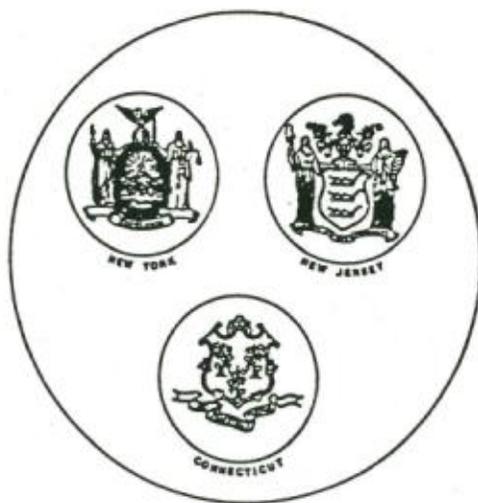


# INTERSTATE SANITATION COMMISSION

*A TRI-STATE ENVIRONMENTAL AGENCY*



## SUMMARY

MICROBIOLOGICAL SURVEYS  
TO DETERMINE THE FEASIBILITY  
OF  
INCREASED SHELLFISH HARVESTING  
IN THE  
ATLANTIC OCEAN OFF THE ROCKAWAYS,  
RARITAN BAY AND SANDY HOOK BAY

July 1988

311 WEST 43rd STREET • NEW YORK, N.Y. 10036

212-582-0380

## INTRODUCTION

The Interstate Sanitation Commission conducted a series of water quality surveys in the Atlantic Ocean off the Rockaways, and in Raritan and Sandy Hook Bays from January through May 1988. The study consisted of 30 sampling trips for a total of 48 stations -- 15 trips at 24 stations in the Atlantic Ocean and 15 trips at 24 stations in Raritan and Sandy Hook Bays. A total of 720 samples were taken -- each being analyzed for total and fecal coliforms for a total of 1,440 analyses. Map A-1 shows the three general areas of sampling and Maps A-2, A-3 and A-4 show the sampling station locations.

The Atlantic Ocean area is used for direct harvesting during the summer but is closed for the winter months. The Raritan Bay area in New York waters was designated for depuration but has not been used since 1983; hence it must be re-evaluated. The New Jersey area in Raritan/Sandy Hook Bays is open for depuration from May 1 through September 30 and cannot be used the rest of the year. The field surveys were carefully scheduled to collect the water samples during the worst case conditions -- on the outgoing tide and under wet weather conditions. All samples were taken on the outgoing tide and, whenever possible, for wet weather. The sampling protocol and analysis procedure was in conformance with Section B of the National Shellfish Sanitation Program (NSSP) Operations Manual (1986); a three tube decimal dilution MPN test was used. The testing results were grouped for each of the three areas and are summarized in Tables A-1, A-2 and A-3.

### Atlantic Ocean off the Rockaways (New York Waters)

A total of 360 samples were taken at 24 stations -- 15 samples per station -- for the purpose of evaluating approx-

imately 16,000 acres of direct harvesting waters. In 1987, as a direct result of the ISC year-round disinfection requirement, NYS DEC extended the season for direct harvesting from the period of June 1st through September 30th to the period of June 1st through December 14th -- an extra 2½ months. The current survey and analyses show that an even longer shellfishing period can be allowed.

All 24 stations met the total coliform criteria promulgated by the Interstate Shellfish Sanitation Conference in its National Shellfish Sanitation Program. The NSSP's fecal coliform criteria were also met for all samples, except that Stations 6 and 8 (western boundary of the "summer harvesting" area) did not meet the criteria that "not more than 10% of the samples exceed an MPN of 49 per 100 ml"; 13% (2 out of 15) of their samples did not meet this requirement. At stations 6 and 8, the two values that exceeded 49 MPN/100 ml were 93 and 240 MPN/100 ml. At Station 5, the fecal coliform median was 15 MPN/100 ml which exceeded the NSSP criteria of 14 MPN/100 ml; all other fecal coliform criteria were met at this station.

#### Raritan Bay (New York Waters)

This shellfishing area was approved by NYS DEC for depuration purposes before harvesting activities were discontinued in 1983. A total of 180 samples were taken at 12 stations -- 15 samples per station. It was found that the NSSP's requirements for total and fecal coliforms for depuration were both met at all times during the sampling period -- February through April 1988.

#### Raritan/Sandy Hook Bay (New Jersey Waters)

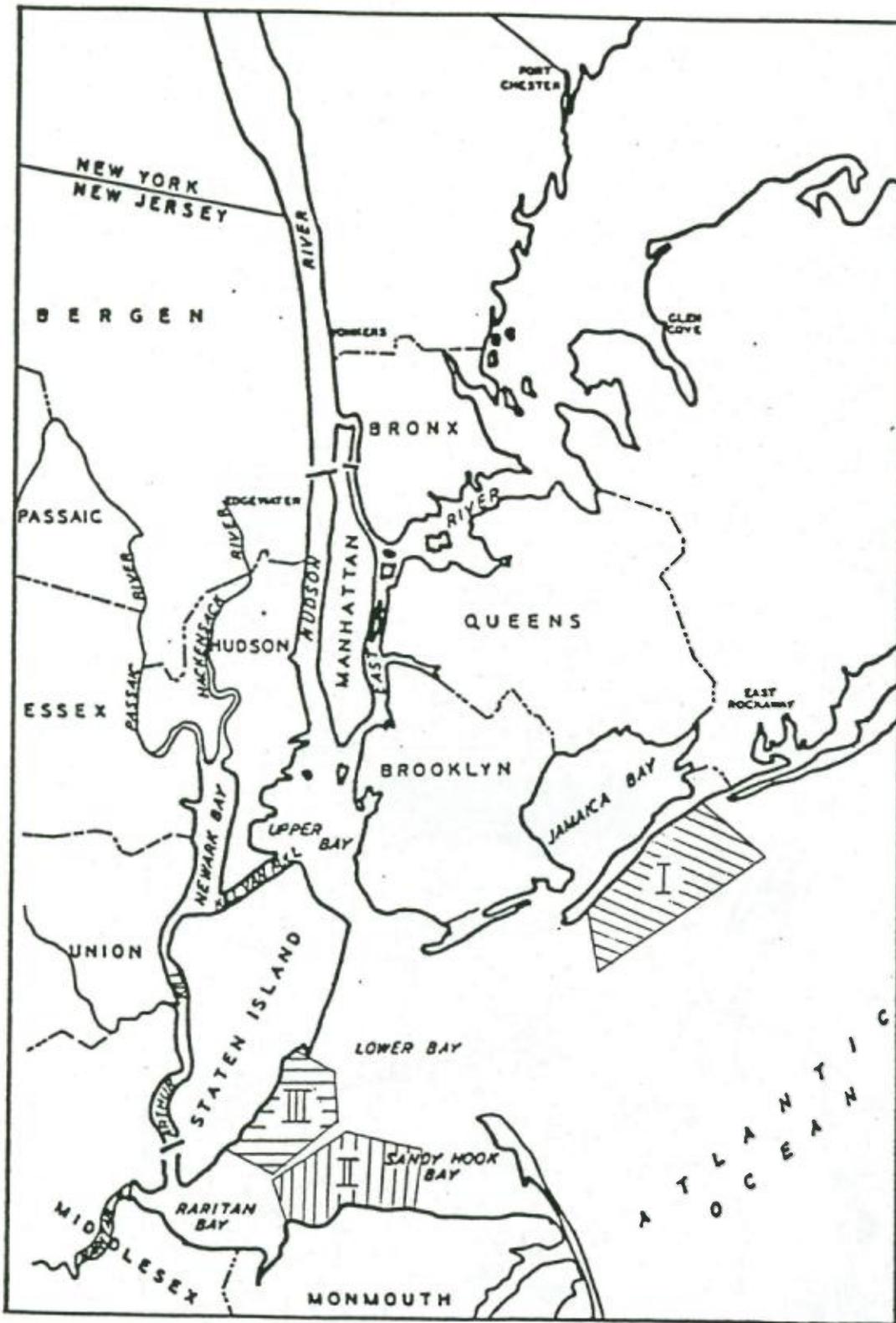
This area encompasses 13,000 acres of seasonally special

restricted shellfishing beds around Port Monmouth, New Jersey. The NJ DEP approved the area for depuration harvesting only for the time period from May 1 through September 30. A total of 180 samples were taken at 12 stations -- 15 samples per station. The sampling data show complete compliance with both NSSP's total and fecal coliform criteria for depuration during February, March, and April of 1988.

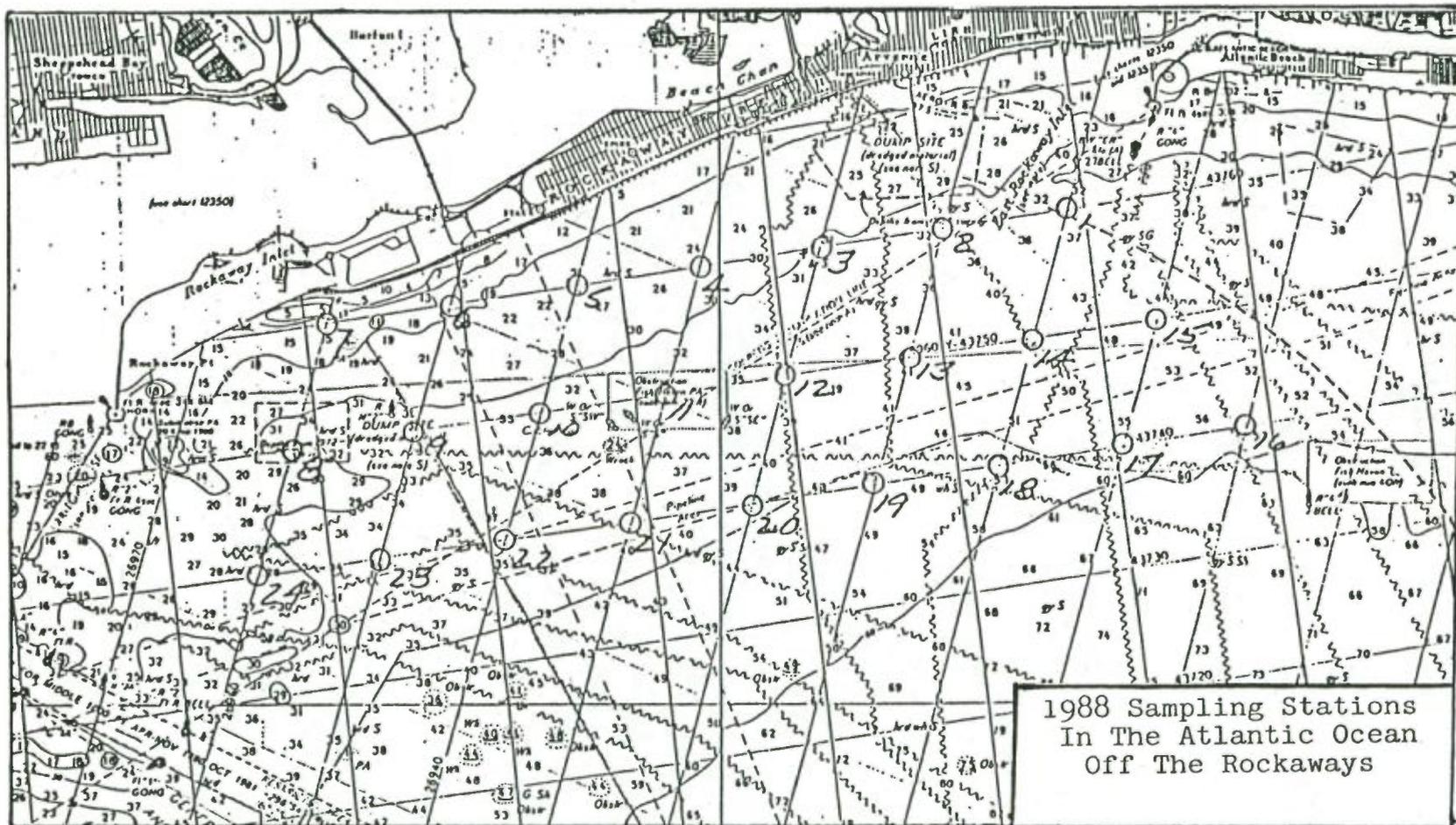
### CONCLUSION

The water quality at all stations in all three study areas (except for three marginal stations in the Atlantic Ocean) showed continuous compliance with the NSSP requirements during this study which was conducted during the time of year when the shellfish beds are presently closed. The regional year-round disinfection requirement enacted by the Interstate Sanitation Commission, which took effect on July 1, 1986, has already shown positive results -- an extended season in the Atlantic Ocean. The water quality of the three areas sampled has shown a reduction of coliforms as confirmed by the data of this special study. If no other limiting factors exist, based on these surveys all three areas should be able to be opened for shellfishing (direct harvesting in the Atlantic Ocean and depuration in Raritan and Sandy Hook Bays) on a year-round basis.

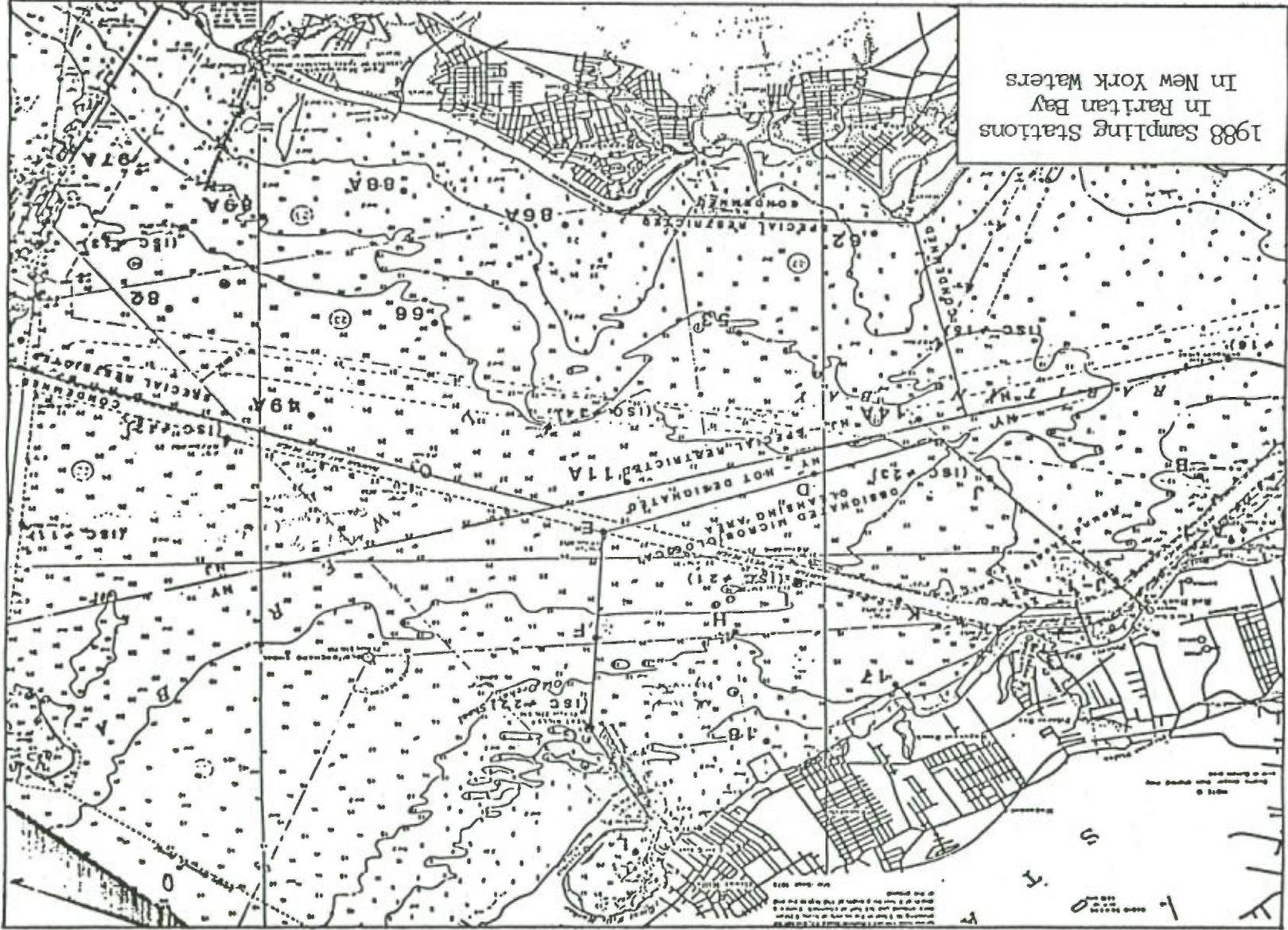
APPENDIX



Map A-1



Map A-2



Map A-4

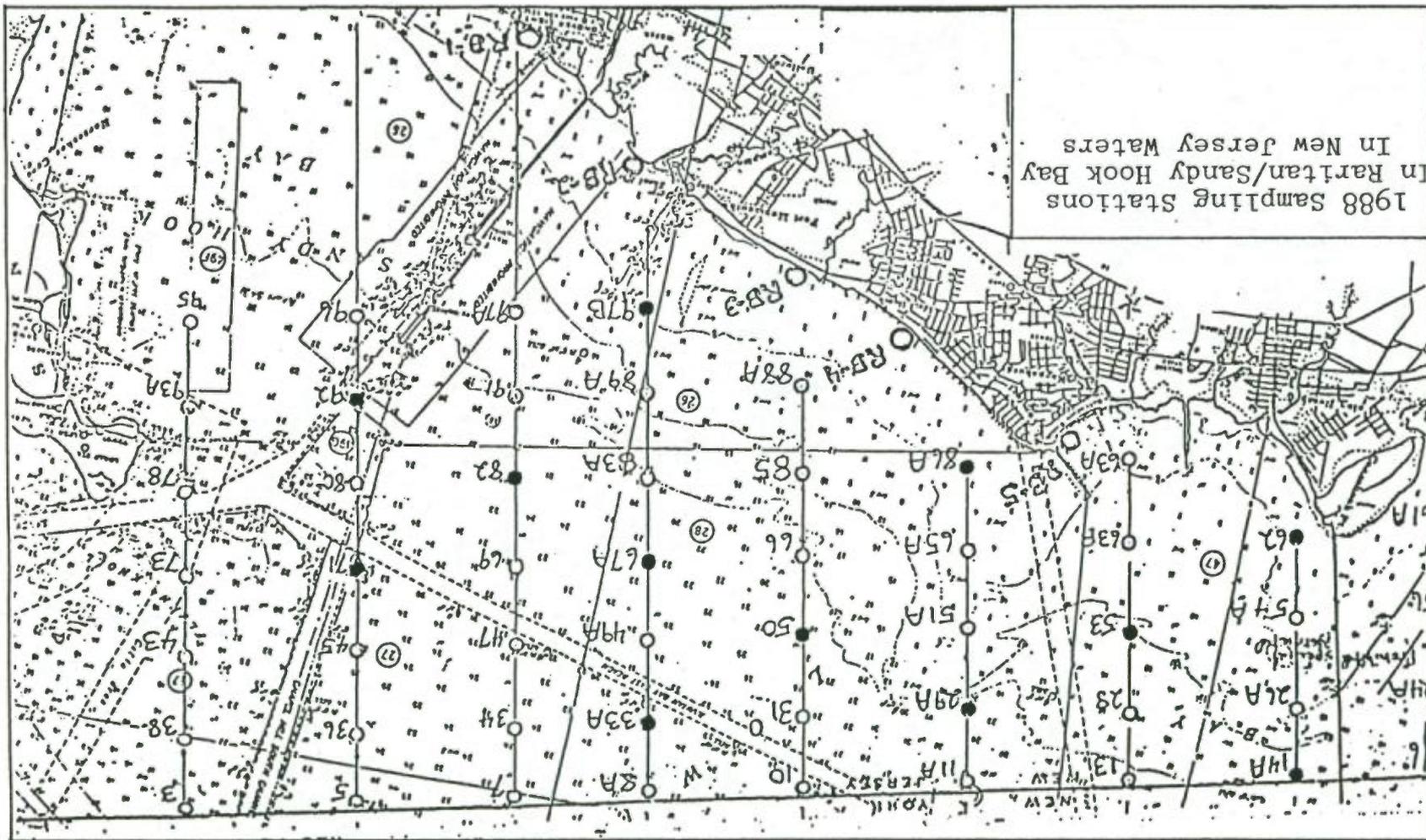


Table A-1

Summary of Sampling Results in New York State  
 Direct Harvesting Shellfish Waters  
 in the Atlantic Ocean Off the Rockaways\*

Station	Fecal Coliforms(MPN/100 ml)			Total Coliforms(MPN/100 ml)		
	Median	Geometric Mean	% of Samples Exceeding 49	Median	Geometric Mean	% of Samples Exceeding 330
1	<3	< 4.4	0	<3	< 4.8	0
2	<3	< 4.6	6.7	<3	< 5.5	0
3	3.6	< 4.8	0	3.6	< 6.5	0
4	<3	< 3.9	0	3.6	< 5.0	0
5	15	<10.7	6.7	20	<13.7	0
6	3.6	<10.1	13.3	3.6	<11.6	0
7	3.6	< 6.6	0	3.6	< 7.3	0
8	3.6	< 8.7	13.3	3.6	<10.8	6.7
9	<3	< 4.4	6.7	3.0	< 5.1	0
10	<3	< 4.1	6.7	<3	< 4.8	0
11	<3	< 3.3	0	<3	< 3.6	0
12	<3	< 3.1	0	<3	< 3.1	0
13	<3	< 3.3	0	<3	< 3.4	0
14	<3	< 3.4	0	<3	< 3.8	0
15	<3	< 4.0	0	<3	< 4.4	0
16	<3	< 3.8	0	<3	< 3.8	0
17	<3	< 4.4	0	<3	< 4.8	0
18	<3	< 3.4	0	<3	< 3.4	0
19	<3	< 3.5	0	<3	< 3.8	0
20	<3	< 3.4	0	<3	< 4.0	0
21	<3	< 3.8	6.7	<3	< 4.5	6.7
22	<3	< 5.0	6.7	<3	< 5.5	0
23	<3	< 4.6	6.7	<3	< 5.9	0
24	<3	< 5.1	6.7	<3	< 7.7	0

\* Source of Data: The Interstate Sanitation Commission Water Quality Survey, 1988.

Table A-2

Summary of Sampling Results in New York State  
 Depuration Harvesting Shellfish Waters in Raritan Bay\*

Station	Fecal Coliform (MPN/100 ml)			Total Coliform (MPN/100 ml)		
	Median	Geometric Mean	% of Samples Exceeding 300	Median	Geometric Mean	% of Samples Exceeding 3300
D	3.6	<13	0	23	<28.2	0
E	9.1	<8.8	0	9.1	<19.4	0
F	9.1	<11.7	6.7	23	<23.6	0
G	15	<15.9	0	23	38.2	0
H	23	<21.5	0	93	58.1	0
I	3.6	<9.5	0	15	<27.3	0
J	3.6	<7.6	0	43	<46.6	0
J-1	9.1	<13.5	0	43	<50.9	0
K	9.1	<10.1	0	43	<45.7	0
L	3.6	<6.5	0	9.1	<11.1	0
17	23	18.8	6.7	43	68.4	0
18	15	<18.1	0	43	51.3	0

\* Source of Data: The Interstate Sanitation Commission Water Quality Survey, 1988

Table A-3

Summary of Sampling Results in New Jersey  
 Depuration Harvesting Shellfish Waters in Raritan/Sandy Hook Bay\*

Station	Fecal Coliform (MPN/100 ml)			Total Coliform (MPN/100 ml)		
	Median	Geometric Mean	% of Samples Exceeding 300	Median	Geometric Mean	% of Samples Exceeding 3300
14A	7.3	<10.6	6.7	23	49.6	0
29A	<3	<5.1	0	23	<26.2	0
33A	9.1	<12.1	0	43	43.7	0
50	3.6	<7.9	0	23	<29.9	0
53	3.6	<6.5	0	23	<46.2	0
62	9.1	<15.8	6.7	93	<71	0
67A	3.6	<5.2	0	23	23.5	0
71	7.3	<7.5	0	43	<28.7	0
82	3.6	<6.2	0	23	<19.7	0
86A	3.6	<5.9	0	15	<29.9	0
92	7.3	<8.9	0	23	<27.4	0
97B	<3	<4.2	0	14	<18.6	0

\* Source of Data: The Interstate Sanitation Commission Water Quality Survey, 1988

Table A-4

National Shellfish Sanitation Program  
Coliform Requirements

Direct Harvesting

One of the following standards shall be met:

The total coliform median or geometric mean MPN of the water does not exceed 70 per 100 ml and not more than 10 percent of the samples exceed an MPN of 230 per 100 ml for a 5-tube decimal dilution test (or an MPN of 330 per 100 ml for a 3-tube decimal dilution test).

OR

The fecal coliform median or geometric mean MPN of the water does not exceed 14 per 100 ml and not more than 10 percent of the samples exceed an MPN of 43 per 100 ml for a 5-tube decimal dilution test (or an MPN of 49 per 100 ml for a 3-tube decimal dilution test).

Depuration

One of the following standards shall be met:

The total coliform median or geometric mean MPN of the water does not exceed 700 per 100 ml and not more than 10 percent of the samples exceed an MPN of 2,300 per 100 ml for a 5-tube decimal dilution test (or 3,300 per 100 ml for a 3-tube decimal dilution test).

OR

The fecal coliform median or geometric mean MPN of the water does not exceed 88 per 100 ml and not more than 10 percent of the samples exceed an MPN of 260 per 100 ml for a 5-tube decimal dilution test (or 300 per 100 ml for a 3-tube decimal dilution test).