Future Project

A plan of study has been submitted for approval prior to submission of a 201 Facilities Plan Step I application to correct some plant operational deficiencies.

Blind Brook, New York (Westchester County)

Project in Progress

The upgrading of this primary plant to a secondary activated sludge plant is about 50% complete. This $12.3 million project when complete will provide for 90-95% removals of the incoming BOD and TSS.

Construction on the sludge force main and outfall line connecting the Blind Brook and Port Chester plants is also about 50% complete. The cost of these projects is expected to be $3 million.

Briarcliff Manor, New York (Westchester County)

Future Project

The two septic tanks at River Road and Scarborough Dock will be abandoned and the flows being treated at these locations will be conveyed to the new regional plant being built in Ossining by the Westchester County Department of Public Works.

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

Project in Progress

The advanced wastewater treatment pilot plant project (tertiary) is about 95% complete. The pilot plant, when complete, will provide for 99% removals of BOD and TSS for 5.5 MGD of the present secondary effluent. The cost of the tertiary facility is $20 million.

Future Project

A project, estimated at a cost of $8 million, is proposed to upgrade the sludge handling facilities. The project will include new polymer feeders, belt filter presses, and conveyors, and will examine alternate methods of disposal.

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

Project in Progress

The existing plant is being converted to a 1.5 MGD pump station to convey the flow to the Westchester County regional plant currently under construction in Ossining.

F.D.R. Veterans Administration Medical Center, Montrose, New York (Westchester County)

Completed Project

Several modifications including new tanks, new bar screens, a new Parshall flume, and new comminutors were installed this year at a cost of $85,000. This new equipment went on-line in August 1979.

Freeport, New York (Nassau County)

Future Project

The existing plant is scheduled to be closed by January 1, 1980 and its flow will be diverted to the Nassau County plant at Cedar Creek.

Glen Cove, New York (Nassau County)

Completed Project

Both the sewer system infiltration/inflow study and the sewer system evaluation study have been completed. The studies cost $600,000.

Project in Progress

The construction to upgrade and enlarge this plant to an 8 MGD secondary activated sludge plant is about 50% complete. This project is expected to cost $23 million.

Great Neck District, New York (Nassau County)

Future Project

There are plans to convert the plant chlorination facilities from using chlorine gas to sodium hypochlorite. This conversion is expected to cost $60,000.

Great Neck Village, New York (Nassau County)

Future Project

Rehabilitation will include replacing the pumps at several of the pump stations serving this plant. The cost of the improvements will be $110,700.

Harbor Club Apartments, Babylon, New York (Suffolk County)

Future Project

The flows from this apartment complex will be diverted to the new Suffolk County plant at Bergen Point when it is complete.

Hunts Point, New York (Bronx County)

Future Project

A Plan of Study has been submitted for approval prior

to submission of a 201 Facilities Plan Step I application to correct some plant deficiencies and improve reliability.

Jamaica, New York (Queens County)

Completed Project

The upgrading tc step aeration of this 100 MGD plant is substantially complete (99+%). Only a few small items remain to complete this contract.

The expected cost of this upgrading and expansion is $32 million.

Joint Regional Sewerage Board, New York (Rockland County)

Completed Project

The project to expand and upgrade the plant from 4 MGD to 8 MGD was completed in August 1979, at a cost of approximately $3.5 million.

Jones Beach, New York (Nassau County)

Future Project

It is proposed tc cover the existing trickling filter at a cost of $50,000.

Lawrence, New York (Nassau County)

Project in Progress

Work began in the last quarter of the year to rechain and resprocket both final tanks as well as one of the primary tanks. The project should cost $62,000.

Long Beach, New York (Nassau County)

Future Project

This trickling filter plant will be upgraded in accordance with the results of the Nassau/Suffolk 201/208 studies.

Long Island Lighting Company, Glenwood Landing, New York, (Nassau County)

Project in Progress

Work is about 30% complete on a $2 million waste treat-

ment facility to treat 200,000 GPD of industrial wastewater primarily for oil and grease removal. This job should be done by mid-1980.

Mamaroneck, New York (Westchester County)

Project in Progress

The existing primary plant is under orders to upgrade to secondary.

New Rochelle, New York (Westchester County)

Project in Progress

The construction to upgrade the current primary plant to a secondary activated sludge (pure oxygen) plant is is about 95% complete. The new facility will also include wet air oxidation of sludge. The project is expected to cost $17.9 million. It should be done by mid-1980.

Newtown Creek, New York (Kings County)

Project in Progress

The 201 Facilities Plan Step I is approximately 65% complete at a cost of $3.2 million.

Future Project

The study will recommend methods for upgrading the existing plant.

North River, New York (New York County)

Completed Project

The plant foundation and five interceptor sewers have been completed at a total cost of $356 million.

The Step I Facilities Plan work for the superstructure of this new 170 MGD plant was completed with the exception of the park study at a cost of $3.3 million and went to a public hearing.

Project in Progress

The Step II grant application is being submitted for the superstructure work.

Work which began on the sludge storage tank at a cost

of $1.7 million in early 1979 is progressing on schedule, and is 35% complete.

A Step I Facility Plan grant is underway for the development of a park.

North Tarrytown, New York (Westchester County)

Project in Progress

This primary plant will be phased out as part of the project which will divert the flows from North Tarrytown and Tarrytown to the Yonkers Joint Treatment Plant. The flow from North Tarrytown will be conveyed to Tarrytown where it will be pumped to Yonkers.

The project is 99+% complete and only awaits take-over by the county.

Oakwood Beach, New York (Richmond County)

Completed Project

The upgrading and expansion of this plant from 15 MGD to 40 MGD is substantially complete (99+%) with only a few minor items remaining. The expected cost for this project is $54 million.

Project in Progress

The main plant interceptor is almost finished (98%) and will cost approximately $11.5 million. Work on another interceptor is progressing, 80% complete, and will cost an additional $7 million.

Work is proceeding well on the nine mile sludge force main connecting the plant with the Port Richmond plant. The cost of this project, which is 95% complete, should be $6 million.

Future Project

An Environmental Impact Statement prepared by the U.S. EPA to evaluate the plans for seven additional interceptors and five pump stations was released. The City has submitted comments to supplement the report.

Construction is expected to start in the last quarter of 1979 on the structures for two pump stations at Elting-ville and at Richmond Hill Road. The cost of the structures (without equipment) is expected to be $4 million and should

be completed in the spring of 1981.

Orangetown Sewer District, New York (Rockland County)

Project in Progress

Engineering studies are in progress to determine the future needs of the plant. The pump station requirements will also be included in the study.

Ossining Correctional Facility, New York (Westchester County)

Refer to Ossining Regional Plant.

Ossining Regional, New York (Westchester County)

Project in Progress

The construction on this new County plant is about 50% complete. When finished the Westchester County operated plant will be a 7.5 MGD secondary activated sludge plant with the capability of removeing 85% both BOD and TSS. When finished the project will cost $20 million.

The new plant will treat the sewage presently treated at the three Ossining plants (Correctional Facility, Water, and Liberty Streets) and from Briarcliff Manor and Croton-on-Hudson.

The proposed drainage basin for this plant will require three pump stations, 5.7 miles of interceptor sewers as well as lateral sewers. This sewering project is expected to cost $10 million.

Owls Head, New York (Kings County)

Project in Progress

The infiltration-inflow study is nearing completion. A Step I Facility Report is 30% complete and should be finished in mid-1980.

Future Project

Based upon the results of the infiltration-inflow study and the Step I Facilities Report, an upgraded plant will be designed to provide 90% removals of BOD and suspended solids. Consulting engineers have been selected and a contract has been negotiated.

Peekskill, New York (Westchester County)

Project in Progress

The present 4 MGD primary plant is being upgraded to secondary and its capacity is being increased to 10 MGD. This $14.4 million project is about 95% complete and should be in operation by mid-1980.

Construction of three new pump stations and two interceptor sewers to serve the new plant was started this year and is about three-fourths complete. The new sewering project should cost $10.5 million.

Port Chester, New York (Westchester County)

Project in Progress

Construction is about half complete on the sludge force main and outfall line which will serve both the Blind Brook and Port Chester plants. This is expected to cost $3 million.

Continuation of progress for the expansion and upgrading of the existing Port Chester plant is awaiting the results of a Value Engineering Study due to be completed by the end of 1979. Projected cost of the expansion and upgrading is $18.2 million.

Port Jefferson, New York (Suffolk County)

Project in Progress

The 201 Facilities Plan study begun last year is still in progress.

Future Project

The plans for the modernization of the plant await the results of the 201 study.

Port Richmond, New York (Richmond County)

Project in Progress

The upgrading and expansion of the Port Richmond plant to 60 MGD is about 98% complete. Flows from already operational interceptors are receiving secondary treatment at this time. The cost of this project is expected to be approximately $165 million.

Port Washington, New York (Nassau County)

Project in Progress

The future needs of this plant will be determined by the Port Washington peninsula, Nassau County 201 Study.

Construction is in progress (95% complete) to modernize the lab and office building. This project will cost $95,000.

Red Hook, New York (Kings County)

Completed Project

An interceptor sewer contract was substantially completed (99%) at a cost of approximately $15.7 million.

Project in Progress

The public hearing results following the 201 Facilities Plan Step I report are being evaluated.

Construction on the foundation of this new 60 MGD step aeration plant is about 40% complete. The tunneled interceptor to the plant is approximately 50% done.

The total estimated cost for all phases of the completed project is approximately $300 million.

Future Project

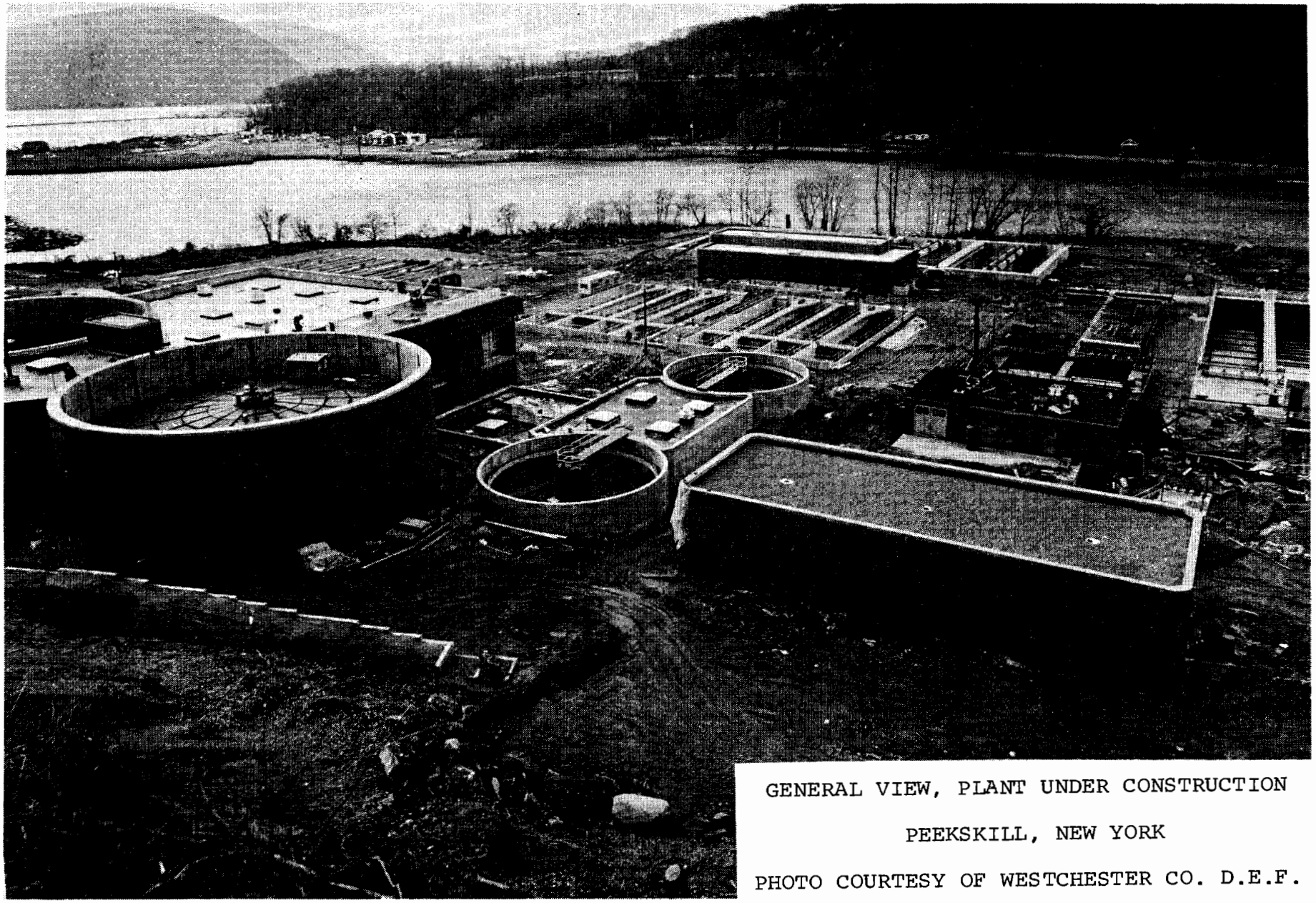
The superstructure of the plant should move into the Step II phase (plans and specifications) soon.

Rockland County Sewer District #1, New York (Rockland County)

Project in Progress

The construction that was started last year to rehabilitate portions of this ten year old plant is about 65% complete. This modernization project should cost $5.5 million.

There are several engineering studies in progress. One is a sludge handling study in cooperation with the Town of Orangetown and the other is a sewer system evaluation study. A Facilities Plan (201 study) is also in progress. There are several sewering projects at this time. Two pump stations and an interceptor sewer are nearly finished and construction on a force main is about to begin. These



GENERAL VIEW, PLANT UNDER CONSTRUCTION

PEEKSKILL, NEW YORK

PHOTO COURTESY OF WESTCHESTER CO. D.E.F.

projects will cost about $5 million.

Future Project

As a result of the 201 study (in progress) an upgrading and expansion of the existing plant will be recommended. The expected cost of this project is about $38 million.

Roslyn, New York (Nassau County)

Project in Progress

The Village of Roslyn is included in the 201 Facilities Plan study being conducted by Nassau County for the Port Washington peninsula.

The existing plant will be phased out and the flow conveyed to the Nassau County Cedar Creek Plant via a pump station at this location.

Shenerock Shore Club, Rye, New York (Westchester County)

Completed Project

As of May 1979 all flows from this location as well as from the American Yacht Club are conveyed to the Town of Rye sewer system.

Stony Point, New York (Rockland County)

Project in Progress

A 201 Facilities Plan study is being conducted to evaluate the need for expansion of the present 1 MGD plant. Two viable alternatives exist at the present time:

1. expand the present plant; or
2. convey the excess flow to the Joint Regional plant at Haverstraw.

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

Project in Progress

The construction on this new secondary plant is about 98% complete and the outfall is 75% complete. It is hoped that the plant will be in operation by mid-1980. There have been some legal problems that have held up construction on the outfall project. The plant cost here is about $76 million and the outfall is $40 million.

The associated lateral and trunk sewers are about 50% complete. The sewering project will cost $550 million.

Tallman Island, New York (Queens County)

Completed Project

The upgrading and expansion of the plant is substantially complete (99+%) with only a few minor items remaining to be finished. The cost of this upgrading was approximately $43 million.

Tarrytown, New York (Westchester County)

Project in Progress

The pump station built at this plant will convey the flows from both North Tarrytown and Tarrytown tc Yonkers Joint Treatment Plant. The project is complete and only awaits testing and take-over by the county.

Wards Island, New York (New York County)

Completed Project

The expansion and upgrading of the Wards Island plant is substantially complete (99+%) with only minor items remaining. The cost of this project was approximately $117 million.

West Long Beach, New York (Nassau County)

Future Project

As a result of the 201 study it is proposed to update and expand the existing plant to 1.5 MGD. The projected cost of the project will be about $0.9 million.

Also scheduled for rebuilding are some of the existing pump stations. This part of the project should cost an additional $0.7 million.

Yonkers Joint Treatment Plant, New York (Westchester County)

Completed Project

The upgrading and expansion of the Yonkers plant is 99+% complete, and the plant is going to be taken over by the Westchester County Department of Public Works. The new plant is a secondary activated sludge plant with a design flow of 93 MGD and design removals of 85% for BOD and sus-

pended solids.

The total cost of this project is approximately $100 million.

Future Project

When the plant goes on-line, the flows from Tarrytown and North Tarrytown will be treated at the new plant.

WATER QUALITY AND EFFLUENT MONITORING

The Commission routinely samples effluents of municipal wastewater treatment plants and industries and also samples these facilities to check compliance with their N/SPDES permits.

The quality of the District waters is monitored with remote automatic water quality monitors and boat survey sampling.

Both the boat survey and effluent data are used for the development of baseline conditions and for statistical distributions. These data have been extremely useful in studies such as the recent 208 plans in the District.

Effluent Monitoring

In order to determine compliance with the Commission's regulations, the Commission, on a routine basis, samples all municipal wastewater treatment plants and many industrial facilities discharging into District waters.

In cooperation with and at the request of the states and the U. S. EPA, sewage treatment plants and industries are sampled for compliance with their N/SPDES permits. Industrial samplings are done on a 24-hour basis for those industries on a continuous schedule and for a full day's production if less than 24 hours.

In addition to parameters called for by Commission or permit requirements, analyses are done for parameters including, but not limited to, heavy metals and nutrients.

Remote Automatic Water Quality Monitoring

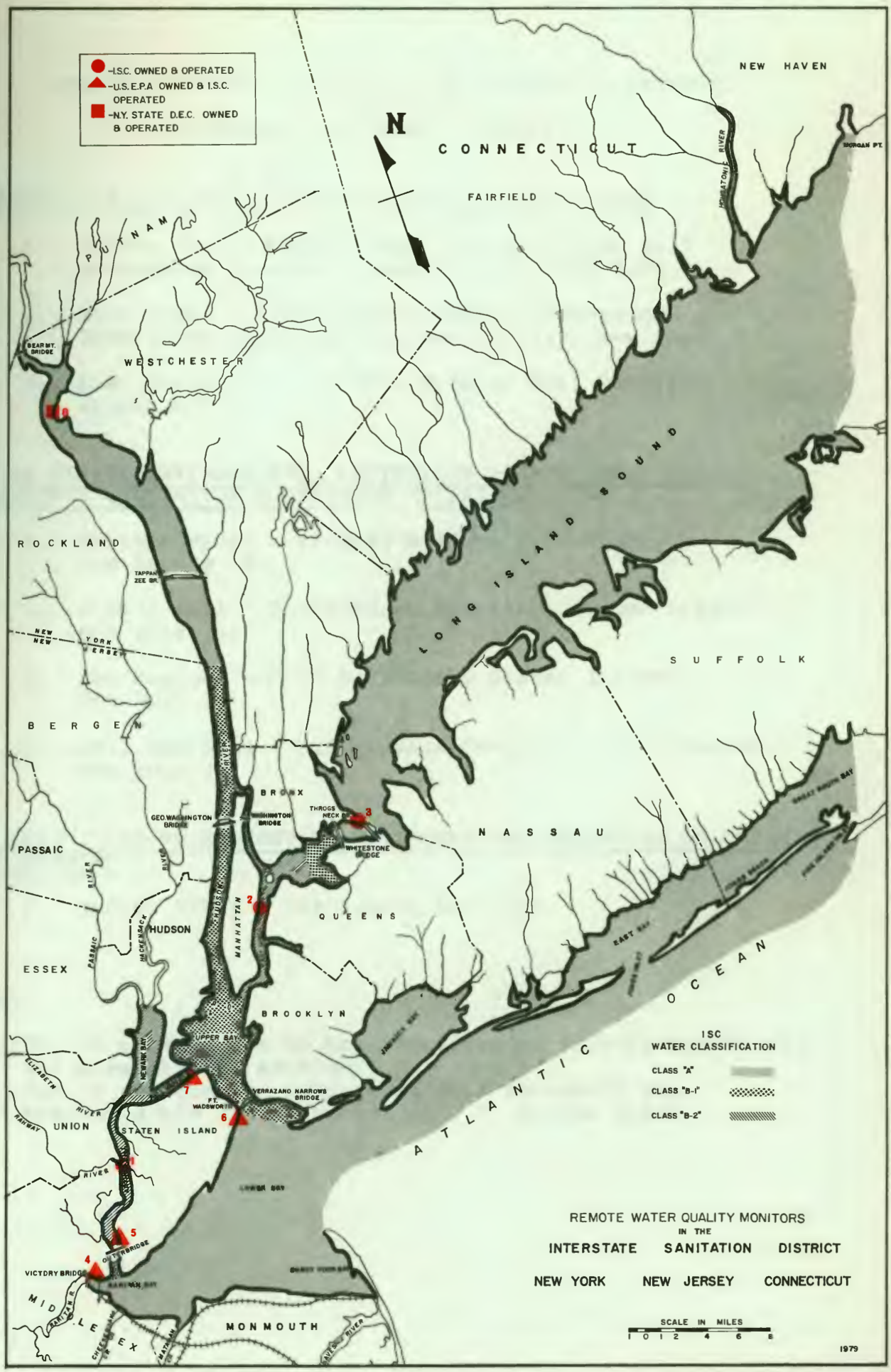
Four parameters - temperature, conductivity, dissolved oxygen and pH - are continuously measured by each of the remote automatic water quality monitoring units. These data are transmitted hourly to a central receiver in the Commission's office and summary reports are generated daily. These reports and magnetic tapes of the hourly values are sent to the appropriate state and federal agencies. The daily summary data are also entered into STORET, the U.S. Environmental Protection Agency's national water quality data bank.

A map showing the location of the monitors and a list describing the sites is on the following pages.

Graphs for the past five years showing the monthly maximum, minimum and average values for each parameter at each station are also included. The monthly maximum and minimum represent the single highest value and the single lowest value for the month, respectively. The monthly average is the average of the daily

average values for the month. Dotted lines indicate a month for which less than ten days of data were available.

Following the graphs is a table showing the percent of time that the dissolved oxygen met Commission requirements at each remote automatic water quality monitoring station for the period October 1, 1978 through September 30, 1979. Although there is a general overall improvement over the previous 12 months reported, District waters are still plagued by low dissolved oxygen values during the summer months. From the table it can be seen that the Commission's dissolved oxygen requirements are being met only about one third of the time during the summer at some stations; this is still unacceptable. The overall general improvement, however, is promising and is due in part to wastewater treatment projects being completed and less continuous bypassing of untreated sewage into District waters.


I.S.C. OWNED & OPERATED
U.S.E.P.A. OWNED & I.S.C. OPERATED
N.Y. STATE D.E.C. OWNED & OPERATED
N
NEW HAVEN
CONNECTICUT
FAIRFIELD
HOUSATONIC RIVER
MORGAN PT.
PUTNAM
BEAR MT. BRIDGE
WESTCHESTER
LONG ISLAND SOUND
ROCKLAND
TAPPAN ZEE BR.
NEW YORK
NEW JERSEY
SUFFOLK
BERGEN
HUDSON RIVER
BRONX
GEO. WASHINGTON BRIDGE
THROGS NECK BRIDGE
WHITESTONE BRIDGE
NASSAU
PASSAIC
PASSAIC RIVER
HACKENSACK RIVER
MANHATTAN
QUEENS
HUDSON
ESSEX
BROOKLYN
UPPER BAY
NEWARK BAY
ELIZABETH RIVER
RAILWAY
VERRAZANO NARROWS BRIDGE
FT. WADSWORTH
UNION
STATEN ISLAND
ARTHUR KILL
KILL VAN KULL
OUTERBRIDGE
VICTORY BRIDGE
RARITAN BAY
MIDDLESEX
MONMOUTH
SHREWSBURY RIVER
SHEEPSHEAD BAY
EAST BAY
ATLANTIC OCEAN
ISC WATER CLASSIFICATION
CLASS "A"
CLASS "B-1"
CLASS "B-2"
REMOTE WATER QUALITY MONITORS IN THE
INTERSTATE SANITATION DISTRICT
NEW YORK NEW JERSEY CONNECTICUT
SCALE IN MILES
0 1 2 4 6 8
1979

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 (1)

5. Arthur Kill - Outerbridge Crossing, Staten Island, New York (2)

6. The Narrows - Fort Wadsworth, Staten Island, New York (3)

7. Kill Van Kull - U.S. Gypsum Company, Staten Island, New York (4)

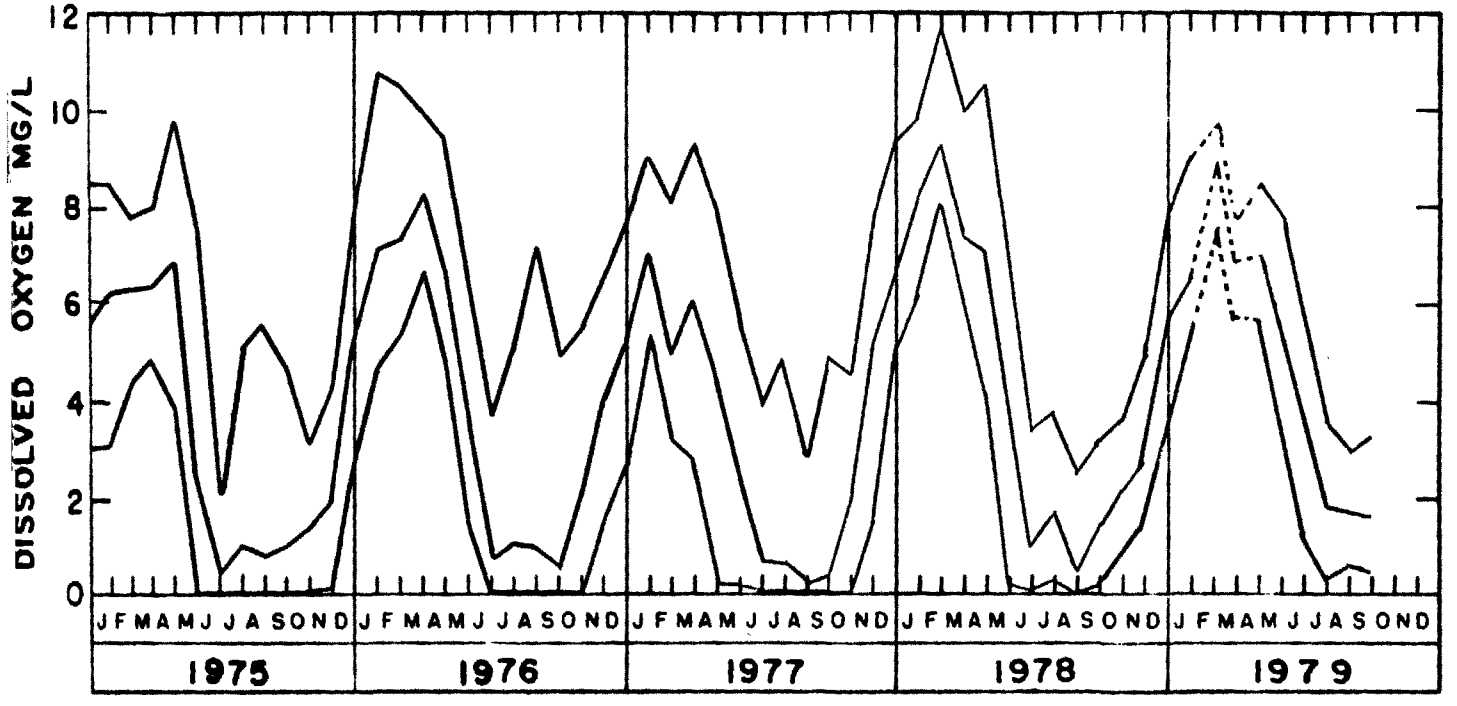
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION OWNED AND OPERATED

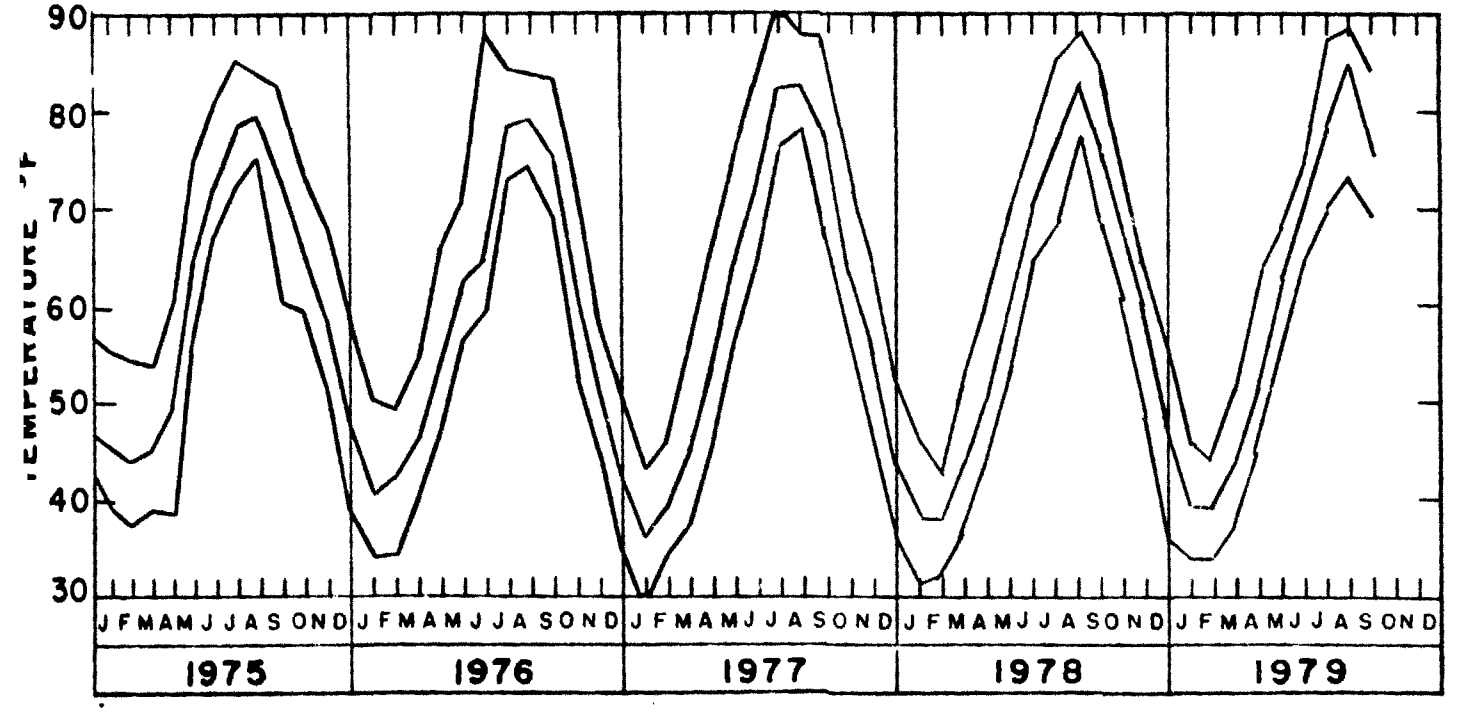
8. Hudson River - Verplanck, New York

Notes:

(1) Out of service due to boat accident at Victory Bridge pier.
(2) Not presently in service.
(3) Out of service due to fire at Fort Wadsworth pier.
(4) Approximately 150 feet east of U.S. Gypsum Plant

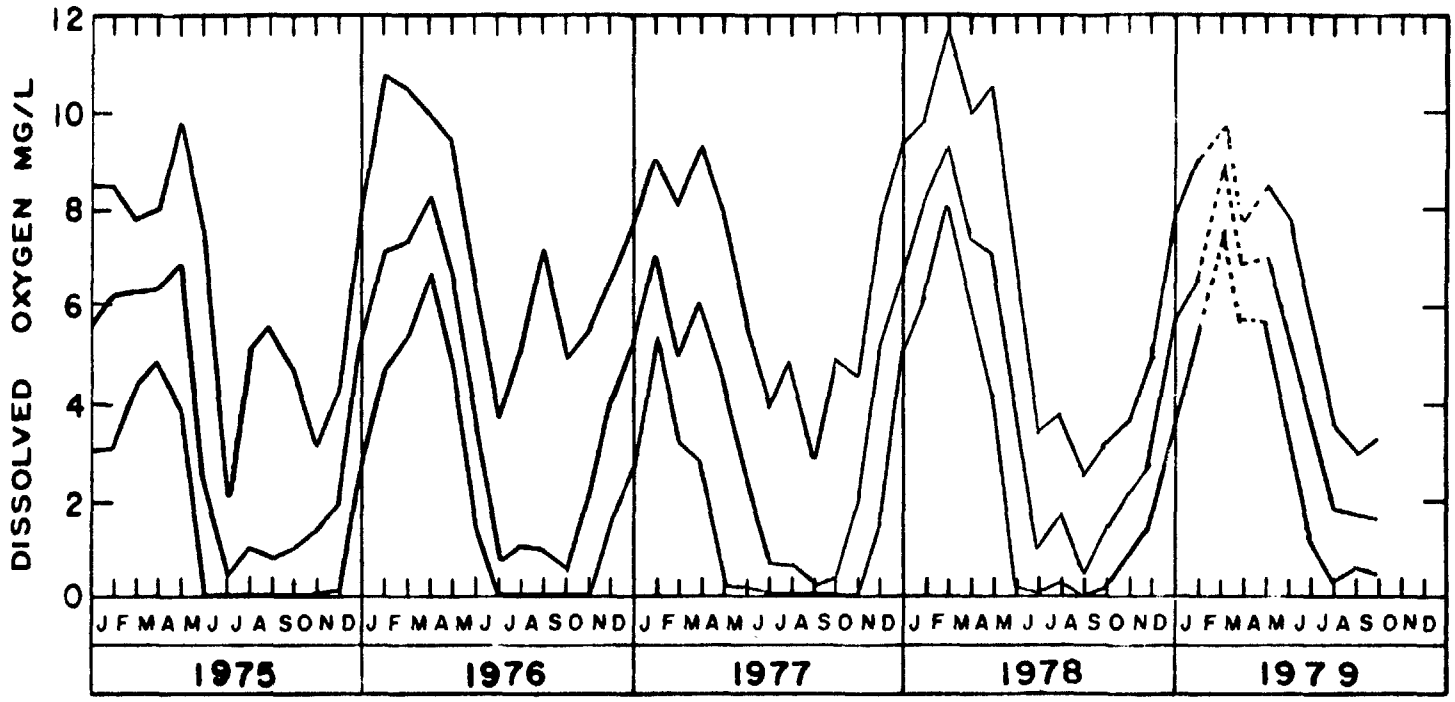
ARTHUR KILL — CON ED. (station no. 1)

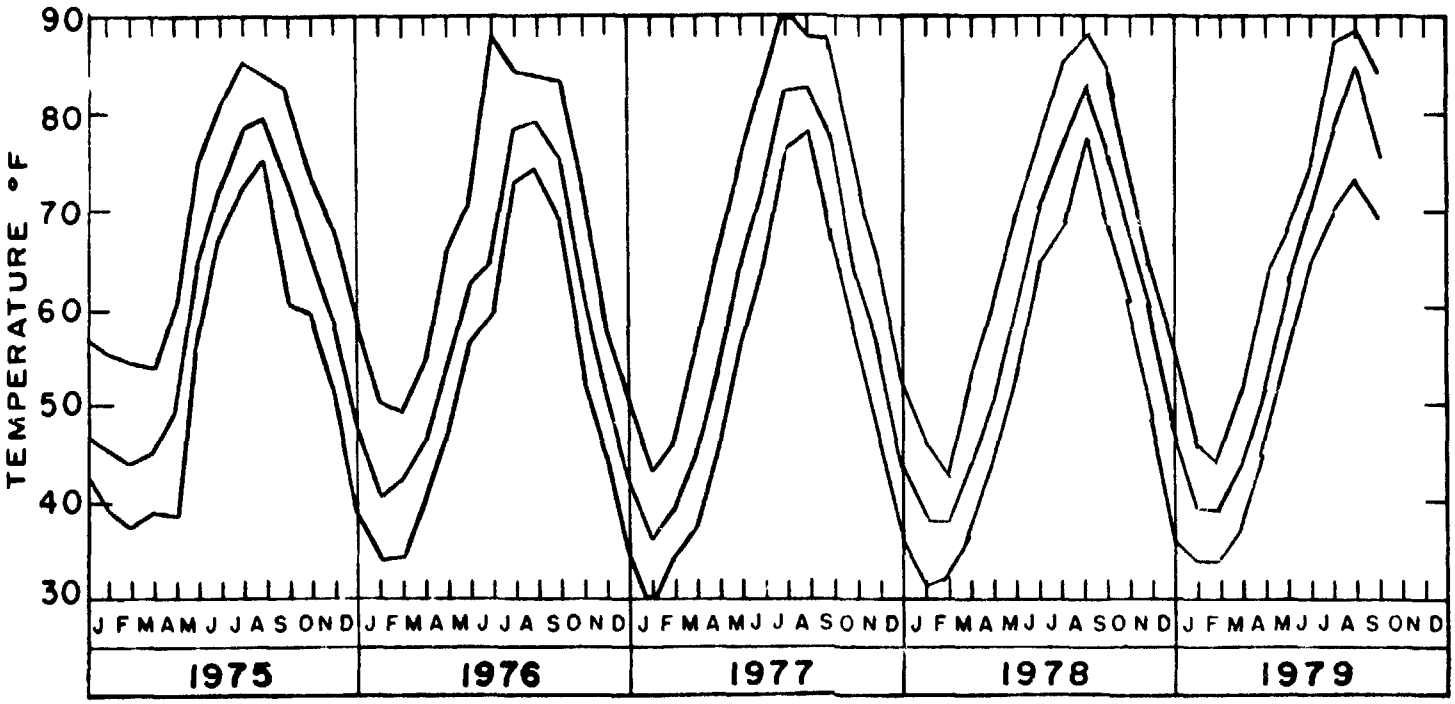




TOP LINE — maximum monthly value
CENTER LINE — average of the daily average values
BOTTOM LINE — minimum monthly value

ARTHUR KILL — CON ED. (station no. 1)





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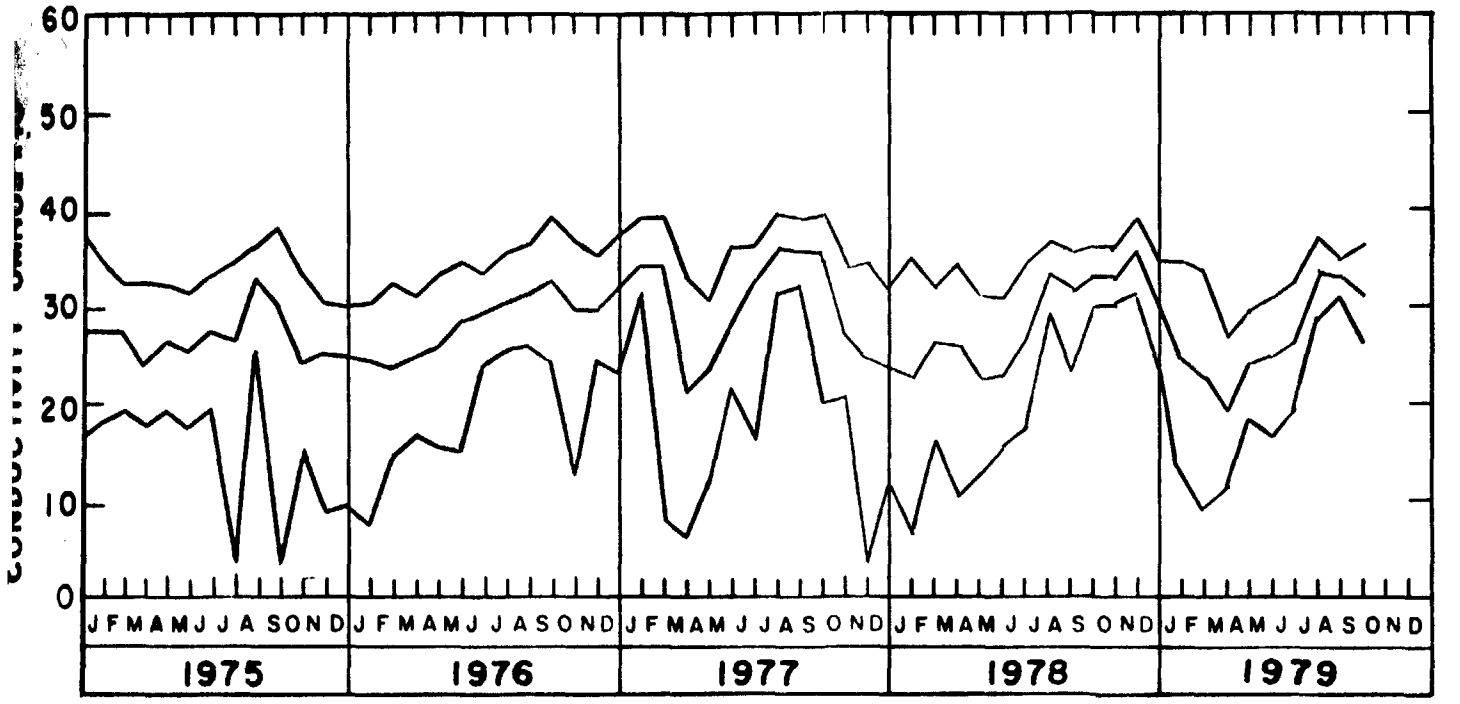
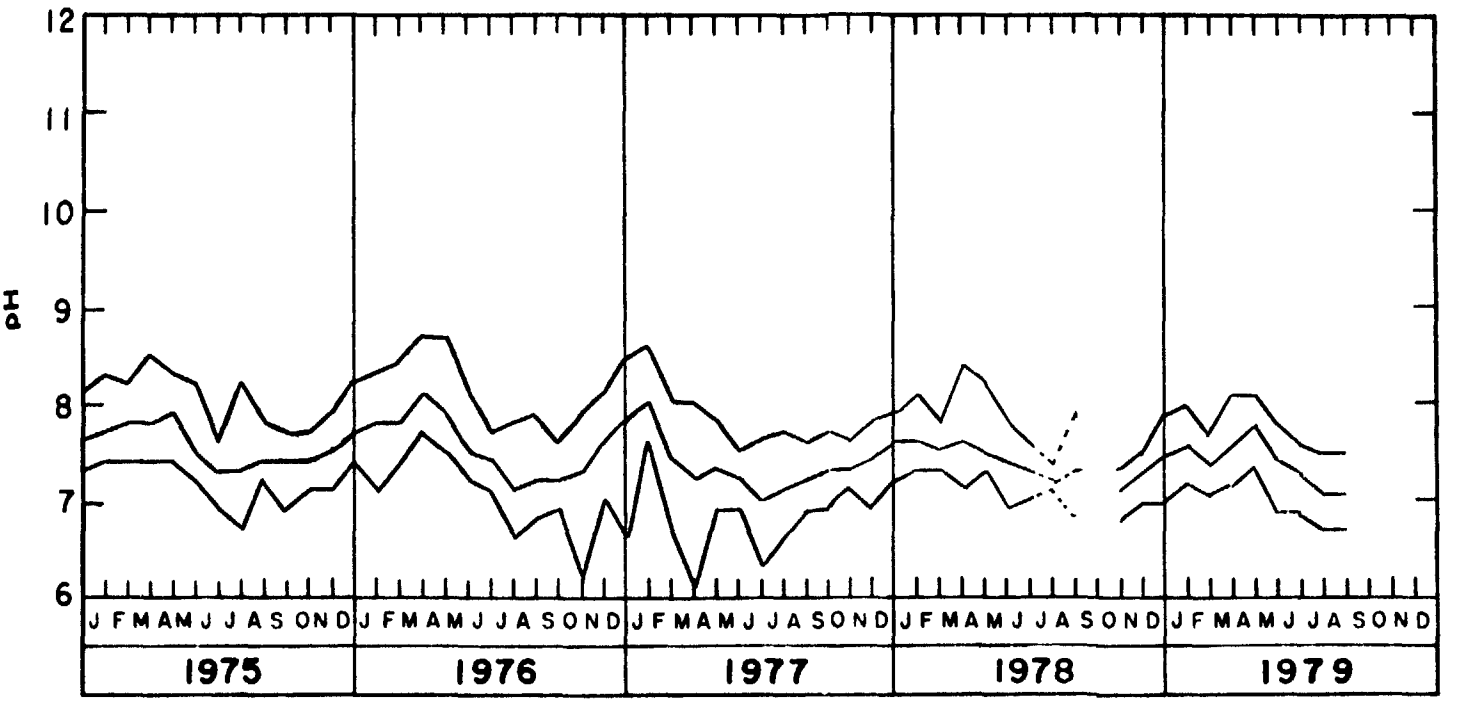
ARTHUR KILL — CON ED. (station no. 1)





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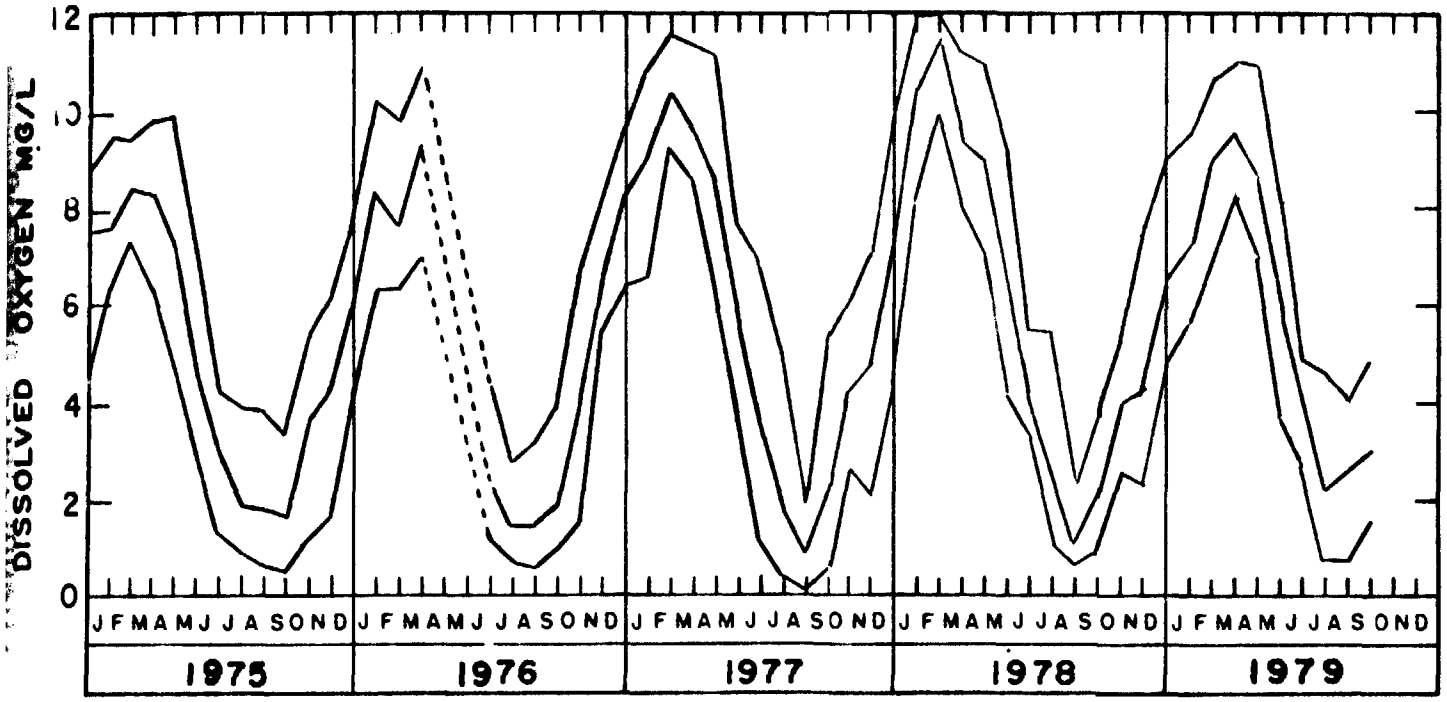
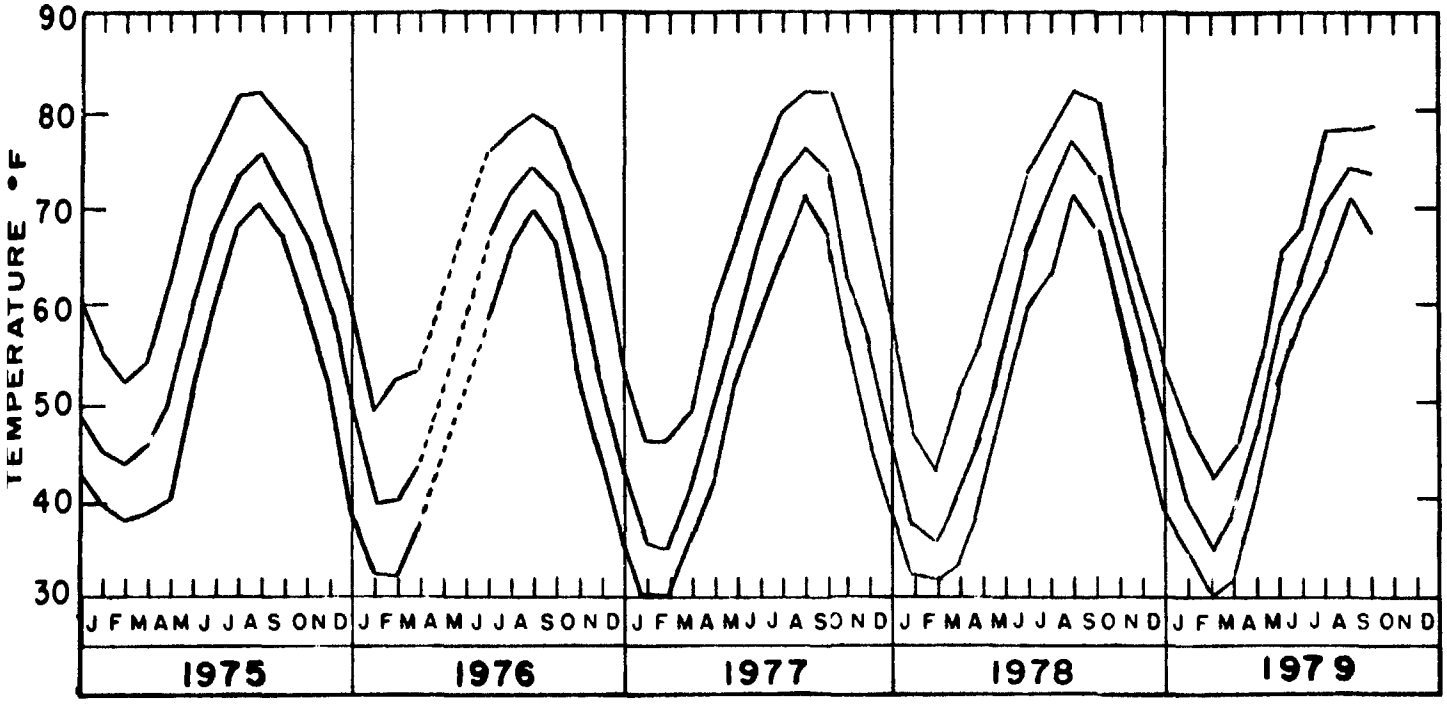
EAST RIVER — CON ED. (station no. 2)





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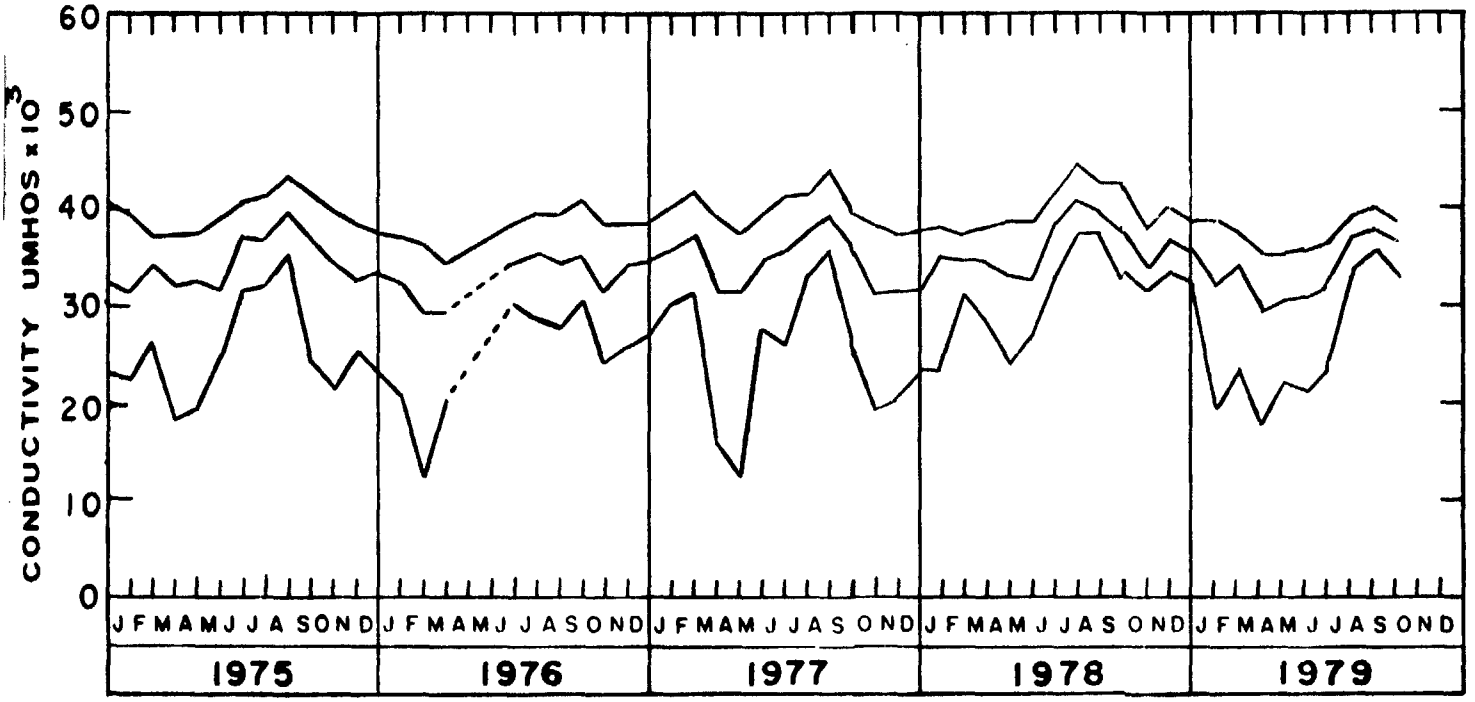

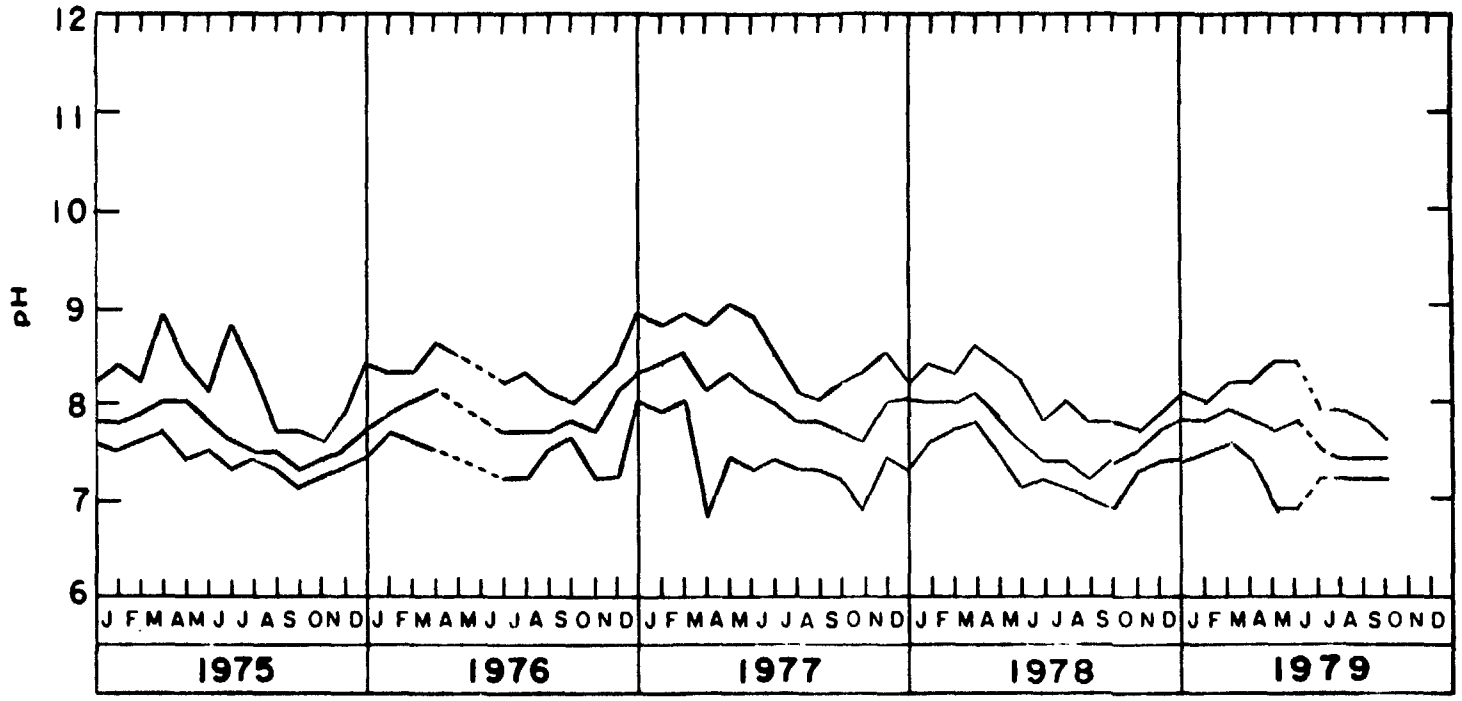

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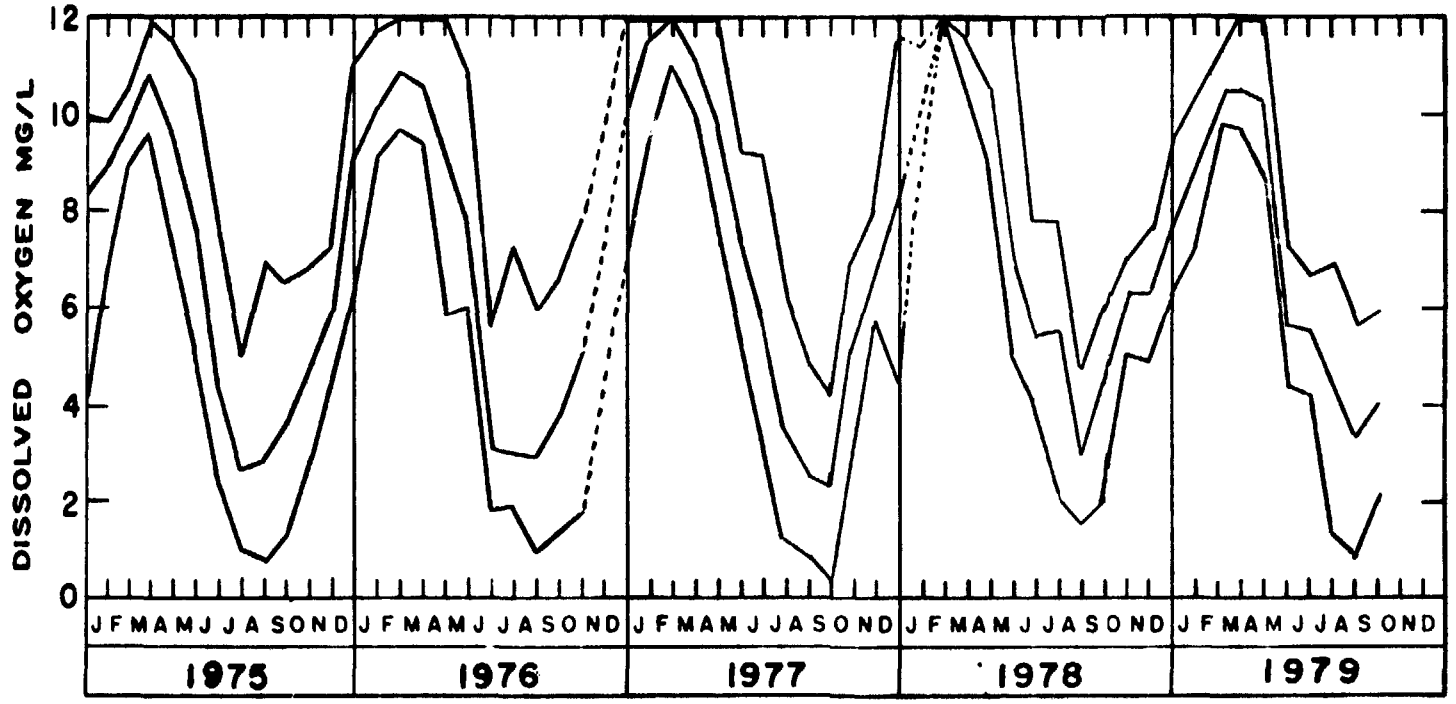
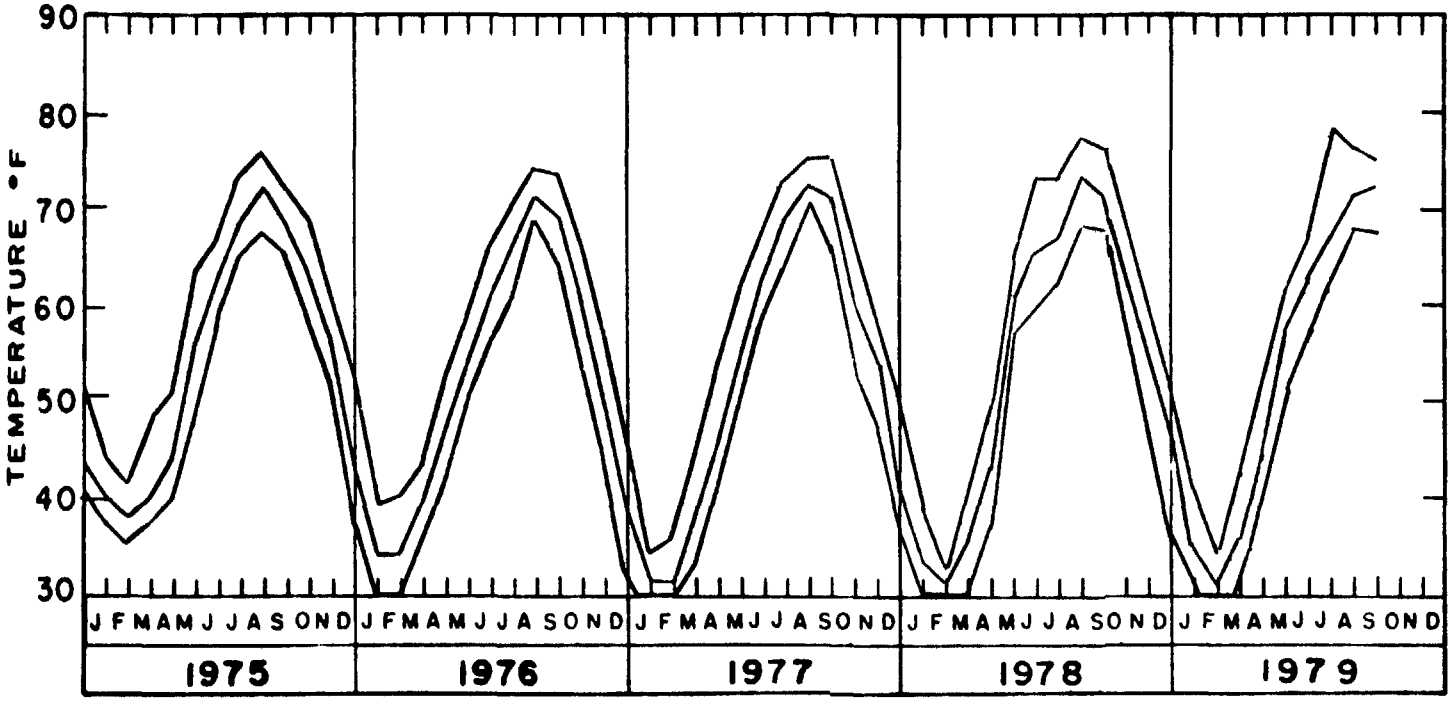
EAST RIVER — THROGS NECK (station no. 3)





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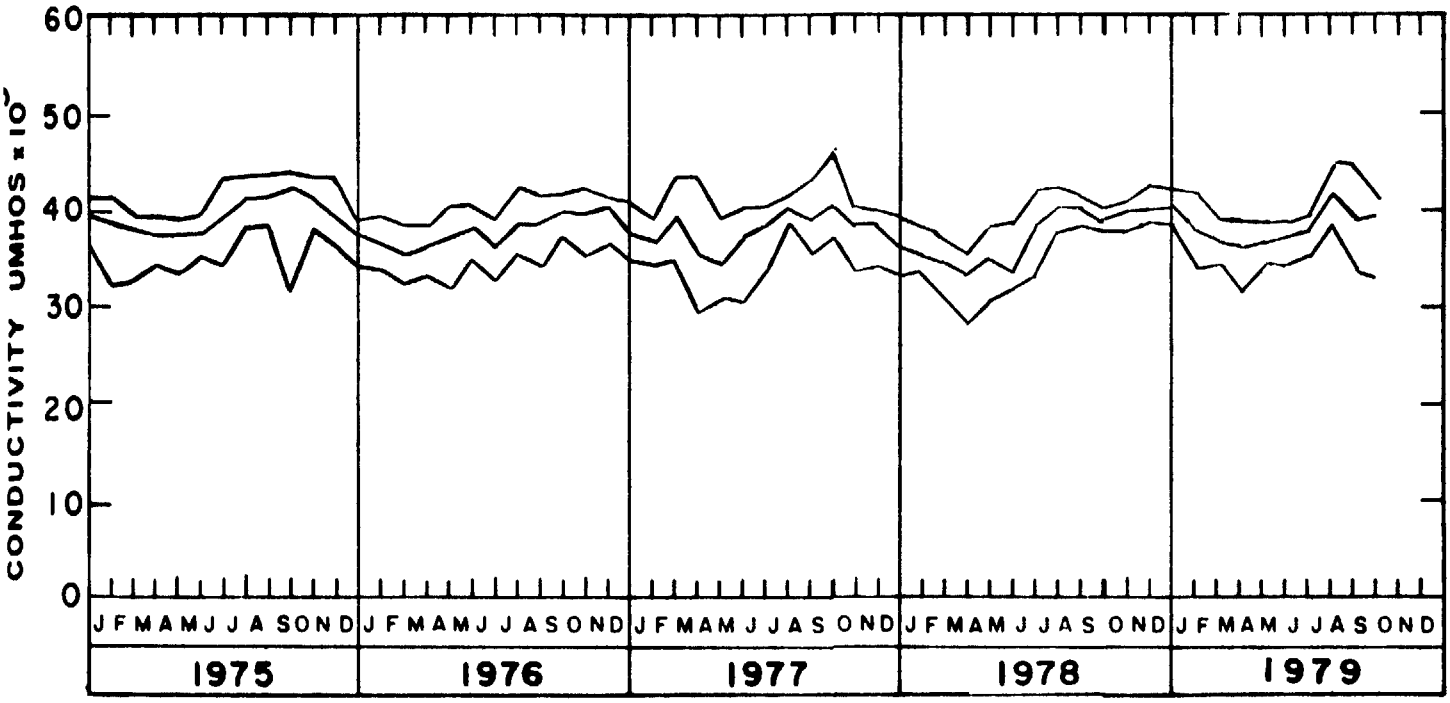

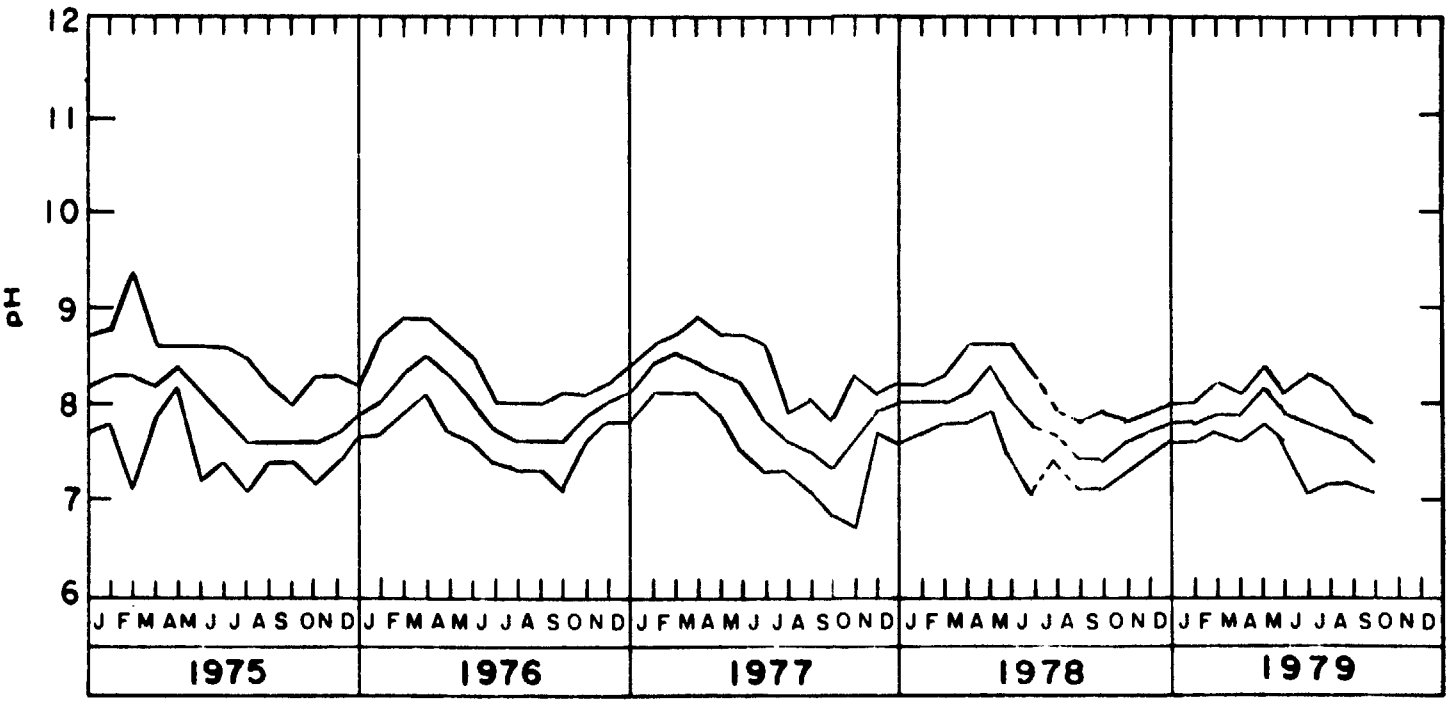

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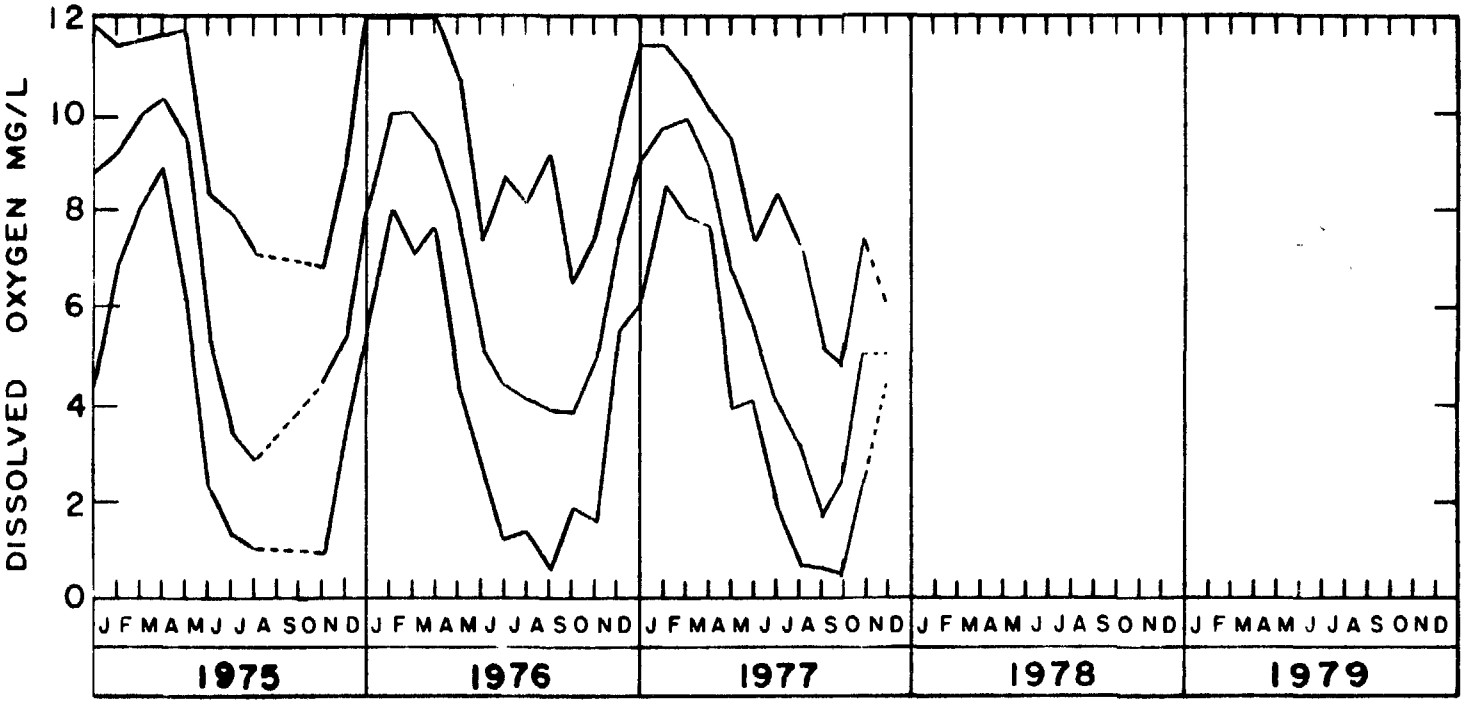
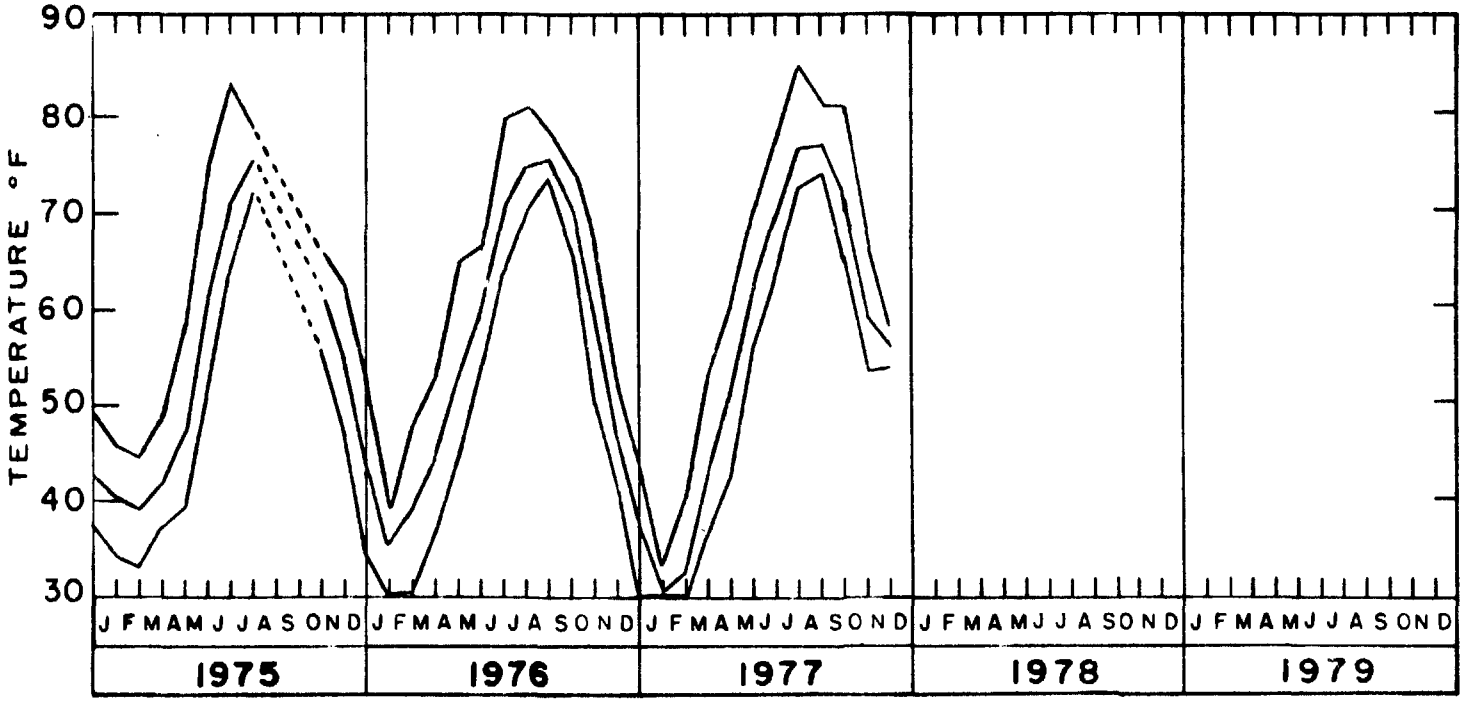
RARITAN RIVER—VICTORY BRIDGE (station no. 4)





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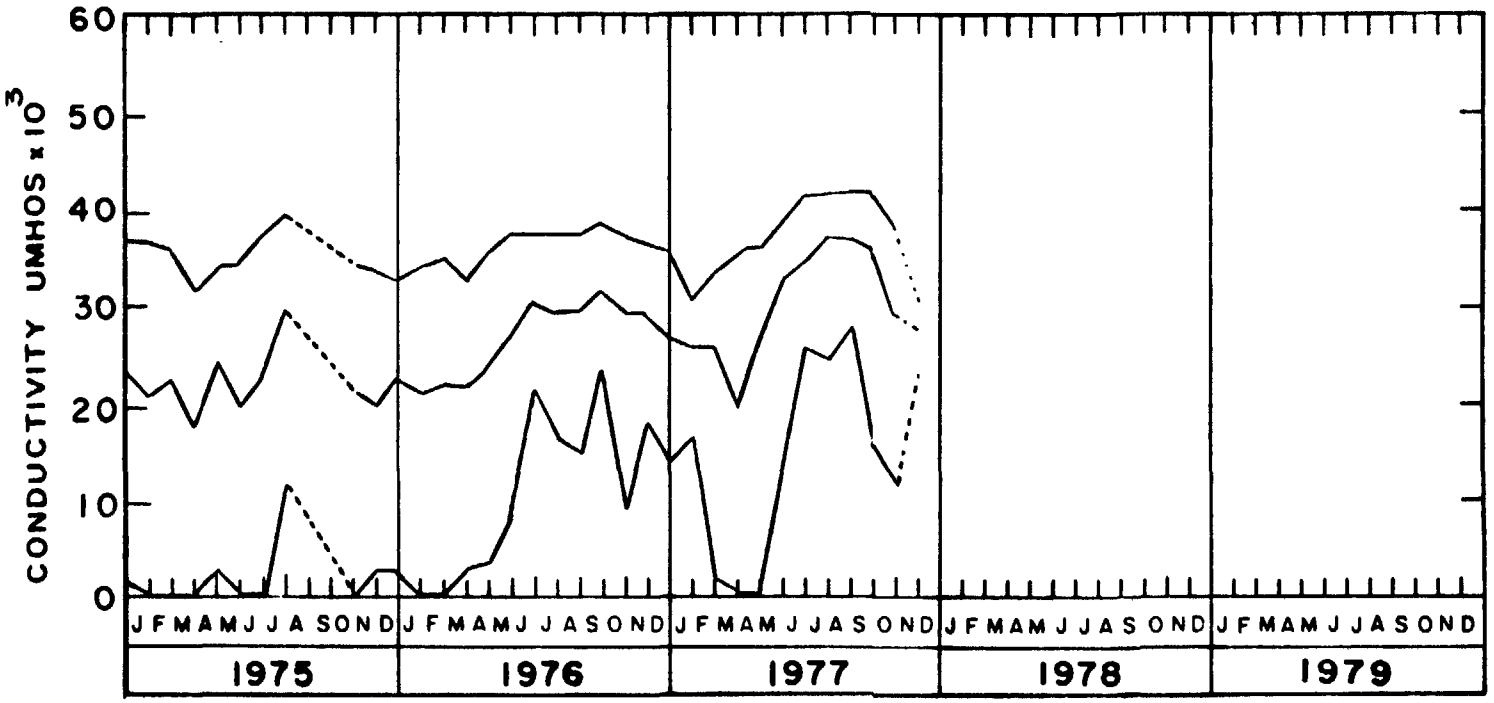
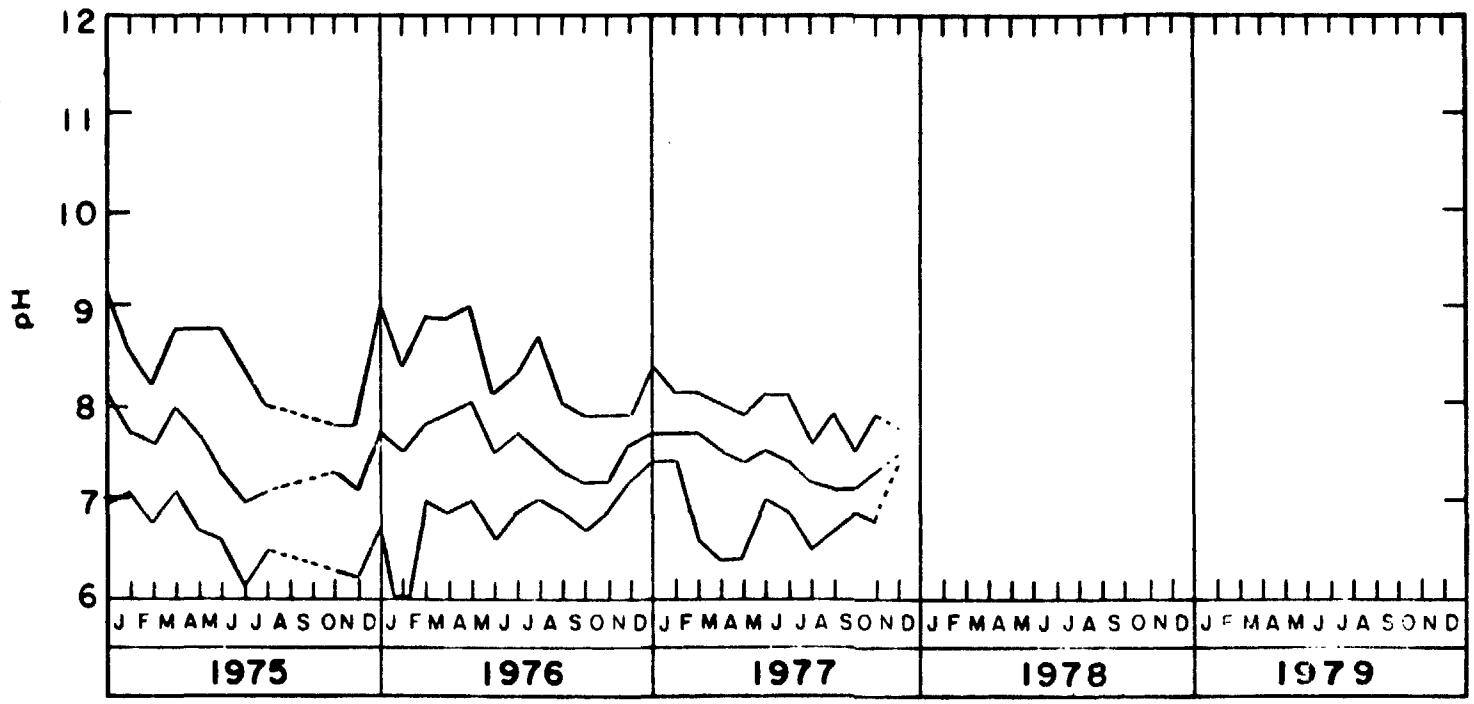
RARITAN RIVER—VICTORY BRIDGE (station no.4)





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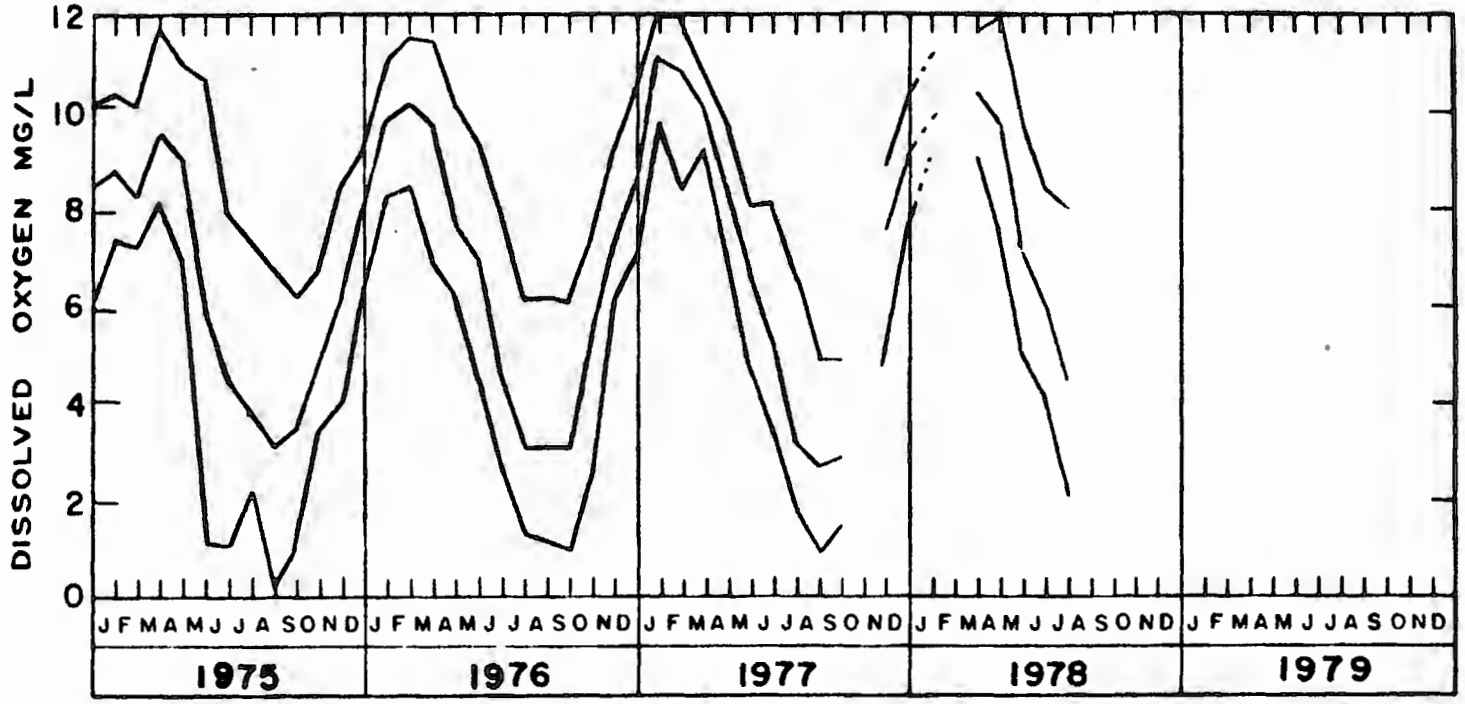
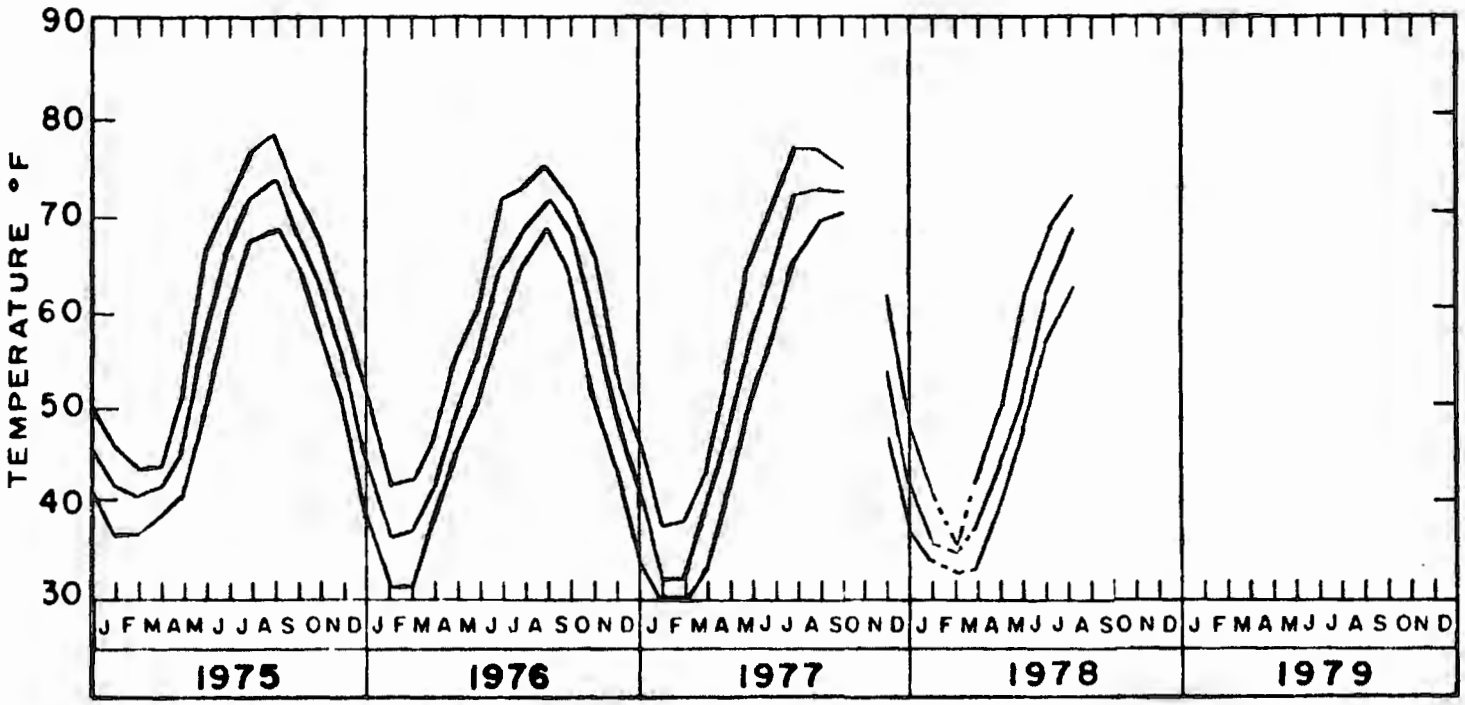
THE NARROWS — FT. WADSWORTH (station no. 6)





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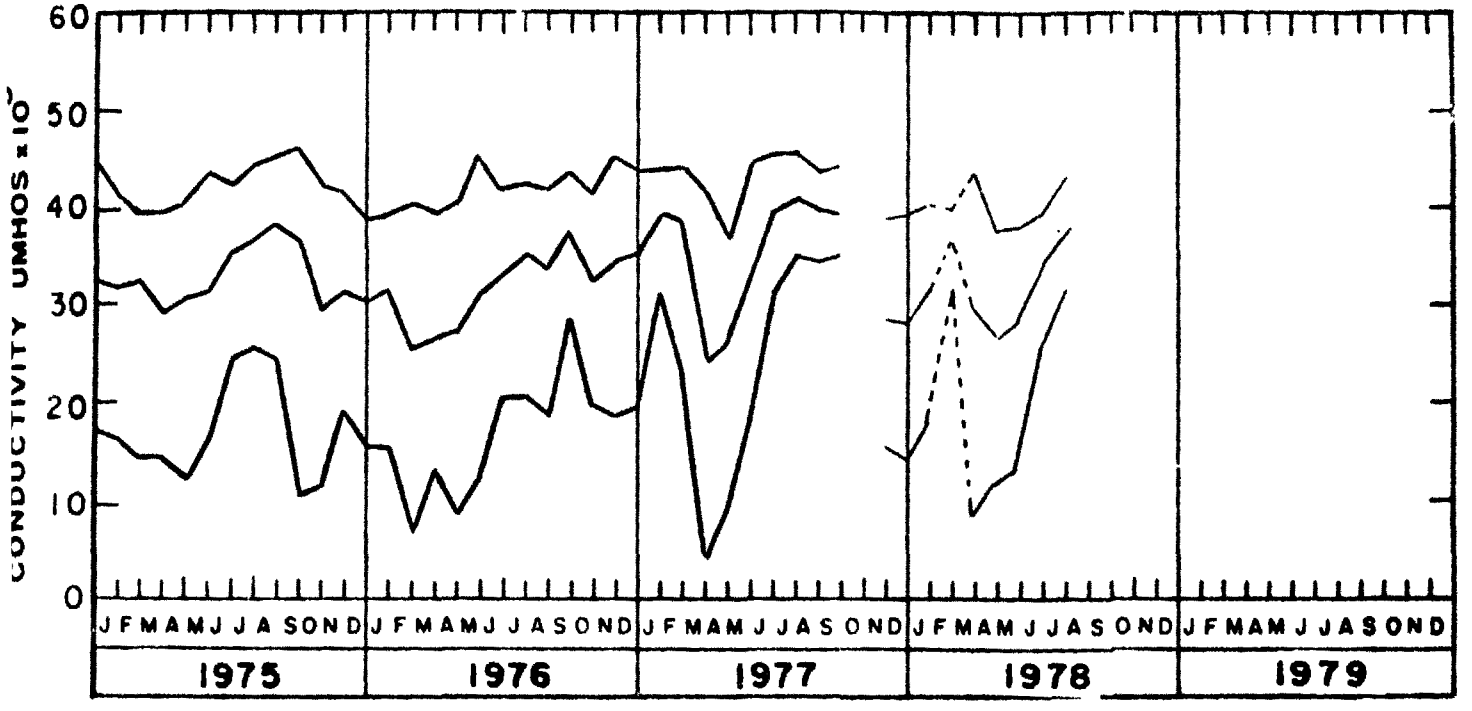

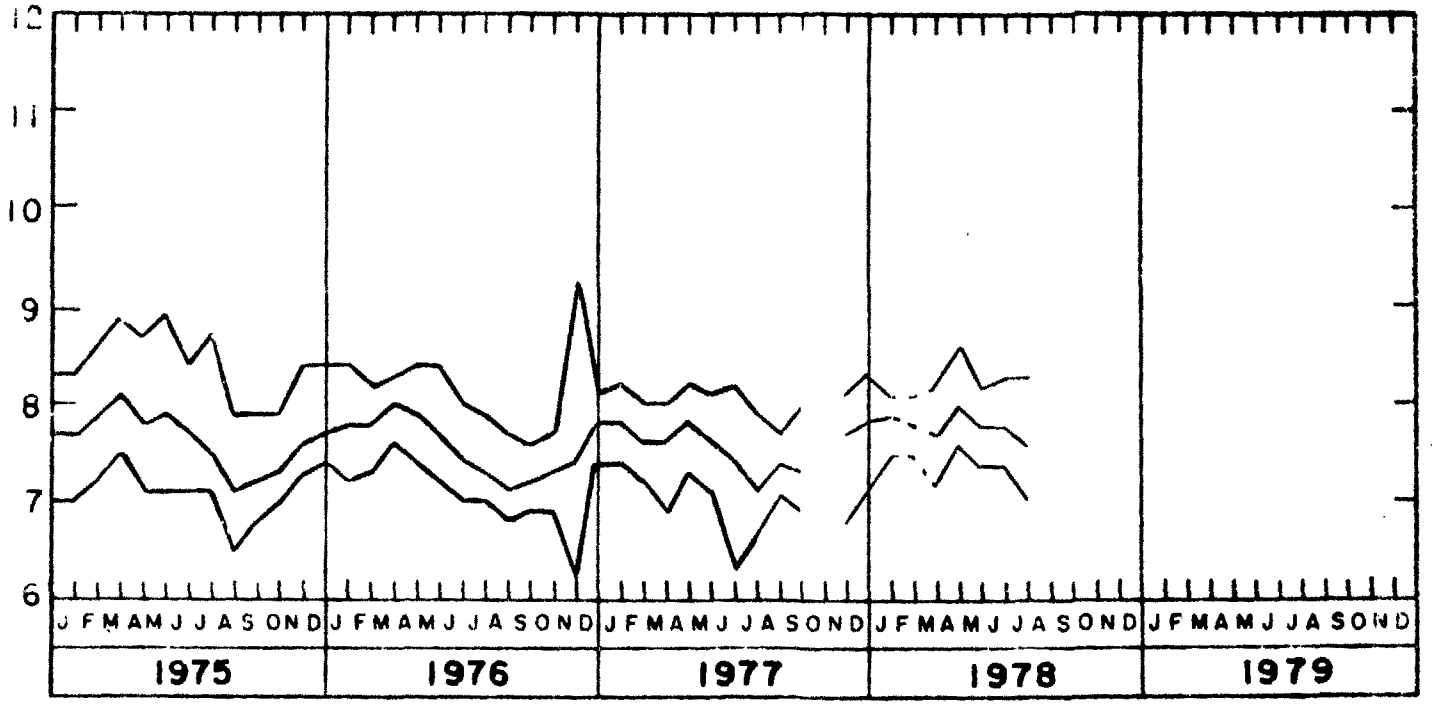

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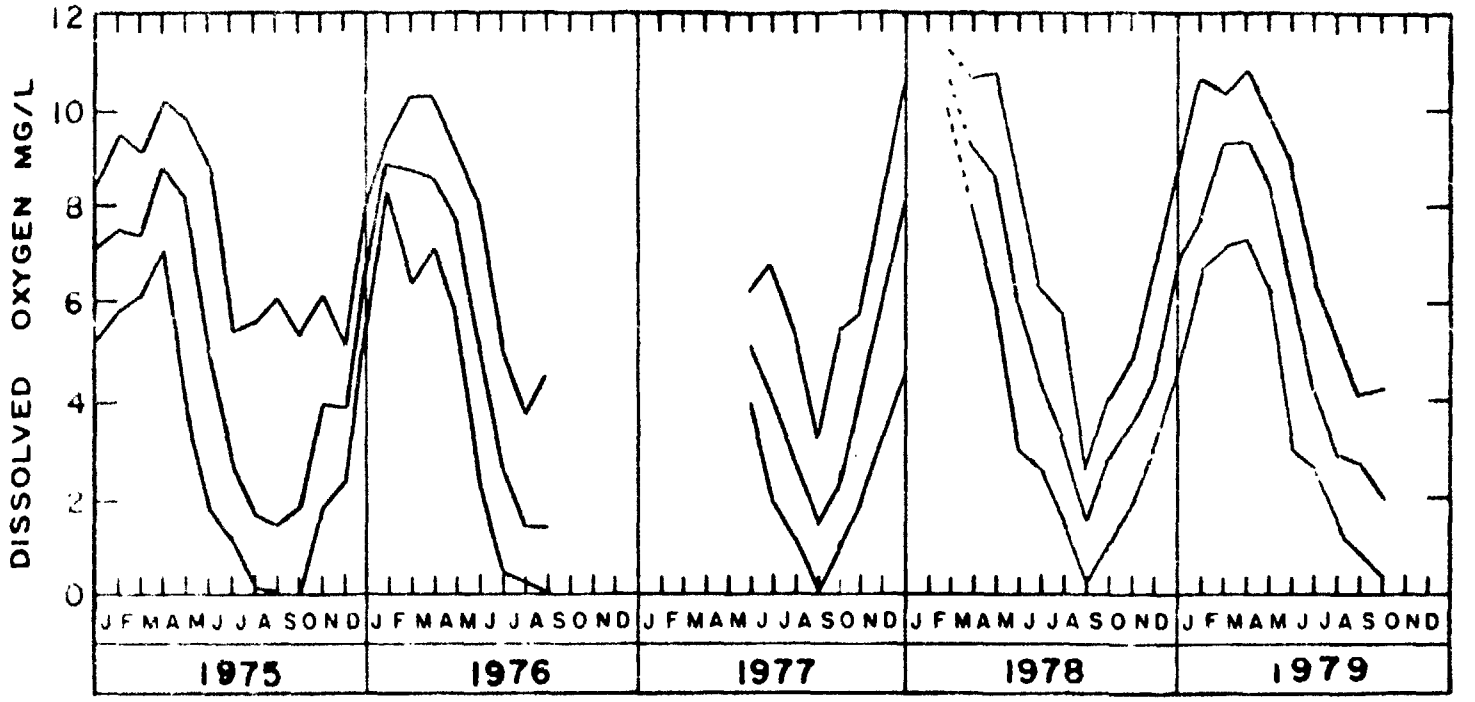
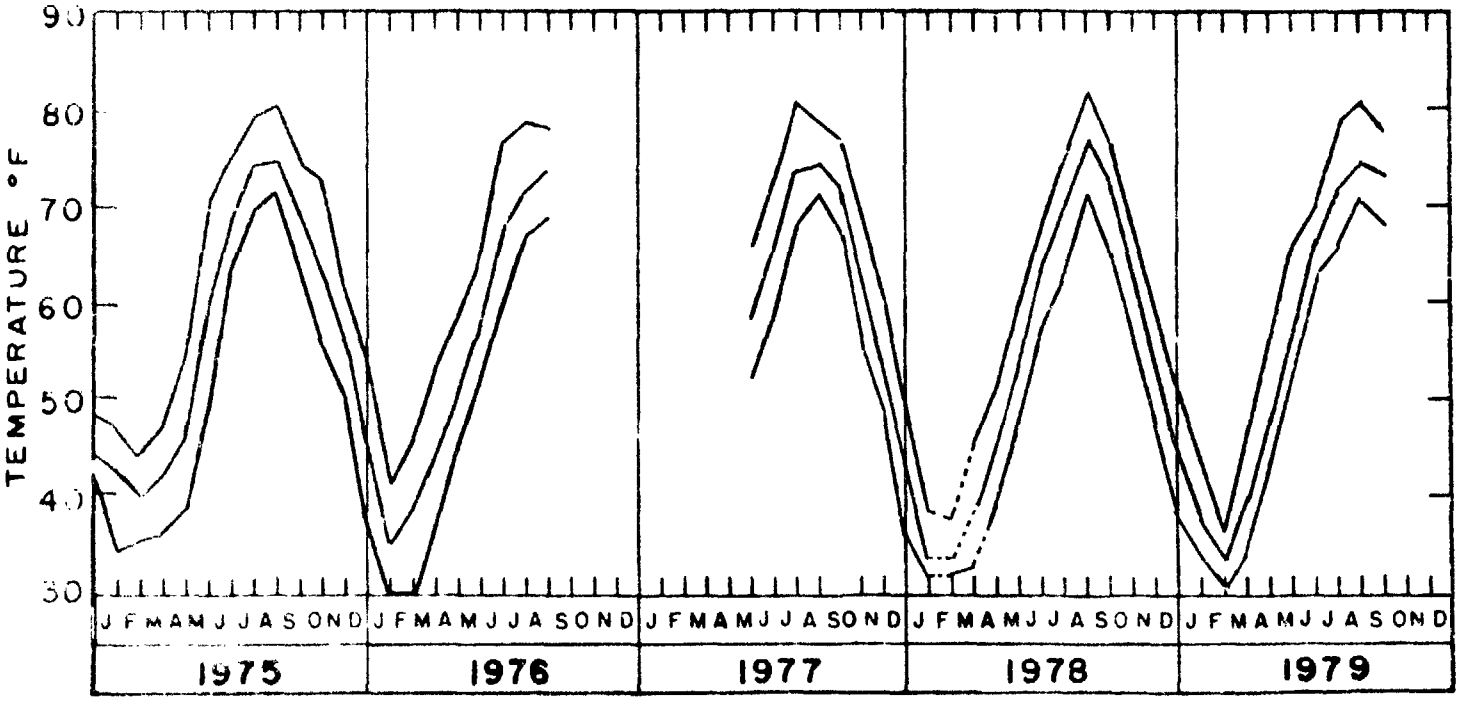
KILL VAN KULL — U.S. GYPSUM (station no. 7)





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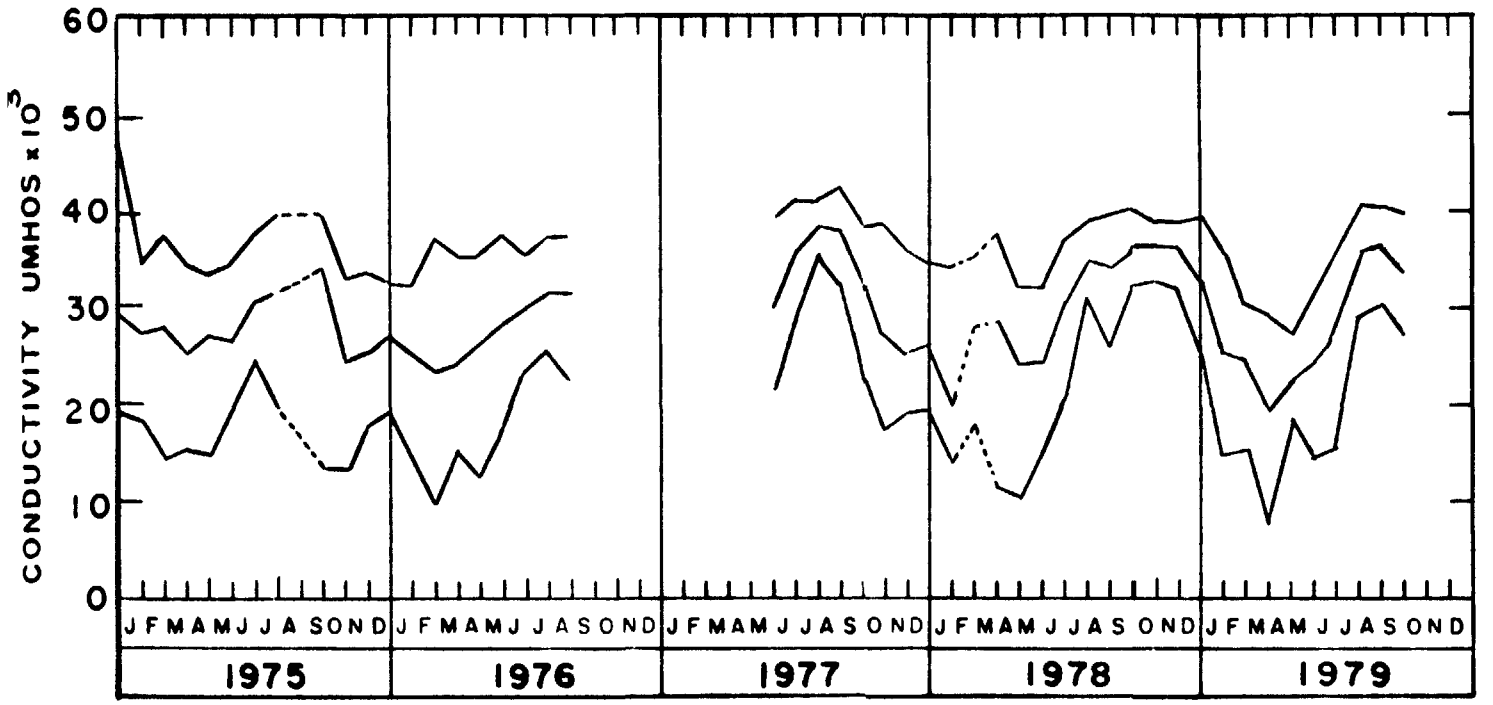
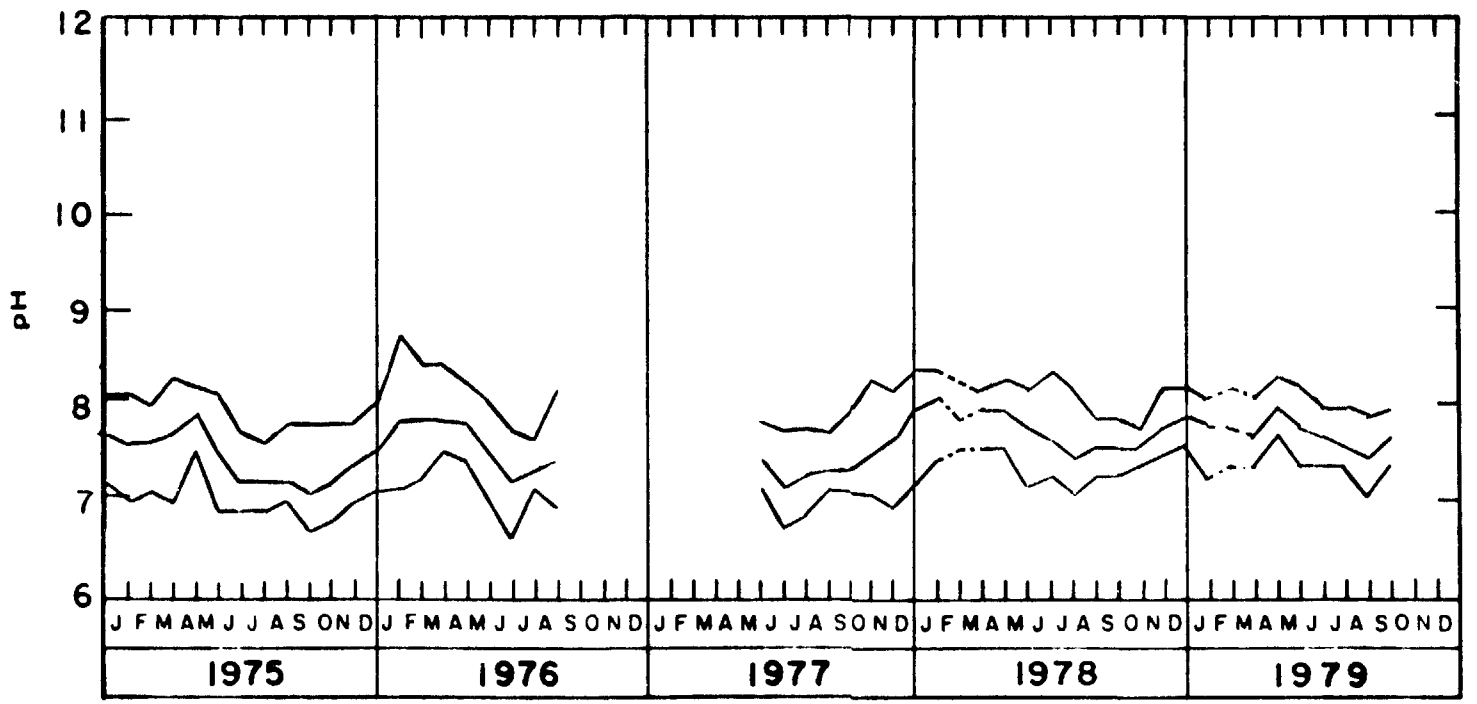
KILL VAN KULL — U.S. GYPSUM (station no. 7)





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PERCENT OF TIME INTERSTATE SANITATION COMMISSION DISSOLVED OXYGEN REQUIREMENTS WERE MET AT I.S.C. REMOTE AUTOMATIC WATER QUALITY MONITORING STATIONS FOR THE PERIOD OF OCTOBER 1, 1978 THROUGH SEPTEMBER 30,1979

MONTH	STATION 1 AK/CE	STATION 2 ER/CE	STATION 3 ER/TN	STATION 7 KVK/USG
October 1978	62.8	100.0	100.0	99.8
November 1978	91.1	100.0	100.0	100.0
December 1978	100.0	100.0	100.0	100.0
January 1979	100.0	100.0	100.0	100.0
February 1979	100.0	100.0	100.0	100.0
March 1979	100.0	100.0	100.0	100.0
April 1979	100.0	100.0	100.0	100.0
May 1978	100.0	100.0	100.0	100.0
June 1979	97.0	100.0	100.0	100.0
July 1979	40.4	53.0	57.1	71.0
August 1979	34.3	76.4	29.6	81.5
September 1979	31.5	88.7	50.8	95.3

Boat Surveys

Interstate Sanitation District waters are routinely sampled by boat throughout the year. This year the New York State Department of Environmental Conservation boat run along the south shore of Long Island was reactivated and seven stations were added, necessitating an additional boat run route. The former Boat Run D is now 2 runs - an eastern and a western run. A map of the boat routes and descriptions and locations of the sampling stations are shown on the following pages. During the critical summer months sampling is done twice a month.

Following the station descriptions are tables showing 1978-1979 boat survey data for thirteen major waterways in the Interstate Sanitation District. The data show that many District waters have low dissolved oxygen content, high bacterial contamination and high temperatures during the summer months.

The waters are also fouled by oil and grease and heavy metals. Pesticides and PCB's are also present as shown by the table containing these data for 1978 and 1979.

Biological sampling was also carried out on the boat surveys. This program concentrated on levels of both chlorophyll and plankton in the District waters in 1979. Chlorophyll samples were taken at nearly all stations for the majority of boat runs during the months of March, April, May, July, and September. Phytoplankton samples were collected at half the stations during January and July.

The cholorophyll data indicated two major occurrences of increased algal activity. The first occurrence was during March and April when high levels of chlorophyll were measured in the Jamaica Bay area. The second event occurred during September when a chlorophyll "a" value of 0.112 mg/l was obtained at station RB-14 in Raritan Bay. A sample of this water contained a light brown colored precipitate. This precipitate consisted of large numbers of Skeletonema costatum and oval shaped cells approximately 55 μ x 30 μ which appeared to be Prorocentrum spp. The high chlorophyll value may reflect a sudden increase in small crabs found in Raritan Bay in late August; this is being investigated by the New York State Department of Environmental Conservation.

On the "C" boat run in June, an algal bloom was cited two miles northeast of Buoy 17 in the Long Island Sound. A total algal cell count of this water was approximately 400,000 cells/ml. The dominant algae present were Phizosolenia spp., Skeletonema costatum, and a small coccoid blue-green algae.

A quantitative approach to the plankton study was initiated

by conducting total cell counts of half the stations during January and July. This is accomplished by use of the Sedgewick Rafter duplicate slide method. At present, samples run from the "A" (waters generally around Staten Island) and "C" (water of Long Island Sound) boat runs have been counted. Comparison of the average values obtained indicated that most "A" stations contain nearly twice the number of planktons found at "C" stations. Samples from the other boat runs are still being counted and will be reported upon completion.


NEW HAVEN
NEW HAVEN FAIRFIELD
HOUSATONIC RIVER
NEW HAVEN
MILFORD
STRATFORD
BRIDGEPORT
FAIRFIELD
CONNECTICUT NEW YORK
PUTNAM
PALISADES INTERSTATE PARK BEAR MT.
WESTCHESTER
PEEKSKILL
WESTPORT
NORWALK
LONG ISLAND SOUND
PORT JEFFERSON
CROTON
HAVERSTRAW
OSSINING
ROCKLAND
STAMFORD
GREENWICH
PORT CHESTER
TARRYTOWN
PIERMONT
NEW YORK NEW JERSEY
HASTINGS
HUDSON RIVER
SUFFOLK
BERGEN
YONKERS
GLEN COVE
BAYSHORE
BRONX
GREAT SOUTH BAY
BABYLON
NASSAU
EDGEWATER
PASSAIC
PASSAIC RIVER
HACKENSACK RIVER
HUDSON
MANHATTAN
EAST RIVER
QUEENS
BEAFORD
HOBOKEN
ESSEX
KEARNY
PASSAIC
JERSEY CITY
EAST ROCKAWAY
OCEAN
BROOKLYN
PORT NEWARK
NEWARK BAY
UPPER BAY
JAMAICA BAY
ELIZABETH
ATLANTIC
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
0 1 2 4 6 8
1979

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "A"

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
AK-03	40-38-18	74-11-45	At the center of & on the northside of the B&O R.R. Bridge
AK-07	40-35-35	74-12-22	Middle of mouth of Rahway River & in line with shoreline along Tremley Reach
AK-13	40-33-02	74-15-00	Mid-channel between Flashing Red Buoy #12 & Flashing Green, Black Buoy #1
AK-18	40-30-24	74-15-34	Mid-channel of Ward Point Bend (west) and opposite Perth Amboy Ferry Slip
LB-01	40-30-44	74-06-03	500 feet from Old Orchard Light in line with the beacon at Old Orchard Shore
LB-02	40-33-45	74-04-20	B.W. Bell off Midland Beach
NB-03	40-39-20	74-08-45	Northside of C.R.N.J. Bridge over the Newark Bay South Reach Channel (mid-channel)
NB-05	40-38-47	74-09-10	Midway between Flashing Red Buoy #14 and Buoy N "2A"
NB-12	40-41-57	74-07-10	Newark Bay North Reach at mid-channel northside of LVRR Bridge
RB-07	40-27-39	74-02-47	Flashing Red Buoy R "4" off the tip of Leonardo (U.S.N.) Pier
RB-08	40-27-08	74-06-22	E-W: Line of Nun Buoy N "2" at channel entrance to Compton Creek & standpipe on Point Comfort. N-S: Approximately 200 yards west of Pews Creek.
RB-10	40-29-04	74-15-38	Qk Fl G "3" Buoy
RB-14	40-28-01	74-11-18	Buoy C "3" off Conaskonk Point at channel entrance to Keyport Harbor
RB-15	40-27-23	74-08-56	Private Fl G Buoy "1" on Belvedere Beach Point Comfort
UH-11	40-39-05	74-05-10	Located in the Kill Van Kull, in mid-channel & directly opposite Fl G & Black Buoy #3
UH-13	40-36-26	74-02-45	Middle of channel in Narrows under Verrazano Bridge

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "B"

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
AO-01	40-31-47	73-56-37	Flashing Red R "2" Gong (4 sec.)
HR-01	40-42-20	74-01-36	Mid-channel of Hudson River N-S: Line of black buoys E-W: Fire Boat Pier (NY) and railroad pier (NJ)
JB-02	40-36-27	73-53-09	Mill Basin at east end of channel
JB-03	40-37-37	73-53-00	In channel 400 feet south of the end of Canarsie Pier
JB-05	40-35-45	73-48-40	At center pier of bridge over Beach Channel - Hammels
JB-07	40-38-52	73-49-20	At mouth of Bergen Basin, southeast of the sludge storage tank
JB-08	40-36-20	73-48-56	Under center of R.R. trestle
LB-03	40-34-03	73-59-00	200 feet south of Steeplechase Pier at Coney Island - N "2S"
LB-04	40-35-00	74-00-51	1/4 mile northeast of Norton Point, near the White Nun Buoy
RI-01	40-34-00	73-55-51	As near the outfall structure of the Coney Island plant as safety permits
RI-02	40-34-24	73-53-08	Under center of bridge from Barran Island to Rockaway
UH-03	40-39-14	74-03-35	Passaic Valley Outfalls E-W: Robbins Reef Light and forward water tower on Naval Dock N-S: Statue of Liberty and Black Bell Buoy #1-G
UH-13	40-36-26	74-02-45	Middle of channel in Narrows under Verrazano Bridge
UH-21	40-40-23	74-02-28	Main ship channel 10 yards to the west of Fl R Bell Buoy #30
UH-22	40-38-25	74-02-50	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 and Fl P Gong Buoy #22
UH-29	40-42-17	75-59-54	Mid-channel of East River in line with Pier #11 (Manhattan) and Pier #1 (Brooklyn)

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "C"

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
LI-15	40-47-58	73-47-38	Middle of Throgs Neck Bridge
LI-17	40-49-43	73-46-46	500 yards off Stepping Stone, north of Fl G "12" M Horn
LI-19	40-51-33	73-45-03	Off Bell "27" at Gang Way Rock
LI-24	40-53-57	73-44-27	At New Rochelle outfall approximately 500 yards south of R "2"
LI-25	40-55-25	73-42-01	Mamaroneck Fl 4 sec. Bell R "42"
LI-26	40-58-47	73-38-59	Port Chester off N "2"
LI-27	41-00-08	73-36-04	Captain's Harbor - Newfoundland Reef Fl R "4"
LI-28	40-59-42	73-33-58	Greenwich Point R N "34"
LI-29	41-00-54	73-32-14	Stamford between E int G 8M Horn & Fl R
LI-30	40-59-26	73-30-49	Stamford - N-S: "32" Fl 4 sec. Bell and Fl 4 sec. "15" Bell E-W: "32A" whistle R N "28"
LI-31	40-53-29	73-30-11	Oyster Bay Gong "1"
LI-32	40-54-39	73-38-07	Matinecock Pt. "21" Fl G 4 sec. Bell
LI-33	40-51-42	73-40-07	Hempstead Harbor midway between R 6 Bell and Fl 4 sec. "1"
LI-34	40-50-00	73-44-02	Manhasset Bay Fl G 4 sec. "1"

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "D" (EASTERN RUN)

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
E-01	40-37-44	73-18-40	Mid-channel of entrance to Fire Island Inlet
E-02	40-36-55	73-20-40	Atlantic Ocean in open waters approximately 1 mile south of Cedar Island Beach
E-03	40-35-20	73-27-29	Atlantic Ocean in open waters approximately 3/4 mile south of Tobay Beach
E-04	40-33-40	73-26-48	Atlantic Ocean in open waters approximately 2 1/2 miles south of Tobay Beach
E-05	40-34-54	73-20-30	Atlantic Ocean in open waters approximately 3 miles south of Cedar Island Beach
E-06	40-37-14	73-11-06	Atlantic Ocean in open waters approximately 1 mile south of Saltaire on Fire Island
E-07	40-36-12	73-17-23	Atlantic Ocean in open waters approximately 1 1/4 miles south of Robert Moses State Park on Fire Island

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "D" (WESTERN RUN)

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
W-01	40-35-03	73-34-33	100 feet east of Red Buoy #6 at entrance to Jones Inlet
W-02	40-33-51	73-35-42	1 mile south of water tower and building on shore and 1/2 mile and 100 feet out from tip of jetty
W-03	40-34-05	73-33-30	1/2 mile east of jetty and 1 mile from shore on a line with the Coast Guard Station
W-04	40-31-12	73-39-12	3 miles off shore south of point W-10
W-05	40-31-18	73-48-15	A heading of 112 degrees east of point W-06 opposite 7 high apartment buildings on shore and approximately 2 1/2 miles out
W-06	40-32-36	73-51-54	South of main building with twin towers at Riis Park and approximately 1 1/2 miles from shore
W-08	40-35-18	73-45-27	50 feet west of Red Buoy #6 and 1/2 mile from shore
W-09	40-34-24	73-44-18	Gas tank on shore and Red Gong Buoy R4 off jetty about 1/2 mile west
W-10	40-33-54	73-39-12	1 mile off shore on a line with edge of apartment building and gas tank. High water tower to East

INTERSTATE SANITATION COMMISSION
SAMPLING STATIONS - BOAT RUN "E"

STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	D E S C R I P T I O N
ER-01	40-42-24	73-59-27	Under Manhattan Bridge - mid-channel
ER-02	40-42-48	73-58-20	Under Williamsburg Bridge - mid-channel
ER-03	40-44-05	73-58-05	Mid-channel of East River E-W: Pier #73 (School Slip) Manhattan with open pier, foot of Greene Street, Brooklyn N-S: Poorhouse Flats Range
ER-04	40-45-22	73-57-11	Under Queensboro Bridge in the East Channel
ER-09	40-47-26	73-54-53	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	73-52-02	Mid-channel of East River E-W: Fl R Beacon (College Point) with stack on Rikers Island N-S: Line from center of Sanitation Pier (Hunts Point) with Fl R #4 Buoy (Station approximately 250 yards SE of #4 Buoy)
HA-01	40-48-40	73-56-02	Third bridge after Triboro Bridge
HA-02	40-50-44	73-55-45	Hamilton Bridge (middle bridge of 3)
HR-01	40-42-20	74-01-36	Mid-channel of Hudson River N-S: Line of black buoys E-W: Fire Boat Pier (NY) and railroad pier (NJ)
HR-02	40-45-17	74-00-58	Mid-channel of Hudson River E-W: Heliport (NY) and Seatrain pier (NJ)
HR-03	40-47-41	73-59-09	Mid-channel of Hudson River E-W: Soldiers & Sailors Monument (NY) and circular apartment buildings (NJ)
HR-04	40-51-04	73-57-04	Mid-channel of Hudson River under George Washington Bridge
HR-05	40-52-40	73-55-02	Mid-channel of Spuyten Duyvil Creek under Henry Hudson Bridge
HR-07	40-56-51	73-54-27	Mid-channel of Hudson River E-W: Opposite Phelps Dodge (Yonkers)

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANTIC OCEAN
Temperature (C) (Summer)							
Low	18.0	18.0	18.5	19.0	18.0	18.0	16.8
High	24.5	25.0	21.0	25.0	24.0	24.5	28.0
No. of Values	12	27	4	21	18	40	44
Temperature (C) (Winter)							
Low	2.0	1.6	-	1.0	2.0	0.8	-
High	2.0	2.8	-	2.0	2.0	2.2	-
No. of Values	1	2	-	5	4	8	-
Dissolved Oxygen (Summer)							
Low	2.4	2.4	3.4	2.4	3.2	5.0	3.2
High	8.8	8.8	4.4	6.6	8.8	12.4	8.4
No. of Values	11	24	3	20	16	40	44
Dissolved Oxygen (Winter)							
Low	15.2	8.8	-	9.6	9.8	9.0	-
High	15.2	9.4	-	13.8	10.2	10.2	-
No. of Values	1	2	-	5	4	8	-
BOD (5 day) (Summer)							
Low	1.3	1.0	0.8	1.2	0.6	0.1	-
High	2.9	>5.2	>3.4	3.0	5.7	4.7	-
No. of Values	9	12	3	9	9	23	-
BOD (5 day) (Winter)							
Low	7.6	0.6	-	2.4	1.8	3.4	-
High	7.6	0.6	-	2.6	2.5	3.4	-
No. of Values	1	1	-	2	2	1	-

NOTES: (1) All units are milligrams per liter unless otherwise shown.

(2) Data are for October 1978 through September 1979. Summer data are for July, August and September; winter data are for December, January and February.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANTI OCEAN
Fecal Coli (/100 ml) (Summer)							
Low	1000	50	-	540	<10	<10	<4
High	25000	5600	-	24000	4800	36	<10
No. of Values	7	12	-	9	7	14	20
Fecal Coli (/100 ml) (Winter)							
Low	5100	3600	-	3900	1500	<10	-
High	5100	3600	-	12000	8200	82	-
No. of Values	1	1	-	2	2	4	-
Total Coli (/100 ml) (Summer)							
Low	1700	100	-	<100	<100	<100	<4
High	30000	7300	-	>100000	5600	4100	<100
No. of Values	4	6	-	5	6	10	20
Total Coli (/100 ml) (Winter)							
Low	20000	24000	-	15000	2500	<100	-
High	20000	24000	-	27000	16000	400	-
No. of Values	1	1	-	2	2	4	-
pH (Standard Units)							
Low	7.1	6.7	7.0	7.0	7.0	7.2	-
High	8.0	8.0	7.6	8.0	8.5	8.5	-
No. of Values	31	54	10	56	45	80	-
Conductivity (umhos/cm)							
Low	7300	23000	5000	16000	28000	34000	42000
High	38000	45000	35000	47000	50000	47000	50000
No. of Values	29	54	10	50	41	88	44

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INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANTIC OCEAN
Turbidity (NTU)							
Low	2	1	2	1	1	1	-
High	23	8	35	7	18	4	-
No. of Values	30	53	10	56	46	88	-
Chlorophyll a							
Low	0.000	0.000	0.000	0.000	0.000	0.000	0.000
High	0.017	0.036	0.008	0.079	0.037	0.051	0.017
No. of Values	18	28	6	29	23	47	22
Chlorophyll b							
Low	0.000	0.000	0.000	0.000	0.000	0.000	0.000
High	0.003	0.004	0.003	0.005	0.002	0.009	0.002
No. of Values	18	28	6	29	23	47	22
Chlorophyll c							
Low	0.000	0.000	0.000	0.000	0.000	0.000	0.000
High	0.011	0.017	0.009	0.038	0.021	0.045	0.006
No. of Values	18	28	6	29	23	47	22
Total Carbon							
Low	21	25	25	22	23	25	-
High	38	38	37	38	40	40	-
No. of Values	21	40	6	50	40	72	-
Total Org. Carbon							
Low	5	4	5	1	1	4	-
High	15	17	16	16	16	18	-
No. of Values	21	40	6	50	40	72	-

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(2) Data are for October 1978 through September 1979.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANTIC OCEAN
Oil & Grease							
Low	0.1	0.1	0.8	0.1	0.1	0.1	-
High	0.3	0.5	0.9	1.1	0.5	0.6	-
No. of Values	6	8	2	10	8	9	-
Ortho Phosphate Phosphorus							
Low	0.02	<0.01	0.08	0.01	0.01	<0.01	-
High	0.13	0.15	0.14	0.12	0.11	0.12	-
No. of Values	12	24	3	20	13	24	-
Total Phosphate Phosphorus							
Low	0.07	0.07	0.17	0.07	0.05	0.05	0.04
High	0.25	0.45	0.20	0.22	0.15	0.38	0.14
No. of Values	12	24	3	20	13	24	18
Ammonia Nitrogen							
Low	0.06	0.03	0.39	0.17	0.02	0.03	0.02
High	0.65	1.20	0.61	0.99	0.48	0.43	0.12
No. of Values	12	22	3	20	13	24	18
Nitrite + Nitrate Nitrogen							
Low	0.19	0.03	0.24	0.12	0.05	0.01	<0.01
High	0.50	0.48	0.51	0.53	0.43	0.79	0.03
No. of Values	12	21	3	20	13	24	18
Total Kjeldahl Nitrogen							
Low	0.64	0.44	0.71	0.61	0.64	0.35	0.20
High	1.10	3.42	0.71	2.35	0.83	0.35	0.75
No. of Values	3	11	1	10	3	1	17

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANTIC OCEAN
Copper							
Low	0.004	0.004	0.013	0.003	0.004	<0.001	-
High	0.042	0.074	0.075	0.214	0.091	0.027	-
No. of Values	13	18	4	20	16	32	-
Zinc							
Low	<0.001	0.010	0.030	0.024	0.024	0.008	-
High	0.053	0.163	0.063	0.095	0.190	0.097	-
No. of Values	13	17	4	16	15	28	-
Chromium							
Low	<0.0010	<0.0010	0.0040	<0.0010	<0.0010	<0.0010	-
High	0.0090	0.0180	0.0090	0.0080	0.0087	0.0250	-
No. of Values	11	18	4	20	16	32	-
Lead							
Low	<0.005	<0.005	0.010	<0.005	<0.005	<0.005	-
High	0.015	0.020	0.015	0.015	0.040	0.040	-
No. of Values	13	18	4	20	16	32	-
Aluminum							
Low	0.120	0.060	<0.010	0.010	0.010	0.010	-
High	0.300	0.290	0.430	0.360	0.140	0.100	-
No. of Values	8	9	3	9	8	12	-
Iron							
Low	0.160	0.065	0.435	0.140	0.075	0.055	-
High	0.730	0.740	1.075	0.421	0.835	0.130	-
No. of Values	9	12	3	9	8	16	-
Nickel							
Low	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-
High	0.035	0.040	0.020	0.045	0.045	0.040	-
No. of Values	13	18	4	19	16	25	-

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

(3) All values for heavy metals are for "total metals".

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	HUDSON RIVER	EAST RIVER	HARLEM RIVER	UPPER NEW YORK BAY	LOWER NEW YORK BAY	LONG ISLAND SOUND	ATLANT OCEAN
Cadmium							
Low	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-
High	0.0020	0.0025	0.0035	0.0050	0.0112	0.0045	-
No. of Values	13	16	4	20	16	32	-
Mercury							
Low	0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	-
High	0.0003	0.0004	0.0003	0.0003	0.0004	0.0014	-
No. of Values	4	6	1	7	6	15	-
Silver							
Low	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	-
High	0.001	0.001	0.001	0.001	0.006	0.015	-
No. of Values	9	12	3	10	8	16	-
Cobalt							
Low	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
High	0.010	0.005	<0.001	0.005	0.007	0.005	-
No. of Values	9	11	3	9	8	16	-
Tin							
Low	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
High	0.050	0.100	0.100	0.050	0.100	0.300	-
No. of Values	9	12	3	10	8	16	-
Arsenic							
Low	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-
High	0.003	0.004	0.002	0.011	0.000	0.002	-
No. of Values	9	11	3	8	6	9	-
Phenols							
Low	0.003	0.004	-	<0.001	0.001	<0.001	-
High	0.003	0.004	-	0.013	0.007	0.009	-
No. of Values	1	1	-	5	4	8	-

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

(3) All values for heavy metals are for "total metals".

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Temperature (C) (Summer)						
Low	19.5	18.5	20.0	19.0	18.0	19.5
High	31.5	27.0	27.0	26.0	25.0	26.0
No. of Values	20	5	15	15	10	20
Temperature (C) (Winter)						
Low	1.8	1.5	1.5	1.0	1.5	1.0
High	1.8	1.5	1.8	1.8	1.5	2.0
No. of Values	2	1	3	3	2	5
Dissolved Oxygen (Summer)						
Low	3.0	2.6	4.2	3.2	5.4	4.8
High	9.6	6.0	6.4	10.4	11.2	8.0
No. of Values	16	4	12	12	8	20
Dissolved Oxygen (Winter)						
Low	7.8	8.4	8.6	9.2	9.6	11.2
High	8.4	8.4	8.8	9.6	10.0	12.0
No. of Values	4	1	3	3	2	5
BOD (5 day) (Summer)						
Low	1.0	1.6	2.0	0.4	0.2	1.7
High	5.4	2.4	>4.8	4.4	4.4	4.4
No. of Values	11	3	9	9	6	8
BOD (5 day) (Winter)						
Low	4.7	-	5.5	4.0	2.7	4.0
High	5.3	-	6.5	4.0	2.7	4.2
No. of Values	2	-	2	1	1	3

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INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Fecal Coli (/100 ml) (Summer)						
Low	270	2200	390	10	<10	10
High	41000	4100	700	400	20	550
No. of Values	10	2	3	4	3	7
Fecal Coli (/100 ml) (Winter)						
Low	3600	-	-	500	390	-
High	4600	-	-	1900	390	-
No. of Values	2	-	-	3	1	-
Total Coli (/100 ml) (Summer)						
Low	810	6100	1200	<100	<100	<100
High	>100000	6100	1700	5700	270	>100000
No. of Values	8	1	3	6	3	5
Total Coli (/100 ml) (Winter)						
Low	32000	-	-	20000	37000	-
High	62000	-	-	59000	37000	-
No. of Values	2	-	-	3	1	-
pH (Standard Units)						
Low	6.7	6.9	6.9	6.7	7.0	7.3
High	7.6	7.6	7.4	7.6	8.1	8.4
No. of Values	46	12	36	36	24	50
Conductivity (umhos/cm)						
Low	18000	18000	11000	23000	23000	35000
High	41000	43500	39500	42000	42500	49000
No. of Values	43	11	33	33	22	45

NOTES: (1) Units are as shown.

(2) Data are for October 1978 through September 1979. Summer data are for July, August and September; winter data are for December, January and February.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Turbidity (NTU)						
Low	3	2	2	2	2	2
High	27	11	12	15	11	5
No. of Values	47	12	36	36	24	49
Chlorophyll a						
Low	0.000	0.000	0.000	0.000	0.000	0.000
High	0.040	0.005	0.030	0.112	0.033	0.083
No. of Values	22	6	16	17	11	29
Chlorophyll b						
Low	0.000	0.000	0.000	0.000	0.000	0.000
High	0.004	0.003	0.006	0.003	0.001	0.002
No. of Values	22	6	16	17	11	29
Chlorophyll c						
Low	0.000	0.000	0.000	0.000	0.000	0.000
High	0.015	0.006	0.020	0.046	0.024	0.040
No. of Values	22	6	16	17	11	29
Total Carbon						
Low	25	27	27	23	24	27
High	45	37	40	37	35	40
No. of Values	39	10	30	30	20	44
Total Org. Carbon						
Low	3	1	7	2	2	4
High	20	13	17	15	14	16
No. of Values	39	10	30	30	20	44

NOTES: (1) All units are milligrams per liter unless otherwise shown.

(2) Data are for October 1978 through September 1979.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Oil & Grease						
Low	0.2	0.1	0.1	0.1	0.1	0.1
High	1.0	0.4	1.2	0.4	0.3	0.2
No. of Values	8	2	6	6	4	7
Ortho Phosphate Phosphorus						
Low	0.05	0.05	0.08	0.01	0.01	<0.01
High	0.26	0.12	0.33	0.10	0.11	0.22
No. of Values	20	4	10	11	7	15
Total Phosphate Phosphorus						
Low	0.08	0.12	0.20	0.07	0.05	0.07
High	0.44	0.20	0.43	0.17	0.16	0.38
No. of Values	20	4	10	11	7	16
Ammonia Nitrogen						
Low	0.31	0.39	0.65	0.16	0.05	0.02
High	2.15	0.64	1.55	1.35	1.27	1.59
No. of Values	20	4	10	11	7	16
Nitrite + Nitrate Nitrogen						
Low	0.20	0.25	0.24	0.18	0.15	0.06
High	1.04	0.54	0.57	0.55	0.80	0.38
No. of Values	20	4	10	11	7	16
Total Kjeldahl Nitrogen						
Low	0.90	1.94	1.33	0.68	0.28	0.35
High	3.60	1.94	2.03	2.00	0.88	1.64
No. of Values	13	1	3	3	2	9

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Copper						
Low	0.012	0.011	0.005	0.006	0.003	0.001
High	0.155	0.100	0.060	0.082	0.072	0.222
No. of Values	17	4	12	11	8	16
Zinc						
Low	0.063	0.036	0.032	0.032	0.033	0.017
High	0.173	0.096	0.095	0.186	0.107	0.069
No. of Values	17	4	10	9	6	15
Chromium						
Low	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
High	0.0080	0.0058	0.0150	0.0050	0.0051	0.0070
No. of Values	17	4	12	12	8	16
Lead						
Low	<0.005	0.010	<0.005	<0.005	<0.0050	<0.005
High	0.030	0.010	0.075	0.035	0.0150	0.020
No. of Values	17	4	12	11	8	16
Aluminum						
Low	0.050	0.200	0.060	0.020	0.030	0.020
High	0.250	0.200	0.160	0.290	0.150	0.200
No. of Values	7	1	5	5	4	10
Iron						
Low	0.290	0.450	0.295	0.230	0.130	0.120
High	0.665	0.530	0.485	1.630	0.467	0.660
No. of Values	8	2	6	5	4	10
Nickel						
Low	<0.005	<0.005	0.010	<0.005	<0.005	<0.005
High	0.055	0.015	0.045	0.040	0.040	0.030
No. of Values	17	4	12	11	8	16

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

(3) All values for heavy metals are for "total metals".

INTERSTATE SANITATION COMMISSION

1978 - 1979 BOAT SURVEY DATA

PARAMETER	ARTHUR KILL	KILL VAN KULL	NEWARK BAY	RARITAN BAY	SANDY HOOK BAY	JAMAICA BAY
Cadmium						
Low	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
High	0.0050	0.0010	0.0055	0.0030	0.0010	0.0060
No. of Values	17	4	12	10	7	16
Mercury						
Low	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001
High	0.0005	0.0003	0.0005	0.0003	0.0003	0.0004
No. of Values	6	2	4	5	3	7
Silver						
Low	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
High	0.002	0.001	0.001	0.004	0.001	0.001
No. of Values	8	2	6	5	4	10
Cobalt						
Low	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
High	0.005	<0.001	0.006	0.008	0.004	0.002
No. of Values	7	1	6	5	4	9
Tin						
Low	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
High	0.100	<0.050	0.100	0.400	0.100	<0.050
No. of Values	8	2	5	6	4	10
Arsenic						
Low	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
High	0.004	<0.002	0.003	0.001	0.002	0.004
No. of Values	6	1	5	4	3	8
Phenols						
Low	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
High	0.005	0.001	0.005	0.004	0.008	0.006
No. of Values	4	1	3	3	2	5

NOTES: (1) All units are milligrams per liter.

(2) Data are for October 1978 through September 1979.

(3) All values for heavy metals are for "total metals".

INTERSTATE SANITATION COMMISSION
1978 - 1979 PESTICIDES AND PCBs DATA
FROM
ISC BOAT RUNS A, B, C & E (1) (2)

WATERWAY	STATION	LATITUDE NORTH D M S	LONGITUDE WEST D M S	PESTICIDES OR PCBs FOUND NAME	VALUE (ppb)
ARTHUR KILL	AK-13	40-33-02	74-15-00	2-BHC	0.005
ARTHUR KILL	AK-18	40-30-24	74-15-34	2-BHC	0.004
EAST RIVER	ER-03	40-44-05	73-58-05	AROCLOR 1242	0.63
EAST RIVER	LI-15	40-47-58	73-47-38	2-BHC	0.002
HUDSON RIVER	HR-01	40-42-20	74-01-36	AROCLOR 1016	0.15
HUDSON RIVER (3)	HR-01	40-42-20	74-01-36	AROCLOR 1260 DIELDRIN	0.250 0.0013
HUDSON RIVER (3)	HR-20	41-19-13	73-59-01	AROCLOR 1260	0.420
JAMAICA BAY	JB-05	40-35-45	73-48-40	2-BHC	0.003
JAMAICA BAY	JB-08	40-36-20	73-48-56	2-BHC	0.002
LONG ISLAND SOUND	LI-24	40-53-57	73-44-27	2-BHC LINDANE	0.006 0.001
LONG ISLAND SOUND (4)	LI-25	40-55-25	73-42-01	2-BHC 2-BHC ALPHA-BHC	0.003 0.004 0.003
LOWER N.Y. BAY	LB-02	40-33-45	74-04-20	2-BHC	0.004
ROCKAWAY INLET	RI-01	40-34-00	73-55-51	2-BHC	0.004
ROCKAWAY INLET	RI-02	40-34-24	73-53-08	2-BHC	0.003

NOTES: (1) Samples were analyzed for pesticides and PCB's at all stations on Boat Runs A, B, C and E. Pesticides or PCB's were found only at the stations included in this table.

(2) Unless otherwise noted, all samples were taken 5 feet below the surface.

(3) Sediment sample taken on special Hudson River Survey. Units are milligrams per kilogram on a dry weight basis.

(4) Samples were taken on different dates.

LABORATORY

As in the past few years, the Commission's laboratory conducted analyses on samples collected throughout the Interstate Sanitation District during 1979. Samples were obtained from municipal sewage treatment plants, industrial facilities, Interstate Sanitation District water surveys and New York State Department of Environmental Conservation Region I and II water surveys. Compliance sampling and analyses for N/SPDES permit requirements at the request of the states and of the U.S. Environmental Protection Agency were also conducted. In addition, samples collected by the states and the U.S. Coast Guard were analyzed by the laboratory.

The purchase of an additional gas chromatograph with electron capture detection and a Tekmar Concentrator (for enhanced sensitivity) enabled the Commission to continue analyses for volatile organics, pesticides and PCB's without interruption. The laboratory is also participating in the ambient air benzene study.

The laboratory continued to participate in the U.S. Environmental Protection Agency's Water Pollution Study 005 Performance Evaluation testing. The laboratory was, as in the past, rated as "excellent".

SLUDGE PYROLYSIS PROJECT

The U.S. EPA funded an extension of the work previously reported on (See 1977 Annual Report). The object of this study was to compare and analyze the heavy metals emissions in the respirable range associated with thermal destruction of sewage sludge. Respirable range is defined as particulates smaller than 10 um. Nichols Engineering and Research Corporation of Belle Mead, New Jersey, performed the thermal decompositions in their pilot scale multiple hearth furnace. A U.S. EPA recommended laboratory collected the particulate samples, analyzed particulate fractions for heavy metals, and also determined particle size distributions and metals concentrations within each particle size. The Commission laboratory provided backup analytical services and quality control. Three modes of furnace operation were examined: incineration, and high and low temperature char.

The following text is an excerpt from Nichols' report which is entitled "Thermal Conversion of Municipal Wastewater Sludge Phase II: Study of Heavy Metals Emissions". The following conclusions appear in the report.

Characteristics of Furnace Residue

1. The residue retains 100 ± 30% of feed chromium, copper, iron, manganese, nickel, and zinc irrespective of mode of operation or operating temperature in the range studied (up to 900 degrees C).

2. Lowering the multiple hearth furnace operating temperature from 900 degrees C to 700 degrees C improves retention in the furnace residue by a factor of 2 for beryllium, 2 to 4 for cadmium, and 1.2 to 2 for lead.

3. Incoming mercury is almost entirely unaccounted for (<1%) by that in the furnace residue.

4. The furnace residue retains 20 to 30% of the feed silver in reducing furnace conditions and 50 to 65% of the feed silver in oxidizing furnace conditions.

5. Amounts of arsenic, selenium, and vanadium were present in the furnace residue, but no quantitative conclusions can be drawn from this study.

Characteristics of Unabated Particulates

6. The kg/hr of zinc, cadmium, and lead during the LTC mode of operation were half that of the HTC and INC

modes, as a result of lower furnace operating temperatures.

7. Between 2 and 11% of feed silver, chromium, copper, iron, manganese, and nickel were confirmed in the particulates; these metals showed no trend with respect to mode of operation.

8. The distribution of metals among particulate size catches is complex; but by and large metals are much less prominent in the 0.1 to 1.0 μm size fraction.

Other Pollutants Exiting the Afterburner

9. Unabated sulfur dioxide emissions were 1.3 kg/hr during the INC mode, 0.6 kg/hr during the LTC mode, and 0.9 kg/hr during the HTC mode.

10. The limited feed and produce chloride analyses indicate that 0.14 kg/hr Cl^- evolved during the INC mode and 0.1 kg/hr Cl^- evolved during the LTC mode.

11. The large unaccounted fraction of several metals in this study could mean that they are formed and not collected as particulates; further study is recommended to address this question.

In reviewing the data obtained, the Commission in a paper presented at the 27th Meeting of the Mid-Atlantic States Section of the Air Pollution Control Association also concluded that scrubbers would be necessary to meet stack particulate requirements for both incineration and pyrolysis. Therefore, any preference for pyrolysis most likely would have to be made on the basis of fuel savings from operation of the afterburner.

III. AIR POLLUTION

General

During 1979, the Interstate Sanitation Commission continued to assist the States of New York, New Jersey, and Connecticut with various projects related to understanding and controlling air pollution. These activities focused primarily on air pollution problems common to all three states, particularly those having interstate effects.

The air pollution division began working with the Commission's legal counsel in March 1979 to develop a pollution response program for incidents of spills of hazardous substances occurring in the Greater New York Metropolitan Area. This program will consist essentially of two parts: (1) an administrative, legal, and physical invention of available resources for handling hazardous substances in the Region, and; (2) recommendations of actions that may be regionally implemented to minimize the risks of storing, handling, and transporting hazardous substances.

A separate but related project commenced in October 1979, to develop a manifest for transportation of hazardous wastes. The following States have agreed to review such drafts in the context of eventual adoption: Maine, Vermont, New Hampshire, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Ohio, Maryland, Delaware, Virginia, and West Virginia.

The Commission began monitoring ambient benzene over Staten Island and surrounding areas in October 1979, as part of a study expected to last for at least one year. While data are being gathered to determine the benzene exposure to the Staten Island population, the Health Departments of the States of New York and New Jersey will be working so as to be able to advise the Commission on acceptable limits of ambient benzene.

Ozone data from the seventeen participating states in the ongoing Moodus Study were again received, tabulated, and mapped, and a paper was submitted to the Journal of the Air Pollution Control Association on the likely effects of the recently adopted new federal standard for photochemical oxidants (ozone).

In 1979, the Commission worked with the States of New Jersey and New York's air pollution enforcement personnel concerning the large number of odor complaints received by the Commission. The Commission has maintained its 24 hour-a-day answering service to facilitate investigation of air pollution complaints which may be interstate in nature.

REGIONAL AIR POLLUTION WARNING SYSTEM

The Interstate Sanitation Commission coordinates the New Jersey-New York-Connecticut Air Quality Control Regional Air Pollution Warning System. Based upon the National Weather Service's forecasted wind speed and dispersion conditions thrugh the following day, the Commission may activate this system. The existing pollutant levels also provide input to this decision. The general effect of activating the Air Pollution Warning System is notification of the participating agencies of the federal government, the states, and New York City of the start of a watch and requesting hourly air quality data in a prescribed format from each state in the Region. These data are then transmitted via teletype to the agencies notified. Also, moving 4, 6, or 24 hour averages of all pollutants are computed hourly. However, conditions through October 1979 were such that it was unnecessary to activate the system.

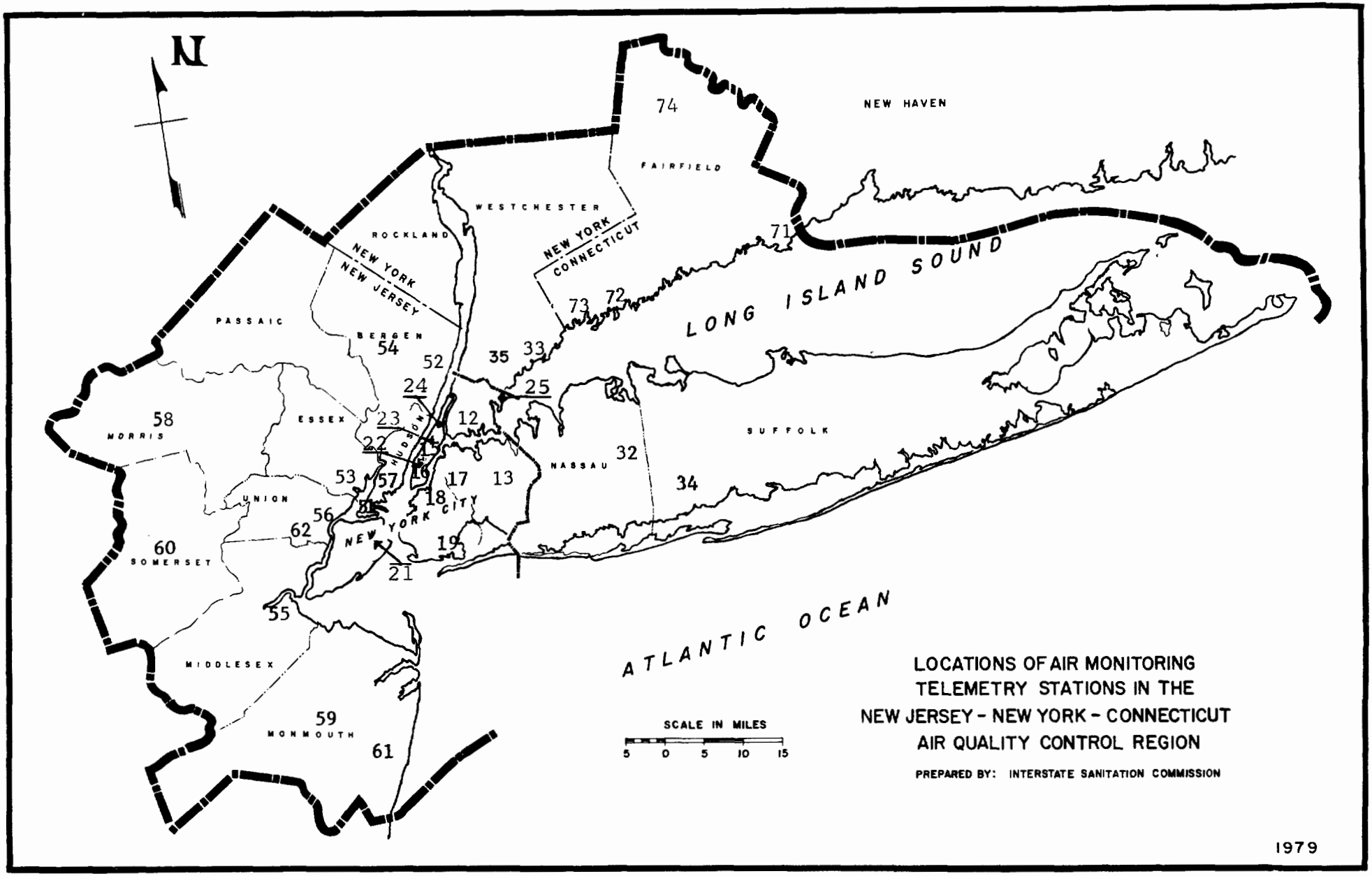
After meeting with the New Jersey Department of Environmental Protection, the Commission is able to directly access the New Jersey air quality data base. The Commission can also execute several statistical programs to provide different report formats.

There are telemetry stations operated by various state and local agencies in the New York-New Jersey-Connecticut Air Quality Control Region. A map of the station locations and an updated list of the stations are shown on the following pages.

AIR POLLUTION COMPLAINTS

The Commission receives and responds to air pollution complaints 24 hours-a-day, seven days a week throughout the District. Most of the complaints are of obnoxious odors on Staten Island during the night. When several similar complaints are received within a short period of time, a Sanitarian is dispatched to investigate the problem. A report of the investigation is then given to the appropriate state or local enforcement officials.

Through May 1979, the Commission received 22 complaints. However, during June through October of 1979 there was an average of 50 complaints a month. Based on this increased number of complaints meetings were held with representatives from New York and New Jersey to increase the effort to alleviate the situation.



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

PREPARED BY: INTERSTATE SANITATION COMMISSION

1979

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

ISC NO.	CITY	COUNTY	STATE
12	New York	Bronx	New York
13	New York	Queens	New York
15	New York	New York	New York
16	New York	New York	New York
17	New York	Kings	New York
18	New York	Kings	New York
19	New York	Kings	New York
21	New York	Richmond	New York
22	New York	New York	New York
23	New York	New York	New York
24	New York	New York	New York
25	New York	Bronx	New York
32	Hempstead	Nassau	New York
33	Mamaroneck	Westchester	New York
34	Bablyon	Suffolk	New York
35	White Plains	Westchester	New York
51	Bayonne T *	Hudson	New Jersey
52	Hackensack	Bergen	New Jersey
53	Newark T *	Essex	New Jersey
54	Paterson	Passaic	New Jersey
55	Perth Amboy	Middlesex	New Jersey
56	Elizabeth	Union	New Jersey
57	Jersey City	Hudson	New Jersey
58	Morristown	Morris	New Jersey
59	Freehold	Monmouth	New Jersey
60	Somerville	Somerset	New Jersey
61	Asbury Park	Monmouth	New Jersey
62	Elizabeth T *	Union	
71	Bridgeport	Fairfield	Connecticut
72	Stamford	Fairfield	Connecticut
73	Greenwich	Fairfield	Connecticut
74	Danbury	Fairfield	Connecticut

* T represents comprehensive laboratory trailers.
Other stations are fixed in buildings.

PHOTOCHEMICAL OXIDANT STUDIES

New Jersey Department of Environmental Protection New Orleans Ozone Flight - 1979

The Commission assisted the New Jersey Department of Environmental Protection in a study to measure ozone concentrations between New Jersey and New Orleans, Louisiana. The data are expected to add evidence to the theory of long-range transport of this pollutant. Weather conditions were favorable and the flight occurred on September 10-11. The data have not yet been analyzed.

1978 Moodus Ozone Data Study and Analysis

The 17 participating states from U.S. Environmental Protection Agency Regions I, II, III, and V in the Moodus Network, continued to supply ozone data which was reduced and analyzed by the Commission. Based on the data, an analysis of the potential effects on violations statistics of the National Ambient Air Quality standard revisions was done and this has been submitted for publication.

Using April-September 1978 data, it appears that violations of the standard (concentrations higher than 0.12 ppm) outside of major urban areas will be relatively infrequent, and that days having maximum hourly values in violation will be less than 5%. The figures on the following pages show the percentage of days that maximum hourly ozone concentrations exceeded 0.080 ppm (the old standard) and also 0.120 ppm (the new standard). The analysis shows that areas with frequent violations will be confined predominantly to urban areas and areas immediately downwind. It should be noted that the lack of frequent rural violations does not imply a decreased need for regional precursor control. The net ozone concentration over urban areas in violation remains the sum of the transported and locally generated fractions.

Isopleths of ozone concentration during this period were constructed and daily maps are available upon request.

HAZARDOUS INCIDENT AND MATERIALS PROJECTS

Hazardous Incident Response Plan

During the latter part of 1978 the Commission was requested by the New York State Department of Environmental Conservation to provide assistance in developing an air pollution response program for incidents involving spills of hazardous substances. Several meetings were held to determine the dimensions of the problem and how the Commission could be most productive. Since

the Commission has interstate responsiblities, the meetings were attended by representatives of New Jersey, Connecticut and federal agencies as well as by staff from the New York State Department of Environmental Conservation.

As a result of the meetings and other preliminary investigations of the problem the Commission defined a Regional Hazardous Incident Project, and work began in March 1979. It has become apparent that hazardous incidents extend to more than air contamination, although air quality is an important concern.

Each of the Commission's member states and most of their local subdivisions have planned for some hazardous incident response preparedness, prevention or recovery. Many administrative activities must be primarily local because of the need for emergency forces to appear upon the scene of an oil or chemical discharge immediately after its occurrence. Individual state and/or federal agencies provide or should provide technical assistance and a variety of resources which are beyond the reasonable capabilities of local governments.

It has been determined that the contributions of the Commission can be twofold:

1. Preparation of a report describing the administrative, legal, and physical resources for handling hazardous substances in the New York-New Jersey-Connecticut Region. This will involve gathering factual information on the physical conditions in the Region, the present organizational responsibilites and performance, and the plans and activities of federal, state, and local governments in progress.

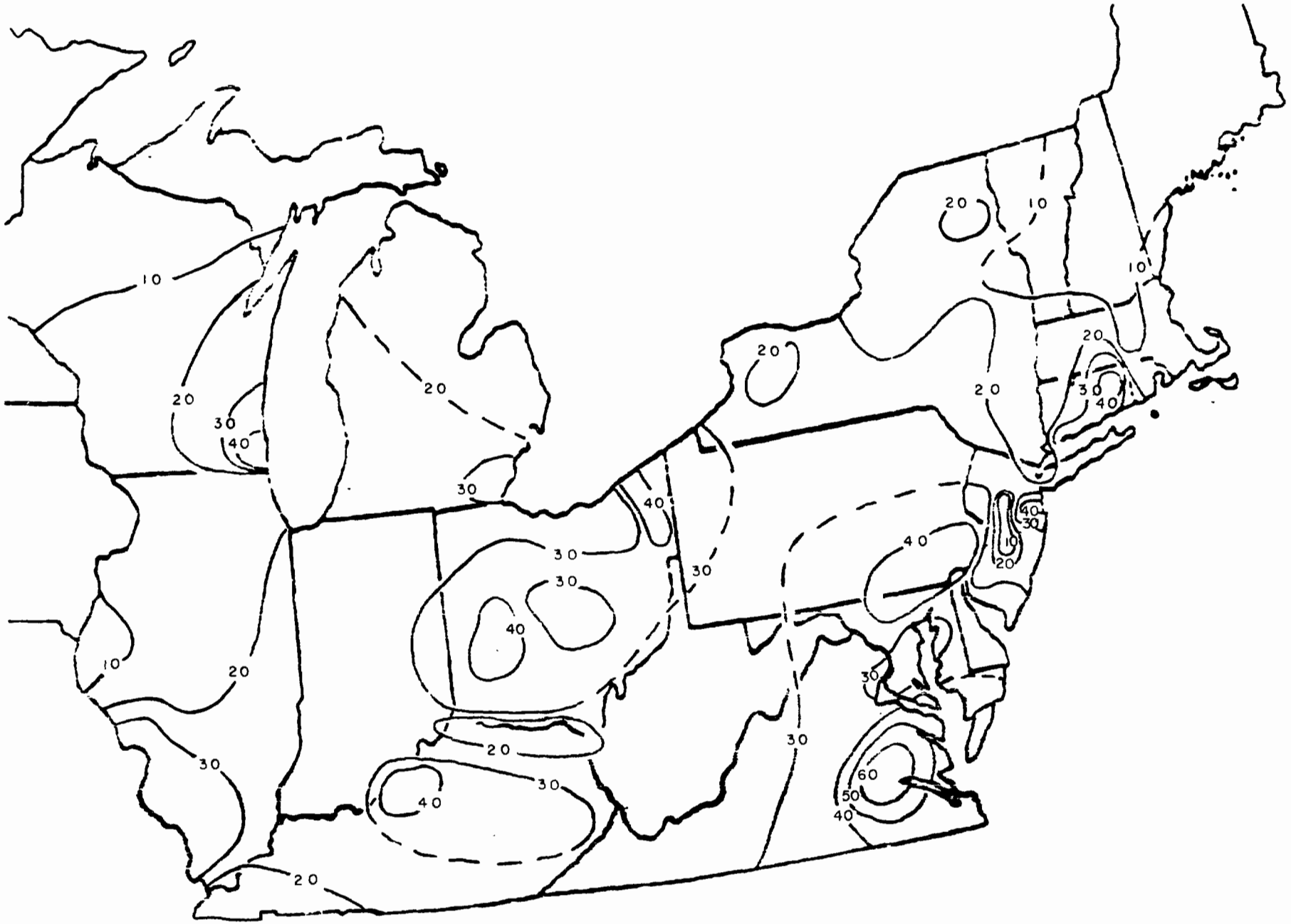
2. Recommendations of actions which could be undertaken in the Region to minimize the risks of storage, handling, and transporting substances.

In 1979 work proceeded on both facets of the Project. State, local and federal agencies have and will be consulted for information, exchange of views and for assistance in evaluating prospective recommendations.

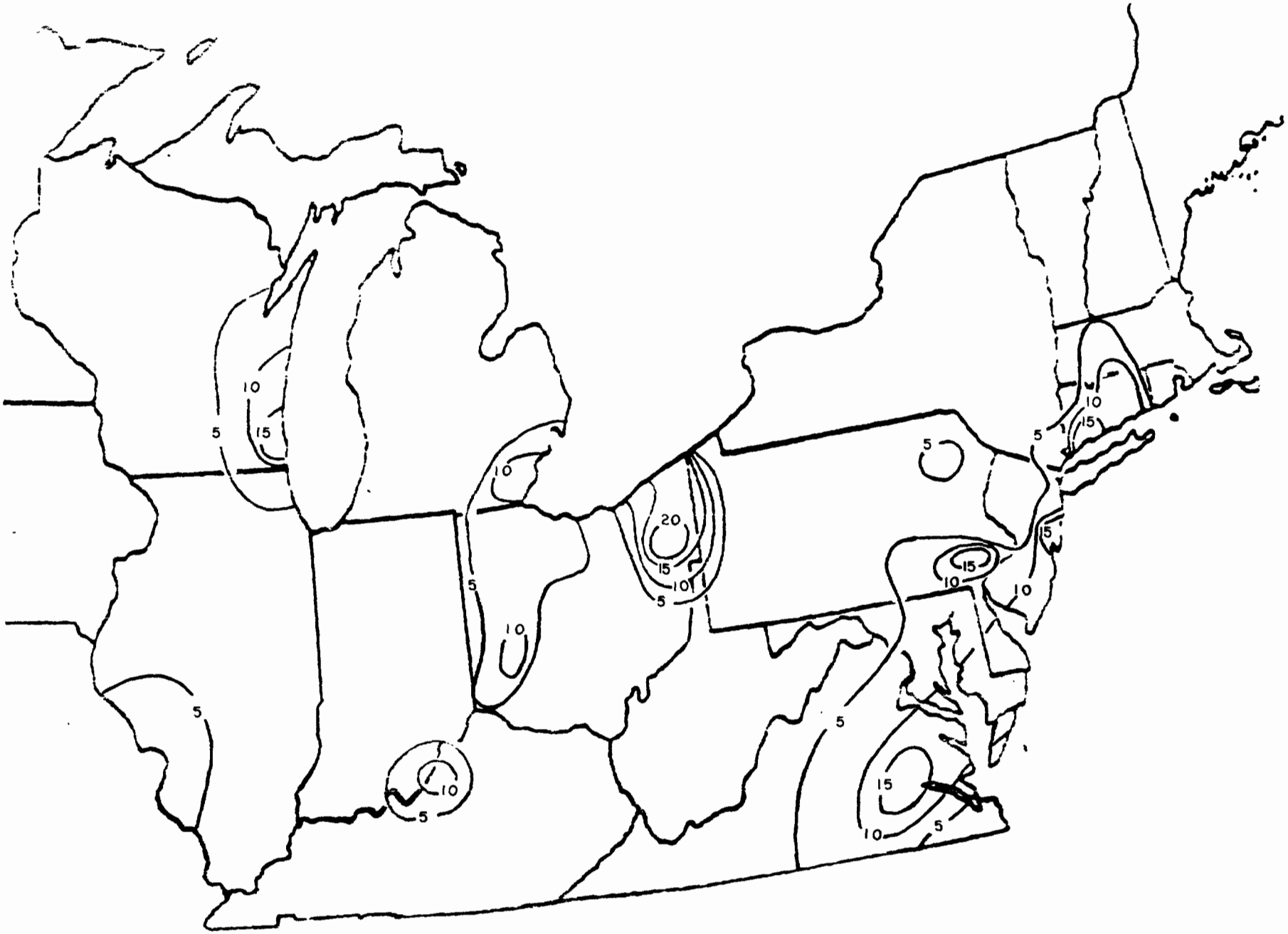
On December 3-5, 1979, the Commission participated in a Northeastern Exhibition and Seminar on hazardous incidents and materials and presented a paper on regional hazardous incident problems.

Uniform Manifest Development

One of the opportunities for regional cooperation which has become apparent is the institution of a Uniform Manifest System for use in connection with the transportation of hazardous sub-



Percentage of days that maximum hourly ozone concentrations exceeded 0.080 ppm for April - September, 1978.



Percentage of days that maximum hourly ozone concentrations exceeded 0.120 ppm for April - September, 1978.

stances. Manifests for wastes were already receiving attention, but a mechanism for bringing the states together to develop a uniform system seemed to be lacking. An inquiry from the Connecticut Department of Environmental Protection suggested that the Commission could perform a service if it would facilitate cooperation in this area.

Accordingly, the Commission invited all of the states of the Northeast and representatives from U.S. EPA Regions I, II, III to a meeting on October 4, 1979, to consider the problem. Since the meeting, the Commission has been providing the technical and legal services needed to develop a Uniform Manifest to be considered by the States from Maine to Virginia and West Virginia. While the Commission's primary interest is the facilitation of cooperation among its three member states, in this instance, the effectiveness of such actions as may ensue will be significantly influenced by cooperation among a larger group of jurisdictions. Hazardous materials (including wastes) are transported throughout the Northeastern United States and, in some instances, for even greater distances. This is why the Commission has undertaken to work with more than its member states in developing and seeking implementation of a Uniform Manifest System.

AMBIENT BENZENE STUDY

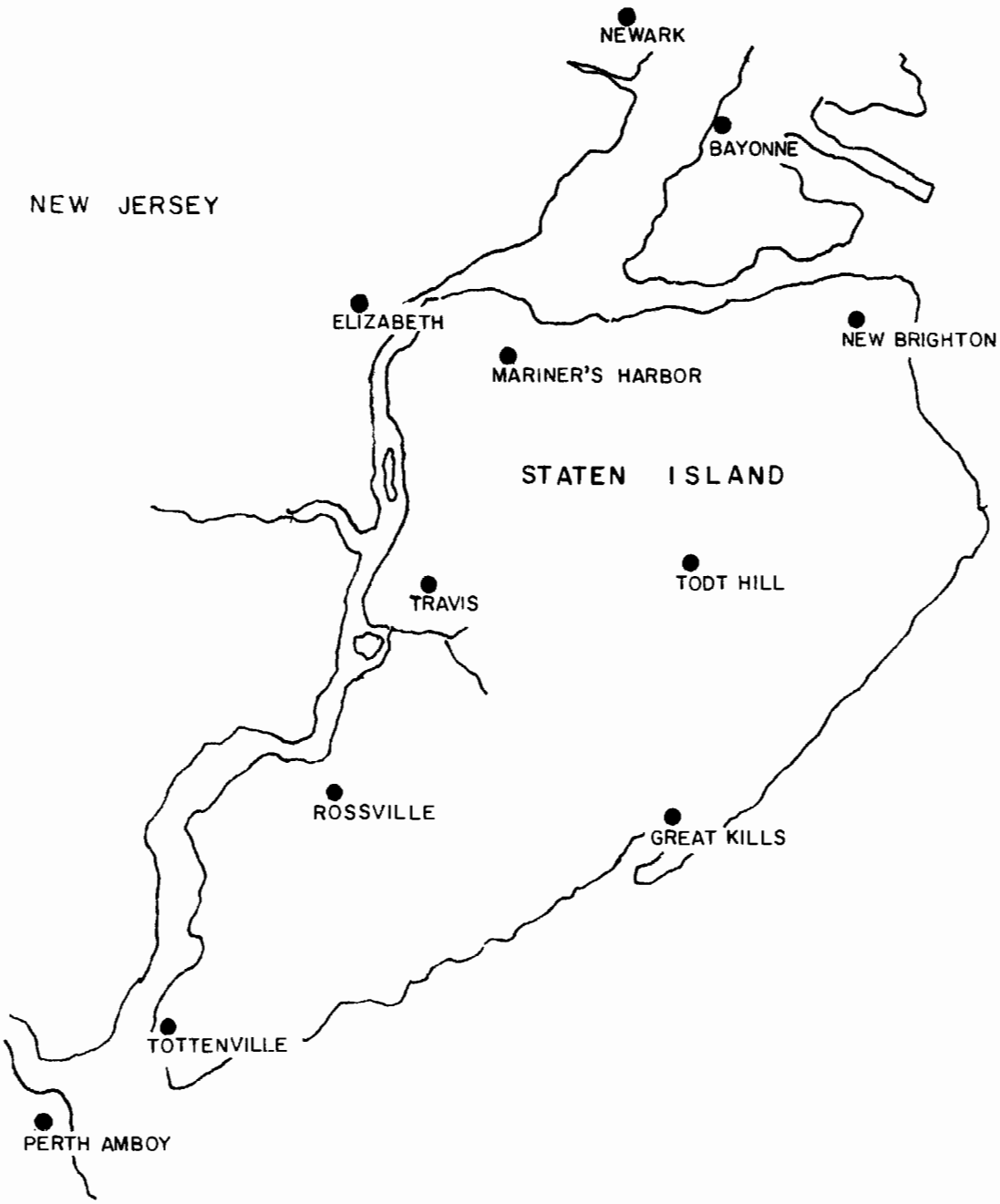
At the request of the New York State Department of Environmental Conservation, the Commission initiated a sampling program to determine ambient benzene concentrations. Concern has developed over exposure to benzene in the Region and particularly in Staten Island.

The Commission held an organizational meeting in early August with representatives from the State of New Jersey, Department of Environmental Protection; the State of New York, Department of Environmental Conservation; and the New York and New Jersey Health Departments. It was agreed that procuring ambient benzene data for Staten Island and the surrounding areas and determining an acceptable limit for ambient benzene were the first considerations of the study.

Sampling commenced in late October 1979. The sampling method employed passes the air through a benzene-adsorbing tenex-filled column and is subsequently analyzed by gas chromatography. Samples will be taken at seven sites on Staten Island and three in New Jersey on a regular basis (see the figure on the following page). The sampling time is about one hour for each sample. The study is expected to take at least one year.

SITES FOR INTERSTATE SANITATION COMMISSION

BENZENE SAMPLING STUDY



IV. LEGAL ACTIVITIES

The provision of legal advice concerning the management of the Commission and the conduct of its programs is usually the largest item in the work of Counsel. This has been the case in 1979. However, three elements of this activity have been large enough to merit special mention.

U.S. ENVIRONMENTAL PROTECTION AGENCY REGULATIONS

Pursuant to a policy objective of the President with respect to administrative regulations made by all federal agencies, the U.S. EPA has undertaken to rewrite the provisions of the Code of Federal Regulations which contain its own regulations. These are applicable to private entities affected by the environmental laws administered by the U.S. EPA, and they also concern state and interstate agencies receiving grants from the U.S. EPA and administering environmental programs. A major emphasis in these revisions has been an effort to consolidate regulations for water, air, and solid waste programs. Counsel has analyzed many of the proposed revisions as they have appeared in the Federal Register and has prepared draft comments in those instances where the interests and responsiblities of the Commission appear to be involved. Analyses and advice have also been provided as new regulations have been issued.

A potentially relevant activity of the U.S. EPA is the effort to institute "EPA-State Agreements" with all states to cover plans and work programs for water quality management and other activities in which there are cooperative federal-state relationships. In the field of water quality management, a principal interest of the U.S. EPA has been to make the prosecution of activities in which states assist with the administration of the Clean Water Act the subject of a specific written document prepared or revised on an annual basis. While interstate agencies continue to be concerned with their own grant negotiations and work agreements with the U.S. EPA, it is also intended that some individual parts of an interstate agency's activities be mentioned in the EPA-State Agreements of individual states. Counsel has participated in the preparation of materials for consideration by formulators of EPA-State Agreements.

POWER PLANT SITING

The efforts of the Power Authority of the State of New York to obtain required licenses and permits for a fossil fueled power plant in the New York Metropolitan Area have created controversy. The site apparently preferred by the Power Authority is on the Arthur Kill in Staten Island.

The Commission has participated in the siting proceedings in order to keep the water quality requirements of the Interstate Sanitation Commission before the siting authorities. The Commission does not have siting or permit issuing responsibilites in these proceedings and so has not advocated any one site in preference to others. Its position has been that wherever such a plant is situated, the permits issued for it must meet the requirements of the Commission.

OTHER ACTIVITIES

As in past years, Counsel has continued to provide legal assistance to the Commission on a day-by-day basis. Matters relating to NPDES and SPDES permits, budgetary affairs, relations with federal and state agencies, and internal administration have all been important.

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

Plant	ISC Receiving Water Classification	Date of Const.	Flow MGD Average	Flow MGD Design	Type of Treatment	Estimated Population Served (1970-79)
CONNECTICUT						
Fairfield County						
Bridgeport - East Side	B-1	1973+	-	24.0	Secondary (AS)	100,000
- West Side	B-1	1973+	22.7	60.0	Secondary (AS)	175,000
Fairfield	A	1973+	7.8	9.0	Secondary (AS)	46,000
Greenwich - Central	A	1964+	9.3	8.5	Secondary (AS)	45,000
*Handy & Harmon	A	1973	-	0.25	Physical/Chemical	Industrial
Norwalk	B-1	1975+	8.9	15.0	Secondary (AS)	80,000
Stamford	B-1	1976+	18.1	20.0	Secondary (AS)	80,000
Stratford	A	1974+	8.2	11.5	Secondary (AS)	51,000
Westport	A	1974+	1.7	2.9	Secondary (AS)	10,000
New Haven County						
Milford - Beaver Brook	A	1969	1.6	3.1	Secondary (AS)	10,000
- Gulf Pond	A	1976+	3.3	2.9	Secondary (AS)	15,000
- Harborside	A	1955+	0.7	0.5	Secondary (AS)	4,000
- Town Meadows	A	1953	1.8	1.2	Secondary (AS)	6,000
New Haven - Boulevard	B-1	1969+	12.3	13.5	Primary	81,000
- East Shore	B-1	1969+	10.0**	12.5	Primary	67,000
- East Street	B-1	1968+	13.9	22.5	Primary	61,000
West Haven	B-1	1974+	10.2	23.5	Secondary (AS)	57,000
NEW JERSEY						
Bergen County						
Edgewater	B-1	1958+	2.8	2.6	Primary	25,000
Hudson County						
Bayonne	B-2	1954	13.2	21.0	Primary	73,000
Hoboken	B-1	1958+	15.5	20.0	Primary	50,000
Jersey City - East Side	B-1	1967+	34.7	46.6	Primary	166,000
- West Side	B-2	1967+	21.2	36.0	Primary	66,000
Kearny	B-2	1955	3.1	4.0	Primary	30,000
West New York	B-1	1954	9.0	10.0	Primary	60,000
Woodcliff - North Bergen	B-1	1962	2.6	4.4	Primary	17,000
Middlesex County						
Carteret	B-2	1952	3.2	3.0	Primary	24,000
Middlesex County Sewerage Authority	A	1978+	91.9	120.0	Secondary (AS)	525,000
Old Bridge Township Sewerage Authority (Laurence Harbor)	A	1962	0.8	1.0	Primary	13,000
Perth Amboy	A	1978+	4.7	10.0	Primary	39,000
Rahway Valley Sewerage Authority	B-2	1973+	32.8	35.0	Secondary (AS)	215,000
Sayreville - Melrose	A	1949	0.06	0.5	Primary	3,000
- Morgan	A	1952	0.3	0.3	Primary	8,000
South Amboy	A	1939	0.6	1.0	Primary	11,000
Woodbridge	B-2	1954	3.4	10.0	Primary	50,000
Monmouth County						
Atlantic Highlands	A	1927	0.5	0.6	Primary	5,000
Highlands	A	1928	0.4	1.2	Primary	5,000
Union County						
*Exxon Company (Bayway Refinery)	B-2	1970	13.0	15.0	Intermediate (AS)	Industrial
Joint Meeting of Essex & Union County	B-2	1978+	64.8	70.0	Secondary (AS)	500,000
Linden-Roselle Sewerage Authority	B-2	1979+	11.9	17.0	Primary	109,000
Essex County						
Passaic Valley	B-1	1937+	250.0**	-	Primary	2,899,000

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NEW YORK						
Nassau County						
Bay Park	A	1960+	60.2	60.0	Secondary (AS)	558,000
Belgrave Sewer District	A	1973+	1.6	1.5	Secondary (TF)	13,000
Cedar Creek	A	1977+	19.4	45.0	Secondary (AS)	580,000
Cedarhurst	A	1968+	1.0	1.0	Secondary (TF)	7,000
*Cold Spring Harbor Laboratory	A	1975	0.03	0.075	Physical/Chemical	100 - 400
Freeport	A	1960+	5.4	4.0	Secondary (TF)	40,000
Glen-Cove - Morris Avenue	A	1964+	5.7	4.0	Secondary (TF)	26,000
Great Neck Sewer District	A	1976+	2.8	2.7	Secondary (TF)	18,000
Great Neck Village	A	1967+	1.0	1.5	Secondary (TF)	11,000
Inwood	A	1961+	1.8	2.5	Secondary (TF)	8,000
Jones Beach	A	1952	0.1	2.5	Secondary (TF)	Seasonal
Lawrence	A	1966+	1.2	1.5	Secondary (TF)	7,000
Long Beach	A	1976+	7.1	7.0	Secondary (TF)	36,000
*Long Island Lighting Company (Glenwood Landing)	A	1929	-	-	3-Septic Tanks	Industrial
Oyster Bay Sewer District	A	1965+	1.6	1.2	Secondary (TF)	7,500
Port Washington Sewer District	A	1969+	3.2	3.0	Secondary (TF)	30,000
Roslyn	A	1965+	0.4	0.5	Secondary (TF)	4,500
West Long Beach Sewer District	A	1950+	0.7	0.67	Secondary (TF)	3,700
NEW YORK CITY						
Bronx County						
Hunts Point	B-2	1978+	150.2	200.0	Secondary (AS)	770,000
Kings County (Brooklyn)						
Coney Island	A	1965+	108.7	110.0	Secondary (AS)	535,000
Newtown Creek	B-2	1967	284.9	310.0	Intermediate (AS)	2,500,000
Owls Head	B-1	1952	98.7	160.0	Intermediate (AS)	750,000
26th Ward	A	1975+	100.4	85.0	Secondary (AS)	385,000
New York County (Manhattan)						
Wards Island	B-2	1979+	215.3	290.0	Secondary (AS)	1,470,000
Queens County						
Bowery Bay	B-2	1978+	127.6	150.0	Secondary (AS)	1,000,000
Jamaica	A	1978+	100.9	100.0	Secondary (AS)	415,000
Rockaway	A	1978+	22.6	45.0	Secondary (AS)	90,000
Tallman Island	B-1	1979+	67.4	80.0	Secondary (AS)	251,000
Richmond County (Staten Island)						
*Arthur Kill Correctional Facility	B-2	1969	-	0.1	Secondary (AS)	1,000
*Elmwood Homes	B-2	1978+	0.5	1.0	Extended Aeration	8,000
*Elmwood Park Condominiums	B-2	1976	0.1	2.0	Secondary (RD)	900
*Heartland Village	B-2	1978+	0.5	1.0	Extended Aeration	7,000
*IS-7	A	1965	0.13	0.075	Extended Aeration w/ Sand Filtration	1,600
*Mount Loretto Home - Plant #1	A	1962+	-	-	Septic Tank	500
- Plant #2	A	1962+	-	-	Septic Tank	200
*Nassau Smelting & Refining	B-2	1973	-	0.43	Physical/Chemical	Industrial
Oakwood Beach	A	1979+	18.0	40.0	Secondary (AS)	85,000
Port Richmond	B-2	1979+	41.4	60.0	Secondary (AS)	60,000
*Richmond Memorial Hospital	A	1936	-	-	Septic Tank	-
*Saint Joseph's School	A	1963	-	0.02	Septic Tank with Send Filtration	900
*Village Green	B-2	1970	0.2	0.2	Extended Aeration	2,000
Rockland County						
*Clevepak Corporation	A	1976+	0.6	3.0	Secondary	Industrial
Joint Regional Sewerage Board-Town of Haverstraw	A	1978+	4.9	8.0	Secondary (AS)	40,000
*Kay-Fries Chemicals, Inc.	A	1972	-	0.5	Extended Aeration	Industrial
*Oranga & Rockland Utilities	A	-	-	-	Secondary (AS)	Industrial
Orangetown Sewer District	A	1968+	6.9	8.5	Secondary (TF)	70,000

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NEW YORK (Continued)						
Rockland County (Continued)						
Palisades Interstate Park						
(Bear Mountain Plant)	A	1951+	0.07	0.25	Secondary (TF)	Seasonal
(Tallman Mountain Plant)	A	1969	0.01	0.01	Extended Aeration	Seasonal
Rockland County Sewer District #1	A	1968+	14.9	10.0	Secondary (AS)	135,000
Stony Point	A	1969	0.8	1.0	Secondary (AS)	10,000
Suffolk County						
*Harbor Club Apartments	A	1967	0.03	0.1	Extended Aeration	400
Huntington Sewer District	A	1957+	2.2	2.0	Secondary (TF)	20,000
Northport	A	1973+	0.3	0.3	Secondary (AS)	3,000
***Suffolk County Sewer District #1	A	1972+	2.0	2.5	Primary	21,000
Suffolk County Sewer District #6	A	1973+	0.7	1.2	Secondary (AS)	8,000
Westchester County						
Briarcliff Manor - River Road	A	1977+	-	0.04	Septic Tank	200
- Scarborough Dock	A	1977+	-	0.11	Imhoff Tank	1,000
Buchanan	A	1962	0.16	0.55	Secondary (AS)	2,500
*Coach Light Square Condominiums	A	1971	0.02	0.05	Secondary (AS)	600
*Con Rail Harmon Shop (Croton)	A	1973+	0.1	0.1	Physical/Chemical	Industrial
Croton-on-Hudson	A	1950	0.9	0.75	Primary	6,500
North Tarrytown	A	1940+	2.1	1.7	Primary	8,000
Ossining - Liberty Street	A	1939	0.7	1.0	Imhoff Tank	6,000
- Water Street	A	1939	1.7	2.0	Primary	12,000
*Ossining Correctional Facility	A	1950+	0.4	0.6	Primary	1,800
*Springvale Apartments Company	A	1959	0.1	0.1	Secondary (TF)	1,000
Tarrytown	A	1940+	1.6	1.5	Primary	14,000
Westchester County D.P.W.						
Blind Brook (Rye)	A	1963+	3.1	5.0	Primary	20,000
Mamaroneck	A	1965+	15.6	18.0	Primary	95,000
New Rochelle	A	1979+	17.3	15.5	Primary	80,000
Peekskill	A	1979+	3.0	4.0	Primary	24,000
Port Chester	B-1	1965+	6.8	6.0	Primary	27,000
Yonkers Joint Treatment	B-1	1960+	78.3	93.0	Secondary (AS)	585,000
FEDERAL & MILITARY						
Camp Smith - (Westchester Co.)	A	1965	0.07	0.24	Secondary (TF)	Seasonal
FDR Veterans Administration Hospital (Westchester Co.)	A	1979+	0.22	0.4	Secondary (TF)	3,000
Gateway National Park (Floyd Bennett Field, Kings Co.)	A	1942	0.13	0.4	Secondary (TF)	500
Military Ocean Terminal (Hudson Co.)	B-1	1972+	0.13	0.18	Secondary (AS)	2,500

\+ Year of major additions or reconstruction

* Private, institutional or industrial sewage treatment plants

** Estimated Flows

*** Includes flows from SUNY & Stony Brook

(AS) Activated Sludge

(TF) Trickling Filter

(RD) Rotating Disc

G L O S S A R Y

BOD	biochemical oxygen demand
C	degrees Centigrade
Cl^-	chloride
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
EPA	Environmental Protection Agency
GPD	gallons per day
HTC	high temperature char
INC	incineration
kg/hr	kilograms per hour
km	kilometers
LTC	low temperature char
MGD	million gallons per day
mg/l	milligrams per liter
ml	milliliter
NAAQS	National Ambient Air Quality Standard
NPDES	National Pollutant Discharge Elimination System
PCB's	polychlorinated biphenols
ppb	parts per billion
ppm	parts per million
SPDES	State Pollutant Discharge Elimination System
STP	sewage treatment plant
TSP	total suspended particulates
TSS	total suspended solids
µ	microns
µm	micrometers
WPCP	water pollution control plant
>	greater than
<	less than