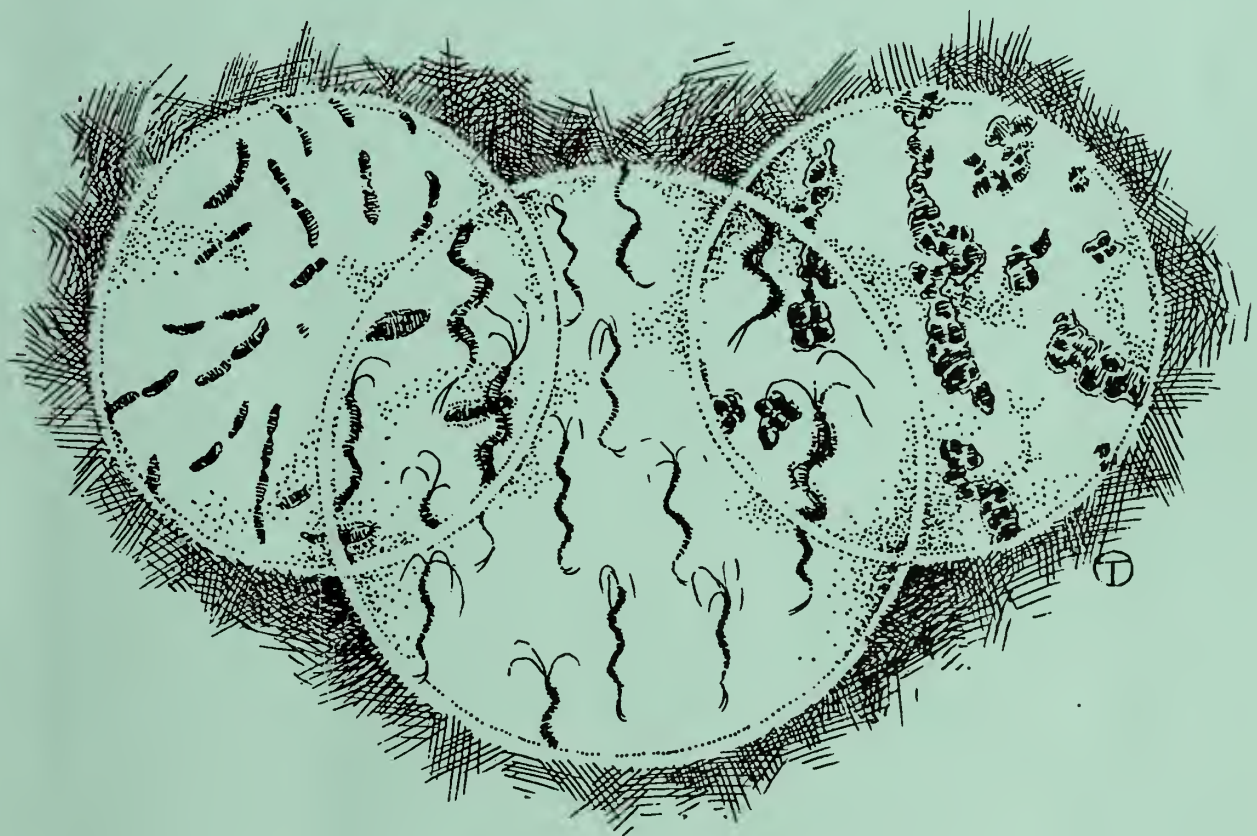
United States Department of the Interior

NATIONAL PARK SERVICE

Gateway National Recreation Area

IN REPLY REFER TO:

1994 WATER QUALITY SAMPLING PROGRAM



DIVISION OF NATURAL RESOURCES

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GATEWAY NATIONAL RECREATION AREA
DIVISION OF NATURAL RESOURCES

1994 WATER QUALITY SURVEY REPORT

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I. BACKGROUND AND HISTORY

Gateway's Water Quality Program was initiated in 1977 to form a data base for the management of park waters for public health and ecological quality. Water quality data were collected for the following purposes:

1. To monitor bacterial levels at public beaches under Gateway jurisdiction for compliance with city, state and federal public health standards for contact-recreational beaches.

2. To monitor bacterial levels at other sites within the park to determine trends in water quality.

3. To identify potential long-term acceptable beach sites.

4. To provide data for the evaluation and review of Gateway's Natural Resources Management Plan regarding fish and wildlife management as well as visitor public health and safety.

The sampling program has been evolving since its inception in 1976. Identical sample sites and methods have been used from 1981 to the present. Two sites are sampled in Breezy Point, and seven in Staten Island during the beach season (Memorial Day to Labor Day). This year due to budget constraints beaches were monitored from June 25th through Labor Day. Jamaica Bay was monitored this year from January 31st to September 26th. This monitoring program included some of the Park's most heavily impacted sites; the outfalls of the sewage treatment plants, Pennsylvania Avenue Landfill and JFK International Airport. Surface and bottom monitoring of nine sites in the bay included not only total and fecal coliforms but also phosphate, nitrate, ammonia, chlorine and copper, as well as, dissolved oxygen, pH, salinity and conductivity.

In 1988 six new sites were added to include the beaches of Gateway National Recreation Area at the Sandy Hook Unit. The basis for water quality classification is total and fecal coliform enumeration. Coliform analysis of each site has been performed using the membrane filter technique.

Coliforms are a group of specific microorganisms whose densities can be related quantitatively to swimming related health hazards. The concern is with infectious, enteric diseases, such as cholera and typhoid fever, whose etiological agents are excreted in feces and are spread by water and food contaminated with fecal wastes (Cabelli et al., 1983).

Total coliform counts of 2400/100ml and fecal coliform counts of 200/100ml are the respective New York State and New Jersey State bacterial standard limits and have the following advantages:

1. Relative simplicity and accuracy of measurement with the Membrane Filter Method (Approved in Standard Methods).

2. Speed of Results: Counts are available within 24 hours of filtration.

3. Ease of comparison with previous data.

4. Measurement of a broader spectrum of coliform bacteria insures the inclusion of most potential pathogens.

II. WATER QUALITY TRENDS

1. Breezy Point/Sandy Hook

The beaches of Breezy Point, the Rockaways (Riis Park), and Sandy Hook are usually Gateway's cleanest and have been consistently acceptable for bathing over the years tested.

2. Jamaica Bay

The waters of Jamaica Bay are the most heavily impacted bacteriologically in Gateway National Recreation Area. The sewage treatment plants and CSOs emptying into Jamaica Bay combine with its poor flushing action (35 day residence time) to produce consistently high average total and fecal coliform counts in peripheral channels and in areas where circulation is poor such as Bergen Basin. The bay's waters are classified as unacceptable for bathing and continue to express high coliform counts.

3. Staten Island

Water quality at sample sites in Staten Island have been "marginal" in past years, with South Beach (SB2) being officially closed to swimming by the New York City Department of Health. Other sites have seasonal averages below city and federal standards (2400/100ml total coliform) but show occasional unhealthy counts throughout the bathing season. Water Quality at Crookes Point (CP7) in the Staten Island Unit has been consistently acceptable over the years studied.

III. METHODS

SAMPLING AND COLIFORM TESTING

Sampling and Membrane Filter culture methods followed standard EPA procedures for wastewater analysis (Bordner and Winter, eds., 1978) with minor modifications. Gateway's Operations Manual for Bacteriological Analysis of Beach Water using the Membrane Filter Technique (Simon, 1984) provides a detailed description of methods used. Total and fecal coliform measurements were obtained for all

sample sites on a weekly basis between June 25th and Labor Day. In Jamaica Bay, surface and bottom water samples were collected by boat (Map 1) while Staten Island (Map 2), Breezy Point (Map 1) and Sandy Hook (Map 3) samples were collected by wading into the surf zone. Samples were stored on ice and analyzed using the Membrane Filter Method (Bordner and Winter, 1978, Gateway 1981).

Based on data from previous years for all sites sampled, a standard dilution scheme for each site was developed to optimize the number of countable plates obtained (**TABLE I**). Data were recorded for sampling time, any unusual water conditions and counts for each dilution were summarized on weekly data sheets.

Standard counts (colonies/100ml) were calculated for each site using the following formula:

Count/100ml = # colonies counted/vol filtered X 100ml

The densities for each site were calculated to be the arithmetic means of the dilutions that showed 20-200 colonies for that week.

$$\text{Count/100ml} = \frac{\text{colony count} + \text{colony count} + \text{colony count}}{\text{Vol. 1} + \text{Vol. 2} + \text{Vol. 3}} \times 100$$

If no plates were found to have less than 200 colonies for a given site, the smallest volume sampled was used to calculate density. If the plate was completely overgrown and no count could be made, the density was determined by dividing 200 colonies by the smallest volume filtered.

IV. **DISCUSSION**

1. WATER QUALITY TRENDS

Water quality classification, based on New York State and New Jersey State criteria, has remained the same in all three units. Breezy Point sites have been classified as acceptable, Jamaica Bay sites as unacceptable and Staten Island sites acceptable (but marginal over short periods) for bathing.

This year's total coliform averages for Jamaica Bay have shown a marked increase over preceding years (**TABLE II**), while Breezy Point, Staten Island and Sandy Hook all exhibit the same general trend. Fecal coliforms, considered to be the more reliable indication of the risk of enteric disease, have not shown the same trend, with levels rising over the same period of time in all units of the park.

Dissolved oxygen in Jamaica Bay over the period tested, shows sharp declines occurring in mid June for top and bottom samples. Sites in the northeastern part of the bay fail to meet NYS Standards for dissolved oxygen (6.0 ppm) for most of the summer and into the fall.

This same area also exhibits high concentrations of ammonia over the same period. Occasionally other areas of the bay also show elevated amounts of ammonia but on a sporadic basis.

2. FACTORS EFFECTING WATER QUALITY

The quality of the waters surrounding Gateway is determined largely by pollutant inputs such as treated and untreated sewage, CSOs, industrial effluent, ocean dumping of sewage sludge and toxic waste leachates. The concentrations of these pollutants are controlled by chemical, physical, and biological processes in the marine environment (Dyer, 1973).

At any given time water quality will vary depending on a variety of other factors. These include tidal mixing, vertical mixing of the water column by wind and wave, biological oxygen demand (BOD), photosynthesis by phytoplankton and water temperature.

Total and fecal coliforms serve as nonconservative tracers of sewage related pollution (Dyer, 1973). They are nonconservative in the sense that they are rapidly removed from the marine environment by dieaway and incorporated into the sediments and decreases in their concentrations are not solely dependent on their physical transport and diffusion. Dieaway for total coliforms in Jamaica Bay was estimated to be 1.3 days and 1.5 days for fecal coliforms (Cardenas, 1983).

3. WATER QUALITY EMERGENCIES

In the past, Gateway's policy for the protection of public health at bathing beaches has been to officially close beaches by public notice when individual samples with total coliform values greater than 2400/100ml and fecal coliforms greater than 200/100ml are detected over a three consecutive day period at a given beach. Although this is an effective response to a persistent problem, it does leave a three day period during which bathers are potentially exposed to unhealthy concentrations of coliform organisms. Literature indicates that swimmers stand a much greater risk of contacting disease from polluted water than nonswimmers when swimmers are defined as those who undergo total immersion (Cabelli et al., 1983).

The following procedures are followed when a sample is determined to have greater than 200/100ml fecal coliform and greater than 2400/100ml total coliform count is collected at one of Gateway's beaches:

(1) Immediately contact the Water Quality Specialist in the Division of Natural Resources, who will notify the Superintendent of the unit effected by the potential problem and advise to alert lifeguards to look for unusual odors, fecal matter, algae, oil, or grease in water or on the beach and to pull swimmers from the water at their discretion.

(2) Check with New York City Health Department to determine if any overflow incident or accidental release of raw sewage has occurred at local sewage treatment plants. Advise park's Chief, Division of Resource Management and document all communication with New York City Health Department.

(3) Collect 5 samples at different locations (at least 50 yards apart) on the suspect beach and filter volumes of 10, 5 and 3ml for each sample.

Swimmers should be prevented from bathing by lifeguards if <u>any</u> of the following is observed:

(1) Elevated average total (greater than 2400/100ml) and fecal coliform (greater than 200/100ml) counts of replicate samples.

(2) Presence of oil, grease, or fecal matter in water or on the beach in large quantities.

(3) Accidental spillage of raw sewage or of any toxic substance in the waters adjacent to the beach which may adversely effect public health.

(4) Any other environmental incident which may be detrimental to the health and safety of the bathers.

Swimmers should be kept out of the water as long as replicate testing continues to show elevated coliform levels or other adverse environmental conditions persist. This will allow continued public access to the beach while still protecting the public health. If these conditions persist for three days or more, however, the beach should be closed officially by public notice and should remain closed until water quality has returned to normal levels. <u>It is the responsibility of the park's Water Quality Specialist to carefully document water quality and environmental conditions when beach closure is considered</u>. A looseleaf laboratory notebook is to be carefully maintained for each season's data. The notebook should contain all data and summary sheets and be used as a log for all laboratory and field operations.

4. <u>DATA</u>

Coliform data throughout the season at most sites showed high variability. This was probably due to error implicit in the method (Fleisher and McFadden, 1979) and various environmental factors.

TABLE III exhibits the days during which standard water quality values were exceeded.

5. PRECIPITATION

Precipitation is a known cause of intermittent decreases in water quality. It produces shock loading of pollutants to local waters by storm waters and combined sewage overflows. (NYC DEP, 1987)

Total and fecal coliform counts have been consistently higher following rainfall in local waters (NYC Department of Health, 1983) **(TABLE IV).**

6. TIDES

Tidal currents and tidal flushing account for much of the transport and dilution in estuaries (Dyer, 1973). Sampling at Gateway sites is performed irrespective of the tidal state.

7. WATER QUALITY PARAMETERS

Water quality parameters include dissolved oxygen (DO), temperature, pH, salinity, and conductivity. These have been taken at both the surface and bottom of nine sites in Jamaica Bay in the past in order to better assess the physical characteristics of these waters throughout the season. However, this season it was determined to be beneficial to the Park's water quality program to also sample some important nutrients and one heavy metal, copper in Jamaica Bay.

The results for all water quality sampling at Gateway National Recreation Area are expressed on **TABLES V** through **XVI.**

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TABLES

TABLE 1

DILUTIONS (VOLUMES) BY SITE FOR MF ANALYSIS

		VOLUMES TO BE FILTERED	
	SITE	TOTAL	FECAL
STATEN ISLAND	FW-1	10, 5, 3	10, 5, 3
	SB-2	10, 5, 3	10, 5, 3
	MB-3	10, 5, 3	10, 5, 3
	NDB-4	10, 5, 3	10, 5, 3
	OB-5	10, 5, 3	10, 5, 3
	GK-6	10, 5, 3	10, 5, 3
	CP-7	10, 5, 3	10, 5, 3
	GKM-8	10, 5, 3	10, 5, 3
BREEZY POINT	ATL-1	10, 5, 3	10, 5, 3
	ATL-2	10, 5, 3	10, 5, 3
JAMAICA BAY	RI-3	10, 5, 3	10, 5, 3
	RB	10, 5, 3	10, 5, 3
	BC	10, 5, 3	10, 5, 3
	JFKS	10, 5, 3	10, 5, 3
	JFKN	10, 5, 3	10, 5, 3
	JB-9	10, 5, 3	10, 5, 3
	BB	10, 5, 3	10, 5, 3
	JB-6A	10, 5, 3	10, 5, 3
	PAL	10, 5, 3	10, 5, 3
SANDY HOOK	SH-1	10, 5, 3	10, 5, 3
	SH-2	10, 5, 3	10, 5, 3
	SH-3	10, 5, 3	10, 5, 3
	SH-4	10, 5, 3	10, 5, 3
	SH-5	10, 5, 3	10, 5, 3
	SH-6	10, 5, 3	10, 5, 3

example: smallest volume filtered = 1ml

$$\frac{20 \text{ colonies}}{1\text{ml}} \times 100 = 2{,}000/100\text{ml}$$

The density would then be logged as 2,000/100ml

TABLE II
GATEWAY TOTAL AND FECAL COLIFORM SEASONAL AVERAGES
1982-1994

	BREEZY POINT		JAMAICA BAY		STATEN ISLAND		MARINE PARK		SANDY HOOK	
EAR	T	F	T	F	T	F	T	F	T	F
982	15	8	588	217	229	71				
983	19	14	1631	1150	466	229				
984	242	18	2955	500	1812	87				
985	307	37	3513	429	3508	42				
986	21	7	176	277	47	23	35	36		
987	37	21	731	277	589	307	167	49		
988	85	29	694	336	464	261	208	45	78	43
989	401	77	3077	1324	401	77	1097	266	2450	29
990	38	27	932	301	408	105	454	69	56	20
991	16	19	580	900	92	88			48	38
992	12	14	1832	1098	344	56			135	31
993	42	24	1268	435	130	113			49	130
994	47	34	6525	4355	198	144			220	150
TTOM			1266	243						

TABLE III
SAMPLE DAYS SURPASSING COLIFORM CRITERIA

ITE	TOTAL NO. OF SAMPLE DAYS	SAMPLE DAYS SURPASSING CRITERIA	%
TL-1**	11	0	0
TL-2**	11	0	0
TLANTIC BEACHES			
VERAGE	11 DAYS	0 DAYS	0
I-3 Top	17	0	0
I-3 Bottom	9	0	0
B Top	18	0	0
B Bottom	11	1	9
C Top	17	1	9
C Bottom	11	0	0
FKS Top	13	0	0
FKS Bottom	11	0	0
FKN Top	8	5	63
FKN Bottom	6	2	33
B-9 Top	10	9	90
B-9 Bottom	8	6	75
B Top	18	14	78
B Bottom	10	8	80
B-6A Top	18	3	17
B-6A Bottom	9	2	22
AL Top	18	5	28
AL Bottom	10	3	30
AMAICA BAY			
VERAGE Top	15 DAYS	2.4 DAYS	16
Bottom	9.4 DAYS	4.1 DAYS	44
M-1	7	0	0
B-2	11	0	0
B-3	11	0	0
DB-4	11	0	0
B-5	11	1	8
E-6**	14	0	0
E-7	11	0	0
M-8	11	0	0
TATEN ISLAND			
VERAGE	11 DAYS	.13 DAYS	1
H-1	11	1	6
H-2	11	4	25
H-3**	11	0	0
H-4**	11	3	15
H-5**	11	0	0
H-6	11	1	6
NDY HOOK			
VERAGE	17 DAYS	1.5 DAYS	8.7

** Bathing beach sites

NOTE: No beaches were closed during 1994 due to bacterial contamination, even though standards may have been exceeded on initial count.

TABLE IV

JUNE, JULY AND AUGUST PRECIPITATION

	JUNE	JULY	AUGUST	TOTAL
LONGTERM AVERAGE	2.65	3.89	4.50	15.25
*1986	1.86	5.56	4.42	11.66
*1987	4.22	3.71	3.84	11.77
*1988	1.29	8.14	2.19	11.62
*1989	8.47	5.99	8.35	22.81
*1990	2.50	3.51	12.36	18.37
1991	N/D	N/D	N/D	N/D
**1992	.08	.24	.23	.55
**1993	.10	.08	.09	.27
**1994	3.17	2.54	7.07	12.78

* Precipitation for the New York Area

** Precipitation for Floyd Bennett Field taken from our weather station

Dates in File Are different but values are correct. Dates are from 1995

TABLE V
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY ROCKAWAY INLET (RI-3)

DATE	1/31/94	2/22/94	3/07/94	3/22/94	4/06/94	4/18/94	5/02/94	5/18/94	6/01/94
TIME	11:20AM	9:40AM	10:10AM	8:40AM	11:05AM	11:25AM	3:20PM	8:30AM	8:50AM
AIR TEMP(F)	44	54	50	44	51	61	67	57	70
WATER TEMP(C)									
TOP	0.6	5.0	5.0	5.1	7.9	9.6	14.6	12.1	16.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	9.1	N/D	12.1	16.2
pH TOP	7.6	7.5	7.3	7.5	7.5	7.2	8.0	7.4	7.6
BOTTOM	N/D	N/D	N/D	N/D	N/D	7.3	N/D	7.5	7.7
SALINITY PPT									
TOP	31.5	18.2	25.9	20.2	22.8	21.1	26.2	22.1	24.1
BOTTOM	N/D	N/D	N/D	N/D	N/D	20.8	N/D	20.3	21.4
CONDUCTIVITY MMHO/CM									
TOP	400	237	259	209	242	237	310	271	302
BOTTOM	N/D	N/D	N/D	N/D	N/D	231	N/D	275	309
DO MG/L TOP	N/D	13.7	11.1	4.5	N/D	N/D	11.9	17.6	7.9
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	18.7	7.7
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	2.0	1.0	0.1	0	0	0	N/D	2.5	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	1.0	0
CHLORINE									
TAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
FAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
CAC TOP	0	0	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
COPPER PPM	0	0	0	0	0	0	0	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	N/D
PHOSPHATE PO_4 PPM									
TOP	2.0	2.5	2.5	2.5	2.5	2.5	2.0	2.5	2.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	2.5	2.5
CHLOROPHYLL a MG/M^3									
TOP	0	1.86	2.32	0	3.79	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	0	0
COLIFORM COLONIES/100ML									
TOTAL TOP	0	0	29	928	435	0	29	406	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	232	0
FECAL TOP	0	0	0	754	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	0	0

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY ROCKAWAY INLET (RI-3)

Dates in file here was also wrong and 1995 but the data were the same

DATE	6/13/94	6/27/94	7/11/94	7/25/94	8/09/94	8/17/94	9/01/94	9/14/94	9/26/94
TIME	10:30AM	10:45AM	2:20PM	11:45AM	N/D	N/D	N/D	10:50AM	8:09AM
AIR TEMP(F)	71	78	86	88	N/D	N/D	73	74	69
WATER TEMP(C)									
TOP	15.6	23.0	24.1	23.4	N/D	N/D	22.0	19.0	19.9
BOTTOM	16.0	22.5	24.5	20.5	N/D	N/D	21.0	19.9	19.1
pH TOP	7.7	7.7	7.2	8.2	N/D	N/D	7.8	7.9	7.9
BOTTOM	7.8	7.4	7.2	8.2	N/D	N/D	7.7	7.9	7.8
SALINITY PPT									
TOP	19.1	22.1	33.5	28.9	N/D	N/D	25.6	22.5	30.8
BOTTOM	26.8	24.1	35.8	28.0	N/D	N/D	25.5	25.1	30.1
CONDUCTIVITY MMHO/CM									
TOP	281	342	405	361	N/D	N/D	370	309	328
BOTTOM	336	362	412	353	N/D	N/D	378	342	330
DO MG/L TOP	5.5	6.5	4.9	5.8	N/D	N/D	3.8	2.8	3.9
BOTTOM	5.5	6.0	5.3	6.5	N/D	N/D	3.8	2.9	3.7
NITRATES TOP	0	0	0	0	N/D	N/D	0.2	0.2	0.2
BOTTOM	0	0	0	0	N/D	N/D	0.3	0.1	0.1
AMMONIA NH_3-N PPM									
TOP	0	0	0	1.0	N/D	N/D	3.3	4.3	1.3
BOTTOM	10.0	0	0	2.0	N/D	N/D	0.4	0.7	0.2
CHLORINE									
TAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0.2	0.2
BOTTOM	0	0	N/D	0.2	N/D	N/D	N/D	0.1	0.1
FAC TOP	0	0	N/D	0.2	N/D	N/D	N/D	0.1	0.2
BOTTOM	0	0	N/D	0.2	N/D	N/D	N/D	0.1	0.1
CAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0.1	0
BOTTOM	0	0	N/D	0	N/D	N/D	N/D	0	0
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	1.5	N/D	N/D	1.5	N/D	N/D	1.2	1.9	0.5
BOTTOM	1.5	N/D	N/D	2.5	N/D	N/D	1.2	1.2	0.2
CHLOROPHYLL a MG/M^3									
TOP	0	0.004	0.064	1.74	N/D	N/D	4.512	0	0.114
BOTTOM	0	0	1	0.195	N/D	N/D	3.946	1.654	0
COLIFORM COLONIES/100 ML									
TOTAL TOP	0	0	0	66	25	317	0	203	203
BOTTOM	0	0	0	330	N/D	N/D	116	116	116
FECAL TOP	0	0	0	0	5	63	0	0	0
BOTTOM	33	0	0	66	N/D	N/D	29	0	0

TABLE VI
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY RUFFLE BAR (RB)

JB-5

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/06/94	4/18/94	5/02/94	5/18/94	6/01/94
TIME	10:55AM	10:20AM	9:40AM	11:30AM	11:30AM	11:40AM	8:10AM	8:40AM	9:10AM
AIR TEMP(F)	37	51	47	40	47	61	50	57	67
WATER TEMP(C)									
TOP	0.7	2.1	2.5	4.4	8.1	9.5	12.5	13.8	17.3
BOTTOM	N/D	N/D	N/D	N/D	N/D	9.1	11.6	13.1	17.0
pH TOP	7.9	7.5	7.4	7.7	7.4	7.4	7.9	7.5	7.7
BOTTOM	N/D	N/D	N/D	N/D	N/D	7.5	7.9	7.6	7.7
SALINITY PPT									
TOP	26.5	16.9	25.1	22.8	22.1	22.1	21.5	22.1	22.8
BOTTOM	N/D	N/D	N/D	N/D	N/D	21.9	22.0	22.8	21.5
CONDUCTIVITY MMHO/CM									
TOP	341	211	236	223	238	248	261	271	298
BOTTOM	N/D	N/D	N/D	N/D	N/D	248	265	277	278
DO MG/L TOP	N/D	14.2	10.5	4.5	N/D	N/D	13.8	15.2	7.7
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	13.2	15.8	7.7
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	2.0	1.0	0	1.5	0	0	N/D	1.0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	1.0	0
CHLORINE									
TAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
FAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
CAC TOP	0	0	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
COPPER PPM	0	0	0	0	0	0	N/D	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	0	N/D
PHOSPHATE PO_4 PPM									
TOP	1.5	2.5	2.5	2.5	2.5	1.5	5.7	2.5	4.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	1.0	5.5	2.5	2.5
CHLOROPHYLL a MG/M^3									
TOP	3.42	18.36	9.12	8.88	6.87	0	0	0	7.25
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	2.6	0	1.18
COLIFORM COLONIES/100ML									
TOTAL TOP	0	261	29	0	0	0	29	377	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	29	0	1166	29
FECAL TOP	0	29	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	58	0	0

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY RUFFLE BAR (RB)
2

DATE	6/13/94	6/27/94	7/12/94	7/26/94	8/09/94	8/17/94	9/01/94	9/13/94	9/26/94
TIME	10:40AM	11:00AM	8:30AM	8:40AM	N/D	N/D	N/D	2:35PM	8:32AM
AIR TEMP(F)	72	76	73	77	N/D	N/D	74	83	69
WATER TEMP(C)									
TOP	17.4	22.5	23.5	22.0	N/D	N/D	22.0	19.2	19.9
BOTTOM	17.6	22.1	24.0	23.0	N/D	N/D	21.0	20.2	19.7
pH TOP	7.7	7.8	7.4	7.5	N/D	N/D	8.1	7.5	7.8
BOTTOM	7.7	7.4	7.4	7.6	N/D	N/D	7.7	8.1	7.8
SALINITY PPT									
TOP	25.8	25.0	36.1	31.1	N/D	N/D	21.5	27.7	23.2
BOTTOM	27.0	25.0	37.5	29.5	N/D	N/D	21.2	20.3	23.3
CONDUCTIVITY MMHO/CM									
TOP	311	375	307	378	N/D	N/D	312	358	331
BOTTOM	338	385	381	370	N/D	N/D	321	361	332
DO MG/L TOP	4.5	7.7	4.5	4.5	N/D	N/D	4.1	7.1	3.1
BOTTOM	5.5	7.1	5.2	3.8	N/D	N/D	3.6	6.6	3.0
NITRATES TOP	0	0	0	0.1	N/D	N/D	0.2	0.1	0.3
BOTTOM	N/D	0	0	0	N/D	N/D	0.4	0	0.2
AMMONIA NH_3-N PPM									
TOP	0.6	0	0	0.3	N/D	N/D	9.2	2.9	>10.0
BOTTOM	0.3	0	N/D	0.4	N/D	N/D	6.7	>10.0	>10.0
CHLORINE									
TAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0	0.2
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.2	0.1
FAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0	0.2
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0	0.1
CAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.2	0
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	5.5	N/D	N/D	5.5	N/D	N/D	0.1	1.5	0.7
BOTTOM	1.5	N/D	N/D	3.0	N/D	N/D	0	0.5	0.5
CHLOROPHYLL a MG/M^3									
TOP	0	0.24	2.14	1.084	N/D	N/D	5.189	2.056	3.938
BOTTOM	0.078	0	1.18	0.197	N/D	N/D	5.341	0	2.468
COLIFORM COLONIES/100 ML									
TOTAL TOP	0	0	0	33	109	537	319	0	116
BOTTOM	33	0	0	66	N/D	N/D	CON	0	174
FECAL TOP	0	0	0	0	126	47	174	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0

no file - hand entered

TABLE VII
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY BEACH CHANNEL (BC)

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/06/ 94	4/18/94	5/02/94	5/18/94	6/01/94
TIME	10:45AM	10:00AM	9:30AM	N/D	11:40AM	11:45AM	8:20AM	8:50AM	9:45AM
AIR TEMP(F)	29	51	57	N/D	48	56	49	60	66
WATER TEMP(C)									
TOP	0.4	2.9	2.1	N/D	8.1	11.1	12.5	14.2	17.3
BOTTOM	N/D	N/D	N/D	N/D	N/D	11.1	11.3	13.7	17.2
pH TOP	7.6	7.7	7.8	N/D	7.5	7.4	8.0	7.5	7.7
BOTTOM	N/D	N/D	N/D	N/D	N/D	7.3	8.1	7.5	7.7
SALINITY PPT									
TOP	27.1	16.8	24.9	N/D	21.8	22.0	21.5	21.5	21.9
BOTTOM	N/D	N/D	N/D	N/D	N/D	22.1	21.5	21.1	22.9
CONDUCTIVITY MMHO/CM									
TOP	348	219	231	N/D	231	249	260	265	286
BOTTOM	N/D	N/D	N/D	N/D	N/D	249	259	270	300
DO MG/L TOP	N/D	19.1	10.8	N/D	N/D	N/D	13.2	10.7	6.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	14.0	12.9	5.9
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	1.0	1.0	0	N/D	0	0	N/D	1.5	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	1.0	0
CHLORINE									
TAC TOP	<2.0	0.1	0.1	N/D	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
FAC TOP	<2.0	0.1	0.1	N/D	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
CAC TOP	0	0	0	N/D	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
COPPER PPM	0	0	0	N/D	0	0	N/D	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	0	N/D
PHOSPHATE PO_4 PPM									
TOP	0.5	2.5	2.5	N/D	2.5	1.5	2.4	2.5	4.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	1.5	2.3	2.5	2.5
CHLOROPHYLL a MG/M_3									
TOP	2.34	16.84	2.42	N/D	9.72	0	4.5	2.37	2.38
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	4.7	0	0.0016
COLIFORM COLONIES/100ML									
TOTAL TOP	0	580	58	N/D	0	29	203	435	29
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	58	800	0
FECAL TOP	0	0	29	N/D	0	0	0	58	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	29	0

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY BEACH CHANNEL (BC)
2

DATE	6/13/94	6/27/94	7/12/94	7/26/94	8/09/94	8/17/94	9/01/94	9/13/94	9/26/94
TIME	10:40AM	11:13AM	8:55AM	8:50AM	N/D	N/D	N/D	2:47PM	8:45AM
AIR TEMP(F)	72	81	76	75	N/D	N/D	72	83	69
WATER TEMP(C)									
TOP	23.5	23.0	24.9	24.0	N/D	N/D	22.0	19.9	19.9
BOTTOM	28.3	23.0	23.0	24.5	N/D	N/D	22.0	20.1	19.8
pH TOP	7.8	8.0	7.2	7.6	N/D	N/D	7.6	8.2	7.8
BOTTOM	6.8	7.3	7.4	7.4	N/D	N/D	7.5	8.2	7.7
SALINITY PPT									
TOP	27.1	24.6	25.5	29.5	N/D	N/D	24.6	25.2	23.4
BOTTOM	21.0	26.2	31.0	29.5	N/D	N/D	24.2	26.9	23.2
CONDUCTIVITY MMHO/CM									
TOP	331	373	380	381	N/D	N/D	332	332	332
BOTTOM	337	380	390	380	N/D	N/D	338	352	331
DO MG/L TOP	5.5	6.6	4.4	2.1	N/D	N/D	3.4	4.7	3.7
BOTTOM	4.5	7.2	4.4	2.3	N/D	N/D	3.1	4.8	2.8
NITRATES TOP	0	0	0	0.1	N/D	N/D	0.1	0.2	0.3
BOTTOM	N/D	0	0	0	N/D	N/D	0.1	0.1	0.5
AMMONIA NH_3-N PPM									
TOP	3.5	0	0	3.3	N/D	N/D	0.7	2.5	0.8
BOTTOM	2.5	0	N/D	1.0	N/D	N/D	6.1	4.7	>10.0
CHLORINE									
TAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0.1
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	2.0	0.1
FAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.1	0.1
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0.1
CAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.1	0
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0
COPPER PPM	0	0	0	0	N/D	N/D	N/D	0	0
BOTTOM	0	0	0	0	N/D	N/D	N/D	0	0
PHOSPHATE PO_4 PPM									
TOP	3.0	N/D	N/D	2.5	N/D	N/D	1.2	1.5	1.3
BOTTOM	1.5	N/D	N/D	3.0	N/D	N/D	1.2	0.8	0.3
CHLOROPHYLL a MG/M^3									
TOP	23.69	0	.312	2.064	N/D	N/D	10.328	0.099	3.164
BOTTOM	4.19	0	.24	0.224	N/D	N/D	4.418	2.757	3.236
COLIFORM COLONIES/100 ML									
TOTAL TOP	33	0	627	726	570	13,200	0	0	812
BOTTOM	0	0	99	495	N/D	N/D	232	0	290
FECAL TOP	0	0	33	33	210	110	0	0	232
BOTTOM	0	0	66	66	N/D	N/D	0	0	58

TABLE VIII
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY JFK SOUTH OF RUNWAY EXTENSION (JFKS)

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/06/94	4/18/94	5/02/94	5/18/94	6/01/94
TIME	N/D	N/D	N/D	9:25AM	12:00AM	12:05PM	8:35AM	9:10AM	10:00AM
AIR TEMP(F)	N/D	N/D	N/D	46	49	61	48	60	64
WATER TEMP(C)									
TOP	N/D	N/D	N/D	3.5	8.9	11.2	12.5	14.2	17.9
BOTTOM	N/D	N/D	N/D	N/D	N/D	12.0	11.3	14.3	17.0
pH TOP	N/D	N/D	N/D	7.6	7.5	7.8	8.0	7.6	7.9
BOTTOM	N/D	N/D	N/D	N/D	N/D	7.2	8.0	7.5	7.8
SALINITY PPT									
TOP	N/D	N/D	N/D	23.4	21.9	22.2	22.0	21.0	23.8
BOTTOM	N/D	N/D	N/D	N/D	N/D	21.5	21.9	21.4	23.9
CONDUCTIVITY MMHO/CM									
TOP	N/D	N/D	N/D	223	234	250	265	268	305
BOTTOM	N/D	N/D	N/D	N/D	N/D	240	261	272	302
DO MG/L TOP	N/D	N/D	N/D	5.5	5.5	N/D	10.5	12.3	8.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	10.7	11.2	6.4
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	N/D	N/D	N/D	1.5	0	0	N/D	1.0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	N/D	1.0	0
CHLORINE									
TAC TOP	N/D	N/D	N/D	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
FAC TOP	N/D	N/D	N/D	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
CAC TOP	N/D	N/D	N/D	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	0
COPPER PPM	N/D	N/D	N/D	0	0	0	0	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	N/D
PHOSPHATE PO_4 PPM									
TOP	N/D	N/D	N/D	2.5	2.5	1.5	2.3	2.5	4.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	1.5	2.4	2.3	1.5
CHLOROPHYLL a MG/M^3									
TOP	N/D	N/D	N/D	6.68	5.93	4.27	2.61	0	3.25
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	2.37
COLIFORM COLONIES/100ML									
TOTAL TOP	N/D	N/D	N/D	0	29	0	0	493	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	58	0	493	0
FECAL TOP	N/D	N/D	N/D	0	0	0	0	29	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	0	0	0	29

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY JFK SOUTH OF RUNWAY EXTENSION (JFKS)
2

DATE	6/13/94	6/28/94	7/12/94	7/26/94	8/09/94	8/17/94	9/01/94	9/13/94	9/26/94
TIME	11:10AM	11:10AM	9:10AM	9:05AM	N/D	N/D	N/D	3:01PM	9:06AM
AIR TEMP(F)	70	81	76	75	N/D	N/D	72	81	69
WATER TEMP(C)									
TOP	20.0	24.0	25.1	26.0	N/D	N/D	22.0	21.5	20.1
BOTTOM	19.1	24.0	25.0	25.5	N/D	N/D	23.0	18.2	20.0
pH TOP	8.0	7.8	7.5	7.6	N/D	N/D	7.8	8.4	8.0
BOTTOM	7.7	7.9	7.5	7.6	N/D	N/D	8.2	8.2	7.9
SALINITY PPT									
TOP	23.0	24.4	31.9	29.0	N/D	N/D	25.3	30.5	24.8
BOTTOM	24.1	5.1	26.5	29.5	N/D	N/D	24.8	30.2	24.3
CONDUCTIVITY MMHO/CM									
TOP	330	346	385	380	N/D	N/D	342	344	329
BOTTOM	338	351	388	384	N/D	N/D	338	347	319
DO MG/L TOP	9.0	7.5	10.4	3.0	N/D	N/D	2.8	5.4	3.8
BOTTOM	4.5	5.8	3.8	0	N/D	N/D	2.5	4.9	1.7
NITRATES TOP	0.5	0	0.3	0.1	N/D	N/D	0.1	0.3	0.3
BOTTOM	N/D	0	0	0.1	N/D	N/D	0.1	0.2	0.2
AMMONIA NH_3-N PPM									
TOP	9.5	0.5	0	1.0	N/D	N/D	4.7	>10.0	0.4
BOTTOM	0.4	0	N/D	0.5	N/D	N/D	0.1	9.3	3.2
CHLORINE									
TAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0.1
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0.1
FAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0.2
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0.2
CAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0.1
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0	0.1
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	2.5	N/D	N/D	3.3	N/D	N/D	0.6	2.1	0.1
BOTTOM	1.5	N/D	N/D	3.5	N/D	N/D	0.6	1.3	0.9
CHLOROPHYLL a MG/M^3									
TOP	2.21	3.97	17.12	3.39	N/D	N/D	6.159	4.466	4.426
BOTTOM	0.08	3.31	4.74	2.09	N/D	N/D	6.739	2.095	4.565
COLIFORM COLONIES/100 ML									
TOTAL TOP	0	0	0	33	60	1253	435	0	87
BOTTOM	66	0	0	231	N/D	N/D	0	29	87
FECAL TOP	0	0	0	0	37	33	0	0	0
BOTTOM	0	0	33	0	N/D	N/D	0	0	0

TABLE IX
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY JFK NORTH OF RUNWAY EXTENSION (JFKN)

DATE	6/28/94	7/12/94	7/26/94	8/09/94	8/17/94	9/01/94	9/15/94	9/28/94	10/12/94
TIME	12:00PM	9:35AM	9:35AM	N/D	N/D	N/D	12:16PM	9:09AM	12:00PM
AIR TEMP(F)	82	77	78	N/D	N/D	73	85	65	55
WATER TEMP(C)									
TOP	25.1	25.0	21.5	N/D	N/D	23.0	21.2	20.2	15.7
BOTTOM	25.0	25.0	21.6	N/D	N/D	22.0	20.8	19.2	15.1
pH TOP	4.5	7.5	7.4	N/D	N/D	8.1	7.8	7.8	8.3
BOTTOM	4.9	7.5	7.4	N/D	N/D	7.5	7.8	7.8	8.3
SALINITY PPT									
TOP	21.8	29.0	28.0	N/D	N/D	22.4	24.8	16.3	26.0
BOTTOM	22.1	28.5	30.0	N/D	N/D	22.0	25.2	20.2	25.8
CONDUCTIVITY MMHO/CM									
TOP	341	385	341	N/D	N/D	322	337	228	301
BOTTOM	349	380	365	N/D	N/D	321	338	281	299
DO MG/L TOP	6.3	11.4	3.6	N/D	N/D	2.1	2.0	3.9	6.5
BOTTOM	7.0	7.7	2.3	N/D	N/D	1.8	1.7	3.7	5.3
NITRATES TOP	0	0	0.2	N/D	N/D	0.3	0.2	0.3	N/D
BOTTOM	0.2	0	0.1	N/D	N/D	0.4	0.2	0.2	N/D
AMMONIA NH_3-N PPM									
TOP	2.0	0	2.0	N/D	N/D	1.0	3.7	9.3	N/D
BOTTOM	6.5	N/D	1.0	N/D	N/D	5.2	1.4	2.5	N/D
CHLORINE									
TAC TOP	0	N/D	0	N/D	N/D	N/D	0.1	0.2	N/D
BOTTOM	0	N/D	0	N/D	N/D	N/D	0.2	0.2	N/D
FAC TOP	0	N/D	0	N/D	N/D	N/D	0.1	0.2	N/D
BOTTOM	0	N/D	0	N/D	N/D	N/D	0.2	0.2	N/D
CAC TOP	0	N/D	0	N/D	N/D	N/D	0.1	0	N/D
BOTTOM	0	N/D	0	N/D	N/D	N/D	0	0	N/D
COPPER PPM	0	0	0	N/D	N/D	0	0	0	N/D
BOTTOM	0	0	0	N/D	N/D	0	0	0	N/D
PHOSPHATE PO_4 PPM									
TOP	N/D	N/D	3.5	N/D	N/D	1.3	1.2	1.5	N/D
BOTTOM	N/D	N/D	3.5	N/D	N/D	1.2	0.5	1.9	N/D
CHLOROPHYLL a MG/M^3									
TOP	0.24	4.45	3.944	N/D	N/D	14.540	1.154	0.943	1.49
BOTTOM	0.26	3.5	4.428	N/D	N/D	17.342	0.205	1.614	2.37
COLIFORM COLONIES/100ML									
TOTAL TOP	CON	33	CON	132000	6000	2175	720	CON	1856
BOTTOM	1089	396	1800	N/D	N/D	3133	348	CON	3599
FECAL TOP	396	0	CON	24000	2643	1675	174	TNTC	0
BOTTOM	330	66	891	N/D	N/D	522	0	TNTC	841

No table for Data in file.
JB9WA2 Run Dates 9/8 & 10/12

TABLE X
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY BERGEN BASIN JB-9

DATE	6/1/94	6/13/94	6/28/94	7/12/94	7/26/94	8/09/94	8/17/94	9/01/94	9/15/94
TIME	10:15AM	11:35AM	12:10PM	9:50AM	10:00AM	N/D	N/D	N/D	11:55AM
AIR TEMP(F)	69	72	84	80	76	N/D	N/D	74	80
WATER TEMP(C)									
TOP	19.4	21.0	25.0	25.0	22.5	N/D	N/D	24.0	23.1
BOTTOM	18.8	20.5	25.0	24.8	23.2	N/D	N/D	23.0	21.1
pH TOP	7.7	7.7	4.6	7.5	7.6	N/D	N/D	7.6	7.6
BOTTOM	7.8	7.5	4.7	7.5	7.6	N/D	N/D	7.6	7.8
SALINITY PPT									
TOP	22.5	21.8	18.1	26.1	23.3	N/D	N/D	21.1	14.8
BOTTOM	25.1	22.9	23.1	26.1	32.5	N/D	N/D	23.8	24.1
CONDUCTIVITY MMHO/CM									
TOP	298	309	283	374	287	N/D	N/D	282	212
BOTTOM	330	320	360	372	385	N/D	N/D	346	331
DO MG/L TOP	6.3	4.5	5.5	2.1	3.1	N/D	N/D	1.8	1.3
BOTTOM	6.4	5.5	3.5	1.4	0.9	N/D	N/D	1.5	2.1
NITRATES TOP	0	0.4	0	0	0	N/D	N/D	0.2	0
BOTTOM	0	N/D	0	0	0	N/D	N/D	0.1	0.2
AMMONIA NH_3-N PPM									
TOP	3.5	>10.0	4.5	0	>10.0	N/D	N/D	5.7	9.6
BOTTOM	1.5	1.5	0	N/D	10.0	N/D	N/D	5.9	4.6
CHLORINE									
TAC TOP	0	0	0	N/D	0	N/D	N/D	N/D	0
BOTTOM	0	0	0	N/D	N/D	N/D	N/D	N/D	0.1
FAC TOP	0	0	0	N/D	0	N/D	N/D	N/D	0
BOTTOM	0	0	0	N/D	N/D	N/D	N/D	N/D	0.1
CAC TOP	0	0	0	N/D	0	N/D	N/D	N/D	0
BOTTOM	0	0	0	N/D	N/D	N/D	N/D	N/D	0.1
COPPER PPM	N/D	0	0	0	0	N/D	N/D	0	0
BOTTOM	N/D	0	0	0	0	N/D	N/D	0	0
PHOSPHATE PO_4 PPM									
TOP	6.0	2.5	N/D	N/D	6.3	N/D	N/D	2.1	3.2
BOTTOM	2.5	2.0	N/D	N/D	3.0	N/D	N/D	0.1	2.0
CHLOROPHYLL a MG/M^3									
TOP	4.45	2.53	0	2.84	2.37	N/D	N/D	3.465	0.0798
BOTTOM	0.38	2.1	4.42	0.94	2.37	N/D	N/D	2.223	1.0294
COLIFORM COLONIES/100ML									
TOTAL TOP	1798	CON	CON	CON	CON	9167	31333	CON	CON
BOTTOM	725	4554	CON	858	3129	N/D	N/D	TNTC	2639
FECAL TOP	203	990	TNTC	3003	1419	4620	17533	TNTC	15200
BOTTOM	58	429	2376	66	396	N/D	N/D	116	232

✓ NO file for this one. Hand entered

TABLE XI
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY BERGEN BASIN (BB)

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/07/94	4/20/94	5/02/94	5/18/94	6/01/94
TIME	10:30AM	11:30AM	9:10AM	10:50AM	11:45AM	7:30AM	8:55AM	9:30AM	10:20AM
AIR TEMP(F)	28	50	48	47	48	59	50	58	71
WATER TEMP(C)									
TOP	3.4	3.2	5.1	12.0	12.1	13.2	15.1	19.7	19.7
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	11.8	14.2	19.2
pH TOP	7.8	7.5	7.6	7.7	7.1	7.4	7.5	7.3	7.2
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	7.6	7.3	7.7
SALINITY PPT									
TOP	24.5	23.1	21.0	21.2	5.0	17.1	17.4	18.1	10.2
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	21.0	21.2	23.1
CONDUCTIVITY MMHO/CM									
TOP	322	219	201	219	62	212	215	233	190
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	251	270	305
DO MG/L TOP	N/D	12.4	12.9	4.5	N/D	9.5	0	3.1	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	3.3	7.5	6.2
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	3.0	1.0	2.5	1.5	4.5	1.0	6.3	2.5	10.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	2.5	1.5
CHLORINE									
TAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
FAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
CAC TOP	0	0	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
COPPER PPM	0	0	0	0	0	0	0	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	N/D
PHOSPHATE PO_4 PPM									
TOP	2.0	2.5	2.5	2.5	2.5	2.5	1.0	5.5	10.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	1.5	3.5	2.5
CHLOROPHYLL a MG/M^3									
TOP	3.56	13.98	6.74	11.44	0	9.95	0	0	0.0016
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	1.898
COLIFORM COLONIES/100ML									
TOTAL TOP	0	87	1450	435	CON	4495	CON	CON	5000
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	5249	3484	2467
FECAL TOP	0	0	0	0	16762	464	7569	9570	29
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	580	1131	145

BBWQ2.WP5

BBWQ3.WP5

other

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY BERGEN BASIN (BB)
2

DATE	6/13/94	6/28/94	7/12/94	7/26/94	8/10/94	8/17/94	9/1/94	9/15/94	9/26/94
TIME	11:45AM	12:15PM	10:00AM	10:10AM	N/D	N/D	N/D	12:04PM	8:45AM
AIR TEMP(F)	70	83	87	78	N/D	N/D	77	85	65
WATER TEMP(C)									
TOP	21.1	25.1	25.0	21.0	N/D	N/D	24.0	23.5	20.9
BOTTOM	20.0	24.9	24.0	22.0	N/D	N/D	23.0	21.1	19.9
pH TOP	7.6	6.9	7.4	7.3	N/D	N/D	7.1	7.6	7.7
BOTTOM	7.4	5.9	7.3	7.3	N/D	N/D	7.4	7.8	7.8
SALINITY PPT									
TOP	19.5	12.5	18.0	18.5	N/D	N/D	12.9	13.2	10.9
BOTTOM	22.8	23.2	23.9	32.0	N/D	N/D	23.6	25.2	27.9
CONDUCTIVITY MMHO/CM									
TOP	280	220	285	228	N/D	N/D	193	187	119
BOTTOM	320	358	370	380	N/D	N/D	343	343	290
DO MG/L TOP	5.5	2.4	2.1	3.1	N/D	N/D	1.0	1.2	0.1
BOTTOM	3.5	3.1	0	1.0	N/D	N/D	1.2	1.7	0.3
NITRATES TOP	0	0	0	0.2	N/D	N/D	0.1	0.2	0.1
BOTTOM	0	0	0	N/D	N/D	N/D	0.1	0.2	0.2
AMMONIA NH_3-N PPM									
TOP	5.5	10.0	0	>10.0	N/D	N/D	9.0	>10.0	>10.0
BOTTOM	2.5	0	N/D	10.0	N/D	N/D	0.7	7.7	6.5
CHLORINE									
TAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.2	0.1
BOTTOM	0	0	N/D	0	N/D	N/D	N/D	0.2	0.2
FAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.2	0.1
BOTTOM	0	0	N/D	0	N/D	N/D	N/D	0.2	0.2
CAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0
BOTTOM	0	0	N/D	0	N/D	N/D	N/D	0	0
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	3.5	N/D	N/D	5.5	N/D	N/D	5.8	3.6	1.2
BOTTOM	3.5	N/D	N/D	3.0	N/D	N/D	1.4	1.8	2.9
CHLOROPHYLL a MG/M^3									
TOP	0.04	47.54	6.56	N/D	N/D	0	0	0.175	0.175
BOTTOM	0.897	2.32	0	4.49	N/D	N/D	6.50	2.238	0.175
COLIFORM COLONIES/100 ML									
TOTAL TOP	CON	CON	CON	CON	>240,000	≥240,000	CON	CON	CON
BOTTOM	CON	CON	4400	1221	N/D	N/D	5933	1798	CON
FECAL TOP	2574	TNTC	5148	132	≥240,000	≥240,000	0	12799	TNTC
BOTTOM	297	3102	330	99	N/D	N/D	261	435	TNTC

TABLE XII
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY HENDRIX CREEK (JB-6A)

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/07/ 94	4/20/94	5/02/94	5/18/94	6/01/94
TIME	10:00AM	11:00AM	8:40AM	11:05AM	11:30AM	7:10AM	9:10AM	9:45AM	10:45AM
AIR TEMP(F)	24	55	47	43	49	58	51	59	72
WATER TEMP(C)									
TOP	2.3	2.9	3.1	4.9	10.1	13.8	12.7	14.3	19.1
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	12.3	13.6	18.9
pH TOP	7.4	7.5	7.6	7.8	7.5	7.2	7.8	7.4	8.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	7.9	7.5	7.9
SALINITY PPT									
TOP	32.4	25.5	24.1	22.5	16.1	10.0	20.5	20.0	21.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	21.9	22.5	21.1
CONDUCTIVITY MMHO/CM									
TOP	331	240	231	222	198	131	250	259	304
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	261	285	305
DO MG/L TOP	N/D	14.1	15.8	4.5	N/D	7.4	6.2	10.1	8.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	6.1	9.1	7.6
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	3.0	1.0	1.5	1.5	3.0	5.5	N/D	0.3	1.50
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	2.0	1.50
CHLORINE									
TAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
FAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
CAC TOP	0	0	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
COPPER PPM	0	0	0	0	0	0	N/D	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0	N/D
PHOSPHATE PO_4 PPM									
TOP	2.0	2.5	2.5	2.5	2.0	2.0	4.7	2.5	4.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	1.7	2.5	2.5
CHLOROPHYLL a MG/M^3									
TOP	4.56	20.14	4.0	11.48	7.11	0	0	0	3.32
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	2.58
COLIFORM COLONIES/100ML									
TOTAL TOP	116	29	348	116	CON	464	638	2407	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	4524	1914	116
FECAL TOP	0	0	0	0	87	0	58	145	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	145	29	0

JB 6AWQ2

JBLAWQ October & Nov

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY HENDRIX CREEK JB-6A

2

DATE	6/13/94	6/28/94	7/12/94	7/25/94	8/09/94	8/17/94	9/01/94	9/14/94	9/27/94
TIME	11:55AM	12:30AM	10:15AM	12:50PM	N/D	N/D	N/D	11:35AM	12:22PM
AIR TEMP(F)	70	81	80	75	N/D	N/D	77	75	76
WATER TEMP(C)									
TOP	21.5	23.5	24.5	26.0	N/D	N/D	23.0	19.2	20.9
BOTTOM	19.1	24.0	24.0	25.5	N/D	N/D	22.0	19.7	20.0
pH TOP	7.5	4.8	7.5	7.7	N/D	N/D	7.9	N/D	7.4
BOTTOM	7.7	4.8	7.4	7.8	N/D	N/D	7.8	7.5	7.5
SALINITY PPT									
TOP	12.0	23.8	9.9	29.5	N/D	N/D	23.1	18.8	16.2
BOTTOM	23.9	25.1	27.1	31.2	N/D	N/D	24.0	26.1	26.9
CONDUCTIVITY MMHO/CM									
TOP	179	370	150	381	N/D	N/D	336	241	185
BOTTOM	339	389	391	403	N/D	N/D	350	358	299
DO MG/L TOP	3.5	9.6	3.3	3.5	N/D	N/D	2.1	3.9	2.6
BOTTOM	4.0	5.5	3.1	2.2	N/D	N/D	1.8	3.5	2.3
NITRATES TOP	0	0	0.5	0.5	N/D	N/D	0.5	0.7	2.5
BOTTOM	N/D	0	0	0.2	N/D	N/D	0.4	0.6	0.5
AMMONIA NH_3-N PPM									
TOP	10.0	1.5	0	2.7	N/D	N/D	1.2	9.3	9.7
BOTTOM	1.5	0	N/D	4.3	N/D	N/D	0.4	7.2	>10.0
CHLORINE									
TAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.1	0.2
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0.1
FAC TOP	0	0	N/D	0	N/D	N/D	N/D	0.1	0.2
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0.1	0.2
CAC TOP	0	0	N/D	0	N/D	N/D	N/D	0	0
BOTTOM	0	0	N/D	N/D	N/D	N/D	N/D	0	0.1
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	N/D	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	5.5	N/D	N/D	2.5	N/D	N/D	1.2	1.5	0.3
BOTTOM	0	N/D	N/D	N/D	N/D	N/D	1.2	1.0	1.2
CHLOROPHYLL a MG/M^3									
TOP	2.38	8.90	0	4.444	N/D	N/D	6.726	12.439	0.442
BOTTOM	0.08	10.82	2.14	2.066	N/D	N/D	3.9668	0.1738	1.856
COLIFORM COLONIES/100 ML									
TOTAL TOP	5511	1023	33	435	460	930	1769	1276	261
BOTTOM	792	1353	99	N/D	N/D	N/D	464	1073	CON
FECAL TOP	132	198	66	0	321	270	116	0	0
BOTTOM	0	66	33	N/D	N/D	N/D	29	0	3667

TABLE XIII
ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY PENNSYVANIA AVE. LANDFILL (PAL)

DATE	1/31/94	2/22/94	3/07/94	3/21/94	4/07/94	4/20/94	5/02/94	5/18/94	6/01/94
TIME	10:20AM	11:15AM	8:55AM	11:15AM	11:20AM	7:00AM	2:55PM	10:00AM	11:00AM
AIR TEMP(F)	29	51	51	43	50	58	69	60	71
WATER TEMP(C)									
TOP	0	6.0	4.0	5.1	11.9	12.2	14.4	14.3	20.2
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	14.2	14.2	20.2
pH TOP	7.8	7.5	7.5	7.6	7.5	7.5	7.8	7.5	7.9
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	8.0	7.5	8.0
SALINITY PPT									
TOP	25.9	22.5	22.5	22.5	12.2	16.7	24.5	22.1	21.4
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	23.9	22.1	21.5
CONDUCTIVITY MMHO/CM									
TOP	335	234	221	213	150	206	290	280	305
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	281	281	311
DO MG/L TOP	N/D	19.4	13.8	3.5	7.0	11.2	9.8	8.9	9.8
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	12.2	10.0	12.8
NITRATES TOP	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0
AMMONIA NH_3-N PPM									
TOP	4.0	1.0	2.5	1.5	0	1.0	N/D	1.0	4.5
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.8	1.5
CHLORINE									
TAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
FAC TOP	<2.0	0.1	0.1	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
CAC TOP	0	0	0	0	0	0	0	0	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	0	0
COPPER PPM	0	0	0	0	0	0	0	0	N/D
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0	N/D
PHOSPHATE PO_4 PPM									
TOP	1.5	2.5	2.5	2.5	2.5	2.0	2.5	2.5	4.0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	2.1	2.5	3.5
CHLOROPHYLL a MG/M^3									
TOP	2.1	27.36	11.42	9.26	4.74	2.37	4.26	0	0.718
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	1.9	0	2.59
COLIFORM COLONIES/100ML									
TOTAL TOP	0	870	116	0	CON	13200	580	5200	145
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	464	9591	58
FECAL TOP	0	0	0	0	15399	11020	0	261	0
BOTTOM	N/D	N/D	N/D	N/D	N/D	N/D	0	464	0

ENVIRONMENTAL WATER QUALITY MONITORING
JAMAICA BAY PENNSYLVANIA AVE. LANDFILL (PAL)
2

DATE	6/13/94	6/28/94	7/12/94	7/25/94	8/09/94	8/17/94	9/01/94	9/14/94	9/27/94
TIME	12:00PM	12:35PM	10:30AM	12:20PM	N/D	N/D	N/D	11:20AM	12:22PM
AIR TEMP(F)	71	74	80	87	N/D	N/D	79	78	76
WATER TEMP(C)									
TOP	21.0	24.5	25.1	27.8	N/D	N/D	23.0	19.9	19.9
BOTTOM	20.0	23.1	25.0	28.2	N/D	N/D	23.0	18.8	20.1
pH TOP	7.8	6.2	7.3	7.8	N/D	N/D	8.2	7.7	7.4
BOTTOM	7.8	5.7	7.3	7.9	N/D	N/D	8.1	7.7	7.4
SALINITY PPT									
TOP	22.9	24.2	26.9	29.0	N/D	N/D	24.8	26.7	17.5
BOTTOM	22.9	23.5	26.4	29.8	N/D	N/D	24.9	27.2	19.6
CONDUCTIVITY MMHO/CM									
TOP	321	372	394	385	N/D	N/D	358	348	251
BOTTOM	330	361	391	390	N/D	N/D	359	351	272
DO MG/L TOP	5.5	9.5	3.8	5.1	N/D	N/D	1.4	4.9	3.9
BOTTOM	5.0	8.9	3.5	5.5	N/D	N/D	1.0	5.1	3.7
NITRATES TOP	0	0	0	0.3	N/D	N/D	0.4	0.2	1.0
BOTTOM	0	0.1	0	0	N/D	N/D	0.4	0.1	0.5
AMMONIA NH_3-N PPM									
TOP	10.0	1.0	10.0	1.0	N/D	N/D	4.3	9.5	3.3
BOTTOM	6.5	0	N/D	1.0	N/D	N/D	>10.0	7.5	7.5
CHLORINE									
TAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0.1	0
BOTTOM	0	0	N/D	0.1	N/D	N/D	N/D	0.1	0.1
FAC TOP	0	0	N/D	0.2	N/D	N/D	N/D	0.1	0.1
BOTTOM	0	0	N/D	0.2	N/D	N/D	N/D	0.1	0.1
CAC TOP	0	0	N/D	0.1	N/D	N/D	N/D	0	0.1
BOTTOM	0	0	N/D	0.1	N/D	N/D	N/D	0	0
COPPER PPM	0	0	0	0	N/D	N/D	0	0	0
BOTTOM	0	0	0	0	N/D	N/D	0	0	0
PHOSPHATE PO_4 PPM									
TOP	1.5	N/D	N/D	2.5	N/D	N/D	1.0	0.7	0.2
BOTTOM	0	N/D	N/D	0.5	N/D	N/D	1.3	1.3	0.5
CHLOROPHYLL a MG/M^3									
TOP	4.16	12.76	0	10.848	N/D	N/D	6.474	3.033	2.064
BOTTOM	3.55	7.22	1.18	10.108	N/D	N/D	5.130	4.418	1.977
COLIFORM COLONIES/100 ML									
TOTAL TOP	2112	1188	1551	759	2267	24866	638	1334	CON
BOTTOM	2409	1320	363	1188	N/D	N/D	2059	2199	4200
FECAL TOP	99	330	165	99	863	643	319	174	522
BOTTOM	132	231	198	99	N/D	N/D	493	116	841

TABLE XIV

BEACH WATER QUALITY BREEZY POINT
1994

	RIIS PARK		SURF CLUB	
DATE	TOTAL	FECAL	TOTAL	FECAL
6/20	0	0	0	0
6/27	0	0	0	0
7/5	116	58	290	203
7/11	87	87	0	0
7/18	29	0	0	0
7/25	0	0	87	0
8/1	203	174	0	29
8/8	30	23	37	11
8/16	30	30	30	30
8/22	33	66	66	33
8/30	29	0	0	0

TABLE XV

BEACH WATER QUALITY STATEN ISLAND
1994

DATE	FORT WADSWORTH FW-1		SOUTH BEACH SB-2		MIDLAND BEACH MB-3		NEW DORP BEACH NDB-4		OAKWOOD BEACH OB-5		GREAT KILLS GK-6		CROOK'S POINT CP-7		MARINA GKM-8	
	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL
6/20	N/D	N/D	0	0	66	99	0	0	0	58	33	58	33	0	231	0
6/27	N/D	N/D	0	165	165	33	29	0	0	0	0	0	0	0	66	66
7/5	N/D	N/D	132	0	33	33	29	0	0	33	29	29	0	0	0	0
7/11	66	0	33	0	66	0	0	0	33	0	0	174	0	0	0	0
7/18	132	0	165	66	165	66	203	0	66	0	145	116	33	0	33	0
7/25	462	132	132	165	165	33	0	0	0	0	0	29	0	0	0	0
8/1	203	203	165	33	0	66	66	0	99	0	33	116	33	0	0	33
8/8	N/D	N/D	313	35	313	118	24	4	2486	967	1320	1320	215	93	40	4
8/16	N/D	N/D	230	100	1910	530	30	30	1986	176	230	183	56	36	410	53
8/22	753	753	396	99	33	0	116	99	99	99	435	261	33	66	203	29
8/23											0	145				
8/29	58	58	20	0	0	3915	493	203	29	0	406	406	29	0	145	87
8/30											464	783				
8/31											58	29				

TABLE XVI

BEACH WATER QUALITY SANDY HOOK
1994

	PLUMB ISLAND SH-1		SPERMACETI COVE SH-2		LOT D SH-3		GUNNISON BEACH SH-4		NORTH BEACH SH-5		HORSESHOE COVE SH-6	
DATE	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL	TOTAL	FECAL
6/22	66	33	0	0	29	0	0	0	58	0	0	0
6/29	0	0	99	33	0	29	0	0	29	0	0	0
7/6	33	0	800	580	87	0	58	0	29	29	66	29
7/13	0	33	0	132	174	66	0	0	29	0	33	66
7/20	66	33	66	0	1160	0	1160	0	1827	0	132	0
7/27	0	198	0	0	0	198	0	0	58	0	0	58
8/3	0	0	0	29	435	58	957	29	0	58	891	165
8/10	403	403	73	33	30	30	30	30	30	30	50	30
8/18	37	33	596	530	36	33	296	296	250	186	203	90
8/24	33	0	99	0	33	0	0	0	0	0	203	33
8/31	0	0	3667	6496	0	0	0	0	29	0	87	0